

TO: All Design Section Staff  
FROM: Bijan Khaleghi  
DATE: January 14, 2012  
SUBJECT: STD Plans Noise Barrier Walls

This memorandum provides guidelines for the use of WSDOT STD Plans Manual M21-01 Noise Barrier Walls.

The STD Plans Noise Barrier Walls listed below shall not be used for WSDOT projects where the seismic acceleration exceeds 0.3g. Noise barrier walls in project where seismic acceleration exceeds 0.3g are considered special designs and shall be redesigned on a case-by-case basis. The structural design requirements for noise barrier walls are described in Design Memorandum issued on July 20<sup>th</sup>, 2011: <http://wwwi.wsdot.wa.gov/eesc/bridge/designmemos/02-2011.htm>

**STD Plans Noise Barrier Walls affected by this policy memorandum are:**

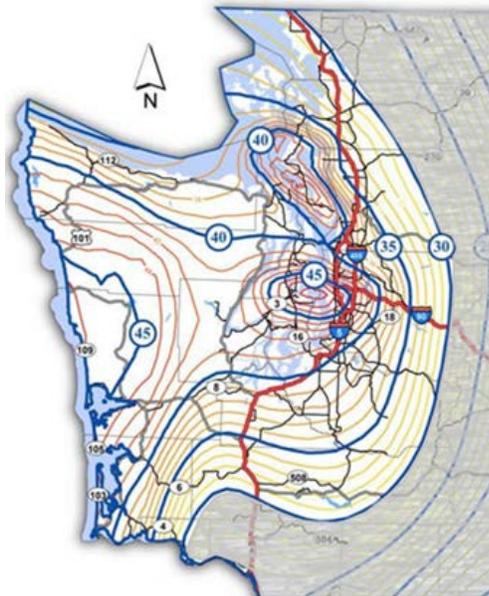
- D-2.04-00 - Noise Barrier Wall Type 2 (CIP Conc. on Spread Footing)
- D-2.06-01 - Noise Barrier Wall Type 3 (... on Offset Spread Footing)
- D-2.08-00 - Noise Barrier Wall Type 4 (CIP Conc. on Shaft Foundation)
- D-2.14-00 - Noise Barrier Wall Type 6 (CIP Conc. with Traffic Barrier on Spread Footing)
- D-2.16-00 - Noise Barrier Wall Type 6SS (CIP Conc. w/ Single Slope Traffic Barrier on Spread Footing)
- D-2.18-00 - Noise Barrier Wall Type 7 (CIP Conc. with Traffic Barrier on Shaft Foundation)
- D-2.20-00 - Noise Barrier Wall Type 7SS (CIP Conc. w/ Single Slope Traffic Barrier on Shaft Fdn.)
- D-2.32-00 - Noise Barrier Wall Type 9 (Precast Conc. on Spread Footing)
- D-2.34-01 - Noise Barrier Wall Type 10 (... on Offset Spread Footing)
- D-2.36-02 - Noise Barrier Wall Type 11 (... on Shaft Foundation)
- D-2.42-00 - Noise Barrier Wall Type 13 (Precast Conc. with Traffic Barrier on Spread Footing)
- D-2.44-00 - Noise Barrier Wall Type 13SS (Precast w/ Single Slope Traffic Barrier on Spread Footing)
- D-2.46-00 - Noise Barrier Wall Type 14 (Precast Conc. w/ Traffic Barrier on Shaft Foundation)
- D-2.48-00 - Noise Barrier Wall Type 14SS (Precast Conc. w/ Single Slope Traffic Barrier on Shaft Fdn.)
- D-2.60-00 - Noise Barrier Wall Type 16 (Masonry on Trench Footing)
- D-2.62-00 - Noise Barrier Wall Type 17 (Masonry on Spread Footing)
- D-2.64-01 - Noise Barrier Wall Type 18 (Masonry on Offset Spread Ftg.)
- D-2.66-00 - Noise Barrier Wall Type 19 (Masonry on Shaft with Grade Beam Foundation)
- D-2.68-00 - Noise Barrier Wall Type 20 (Masonry on Shaft Foundation)

**Background:**

The current WSDOT Standard Plan noise walls were designed for specific soil conditions, geometry, and seismic accelerations. The Geotechnical Design Manual Chapter 17 provides the specifics of the design assumptions upon which the standard plan noise walls are based. If those conditions are not met, special designed noise walls should be used.

One important criterion that cannot be overlooked is the design seismic acceleration. The standard noise barrier foundations have been designed to resist a PGA of 0.35g. This corresponds to a peak bedrock acceleration (PBA) from Figure 6-6 in WSDOT GDM Chapter 6 of 0.3 g and an amplification factor of 1.18, corresponding to stiff soil.

Accordingly, our Standard plan noise walls should not be used where the seismic acceleration exceeds 0.3 g on the GDM figure. Where the acceleration exceeds 0.3 g, special designed noise walls are required. The map below highlights the area where special noise wall foundation designs are required. The current standard plans are still applicable elsewhere in the State, provided the soil and geometry conditions of Chapter 17 are met. The Geotechnical Division and the Bridge and Structures Office are working to develop new noise wall standard plans. Until then, please remain cognizant of the underlying assumptions which form the basis of the Standard Plans.



If you have any questions regarding these issues, please contact Jim Cuthbertson at 709-5452 or Bijan Khaleghi at 360-705-7181.

cc: Mark Gaines, Bridge Construction - 47354  
F. Posner, Bridge and Structures – 47340