PDN - CHAPTER 5

FOOTPRINT ESTABLISHED STAGE 2

CHAPTER 5 - FOOTPRINT ESTABLISHED

Table of Contents

INTRODUCTION

ROADWAY DESIGN GUIDELINES AND STANDARD DRAWINGS

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

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

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

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

3 Phases of Project Development

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

4 Stages of Project Delivery Network

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

This page is left blank intentionally.

SECTION 1 – PREPARING FUNCTIONAL DESIGN PLANS

5-100.00 DEVELOP FUNCTIONAL DESIGN PLANS

See Project Delivery Network 2RD1 for the Functional Design Plan requirements.

5-101.00 FEDERAL TRACTS

Federal tracts should be marked as permanent easements on federal tracts in the right-of-way acquisition table when obtaining land rights from the Tennessee Valley Authority, the U.S. Corps of Engineers, other U.S. Government Agencies. Railroads, Cities and Counties. ((See TDOT Right-of-Way manual Chapter VIII-7)

5-102.00 RIGHT-OF-WAY NOTES FOR ALL RIGHT-OF-WAY PROJECTS

See Chapter 9 Section 3, Right-of-Way/Utility Notes, to determine which notes apply. These notes shall be placed on Plan Sheet 3 - Right-of-Way Notes, Utility Notes, and Utility Owners sheet of the Functional Design Plans.

5-103.00 UTILITY OWNER INFORMATION

Utility owner information is submitted in the Survey CADD file. All utility owner's names with contact information shall be confirmed by Preconstruction Utility personnel and shall be listed on Plan Sheet 3 – Right-of-Way Notes, Utility Notes, and Utility Owners. For format of Utility Owners see Figure 5-1, Typical Format for Utility Owner Information.

UTILITY OWNERS

FIBER:
AT&T
315 E. COLLEGE STREET
JACKSON, TN 38301
CONTACT: COREY BARTHOLOMEW
OFFICE PHONE: 731 423 5026
CELL PHONE: ___ ___ ____
Email: N/A

FIBER:
SPRINT
411 HUGER STREET
COLUMBIA, SC 29201
CONTACT: STEVE THOMPSON
OFFICE PHONE: 678 852 2726
CELL PHONE: ___ ___ ____
Email: N/A

WATER:
TOWN OF CAMDEN WATER DEPT.
110 HWY 641 SOUTH P.O. BOX 779
CAMDEN, TN 38320
CONTACT: JOHN BEASLEY
OFFICE PHONE: 731 584 4656
CELL PHONE: ___ ___ ____
Email: N/A

SANITARY:
TOWN OF CAMDEN WATER DEPT.
110 HWY 641 SOUTH P.O. BOX 779
CAMDEN, TN 38320
CONTACT: JOHN BEASLEY
OFFICE PHONE: 731 584 4656
CELL PHONE: ___ ___ ____
Email: N/A

GAS:
WEST TENNESSEE PUBLIC UTILITY
14055 PARIS STREET
HUNTINGDON, TN 38344
CONTACT: MIKE STAFFORD
OFFICE PHONE: 731 986 8289
CELL PHONE: ___ ___ ____
Email: N/A

RAILROAD:
CXS RAILROAD
500 WATER STREET, 15TH FLOOR
JACKSONVILLE, FL 32202
CONTACT: N/A
OFFICE PHONE: ___ ___ ____
CELL PHONE: ___ ___ ____
Email: N/A

Figure 5-1
Typical Format for Utility Owner Information

5-104.00 PROJECT COMMITMENTS SHEET IN FUNCTIONAL DESIGN PLANS

All commitments made during the planning and development of the project, shall be documented in the Project Commitment Document for each respective project. Those commitments shall be included on a separate Project Commitments sheet in the Plan-in-Hand plans. For an example of the Project Commitments sheet see *Figure 5-2, Example of Project Commitments Sheet.*

The Project Commitments sheet shall be developed using the Project Commitments template. The sheet shall be placed in the plans as sheet 1B.

The following procedures shall be used for identifying project commitments and developing the Project Commitments sheet:

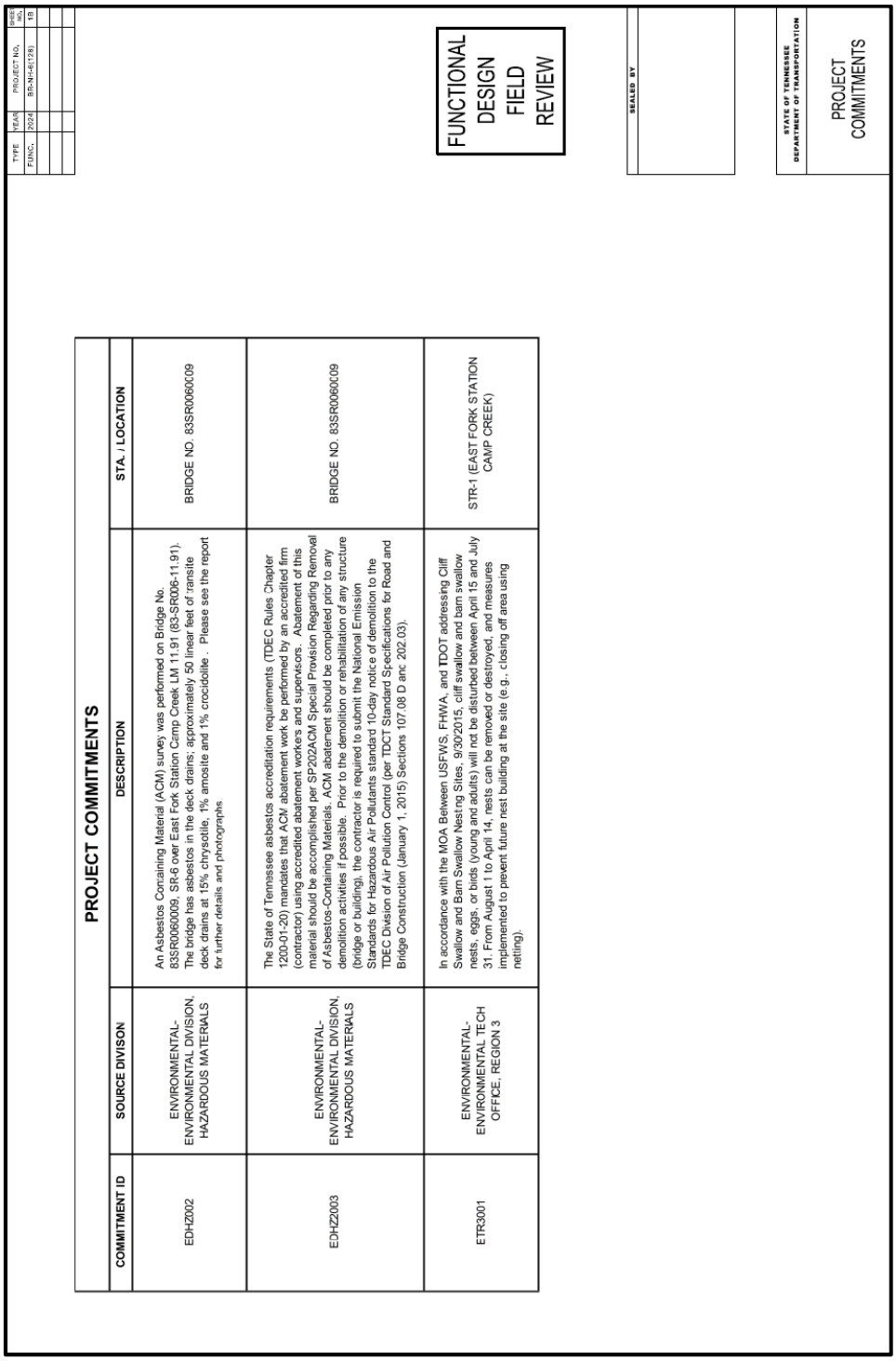
1. Each Division is responsible for placing their respective project commitments on the Project's SharePoint site under the discipline folder. The Division adding the commitments shall be defined. The commitment shall be well defined with stations and locations if applicable. Once the commitment is added, the program will define a commitment ID.

2. The Design Lead will be responsible for checking the Project Commitments page and developing the Project Commitments sheet at the beginning of Functional Design plans development and update as needed. Each commitment shown on the Project Commitment sheet shall contain the commitment ID, source division, commitment description, and the station/location.

3. For any pending commitments, Design Leads should contact the Division responsible for the commitment prior to issuing Right-of-Way plans to verify if the commitment may be active. If project commitments are added or revised after final Plan-in-Hand plans submittal, a plan revision may be necessary.

4. Design Leads shall be responsible for verifying that the commitment does not violate any of the 10 controlling elements of design or design standards. In the event a commitment requires a Design Exception and Justification Form or other documentation, it shall be the responsibility of the Design Manager to obtain a design exception or provide appropriate documentation needed to document the variance from the standard design practice prior to adding the commitment to the Project Commitments sheet. The Design Lead should also follow up with the Division responsible for the commitment.

5. Project commitments are intended to include commitments made during the development of the environmental document, to mitigate environmental impacts, to address issues related to the project design, or Right-of-Way acquisition that the Department has agreed to during project planning and development. Commitments should not include items normally included as part of a set of construction plans, covered under standard specifications, supplemental specifications, or other contract documents. If the Design Lead/Project Manager believes a commitment has been added that is not warranted, the Project Manager will follow up with the appropriate person or persons in the Division which added the commitment to determine if the commitment is appropriate.



TYPE	YEAR	PROJECT NO.	SHEET NO.
FUNC.	2024	BR-NH-6(128)	18

FUNCTIONAL DESIGN FIELD REVIEW

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PROJECT COMMITMENTS

PROJECT COMMITMENTS

COMMITMENT ID	SOURCE DIVISON	DESCRIPTION	STA. / LOCATION
EDHZ002	ENVIRONMENTAL-ENVIRONMENTAL DIVISION, HAZARDOUS MATERIALS	An Asbestos Containing Material (ACM) survey was performed on Bridge No. 83SR0060009, SR-6 over East Fork Station Camp Creek LM 11.91 (83-SR06-11.91). The bridge has asbestos in the deck drains; approximately 50 linear feet of transite deck drains at 15% chrysotile, 1% amosite and 1% crocidolite. . Please see the report for further details and photographs	BRIDGE NO. 83SR0060C09
EDHZ2003	ENVIRONMENTAL-ENVIRONMENTAL DIVISION, HAZARDOUS MATERIALS	The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03).	BRIDGE NO. 83SR0060C09
ETR3001	ENVIRONMENTAL-ENVIRONMENTAL TECH OFFICE, REGION 3	In accordance with the MOA Between USFWS, FHWA, and TDOT addressing Cliff Swallow and Barn Swallow Nesting Sites, 9/30/2015, cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (e.g., closing off area using netting).	STR-1 (EAST FORK STATION CAMP CREEK)

Figure 5-2
Example of Project Commitments Sheet

SECTION 2 – TRAFFIC CONTROL PLAN DESIGN

5-200.00 TRAFFIC CONTROL IN CONSTRUCTION ZONES

TDOT's policy is to plan, design, construct, maintain, and operate safe and efficient work zones. The control of all road users through a work zone is an essential part of highway construction, utility work, maintenance, and right-of-way use permits. All projects shall follow TDOT's Traffic Design Division Work Zone Safety and Mobility (WZSM) manual. Consideration and management of work zone impacts begin at project inception and continue through all phases of design.

According to 23 CFR Part 630, Subpart J, all federally funded projects must have a Work Zone Significance Determination Evaluation and an appropriate Traffic Management Plan (TMP). TDOT's policy is to have a TMP for state-funded projects as well as federally funded projects. This is for all projects, including bridge repair, utility, or Local Program projects. All state/local projects shall include these three goals and objectives:

A. Maximize safety in all work zones having TDOT oversight by reducing fatality, injury, and property damage crashes statewide.
B. Minimize delay and other negative operational aspects of work zones.
C. Promote consistency in all phases of work zone development, including planning, design, implementation, and operation.

The first step is to determine whether the project is exempt according to the introduction of the TDOT Work Zone Safety and Mobility Manual. If it is not exempt, then the next step is to complete the TMP Cover Page and Work Zone Significance Determination form and develop a TMP. The TMP template should be completed for all projects, whether significant or non-significant. The template format is available in Chapter 1 of the Work Zone Safety and Mobility Manual. The TMP packet includes the items listed in Table 5-1, TMP Packet Item List. Local agencies should use the Local Program version of these forms, as TDOT personnel will not be approving Local TMPs.

Item #	Item Description
1	TMP Template
2	TMP Cover Page
3	Work Zone Significance Determination Form
4	Traffic Control Plans

Table 5-1
TMP Packet Item List

Consideration and management of work zone impacts begin at project inception and continue through all phases of design. The TMP shall at the minimum include a temporary traffic

control plan which shall either be a project specific temporary traffic control plan, approved TDOT standard drawings, or a reference to specific temporary traffic application in the MUTCD. The Design Lead shall use the Standard Traffic Design Drawing T-WZ series and the MUTCD to develop the traffic control plans. Additionally, all Operational Strategies agreed to at the Field Reviews and included on the TMP shall be shown as a special note on the Traffic Control Plan in the project plans.

The different responsibilities for Design Leads and Project Managers are specified in Appendix B of the WZSM. If the project type is not listed in the table, the Project Manager shall ensure that the significance determination and TMP are completed.

Prior to the Plan-in-Hand submittal, the Design Lead/Project Manager will submit the TMP packet to the Regional Traffic Engineer for approval and TMP cover sheet signature. The TMP packet with signed TMP cover sheet shall be uploaded to FileNet at the Plan-in-Hand plans submittal. Refer to *Chapter 1-105.07*. The naming convention shall be ***nnnnnn-nn*-TMP.pdf** where "nnnnnn-nn" is the project PIN. The revised, finalized, and signed TMP shall be uploaded to FileNet at the PS&E submittal. Refer to *Chapter 1-105.09*. Naming conventions shall be ***nnnnnn-nn*-TMP.pdf**, where "nnnnnn-nn" shall be the project PIN. For more detailed information, please see TDOT's Work Zone Safety and Mobility Manual.

At the Functional Design Plans Field Review, the Traffic Control Plan sheets shall be a draft version and printed for informational purposes only. The sheets will not be shown in the Index and shall be removed from the plan set prior to submittal. The sheet(s) shall have the *Info Only* stamp. Traffic control shall be discussed to ensure that all aspects of the traffic control and construction phasing are discussed during the Functional Design Plans phase. After the field review, changes shall be made to the Traffic Control sheets prior to Plan-in-Hand submittal. When Functional Design plans are submitted, the draft traffic control plans will be an independent pdf named ***nnnnnn-nn*-ConceptualTrafficControl.pdf** and placed on FileNet as a part of the Functional Design Plans submittal package. After the Plan-In-Hand submittal, these plans will not be updated. If traffic control plans change significantly from the Functional Design draft, the Regional Utility office will need to be notified. The TMP shall be reviewed, revised, and finalized at the PS&E Field Review or as deemed necessary by the Design Manager.

5-201.00 CONSTRUCTION SIGNING

Detour signs shall be used only when traffic is rerouted onto another road and not used for diversions (runarounds), lane shifts, etc. on the road under construction. A Road Work Next XX Miles sign shall be used on roads whose work zone is more than 2 miles in length or as instructed by TDOT Standard Drawings. Distances on the sign shall be rounded to the next mile up (example: 5.4 miles in road work shall be shown as 6 miles on the Road Work Next XX Miles sign).

5-202.00 BARRICADES AND DRUMS LIGHTING DEVICES

Plastic drums shall be used in lieu of Type II barricades due to better performance in terms of durability and target value.

1. Where plastic drums are used, there are certain situations where additional delineation provided by lighting devices is not necessary. Type C (steady burn) lamps are not recommended for use with plastic drums along tangent sections following a lane closure taper or along a line of drums delineating the edge of the traveled way. The large target area of reflective sheeting on drums has been shown to provide adequate delineation for these conditions. However, the use of Type C lamps is still recommended for use with drums on tapers. Also, Type C lamps on drums, including tangent sections, might be considered when climatic conditions (for example fog) dictate the need for additional delineation.
2. Where portable concrete barrier rails are used, portable barrier rail delineators are recommended in lieu of Type C lamps. These devices have provided adequate delineation at a much lower cost, while requiring much less maintenance effort as compared to Type C lamps.
3. The use of high intensity (Type B) lamps is optional according to the *MUTCD.* These lamps are frequently attached to the initial set of road work signs in advance of the work zone (Road Work Ahead, Road Work ½ Mile, etc.). These lamps do not add any significant degree of attention to these signs and are costly to provide and maintain. The use of Type B lamps shall be limited to just those situations where a "spot" hazard is anticipated, and additional delineation of a channelizing device is considered necessary.

5-203.00 MARKINGS

Wide (8 inch) solid lane lines are recommended for use as temporary marking at lane transitions and lane shifts. Wide lines provide better guidance through changes in alignment, especially where conflicting traces of removed markings may remain. Wide-edge line marking is also recommended for use next to portable concrete barrier rail. Review Standard Roadway Drawings - T-WZ Series for pavement marking requirements.

5-204.00 TEMPORARY RAISED PAVEMENT MARKERS

Raised pavement markers should be placed on lane lines for lane shifts on divided highways and freeways and 2-lane two-way diversion (run-arounds), as shown on the Standard Traffic Design Drawing T-WZ-series.

Temporary raised pavement markers should also be considered for use throughout construction projects on major facilities and locations where the lane visibility is an issue. The use of temporary raised pavement markers should be addressed at the Plan-in-Hand field review on projects involving major facilities.

Designers should ensure that the appropriate 716 series of pay items are included in the plans for temporary raised pavement markers.

5-205.00 PORTABLE BARRIER RAIL

Portable Concrete Rail (PCB) Standard Traffic Design Drawings, T-WZ-PCB1 thru PCB4 are listed under, Design-Traffic Control. PCBs comes with two standard lengths, 10 ft and 20 ft at 32" height meeting MASH TL-3. Installation of PCBs are compensated by per linear foot. Due to the improved PCB key connection design, articulation of this system at connections is limited to 5%. Therefore, when site condition requires to have installation of PCB with less than 230' radius, the designer should have a foot note indicating 10' PCBs will be required per TWZ-PCB-1.

Horizontal taper rates of PCB shall be 10:1 or flatter for designs where posted speeds are less than or equal to 45 mph and 15:1 or flatter for designs where posted speeds are greater than 45 mph (see standard traffic design drawings T-WZ series for more information). The approach ends of the portable barrier rail shall be located outside the clear zone or shielded with a crush cushion. Regardless the first and the last barrier or crush cushions at both ends shall be anchored to offer tension for the PCB system controlling the barrier deflection during an impact.

Free standing PCB system shown on the TDOT standards deflects up to 3' under MASH TL-3 criteria (62 mph at 25 impact angle) anchored at both ends by pining the first and last barriers or having connected to anchored CC system. The crash cushions paid for under Item Number 712- 02.60 Temporary Crash Cushion (MASH TL-3) per Each. The pay item includes furnishing and installing all components as shown on the manufacturer's drawing. At a minimum 100 ft of PCB installation will be required for the barrier system to perform as evaluated. Only freestanding WZ safety positive protection products offering less than 5' deflection have been accepted and listed on TDOT QPL. Designers should be aware, other freestanding WZ barriers listed on QPL deflection rates may be much higher than the PCB and if the barrier deflection is a concern, have a foot note on plans stating only anchored systems are allowed.

In many cases, anchoring WZ barriers to newly constructed pavement or a bridge deck is highly undesirable. The TDOT PCB system offers limited deflection alternative by attaching a stiffener tube to 20' PCB (cannot be used with 10' segments) as shown on T-WZ-PCB2A and be compensated by a separate item number 712-02.12. System offers approximately 2' deflection under TL-3. The following table offers a general PCB deflection guidance assisting designers with selecting a system based on the site conditions.

PCB Deflection Guidance				
PCB	Impact angle at 25 degrees		Impact angle < 15 degrees (Note 1)	
	Speed<45mph (Note 2)	45mph<Speed <65mph	Speed<45mph (Note 2 and 3)	45mph<Speed <65mph
Free Standing T-WZ-PCB1 T-WZ-PCB2	1.5 ft.	3.0 ft.	1.0 ft.	2.0 ft
Reduced Deflection T-WZ-PCB2A	1.0 ft.	2.0 ft.	0.7 ft.	1.5 ft.

Pinned/ Anchored T-WZ-PCB4	0.0 ft.	0.0 ft	0.0 ft.	0.0 ft.

Notes:

(1) Low impact angles may be considered at locations where both sides of the travelled lanes are bounded by barriers not offering conditions for vehicles to depart from the roadway at angles larger than 15 degrees.
(2) Theoretical deflection based on the reduced kinetic energy, 50% less for TL-2 conditions.
(3) Theoretical deflection based on the reduced kinetic energy, 30% less than MASH impact angle of 25%.

5-206.00 BARRIER RAIL DELINEATORS

Barrier Rail Delineators (Item Number 712-04.50 Barrier Rail Delineator per Each) shall be used on portable barrier rail in accordance with the Standard Traffic Design Drawings T-WZ-Series. The TDOT approved qualified product list will be used to identify acceptable products. Barrier rail delineators should meet the following specifications:

1. Portable barrier rail delineator reflective sheeting shall meet ASTM D4956, Type V specifications.
2. Delineator should have 4” x 3” dimensions. Delineators with dimensions other than 4” x 3” may be used if the product is on the approved products list. The variations in delineator dimension should not exceed ±10%.
3. Different types of barrier rail delineators should not be mixed in the same line.
4. Portable Barrier Rail Delineators shall be high impact, UV-stabilized, engineered thermoplastic or polycarbonate substrate.

5-207.00 DIFFERENCES IN ELEVATION BETWEEN ADJACENT ROADWAY ELEMENTS

To minimize the hazard to traffic where differences in elevations between adjacent roadway elements exist, the Designer shall follow the procedures listed in *Chapter 9 Section 5 Pavement Edge Drop-Off Traffic Control Notes*, unless otherwise shown on the plans or directed by the Engineer. The Designer is advised that the procedure listed in *Chapter 9 Section 5* shall be presented in the form of traffic control notes shown on the first sheet in the traffic control plans and not on the general notes sheet.

5-208.00 WORK ZONE SPEED CONTROL

WORK ZONE SPEED LIMITS

Speed limits in work zones shall be established based on the Work Zone Speed Control chapter of TDOT's Guidance on Setting Speed Limits manual. An evaluation for the need for a speed limit reduction shall be done for all freeway and expressway projects. If the criteria are met for a reduction, a written request shall be made to the State Traffic Engineer identifying the existing speed limit, proposed speed limit, whether it is to be variable or continuous, and which conditions and factor(s) necessitating the reduction are met. If approved, a pay item for portable, changeable speed limit signs shall be included. These signs shall be located at the beginning of the active construction work zone and every 1 to 1.25 miles on the right side of the roadway throughout the project length. These signs shall also be located at every on-ramp, if applicable. A static speed limit sign (R2-1) with the original speed limit shall be placed at the end of the work zone to establish that limit.

"WORKERS PRESENT" SIGN

A pay item for the "Workers Present" (TN-44) sign is to be used on all freeway and expressway construction projects if reduced speed limits for the construction zone are approved for use. This sign is to be placed 1,000 feet in advance of the reduced speed limit sign which is to be located at the beginning of the active construction work zone. These signs shall be located on the right side and on the median side of the roadway (except on the concrete median barrier wall sections). The signs shall be located only on the right side downstream of each interchange on-ramp within the active construction work zone.

The "Workers Present" sign will be paid for under Item Number 712-06.16 Signs (Construction) (Reduced Speed Warning) per Each. This item will be footnoted as follows:

"Item to be used only when a reduced speed limit is established within the project construction work zone limits. Item includes sign face, supports, and two type "B" flashers per the standard specifications. The contractor shall be responsible for turning on the type "B" flashers when workers are in the construction work zone and turning them off when workers are no longer in the construction work zone."

5-209.00 USE OF LANE CLOSURE WITH LEFT HAND MERGE

Controlled access projects which utilize left lane closure details shall be reviewed for the inclusion of Left-Hand Merge. Standard Traffic Design Drawing T-WZ-21 details Lane Closure with Left Hand Merge and Lane Shift. The layout and signage may require modification depending on site and field conditions. Freeway construction or maintenance projects where the left lane of traffic is closed through the work zone are the primary candidates.

The following criteria will be used for determining Merge Left use:

- Projects on rural freeways should include Merge Left
- Projects on urban freeways will be reviewed for Merge Left considering factors such as number of lanes, interchange spacing, and proximity to major splits
- Other controlled access facilities will be considered on a case-by-case basis

The State Work Zone Engineer should be notified by email (TDOT.TrafficDesign.WZ@tn.gov) for any freeway or controlled access facility with lane closures not utilizing Left Hand Merge prior to finalizing the traffic control. The memorandum shall contain the reasons left hand merge would not be warranted.

5-210.00 WORK ZONE DESIGN DEVIATION FORM

All projects with Temporary Traffic Control plans that do not meet TDOT or MUTCD standards shall require the completion and approval of a Work Zone Design Deviation Form.

Despite the range of flexibility that exists with respect to the controlling elements of temporary traffic control design, there are situations in which Standard Traffic Design Drawings - T-WZ series or MUTCD Part 6 criteria are not applicable to the project circumstances or cannot reasonably be met. For such instances, the work zone design deviation process allows for the request, justification, mitigation, and acceptance of alternate design criteria.

The work zone design deviation process requires formal approval for exceptions relating to TDOT's and MUTCD's accepted standards. Work Zone Design Deviation requests shall be submitted to the State Work Zone Engineer (TDOT.TrafficDesign.WZ@tn.gov) using the Work Zone Design Deviation Form. Designers shall keep a copy of the signed form in the Project Folder. Approved deviations shall then be described in detail within the Traffic Control Plan Notes.

SECTION 3 – ENVIRONMENTAL CONSIDERATIONS

5-301.00 KNOWN ENVIRONMENTAL CONSTRAINTS

Any known environmental constraints identified in environmental technical documents should be indicated on the plans and brought to the Project Team's attention as soon as the constraints are recognized. Constraints may include, but are not limited to the following: streams, wetlands, endangered or protected species, registered historical or archeological sites, etc. Ecology, permit assessment, and SWPPP review items encountered are to be addressed prior to the Functional Design Plan submittal.

5-302.00 ENVIRONMENTAL NOTE REQUIREMENTS

Design Leads should refer to *Chapter 9-400 Environmental General Notes* for Environmental Note requirements. The blue instructional text listed there will help guide as to whether notes are needed in the plans and the placement of those notes. These notes shall be part of the Plan-in-Hand Field Review and part of the official Plan-in-Hand plan submittal. The notes shown in Chapter 9-400 through 9-405 shall be placed in the Environmental Notes sheet series. This series comes after the General and Special Notes sheets. The notes shown in Chapter 9-410 through 9-415 shall be placed in the Erosion Prevention and Sediment Control (EPSC) Notes sheet series. This is the first sheet of the EPSC sheet series. For Resurfacing projects, these notes shall be placed after the Environmental Notes sheet.

Project Specific Notes requested by the Environmental Division should be included in the Environmental Notes or EPSC sheets as Special Notes except for special circumstances that require the note to be shown on the specific plan sheet for which the note applies. In these cases, a special note should be included in the Environmental or EPSC Special Notes indicating the location of the note.

The Design Lead should add any additional Special EPSC Notes which provide project specific information on requirements for the proposed EPSC measures as well as specific steps the contractor should take in the execution of the EPSC Plan. These notes should also be added to the first sheet of the EPSC Plans.

For notes added at the direction of the Environmental Division, the following sub-headers should be used:

A. Environmental - Air and Noise
B. Environmental - Archaeology
C. Environmental - Ecology
D. Environmental - Hazardous Materials
E. Environmental - Historic Preservation
F. Environmental - Mitigation
G. Environmental - Permits

5-303.00 ADDITION OF EPSC PLANS INTO FIELD REVIEW AND FUNCTIONAL DESIGN PLANS

EPSC Plans sheets shall be included in the Functional Design Field Review plans. Updates from comments at the field review should be made to the plans prior to submittal for Right-of-Way Appraisals and Acquisition. EPSC Plan sheets shall be named and follow the sequence as shown in *Chapter 1-204.01, Functional Design Index of Sheets* and include all listed items in the Functional Design checklist. Refer to the Drainage Manual *Chapter 10 Erosion Prevention and Sediment Control* for additional information on EPSC plans.

All projects require at least three (3) EPSC stages unless SWPPP staff member states otherwise:

1. Clearing and Grubbing Stage
2. Intermediate Stage (example: a widening project where traffic remains on existing roadway and portion of road is being constructed)
3. Final Construction Stage

In all cases, the plans will have the same number of EPSC stages as it has Traffic Control phases.

The Design Manager should contact the Regional Environmental Technical Groups when EPSC Plans are revised to determine if revised plan sheets or other information is needed.

5-303.01 ADDITION OF CONTOURS TO EPSC SHEETS

Contours shall be included in plans as part of the EPSC sheets for all projects submitted for Right-of-Way Appraisal and Acquisition except for resurfacing projects, projects where a survey is not required, and small projects or projects of limited scope where a surface is not developed. Contours should include existing (pre-construction), intermediate, and proposed contours. Contours shown on EPSC sheets should include all listed items in the Functional Design checklist.

Since site conditions and topography are unique to each project, Design Leads should seek input from Regional Environmental Technical Offices to determine contour intervals.

5-304.00 ENVIRONMENTAL PERMIT REQUIREMENTS

Several State and Federal Agencies issues permits for impacts to Waters of the United States and Waters of the State of Tennessee. These agencies have regulatory authority over the Tennessee Department of Transportation. These agencies and the permits the agencies issue are described in the Tennessee Environmental Procedures Manual.

Design Leads are responsible for preparing all requested information, permit sketches, and modifications to their plans that the Regional Environmental Technical Office and

Environmental Division – Permits Office use to apply for permits. This document assists in determining what is included in the packet and on the individual sketches. Once the Environmental Permit Package is complete and uploaded to FileNet, send a notification by email to the HQ Environmental Division (TDOT.Env.Permits@tn.gov) and the appropriate Regional Environmental Technical Office:

Region 1 – Environmental Technical Office R1.EnvTechOffice@tn.gov
Region 2 – Environmental Technical Office R2.EnvTechOffice@tn.gov
Region 3 – Environmental Technical Office R3.EnvTechOffice@tn.gov
Region 4 – Environmental Technical Office R4.EnvTechOffice@tn.gov

Once the application for water quality permits (which includes the permittable roadway plans and permit sketches) for a given roadway project has been submitted to the various permitting agencies (i.e. Tennessee Department of Environment and Conservation, U.S. Army Corps of Engineers, and Tennessee Valley Authority) by the Environmental Division, an email will be sent to the project's Project Manager notifying them of this application submittal. It should be noted that if agency review results in a Request for Additional Information (RAI) from the Environmental Division revisions to the roadway plans and/or permit sketches may be required from the Design Lead to satisfy the RAI comments. If revisions to the plans or sketches are required, this information will be coordinated by the Environmental Division to either the Environmental Technical Office or the Project Manager/Design Lead by email.

If the project does not require items submitted for permit evaluation, the Regional Environmental Technical Office or Environmental Division shall send an email to the Design Lead, copied to the Program Scheduling Office, stating that no environmental impacts will occur as a result of the project.

5-305.00 PLACEMENT OF TREES IN MITIGATION AREAS

Areas designated for tree planting for water quality impacts typically include restored or existing wetlands, channel changes, and when specified, areas around streams and the inlet and outlet areas at culverts. The Environmental Technical Office or TDOT Mitigation shall be consulted to determine which areas require tree planting. All required tree planting must be located within the permanent right-of-way rather than in a drainage easement. Sufficient room shall be designated for the placement of trees and seedlings near culverts, channel relocations, and along stream banks, or other mitigation features within the right-of-way boundaries. These trees should be protected from disturbance during construction and from maintenance activities after construction. Within the approved permit, the regulatory agencies will specify how long and what percentage of survival is needed to satisfy the conditions of the specific permit.

All notes required by the Technical Studies Office, Environmental Division, Regional Environmental Tech Offices, or specified in the Ecology report must be placed in the Plan-in-Hand plans for the permit applications. Email addresses are as follows:

TDOT.Env.Ecology@tn.gov
R1.EnvTechOffice@tn.gov
R2.EnvTechOffice@tn.gov
R3.EnvTechOffice@tn.gov
R4.EnvTechOffice@tn.gov

5-306.00 ABANDONMENT OF WATER WELLS

If during the Environmental Boundaries and Functional Design phase it is determined that a water well requires abandonment, the Project Manager/Design Lead shall request information after Functional Design plans have been submitted by notifying the Tennessee Department of Environment & Conservation, Division of Water Resources, Water Well Program at the Davey Crockett Tower, 9th Floor, 500 James Robertson Parkway Nashville, Tennessee 37243 or telephone 1-800-525-4873 or (615) 532-0176. The Project Manager/Design Lead shall also request an inspection of the well and recommendations concerning sealing. Quantities and bid items shall then be set up in the project plans for the contractor to perform the actual sealing of the well. The abandonment of water wells shall become a project commitment. See *Section 5-104.00 Project Commitments Sheet in Functional Design Plans*.

When requesting a well inspection and recommendations for sealing from the Water Management Division, the Designer shall provide the following:

1. A print of the title sheet and of the plan sheet showing the location of the well.

2. The name, address, and telephone number of the driller, the date the well was drilled, and the name and telephone number of the property owner at the time the well was drilled, if the information is available.

The Project Manager/Design Lead shall take the initiative to ensure that this information is returned in time to incorporate it into the project plans. The well shall be located on the proposed layout sheet and a note added as to whether the well is to be sealed by the contractor.

Every effort is to be made to ensure that this information is on the project plans before turning them in for the letting. All water wells shall be sealed in accordance with the standards set forth by the Tennessee Department of Environment and Conservation (TDEC).

5-307.00 ADDITION OF NATURAL STREAM DESIGN SHEETS TO FUNCTIONAL DESIGN PLANS

For a project involving a stream relocation the Environmental Division, Natural Resources Office will determine if a Natural Stream Design is required and will notify the Project Manager/Design Lead in the Permit Assessment. The Project Manager/Design Lead will not be responsible for developing the Natural Stream Design.

The Design Lead is not responsible for showing the natural stream design on the Proposed sheets; however, the Design Lead shall add the following note on each Proposed sheet in which the natural stream design would otherwise appear:

NOTE: NATURAL STREAM DESIGN IS NOT SHOWN, SEE SHEET NS SERIES PLANS FOR DETAILS.

SECTION 4 – FUNCTIONAL DESIGN PROCESS

5-401.00 FUNCTIONAL DESIGN FIELD REVIEW

See PDN 2RD1, 2PM1 and Chapter 1-105.02 for information regarding the Functional Design Field Review process.

5-402.00 FUNCTIONAL DESIGN PLANS FILENET SUBMITTAL

See PDN 2RD1, 2PM1 and Chapter 1-105.03 for information regarding the Functional Design Plans Submittal process. This submittal is required to allow for right-of-way purchases and acquisitions.

5-403.00 SUBMITTAL FOR "UTILITIES ONLY"

On any project, other than paving or resurfacing projects, that does not have right-of-way acquisition involved, the Design Lead shall submit Functional Design plans and stamp them Functional Plans (Utilities Only) (See *Chapter 1-402.02*). Submission of these plans will be treated as Functional Design Plans and follow the procedures listed in *Chapter 1-501.03* and *Chapter 5-402.00*.

It will be the responsibility of the Right-of-Way Office to print and distribute copies of the plans as needed.

5-404.00 SUBMITTALS OF RIGHT-OF-WAY APPRAISALS AND ACQUISITION

When submitting a project for Right-of-Way “appraisals and acquisition,” the Design Manager in charge of the project is to upload all required files to FileNet (see *Chapter 1-105.03*) and sending the submittal email of the Functional Design plans turn-in to the appropriate personnel listed in the *Distribution List*.

Refer to *Chapter 1-402.02* for Functional Design Estimate submittal. This estimate shall be completed and submitted to the Estimating and Bid Analysis Office prior to submitting plans for “appraisals and acquisition”. The date the information was submitted to the Estimating and Bid Analysis Section shall be included in the Functional Design submittal email.

It is important that the incidentals report data be incorporated into the plans before finalizing the Functional Design Plans to reduce Right-of-Way revisions (see Chapter 5-408.00). However, **if it is imperative** that Functional Design Plans be submitted before receiving the incidentals report data, the Regional Preconstruction Director will give the approval to proceed to the Design Manager in charge of the project. This approval shall be noted on the Right-of-Way

Funding Request approval transmittal letter to the Program Operations Office, Federal Aid Section. See *Chapter 5-406.00* for additional information.

When a consultant submits plans for Right-of-Way "appraisals and acquisition," the consultant's seal, signature, and date shall be placed on the right side of the title sheet above the Chief Engineer's signature as stated in Chapter 1.

All cross-sections will have the project number shown and be numbered in the upper right-hand project identification block. The sheet numbering will follow the numbering used on the plan sheets in the same manner used in the construction plans.

Before plans are submitted for Right-of-Way appraisals and acquisition, all information which might affect the existing or relocated utilities shall be shown on the plans. This includes, but is not limited to, the following:

1. Storm sewers, catch basins, manholes, cross drains, side drains, box culverts, channel changes, special ditches, and other drainage facilities
2. Preliminary bridge layouts and hydraulic data
3. Retaining walls and/or noise walls
4. Guardrails
5. Detour roads
6. Traffic signal pole locations including attachment heights and footing details
7. Street light pole locations
8. Erosion prevention and sediment control devices (EPSC Plan)
9. Other details which might affect utilities

5-405.00 SUBMITTAL OF FUNCTIONAL DESIGN PLANS ESTIMATE FOR FUNDING

See Chapter 1-402.02 for information regarding submitting the Functional Design Plans Estimate.

5-406.00 RIGHT-OF-WAY FUNDING APPROVAL REQUESTS

See Project Delivery Network 2PM1, 3PM1, 4PM1 for right-of-way funding approval request process.

5-408.00 RIGHT-OF-WAY REVISIONS

When the Functional Design Plans and the Right-of-Way appraisals and acquisition have been submitted for a project, and a change becomes necessary anywhere on the project, a Right-of-Way Plans revision is required. 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.

The Design Manager responsible for the project will upload the revised plan set to FileNet (See Chapter 1-105.04) and submit a notification to the appropriate personnel listed in the Distribution List. The plans revision distribution shall be sent by email for all Right-of-Way revisions regardless of whether they have been let to contract or not. The email will contain the revision letter and a PDF of the revised sheets only. See Chapter 1-105.04 and the Project Deliverables, for file naming convention. If the PDF is larger than the allowable email limit, then the PDF should be placed on FileNet and noted at the bottom of the email. It will be the responsibility of the Regional Right-of-Way Office to print and distribute copies of the plans as needed.

Once plans are formally submitted, any changes to the EPSC Plan sheets due to design revisions, right-of-way revisions, permit requirements, mitigation requirements, ecological evaluation requirements, EPSC notes revisions, addition or deletion of sheets, etc. will require a formal plan revision.

5-409.00 REVISIONS ON UNECONOMIC REMNANTS

A plan change request will be submitted by the division requesting to add the uneconomic remnant acquisition. The parent (original) tract will be left as it appears in the acquisition table. Place the uneconomic remnant in the table separately as an 8000 series number using the parent tract number as the last digits. For example, Tract 25 would be Tract 8025. The "Total Area Acquired" column for Tract 8025 will be the area remaining from Tract 25 as an uneconomic remnant. In order to identify the remnant properly, it shall be specially shown on the property map and the present layout sheets with broken single cross hatching and labeled as an uneconomic remnant. If there is a driveway associated with the uneconomic remnant and TDOT purchases the remnant (8000 series Tract), the driveway can be removed from the plans. If an uneconomic remnant is sold, the word "Sold" and the excess land request number shall be added to the acquisition table by footnote. The word "Sold", name of grantee, date of transfer, and the excess land request number shall be placed on the property map and present layout sheets adjacent to the remnant.