

**Tennessee Department of Transportation
Division of Materials and Tests**

Part 4: Submission of Substitution Designs

Under Standard Operating Procedure 5-3 (SOP 5-3), the producer may submit manufacturer's alternate detail drawings that have been designed and stamped by a Professional Engineer licensed in the State of Tennessee. All submissions shall be through Headquarters Materials & Tests. The Producer shall submit the following information for review.

1. Design drawings that fully describe and detail how to build the structure or roadway item. As noted in SOP 5-3, these drawings must be stamped by a Professional Engineer licensed in the State of Tennessee.
2. Supporting calculations with the first page stamped and signed by a Professional Engineer licensed in the State of Tennessee showing all relevant data including the following:
 - Name of the designer
 - Design code(s) used (Structural code shall be AASHTO LRFD Bridge Design Specification, no exceptions)
 - Supporting documents used (Textbook/industry guide)
 - Software used
 - Design assumptions
 - Material Data
 - All loads applied to the structure (dead, live, earth, wind ...)
 - All load cases considered (Service, strength, extreme events...)
 - Structural resistance calculation
 - Verification that resistance is greater than or equal to the load in each case specified by code.
 - Checks for minimum and maximum reinforcement, bar cover, development length, splice length, etc.
 - Verification that assumptions are consistent with design
 - Copies of all applicable referenced sections from design codes or guides and any other supporting documents. All copies must be marked to identify the document and edition as well as circle or highlighted the particular section that is being referenced.

The producer will be responsible for providing any additional information required by the reviewer and addressing any issues raised before approval will be granted.