



Office of Engineering  
Project Development Division  
Bridge Design Section  
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John Bel Edwards, Governor  
Shawn D. Wilson, Ph.D., Secretary

## MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

FROM: ZHENGZHENG "JENNY" FU, P.E.  
BRIDGE DESIGN ENGINEER ADMINISTRATOR

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO.109 (BDTM.109) -  
SOUND BARRIER DESIGN

DATE: December 22, 2021

This BDTM revises BDEM Revision 9 by adding the following section:

Part II, Volume 1, Section 15 Design of Sound Barriers (attached)

BDEM Section 15 supplements AASHTO LRFD Bridge Design Specifications, 9th Edition, Section 15 as follows (showing Section numbers):

- 15.2 - Adds definitions for MASH TL-4 and Non-MASH TL-4 sound barrier systems.
- 15.4.1.2 - Revises Lateral Clearance by requiring structure-mounted sound barriers to have no gap between sound barrier and support structure.
- 15.4.1.3 - Added new Section which makes the following modifications:
  - Provides general design and detailing guidance, such as requiring designer to coordinate design and detailing with all DOTD construction specifications.
  - Requires designer to coordinate with the Environmental Section, Environmental Document, Noise Study, the District, and all other DOTD Sections to identify sound barrier types (MASH TL-4, Non-MASH TL-4, etc.), locations, height, clear distance from roadway, aesthetic requirements, etc., and to show these requirements on the plans.
- 15.4.2 and 15.4.3 - Incorporates the following:
  - Requires designer to coordinate with the District to verify that ground-mounted sound barrier locations, clearances, etc. are acceptable from the standpoint of emergency access, maintenance, drainage, and all other District and project requirements.

- Requires designer to contact the Environmental Section for evaluation of all required modifications to sound barrier location and/or height. Such modifications to sound barrier may require modifications to the Noise Study and/or Environmental Document.
- 15.8.4 - Requires sound barrier systems to meet MASH Test Level 4 (TL-4), and provides exceptions to permit the use of Non-MASH TL-4 sound barrier systems pending approval of Design Waiver.

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This technical memorandum is posted on the LA DOTD Website under *Inside La DOTD > Divisions - Engineering > Bridge Design > Technical Memoranda – BDTMs.*  
Please contact Kelly Kemp (kelly.kemp@la.gov or 225-379-1809) if you have questions or comments.

ZZF/kmk  
Attachment

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## SECTION 15 – DESIGN OF SOUND BARRIERS

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## 15.2—DEFINITIONS

Add the following to A15.2:

*MASH TL-4 Sound Barrier Systems* - Sound barrier systems that have successfully passed testing performed in accordance with MASH Test Level 4 requirements while supported in similar fashion as the intended project installation.

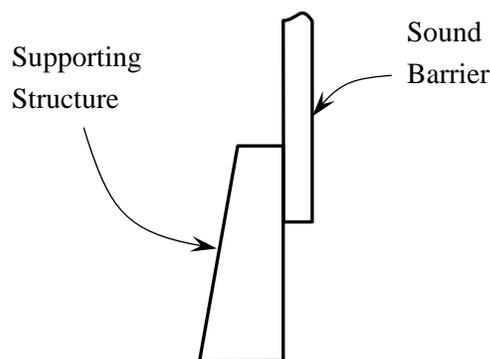
*Non-MASH TL-4 Sound Barrier Systems* - Sound barrier systems that have successfully passed testing performed in accordance with MASH test levels other than Test Level 4 while supported in similar fashion as the intended project installation, or have been designed in accordance with AASHTO Section 15 or other design criteria.

## 15.4—GENERAL FEATURES

### 15.4.1.2—Lateral Clearance

Add the following to A15.4.1.2:

Attach structure-mounted sound barriers directly to bridge railing, concrete barriers, walls, or other supporting structure in accordance with Figure 15.4.1.2-1 using a setback distance that results in the sound barrier being immediately behind the supporting structure with no gap.



**Figure 15.4.1.2-1**

Add the following section:

#### **15.4.1.3—General Design and Detailing**

Review corresponding LA DOTD construction specifications, including Standard Specifications, Special Provisions, and NS Item Specifications, and coordinate design and detailing accordingly with these specifications.

Coordinate with the Environmental Section, Environmental Document, Noise Study, District, and all other DOTD Sections as needed, to determine sound barrier types, design, and plan notes and details. On the plans, as a minimum, identify sound barrier types (MASH TL-4, Non-MASH TL-4, structure-mounted, ground-mounted, etc.) and show sound barrier locations, beginning and ending stations, height, and clear distance between sound barrier traffic face and edge of nearest travel lane.

Coordinate with the Environmental Section, Environmental Document, District, and all other DOTD Sections as needed, to determine aesthetic requirements. On the plans, include notes and details showing aesthetic requirements. On the plans, as a minimum, require Class 3 Finish on all sound barrier concrete components. On the plans, as a minimum, require metal components such as posts, rails and panels to receive a colored top coat and show the required color.

#### **15.4.2—Drainage**

Add the following to A15.4.2:

For ground-mounted sound barriers, verify sound barrier plan location with the District to ensure that District and project drainage needs are satisfied. For cases where sound barriers are located behind a traffic barrier, verify sound barrier setback distance and clearances with the District to ensure drainage needs are satisfied. The District may require additional details to improve drainage, prevent erosion, etc., such as, but not limited to, incidental paving underneath sound barrier and/or between sound barrier and traffic barrier, larger setback distance, etc. If sound barrier location and/or height as shown in the Noise Study and/or Environmental Document requires modification,

contact the Environmental Section for evaluation of required modifications.

### **15.4.3—Emergency Responder and Maintenance Access**

Add the following to A15.4.3:

For ground-mounted sound barriers, with or without protecting traffic barriers, verify sound barrier and traffic barrier plan locations and clearances with the District to ensure that District maintenance needs are satisfied. The District may require additional details to minimize maintenance effort, such as, but not limited to, incidental paving underneath sound barrier and/or between sound barrier and traffic barrier, larger clearances and/or setback distance, etc. If sound barrier location and/or height as shown in the Noise Study and/or Environmental Document requires modification, contact the Environmental Section for evaluation of required modifications.

## **15.8—LOADS**

### **15.8.4—Vehicular Collision Forces**

Replace the contents of A15.8.4 with the following:

#### **15.8.4.1 - Structure-Mounted Sound Barriers**

For structure-mounted sound barriers, use sound barrier systems that meet MASH Test Level 4 (TL-4). Vehicular collision force analysis is not required for MASH TL-4 sound barrier systems.

Non-MASH TL-4 structure-mounted sound barrier systems may be permitted pending approval of a Design Waiver where full or partial sound barrier system collapse will result in no potential safety concerns, such as installations over non-navigable waterways. Include detailed justifications and design details in the Design Waiver.

#### **15.8.4.2 - Ground-Mounted Sound Barriers**

For ground-mounted sound barriers, use sound barrier systems that meet MASH TL-4. Vehicular collision force analysis is not required for MASH TL-4 sound barrier systems.

Non-MASH TL-4 ground-mounted sound barrier systems may be permitted pending approval of a Design Waiver where sound barrier system is located behind a rigid traffic barrier with setback distance greater than 4 feet, or located behind a flexible traffic barrier with setback distance greater than 4 feet and as required to accommodate traffic barrier deflection. Include detailed justifications and design details in the Design Waiver.

Non-MASH TL-4 ground-mounted sound barrier systems may be permitted pending approval of a Design Waiver where sound barrier system is located outside the clear zone, has no traffic barrier protecting the sound barrier system from vehicle collision, and where full or partial sound barrier collapse will result in no potential safety concerns, including affects to public and private property, and including consideration for the sound barrier proximity to public or private property. Include detailed justifications and design details in the Design Waiver.