10/23/20

State of Louisiana
Department of Transportation and Development (DOTD)
Materials and Testing Section Approved Materials Procedure
for

NOISE REDUCTION SYSTEMS

MATERIAL SPECIFICATION REFERENCE:

DOTD Special Provisions, Noise Reduction Systems.

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

APPROVED MATERIAL EVALUATION SUBMITTAL:

The manufacturer shall submit a completed Approved Materials Evaluation Submittal to the DOTD Materials and Testing Section Coordinator listed below.

PRELIMINARY REQUIREMENTS:

The complete submittal must include:

- Complete Approved Materials Evaluation Form
- Letter requesting evaluation of the material
- Product data information
- Sample

NOTE: Evaluation will not begin until all required items listed above are received by the Materials Laboratory.

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 (2) panel samples, each 0.7 meters by 0.7 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 (3) samples without reinforcement and 3" x 4" x 16" shall be submitted for freeze / thaw testing.

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 Specification 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.

TEST REQUIREMENTS:

Test Reports Required From Manufacturer

Certified laboratory/test results for Sound Transmission Class "STC" (ASTM E413andASTM 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. Absorptive 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 case 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.

Evaluation Time (26 weeks)

Laboratory testing – 24 weeks

Evaluation of results – 2 weeks

GENERAL:

Upon completion of the evaluation, the submitter will be notified in writing concerning the results of the evaluation and whether the system will or will not be added to the Approved Materials List (AML). The DOTD Materials and Testing Section Coordinator shall be notified in writing of any change from the original system submittal. The Department reserves the right to re-evaluate any system or individual material at any time. A Certificate of Compliance of the system shall be submitted annually to the DOTD Materials and Testing Section Coordinator to remain on the AML.

PROJECT ACCEPTANCE REQUIREMENTS:

The inclusion of any system on the AML is not blanket approval for its use. All systems, regardless of prior approval, shall be sampled in accordance with the Materials Sampling Manual.

DISQUALIFICATION AND REMOVAL:

Any system may be removed from the AML for non-conformance with specifications, performance requirements, failure to supply annual Certificate of Compliance to the DOTD Materials and Testing Section Coordinator or failure to notify the Department of any change in system formulation.

REQUALIFICATION:

Any system which has been disqualified and/or removed from the AML will be considered for re-evaluation only after submission of a formal request along with acceptable evidence that the problems causing the disqualification and/or removal have been resolved.

DOTD MATERIALS AND TESTING SECTION COORDINATOR

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Approved

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