Chapter

22

Noise Barriers

22.1 General

The primary purpose of noise barriers is to mitigate the effects of highway noise on people. Design of noise barriers includes acoustic design, structural design, and geotechnical design. This chapter contains design standards for noise barriers. The terms “noise barrier” and “sound wall” are interchangeable in this manual.

Load and Resistance Factor Design (LRFD) methods are not currently available in *AASHTO Guide Specifications for Structural Design of Sound Barriers*. Existing ODOT Standard Drawings were also developed using Load Factor Design (LFD) and Allowable Stress Design (ASD), rather than LRFD. Until LRFD ODOT Standard Drawings and LRFD AASHTO Guide Specifications are available, use LFD for structural design of sound barriers, and use ASD for geotechnical design of sound barriers.

Where a sound barrier is required, use the following ODOT Standard Drawings wherever possible:

- BR730 – Standard Reinforced Concrete Masonry Soundwall
- BR740 - Standard Precast Concrete Panel Soundwall
- BR750, BR751 - Standard Masonry Soundwall on Pile Footing

Construct noise barriers according to the Oregon Standard Specifications for Construction.

22.2 Acoustic Design of Noise Barriers

Guidance regarding acoustic design of noise barriers is located in the *ODOT Noise Manual*, which is available online at the Air Quality, Acoustics & Energy Program web site.

22.3 Structural Design of Noise Barriers

Perform structural design of noise barriers according to the following publications:

- *ODOT BDDM* (*Section 1.4.2*)
- *AASHTO Guide Specifications for Structural Design of Sound Barriers*
- *AASHTO Standard Specifications for Highway Bridges*

In the case of conflict or discrepancy between manuals, the following hierarchy shall be used: Those manuals listed first shall supersede those listed below in the list.

22.4 Foundations for Noise Barriers

Perform foundation design of noise barriers according to the following publications:

- *ODOT Geotechnical Design Manual (GDM*), Chapter 16
- *ODOT Bridge Design and Drafting Manual (BDDM) Section 1.4.2.*
- *AASHTO Guide Specifications for Structural Design of Sound Barriers*
- *AASHTO Standard Specifications for Highway Bridges*

In the case of conflict or discrepancy between manuals, the following hierarchy shall be used: Those manuals listed first shall supersede those listed below in the list.

22.5 References

- *Bridge Design and Drafting Manual*, *Section 1*; Oregon Department of Transportation Bridge Section; 2015.
- *Standard Specifications for Highway Bridges*, American Association of State Highway and Transportation Officials (AASHTO), 2002, 17th Edition, Washington, D.C., USA.
- *Oregon Standard Specifications for Construction*, Oregon Department of Transportation (ODOT), 2015 Edition, and related Special Provisions.
- *Oregon Standard Drawings*
- *Guide Specifications for Structural Design of Sound Barriers*, American Association of State Highway, and Transportation Officials (AASHTO), 1989, with 1992 and 2002 interims, Washington, D.C., USA.