

 Office of Structures <i>Guidelines and Procedures</i> <i>Memorandum</i>	DESIGN
	Number: D-94-45(4)
	Date: 08-15-2019
Proprietary Noise Barrier Approval Process	DRAFT

In order for a proprietary noise barrier system to be considered for use on MDOT SHA right-of-way, the barrier system must be on the list of Approved Proprietary Noise Barriers maintained by the Office of Structures and posted on the Administration's website (www.roads.maryland.gov). All proprietary noise barrier systems must go through a five (5) step approval process prior to inclusion on the list. It should be noted that the inclusion of a noise barrier system onto the Approved Proprietary Noise Barrier list does not guarantee that it will be used on any MDOT SHA project. In addition, a system will only be used on projects where it is reviewed and approved by the Administration prior to advertisement and is specified in the Contract Documents.

All proprietary noise barrier systems shall use caisson foundations designed by MDOT SHA or their design consultant, unless otherwise approved by MDOT SHA. The caisson schedule will be provided in the contract documents.

It should be noted that the approval of a noise barrier system does not extend to approval of precast plants or to the approval of the materials to construct the wall. All precasters and materials used on MDOT SHA projects must be approved by MDOT SHA's Office of Materials Technology prior to use.

The approval process for selection and placement on the approved list is as follows:

Step 1 - Request For Inclusion

A supplier or his representative requests in writing to the Director of the Office of Structures and the Office of Highway Development's Noise Abatement Team the desire to be placed on this list. The request must include enough information for the Administration to make a determination based on the following points:

- The supplier demonstrates that they are a large enough operation to supply the necessary wall components to a Contractor in the needed turnaround time.
- The system has a sound theoretical and practical basis for the engineers to evaluate its claimed performance.
- The system presents an aesthetically pleasing appearance.
- Past experience in construction and performance of the proposed system.

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Step 2 –Noise Barrier System Information

Should the noise barrier system be accepted for consideration, the supplier or his representative must submit a package which includes and satisfactorily addresses the following items:

- A. The system theory and the year it was first used;
- B. Practical applications with descriptions and photos. Direction to a manufacturer's website containing this information is acceptable.
- C. Limitations and disadvantages of the system;
- D. Any known failures of the system, including where, how and why it failed. If applicable, include information on how the system was repaired;
- E. List of users (other states, counties, etc.) including contact names, addresses and phone numbers;
- F. Details of noise barrier elements, analysis of structural elements, design calculations, factors of safety, estimated life, corrosion design procedure, procedures for field and laboratory evaluation including instrumentation and special requirements, if any;
- G. Sample material and construction control specifications—showing material type, quality, certifications, field testing, acceptance and rejection criteria and placement procedures;
- H. A well documented field construction manual describing in detail, with illustrations where necessary, the step by step construction sequence and any special equipment required. The document shall also include repair procedures;
- I. Typical unit costs, supported by data from actual projects.

Step 3 – Design Evaluation

If, after evaluating this material, MDOT SHA finds it acceptable, the supplier must have the total system reviewed by an independent professional engineer, registered in Maryland, and acceptable to this Office. A list of professional engineering firms acceptable to this Office is available upon request. If the supplier selects an engineering firm who is not on the list, the name and qualifications must be submitted to this Office for approval.

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The independent professional engineer shall, at no expense to MDOT SHA, review the design concepts, specifications, calculations, construction specifications, for compliance with AASHTO and SHA criteria. If the independent, professional engineer finds the barrier system meets AASHTO and SHA criteria and so documents in writing, the barrier will then be evaluated for aesthetics and constructability. The independent professional engineer shall stamp the design calculations and plans indicating that they have been reviewed and found to be acceptable. A copy of the stamped calculations and plans will be kept on file.

The design of the proprietary noise barrier system must follow the current AASHTO Specifications. Design calculations should clearly indicate the date of the specifications and interims used in the wall design.

A two-degree rotation of panels and posts at the top of the foundation (caissons) shall be assumed and the additional moment caused by dead load shall be considered.

If the proposed system contains a restrained panel, it shall be reinforced for the additional forces caused by the panel restraint.

Step 4 – Aesthetic Evaluation

For this evaluation, the supplier shall, at no expense to MDOT SHA, furnish and erect a sample barrier at MDOT SHA's Office of Traffic and Safety in Hanover, Maryland. Plans for posts and foundations which are available at this site may be obtained from the Office of Highway Development's Noise Abatement Team. The date of the sample barrier erection must be coordinated with the Office of Structures and the Office of Highway Development's Noise Abatement Team. The sample barrier shall remain erected for two weeks, unless directed otherwise by MDOT SHA, and then be removed by the supplier, at no expense to MDOT SHA. In lieu of the sample barrier, the supplier may provide the location of an actual noise barrier in service within 100 miles of the city of Baltimore. This wall must be of the same design and surfacing as the barrier proposed for consideration.

Once all of the above criteria and evaluations are successfully met, the barrier will be added to the approved list, and considered for use at locations deemed appropriate by MDOT SHA, based on aesthetics, economy, design requirements and constraints, etc.

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Step 5 – Submittal of Standard Details

Once a noise barrier system is on the approved list, the noise barrier firm shall provide standard details and specifications showing panels, posts, reinforcements, materials, repair details, etc., for review and approval. Once approved by the Office of Structures and the Office of Highway Development, they will be stamped and kept on file along with a copy of the design calculations. For Contracts in which the system is selected, the barrier firm shall submit construction plans, etc. using only the approved details and specifications that are on file. Shop drawing review will be based on these details.

For information on what is to be included in the advertised contract documents, see GPM No. P-93-37(4), Contract Documents for Noise Barriers.

Revisions to Approved Proprietary Noise Walls

Should any detail, specification, etc. change during the time it is on the Approved Proprietary Noise Barrier list, the barrier firm must submit the revision for review and approval, prior to using that revision on MDOT SHA projects. Revisions may not be submitted for projects which are already bid.

Approval Expiration

The approval of a noise barrier system is good for 10 years from the date of acceptance. To have the noise barrier system approval renewed, the noise barrier system representative must request in writing to the Director of the Office of Structures indicating any changes to the barrier system since the prior approval. An evaluation as outlined in Step 3 may be required.

The Administration reserves the right to remove a noise barrier system from the Approved Proprietary Noise Barrier list at any time.