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# Constructability Review Procedures Manual

Version 2.0 | July 2024

Construction | Project Management | Engineering



## Foreward

This Manual establishes uniform policies and procedures for Constructability Reviews within the Tennessee Department of Transportation. A legal standard for these reviews is not established or intended. It is published for information, guidance, and training of the Department's employees and those in the Road Building Industry.

The Manual does not establish any legal or administrative interpretations of the Department's contracts. If the terms of a contract or specifications and the Manual are in conflict, the Manual is subordinate to the contract and specifications.

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## Executive Summary

The Tennessee Department of Transportation is responsible for an integrated transportation system that provides the opportunity for economic prosperity and a high quality of life for Tennessee's citizens. In order for the Department to build fiscally responsible projects and maintain this infrastructure, development of transportation projects requires the combined effort of many resources, functional areas, and partnerships.

Recognizing the challenges associated with highway construction, the Constructability Review allows the designer to tap into the vast wealth of knowledge and experience, utilizing the expertise of both the Department *and* outside resources including the Road Building Industry. A Constructability Review is intended to improve project quality, minimize potential change orders during construction, and provide a buildable and biddable construction bid package which helps to reduce project costs, improve construction durations and provide high quality bidding documents. The review is held individually with each Contractor is voluntary, non-compensable, and will not prevent a bid from being submitted on a project.

This manual provides guidelines and procedures for establishing and conducting Constructability Reviews. Procedures outlined in this manual were developed by the Constructability Review Committee with input from Departmental resources and updated as part of the Project Delivery Network (PDN).

## Role of the Review Manager/Review Team

The intent of the Constructability Review is to apply new ideas, make corrections, and determine the most appropriate design approach early in the development of the project. This will reduce potential problems and associated plan revisions after the project is let to contract. Since Regional Project Management will have the most comprehensive knowledge of project scope, they will be best suited to determine if a Constructability Review should be conducted. Not all projects will require that a Constructability Review be held. Projects that should be considered for a Constructability Review are as follows:

- Projects with unusual or critical construction sequencing
- Projects with critical traffic control, especially in the 4 major urban areas
- Projects where utilities may impact construction phasing and scheduled completion
- Projects where retaining walls, structures and grading are a major design component
- Any project that may benefit from the experience provided by outside resources

In order to allow adjustments in the design, it is important that Constructability Reviews be held as early as practical. It is suggested that a review be held, during the development of Functional Plans (PDN Stage 2PM5) or at any point thereafter but preferably prior to completion of the Plan-in-Hand design (PDN Stage 3PM2). In order for the review to be most effective, bridge, utility, and geotechnical plans should be at least 50% complete. If Roadway or Bridge Design Value Engineering is included in the project it should be completed prior to the Constructability Review process. The Regional Project/Program Manager reserves the right to decide if the review schedule needs to be adjusted to provide industry representatives the needed information to benefit the project. Additional reviews may be incorporated and tailored to a specific topic if needed.

The Project/Program Manager's Constructability Review responsibilities include:

- Notify HQ Construction and provide information for industry solicitation
- Schedule meetings and invite participants
- Select Constructability Review Team members
- Determine list of topics for discussion
- Conduct meetings
- Select member to record meeting minutes
- Provide appropriate responses to information and suggestions provided
- Ensure inclusion of warranted recommendations are incorporated into Plan-in-Hand Plans
- Save all documentation as part of official project files

## Solicitation and Selection of Construction Industry Participants

One of the greatest benefits of the Constructability Review is the knowledge and experience that the construction industry can provide. Information regarding construction sequencing, conflicts with utilities, traffic control, and construction methods can help in reducing cost overruns, construction delays, construction changes, and traffic delays.

Approximately 3 months prior to the proposed date of the Constructability Reviews, the Project/Program Manager shall provide the following information to HQ Construction, using the *Constructability Review Request Template* found in the Appendix :

- Date, time and location for the meeting
- Project summary/scope of work
- Map of project location
- List of challenges/issues for the project
- Set of construction plans

HQ Construction will post information online at: [Constructability Reviews \(tn.gov\)](#) to notify contractors of the upcoming Constructability Review. Interested firms will return a *Letter of Interest* to HQ Construction (see example in the appendix). All interested firms will be invited to attend provided they are Prequalified and that their bonding capacity is commensurate with the cost estimate of the project. Participation in the Constructability Review will not preclude the Contractor from bidding for the job and is non-compensable.

HQ Construction will provide the names and contact information of the interested firms to the Project/Program Manager who will send a *formal invitation to the firms* (see template in Appendix).

Prior to the Review Meeting, the Project/Program Manager will send a link to the plans and the Constructability Review Questions to the firms. These plans will be stamped "For Constructability Review only; not suitable for bidding". The information should be sent at least 2-3 weeks prior to the meeting to allow firms time to review the plans and prepare comments.

## Selection of Constructability Review Participants

The Constructability Review Team will consist of participants that may have a stake in the project or can provide needed expertise. The following is a list of potential resources and stakeholders that may be considered by the Project/Program Manager:

### TDOT Personnel

- Engineering
- Construction
- Traffic Design
- Traffic Operations
- Environmental
- Right of Way
- Materials and Tests
- Maintenance Operations
- Utilities
- Others may be included as determined by the Project Manager

### Other Governmental Agencies

- Local public works/city engineers
- Tennessee Department of Environment and Conservation (T.D.E.C.)
- Corps of Engineers
- U.S. Fish and Wildlife Agency
- Tennessee Wildlife Resources Agency (T.W.R.A.)
- Federal Highway Administration
- Fire and Police Agencies
- School Systems
- State Archeologist
- All permitting agencies
- Others may be included as determined by the Project Manager

### Utilities

- Various utilities affected by the project may be called in to discuss potential constraints. These may include utilities such as electric, gas, water, sewer, phone companies, cable TV, and railroads. The Constructability Review phase is an excellent time to work out phasing issues that may delay a project.

## Contractors

- Bridge Contractors
- Paving Contractors
- Grading Contractors
- Specialty Contractors

(Contractor meetings will be held individually for the Project)

Depending on the complexity of the project, one or more of the contractors listed may be asked to participate in individual Constructability Reviews. Potential topics of discussion may include but not be limited to traffic control phases or closures, material lead times, a new type of bridge construction practice, blasting concerns, sensitive environmental issues, and traffic control restrictions, especially in the four major urban areas.

## Suppliers

This is a stakeholder that may not be called upon often but may be of great benefit. As new products are developed, vendor participation in the proper application of required specific products is vital. Benefits, limitations, and availability of various products could greatly affect phasing.

## Consultants

- Geotechnical
- Structural
- Environmental
- Scheduling

Consultants may be called in to discuss topics such as specialty items of work or complex scheduling or maintenance of traffic issues. Project/Program Managers should choose consultants independent of the current design. Participation by consultants will be voluntary and non-compensable.

Selection of any of the participants should depend on what benefit or expertise that participant can bring to the review. The Team should be limited to a manageable size. On large projects, especially those with many utilities, this may not be practical. Not all participants may be asked to each review on a particular project. Some reviews may focus on a particular issue thus eliminating the need for a large group.

## Determining Topics of Discussion

Topics to be discussed during the Constructability Review Meeting should focus on specific issues/concerns/project risks. Examples include:

- Unusual or critical construction sequencing
- Utility relocation and coordination with other items
- Utility impacts to construction phasing and scheduled completion
- Railroad coordination
- Retaining walls, bridges or other structures
- Crane placement
- Traffic control phasing/lane width/interconnected barrier rail widths
- Bridge demolition
- Site access, including ingress/egress points
- Haul road needs/locations
- Borrow/excavation/waste locations related to project phases
- Temporary shoring

## Conducting the Constructability Review

The Constructability Review is dependent upon the role of the attendees and meeting coordinator to ensure the meetings success. The purpose of the meeting is to provide an open forum for comments and discussion of the project. It is important that all participants have an opportunity to provide input. Review of plans and reports by the attendees prior to the meeting is essential. A site visit prior to the meeting is recommended.

The Project/Program Manager is responsible for conducting the meetings. The HQ Construction representative will assist with facilitating the meeting to ensure all topics are discussed.

The following is a suggested sequence of events conducted during the Constructability Review:

- Welcome/Introduce Participants
- Agenda Topics
- Overview of project and the proposed letting schedule
- Begin discussion topics
- Address other issues
- Open the floor to allow for any presentations
- Discuss follow up and action items

It is suggested that the Design Lead ensure phasing plans, layouts, and earth imagery is available for the meeting.

## Record Keeping and Documentation

The Constructability Review requires the input from many resources within the Department as well as outside stakeholders. It is important that all comments or suggestions be recorded into the minutes of the meeting. The Regional Project/Program Manager shall designate a record keeper to capture all information discussed and by whom. Action items and the responsible party shall be noted and recorded. At a minimum, the following documents shall be saved as part of the official project records: Meeting sign-in roster, contractor letters-of-interest, official contractor invitations to review, meeting notes/recordings.

Each participant provides valuable and diverse input to the team. However, it is not practical to incorporate all comments or suggestions into a project. Some issues may be discussed and resolved quickly in the review. Others may require further discussions with management staff and, thus, be resolved outside the Constructability Review. Each participant in the review shall receive a copy of a summary of the meeting. An action item email shall be sent to TDOT Staff to ensure items are appropriately addressed (see example in Appendix). The Department shall not be required to make meeting minutes available, so as to protect the participant's comments and/or suggestions. A sample of the proper form of minutes is shown in the Appendix

The *summary of each Constructability Review* (see example in Appendix) may provide valuable information to potential bidders of a project. The Regional Project/Program Manager will be responsible for providing the review summary to HQ Construction for posting on the TDOT Construction Division webpage with all other pertinent project information.

The Department does not guarantee or assume any responsibility that the information provided at the Constructability Review will appear in the final set of drawings. Additionally, there is no guarantee that the project will be let to contract in a specified timeframe. The project information at the review is preliminary and does not relieve the Contractor of the responsibility to examine the site, the work, the plans, the permits, and the specifications as detailed in the Department's Standard Specifications for Road and Bridge Construction once the project is posted for letting.



## Follow Up and Lessons Learned

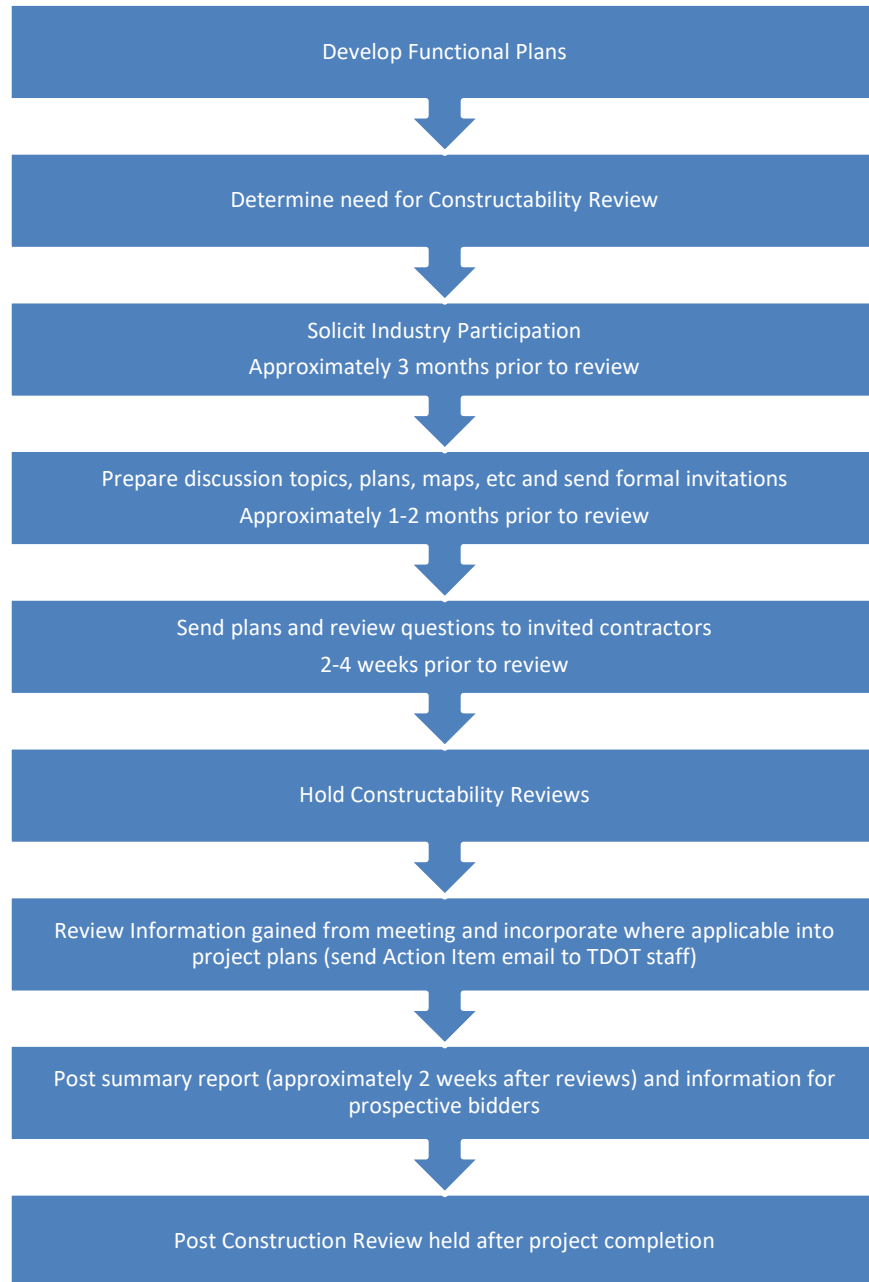
Transportation projects require the functional area expertise of many Divisions within the Department. Significant benefits can be realized when construction expertise is also incorporated early into Project Development. These benefits include reduced project cost, improved construction duration, and quality of bidding documents. The results of the Constructability Review process in these three key areas will be evaluated for each project providing tools for the Department to utilize on all projects in Development.

Meeting summaries will be posted online and available for future project teams to use as a resource of lessons learned to maximize the rate of return on future projects evaluated by the Department, minimizing risk and providing an improved quality product to the Industry as a whole. NCHRP Report 390, *“Constructability Review Process for Transportation Facilities”*, 1997 further identifies the benefits of the Constructability Review Process. An additional resource is the AASHTO *“Constructability Review Best Practices Guide”*, 1997.

## Post Construction Reviews

After the project construction is complete, a Post-Construction Review is recommended. The Project/Program Manager should invite the Design Team, Operations project staff, and CEI staff (if applicable) to discuss items such as Change Orders, cost overruns/underruns, VECP's, and completeness and accuracy of plans. This will also be an opportunity to review the Constructability Review summaries prior to construction and compare actual issues encountered to those expected.

## Appendix



**Constructability Review Flowchart**



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**CONSTRUCTION DIVISION**  
SUITE 700, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402  
(615) 741-2414

**BUTCH ELEY**  
DEPUTY GOVERNOR &  
COMMISSIONER OF TRANSPORTATION

**BILL LEE**  
GOVERNOR

<DATE>

MEMORANDUM

PROJECT:	<PIN NUMBER>
	<COUNTY>
	<PROJECT DESCRIPTION>
SUBJECT:	REQUEST FOR CONSTRUCTABILITY REVIEW MEETING
DATE:	<CURRENT DATE>
FROM:	<NAME>
	TDOT <DIVISION>

Please see information below relating to a proposed Constructability Review Meeting for the referenced project.

<Proposed Dates and Times>

<Proposed Location of meeting>

<Project Summary/Scope of Work>

<List of Challenges/Issues/Questions to be discussed (include applicable pictures, drawings, maps, etc. that define or explain specific areas in question)>

Attach: Project Map

Attach: Set of construction plans stamped "Constructability Review, not for bidding"

See: [Constructability Reviews \(tn.gov\)](http://tn.gov) for examples of previous constructability review postings.

**Constructability Review Request Template**

# EXAMPLE LETTER

TO EXPEDITE PROCESSING INFORMATION PLEASE SUBMIT YOUR LETTER OF INTEREST IN PARTICIPATING IN THE CONSTRUCTABILITY REVIEW PROGRAM IN THIS EXAMPLE FORMAT. Thank You!

Please submit this Letter to Ms. Shawna Smith @ [Shawna.B.Smith@tn.gov](mailto:Shawna.B.Smith@tn.gov)

Date \_\_\_\_\_

Ms. Shawna Smith, P.E.  
Senior Transportation Engineer  
TDOT Construction Division  
505 Deaderick Street, Suite 700  
Nashville TN 37243-0236

REF: Letter of Interest to Participate in the Benton Co. Constructability Review for SR-1 (US-70) from the Camden Bypass to the Tennessee River (TDOT PIN 105768.00):

Dear Ms. Smith:

In response to the Department's upcoming Constructability Review on SR-1 in Benton County on May 7-8<sup>th</sup>, 2024, we are pleased to submit this Letter of Interest to participate in the review process:

## **Expertise:**

A current Prequalification Questionnaire is on file in your office meeting the eligibility requirements for this Program. It is understood that participation in the review is voluntary, non-compensable, held individually with one contractor, and will not prevent our company from submitting a bid for the project.

If you have any questions or need additional information, please let me know.

Sincerely,

John Doe, PE  
XYZ Construction  
John.Doe@xyzconstruction.com  
(800) 123-4567

12/16/21

**Contractor Letter of Interest**



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**BUTCH ELEY**  
DEPUTY GOVERNOR &  
COMMISSIONER OF TRANSPORTATION

**BILL LEE**  
GOVERNOR

Date

Mr./Ms. XXXX  
XXXXX Construction Co., Inc.  
Street Address  
City, State, Zip Code

RE: Constructability Review – XX County, Project Description

Dear Mr./Ms. XXXX,

Thank you for agreeing to participate in the constructability review for the upcoming XXXX County project. Please note that participation in this review is voluntary, non-compensable, and will not prevent you from submitting a bid for the project. Anything that you choose to share will remain in confidence. The Department would like to conduct the review with you on an individual basis, in person. The review will be on xx/xx/XX at X:xx pm CST at Region X in room xx.

(Specific topics and project questions generated from project team meetings and/or site reviews should be included here)

Some of the topics for the review will cover:

- Project Phasing & Timing
- Constructability of retaining walls
- Utility relocation and coordination with other work

Specific Questions:

1. Will the phasing provided by the utility plans coincide with the contractors suggested phasing of construction (maintenance of traffic)?
2. In reviewing the maintenance of traffic plans, do the plans presented allow for motorists to travel as needed, but allow all work to be accomplished as designed?
3. What are the timeframes for each phase of work? Can this work be done in XX months?
4. How would the contractor sequence construction of the large box culvert and channel?
5. How could the contractor get creative and balance the earthwork and minimize the amount of borrow needed.
6. What are the greatest challenges of the project? What are the greatest opportunities for improvement?

Again, thank you for your help.

If you have any questions, please contact me at (xxx)xxx-xxxx or by email at [john.doe@tn.gov](mailto:john.doe@tn.gov).

Sincerely,

TDOT Project ManagerCC: Sr. Transportation Engr. – HQ Construction; Project Team

Contractor Invitation to Constructability Review

**From:** Project/Program Manager  
**Sent:** Monday, May 13, 2024 7:31 PM  
**To:** TDOT Staff - Constructability Review Team

**Cc:**  
**Subject:** Constructability Review Action Items - County, Project Name

All,  
Thank you for a great constructability review of the \_\_\_\_\_ widening project . We received good feedback and suggestions from Contractors and lots of discussions and considerations that were voiced have been very beneficial. Below is a summary of action items that were discussed at the review for your consideration. A summary of the constructability review is posted on the Construction webpage for viewing. Please keep your Project Manager updated as these action items are addressed.

- Consider moving water line to the south side of roadway
- If water line remains on north side, consider how to give contractors access to cross over the line (fill, stone, steel plate, crane pad or “turn down” areas or a combination of these)
- Consider maintaining a 7-10’ distance from water line to other utility or guardrail
- Consider moving the electric poles to the south side permanently
- Consider building a haul road in the slough to excavate the 27’ ditch
- Consider building a bench next to the proposed slough ditch to work off
- Address how to handle the waste material from slough excavation (will TWRA accept the material on site)
- Ask TWRA if the sloughs can be de-watered, can they be “closed” for a certain amount of time
- Ask TWRA to better define criteria of No Work Restrictions (i.e. stations, distance from centerline, what type of work is/is not allowed, could certain blinds be omitted from the draw for 1-2 seasons)
- Review SP107L and job specific material to identify what material must be hauled off and what is acceptable to be encapsulated in the fill
- Consider the need for haul roads (specifically at box at Brook Lane)
- Consider re-evaluating the elevation that rock must be placed in the fill
- Consider the effectiveness of using geotextile under water verses bringing the rock to ground elevation then placing geo
- Check rock quantity to ensure we have accounted for settlement (sinkage)
- Add notes to differentiate areas of shoring and sheet piling, ensure quantities for both are sufficient
- Consider the following items: haul roads, maintenance rock, 57 stone, silt fence quantities, rock riffle unit/quantities, what type of barrier rail, pre-cast boxes, roadway cleaning item
- Consider the timing of when the project is let, most beneficial to begin work in the winter months
- Consider using flowable fill for existing cross drains



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**BUTCH ELEY**  
DEPUTY GOVERNOR &  
COMMISSIONER OF TRANSPORTATION

**BILL LEE**  
GOVERNOR

June 27, 2023

**MEMORANDUM**

<b>PROJECT:</b>	PIN's 124061.00
	Fentress County SR-85 Bridge over East Fork Obey River (L.M. 5.67)
<b>SUBJECT:</b>	CONSTRUCTABILITY REVIEW MEETING SUMMARY
<b>DATE:</b>	June 14 <sup>th</sup> , 2023
<b>NOTES BY:</b>	Blake Fulton, P.E. TDOT Construction Division

A Constructability Review meeting was held on June 14<sup>th</sup>, 2023 with Construction Industry Representatives, TDOT Headquarters Construction Division, TDOT Structures Division and TDOT Region 2 Project Development. The scope of the review was to integrate construction expertise early into the project development process for the SR-85 bridge replacement project in Fentress County.

The roadway, retaining wall, utility and traffic control plans were specifically reviewed as part of this meeting.

**AGENDA:**

1. Introductions
2. Purpose: Existing Conditions
3. Project Overview: Roadway, Bridge, Construction, Traffic Control
4. Work Session

**ACTION ITEMS:**

1. Project Phasing & Timing
2. Accessibility
3. Environmental
4. Traffic Control

**SUMMARY:**

Information regarding what type of piles shall be used on the project will be added (drilled shaft, micropiles, etc.). The current length of beams will not be accessible to the project due to constraints with the existing roadways cross section and alignment, so shorter box beams and steel beams will be evaluated in lieu of bulb T beams by the Department; the Department will also consider extending the abutments with retaining walls to reduce span lengths. Pre-cast deck panels, additional deck concrete for sag areas and K-bars for horizontal shear will all be assessed.

The Department will consider allowing either four haul roads or two haul roads with a stream crossing for construction activities. Should a stream crossing be allowed, the Department will determine the temporary culvert size and spacing needed. Haul roads will be planned with a minimum width of thirty feet and be paired with fifty-by-fifty foot crane pads. The maximum slope of the haul roads should be between fifteen and twenty percent.

The need for a safety study on the existing SR-85 leading to the project will be analyzed to ensure the current roadway conditions are adequate for construction equipment and materials to be hauled on.

Clarification from the Tennessee Wildlife Resources Agency (TWRA) will be requested regarding the commitment to avoid impacts on Eastern Small-footed bats. Any demolition restrictions will be defined in the bid package.