Texas A&M Transportation Institute

PROJECT SUMMARY

Texas Department of Transportation

0-7014: Sequencing and Placement of Noise Walls and Retaining Walls on Complex TxDOT Projects

Background

Difficulties can arise when constructing noise walls and retaining walls due to utility conflicts, construction phasing, and inadequate access. The goal of this research was to provide guidance on the sequencing and placement of noise walls and retaining walls. The research included examining noise and retaining wall selection, standards and specifications, preferred methods and best practices for sequencing and placement, and design and construction procedures. This research provided background and documented challenges in sequencing and placing noise walls and retaining walls. The research also included preferred methods and best practices for sequencing and placement, and design and construction processes. A guidebook was produced from the research to provide a how-to approach to sequencing and placement of noise walls and retaining walls.

What the Researchers Did

The researchers reviewed a variety of sources, including existing standards and specifications, manuals, reports, bidding documents, and peer-reviewed journal and conference publications. The researchers requested, processed, and analyzed data from a variety of relevant data sources to gain an understanding of the sequencing and placement of noise and retaining walls within the Texas Department of Transportation (TxDOT) project development process. Meetings were held with TxDOT district and division officials to review existing practices, identify issues, and document recommendations for noise walls and retaining walls. Additional detailed interviews were held to allow for more in-depth discussions with district personnel and one-on-one conversations. Based on the information collected during the interviews, the research team created a list of the processes, issues, and recommendations. Active TxDOT projects were selected as case studies to document issues and best practices. Researchers performed site visits, held discussions with TxDOT personnel and contractors, and reviewed project documents.

Research Performed by:
Texas A&M Transportation Institute

Research Supervisor:
Kris Harbin, TTI

Researchers:
Edgar Kraus, TTI
Bob Huch, TTI
Kirbie Ferrell, TTI

Project Completed:
8-31-2021

What They Found

Issues with the placement and phasing of noise walls and retaining walls are often project specific. The literature identified a number of conflicts that can occur between noise walls and retaining walls during design and construction. Conflicts with utilities were a significant issue regarding noise walls and retaining walls. Selecting a wall design that minimizes the number of utility conflicts is recommended since utility relocations significantly increase project cost.

From the analysis of the data sets, researchers were able to establish a typical sequencing of noise wall activities, the mean number of days between the establishment and completion of the activities, and the mean duration of the noise wall development process. The researchers were also able to relate the noise wall development process to two project development milestones: the environmental clearance date and the actual letting date.

Based on the information collected during the interviews, the research team created a list of the processes, issues, and recommendations. The research documented key challenges and developed recommendations for use. Areas of recommendation include spacing, utility coordination, earlier and wide-ranging involvement of stakeholders, right-of-way considerations, and alternative wall types and materials. Recommendations for additions to manuals were also produced from the research including updates to the *Geotechnical Manual, Project Development Process Manual*, and *Roadway Design Manual*.

What This Means

Project stakeholders can use the produced research products to assist in the sequencing and placement of noise walls and retaining walls. The guidebook and related documentation provide best practices and background information that can be used to lessen the impact of noise walls and retaining walls on the overall project development process, including design, construction, and maintenance. The updates to TxDOT manuals, listed in the research report, are recommended to be added to future revisions of the documents.

For More Information

Project Manager:
Joanne Steele, TxDOT, (512) 416-4657

Research Supervisor:
Kris Harbin, TTI, (210) 321-1234

Technical reports when published are available at **http://library.ctr.utexas.edu.**

Research and Technology Implementation Office
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

www.txdot.gov
Keyword: Research