

State of Louisiana
Department of Transportation and Development(DOTD)
Materials and Testing Section Qualification Procedure
for
Qualified Products List 69

NOISE REDUCTION SYSTEMS

MATERIAL SPECIFICATION REFERENCE:

DOTD Special Provisions, Noise Reduction Systems 11/07.

This reference covers reflective and absorptive barriers constructed from concrete, masonry, fiberglass, plastic and steel components as well as pertinent noise abatement criteria.

PRELIMINARY REQUIREMENTS

Qualified Product Evaluation Form

Submit a standard "Qualified Product Evaluation Form" to the DOTD Materials and Testing Section Coordinator listed below, along with a letter requesting evaluation for the Qualified Products List. (copy of form attached)

Product Data Information

Manufacturers shall submit to the Materials Section product literature including pictures and engineering drawings of their noise reduction system. The literature should contain general maintenance requirements, wind load calculation data, and under normal environmental conditions the anticipated design-life of the barrier system.

Engineering drawings of barrier design will be required from all system manufacturers; the drawings must include mounting details and expansion-joint provision if required. Metallic barrier systems will require provisions for electrical grounding. Four (4) sets of drawings shall be sent to the Materials Section for review and distribution; a Department structural-design engineer will review all submitted materials for design approval.

Product data information shall also include the dates of installation, locations of noise reduction systems and a contact person for each system meeting the minimum three year field performance criteria.

Noise Reduction Systems shall be evaluated for structural requirements according to the AASHTO Guide Specifications for Structural Design of Sound Barriers. Wind load calculations shall be based on a sustained wind speed of 100 mph with gusts up to 130 mph. For Noise Reduction Systems using concrete components, only the AASHTO Design Specifications shall be allowed, with the exception that the specified coverage of the reinforcement shall be a minimum of one inch for concrete wall panels. Concrete wall components shall have a minimum compressive strength of 4000 psi.

Product Samples (to be provided at no cost to the Department)

Representative samples of the system shall be furnished for testing within the Materials Section's laboratories; two panel samples, each .7 meters by .7 meters (two feet by two feet) minimum, shall be provided for testing purposes. Additionally, major components of the support system such as I-beams, H-beams, etc. and ancillary mounting hardware are to be provided along with the acoustical panels. Submittal of the individual components of the panels may be required for testing. For concrete systems, three samples without reinforcement and 3" x 4" x 16" shall be submitted for freeze / thaw testing.

TESTING REQUIREMENTS

Test Reports Required From Manufacturer

Certified laboratory test results for Sound Transmission Class "STC" (ASTM E 413 and ASTM E90) must be submitted to the Materials Section for reflective and absorptive - type barrier systems. Barriers shall have a minimum STC of 30. In addition to STC, absorptive-type barrier systems require acoustical testing for Noise Reduction Coefficient in accordance with ASTM C 423. Absorbive barriers shall have a minimum NRC of 0.80. The system manufacturer must also provide certified test results describing the surface burning characteristics of all potentially flammable components (flame spread indices - ASTM E84). The manufacturer shall supply information regarding the graffiti resistance of the product.

Materials Laboratory Testing

Galvanized hardware shall be hot-dipped and tested in accordance with ASTM A153. Coated steel systems shall be fully coated, including any perforations, with an anti-corrosive protective system. Coated steel systems shall be exposed to 1,500 hours of weathering in accordance with ASTM B117 and ASTM G154. After exposure the systems shall show no blistering, cracking, flaking, peeling, undercutting and only slight chalking, fading or discoloration.

Fiberglass and plastic systems shall undergo ultraviolet-light testing (ASTM G154) for a period of 1,500 hours. Any delamination, excessive fading or chalking, or embrittlement will result in disqualification.

Precast concrete panels must conform to Section 805 and 901 of the 2006 Standard Specifications and shall be subject to not less than 50 cycles of freeze / thaw exposure according to ASTM C666 and C215. The samples shall have a minimum average retained strength of 85 percent after the freeze / thaw exposure.

Other miscellaneous systems not mentioned above will be evaluated for durability on a case by base basis using appropriate ASTM test procedures for the submitted materials.

The Department's Aesthetic Review Committee shall review the appearance of the system design to meet aesthetic requirements.

Materials and Testing Section

Total Evaluation Time

Six (6) months

PROJECT SAMPLE REQUIREMENTS

The noise reduction system delivered to the job site shall be representative of the approved system from the Qualified Products List (QPL). The system shall be accompanied by a certificate of conformance that states that the system is identical to that tested and approved for the QPL.

GENERAL

Disqualification

Any system may be removed from the QPL as a result of alteration of the system's design or composition which may affect its application or performance. Therefore, the Department must be notified in writing when an approved system has undergone redesign or reformulation. Significant alternation of a previously approved system will necessitate a complete reevaluation as described herein.

Re-qualification

Should a system fail to meet minimally acceptable criteria, and thus be excluded from the Qualified Products List, the manufacturer shall submit to the Department a formal written request for re-qualification of a modified system. The request for reevaluation must contain reasonable evidence that deficiencies causing the disqualification have been rectified.

DOTD MATERIALS AND TESTING SECTION COORDINATOR

Jason K. Davis, P.E.
Special Testing Engineer
DOTD Materials and Testing Section
5080 Florida Blvd.
Baton Rouge, Louisiana 70806-4123
(225) 248-4106

Approved 4-1-09

Luanna Cambas, P.E.
DOTD MATERIALS ENGINEER ADMINISTRATOR