

SECTION 15 DESIGN OF SOUND BARRIERS

15.1 GENERAL REQUIREMENTS

This section provides guidance for the design of sound or noise barriers.

AASHTO and CDOT pay items refer to sound barriers while FHWA typically refers to noise barriers. The terms should be considered interchangeable although noise wall is preferred and used throughout this Design Manual, inspection reports, and APL lists.

15.2 CODE REQUIREMENTS

This section of the BDM supplements AASHTO Section 15.

AASHTO generally concerns itself with the structural design requirements for noise barriers while FHWA Noise Barrier Design Handbook deals with the noise reduction properties of the wall.

15.3 AESTHETICS

A typical CDOT noise barrier consists of a concrete panel mounted on concrete or steel posts. Refer to Section 2.3.3 of this BDM for acceptable concrete aesthetic treatments.

Wood is not allowed because of past experience with durability issues. Staff Bridge will consider other materials and designs if design criteria are met.

15.4 LOADS

Wind loads shall be in accordance with AASHTO. When a noise barrier is in Colorado's special wind region, use the Partial Special Wind Region Map in Section 32 of this BDM to determine wind speed.

**AASHTO 3.8
& Figure
3.8.1.1.2-1**

Vehicle collision forces need not be considered for the following cases:

**AASHTO
15.8.4**

- Noise barriers located beyond the acceptable clear zone.
- Noise barrier/rail systems within the clear zone that have been successfully crash tested.
- Noise barriers behind a crashworthy traffic railing with a setback greater than 4 ft. The Designer should make every effort to achieve a minimum setback greater than 4 ft.
- Noise barriers or portions thereof at locations where the collapse of a wall has minimal safety consequences, as determined by Staff Bridge.

When the above requirements cannot be met, the railing test levels and crash criteria shall be in accordance with AASHTO.

**AASHTO
Sections 13,
A13.3, & 15**

Noise barrier materials shall be selected to limit shattering of the noise barrier during a vehicle collision. When reinforced concrete panels are used, AASHTO recommends the use of two mats of steel to limit the concrete shattering during a vehicle collision.

**AASHTO
15.8.4**

New noise barrier systems shall meet AASHTO Test Level 3 (TL-3) requirements.

AASHTO
Table A13.2-1