

AcoustaX by Faddis Concrete Products

Section 1

DESIGN SPECIFICATION FOR ACOUSTAX NOISE BARRIER SYSTEM PERFORATED METAL SOUND ABSORPTIVE NOISE BARRIER PANELS ALUMINUM

- 1) GENERAL:
 - a) Provide AcoustaX design calculations and contract drawings for prefabricated noise barrier panels. Post and fabrication design as required.
- 2) DESIGN:
 - a) Provide drawings, calculations, erection methods, and detailed erection plans for approval.
- 3) DESIGN:
 - a) The Noise Barrier shall consist of stacked perforated metal panels. The panels shall be comprised of aluminum sheet metal filled with mineral fiber planks. Individual panels shall be acoustically sealed with a bead of pre-formed Mortite caulk placed along the length of each panel at the panel seam. The panels shall be lifted and placed by hand into the supporting posts to the wall design height.
 - b) Design per requirements of the AASHTO Guide Specifications for Structural design of Sound Barriers (current edition)
 - c) Determine final plan location, grades and elevation for ground mounted noise barrier wall. Furnish plans and elevations to the contractor to develop the foundation drawings, including a complete elevation view of each wall section including top and bottom elevations. Project final ground elevations, established in the field, for the duration of the project and do not adjust after shop drawing approval.
 - d) Foundations to be designed and installed by others. Check actual soil conditions, pressure and settlement to insure the no failure occurs. Adequately reinforce the entire footing as required by the approved design. AcoustaX will provide all wall forces needed to design the footings.

Section 2

CONSTRUCTION SPECIFICATIONS FOR ACOUSTAX NOISE BARRIER SYSTEM PERFORATED METAL SOUND ABSORPTIVE NOISE BARRIER PANELS ALUMINUM

- 1) **SCOPE:**
 - a) The specification covers the minimum material, mechanical and noise reduction performance requirements of a perforated metal sound absorptive noise barrier. This product may be used in conjunction with steel support posts to provide sound absorptive noise abatement along highway or rail corridors, airports, industrial facilities, or construction sites, and in other applications requiring long term outdoor durability, vandal resistance and ease of construction.
- 2) **GENERAL REQUIREMENTS: CONSTRUCTION**
 - a) As indicated on the design contract drawings and approved shop drawings and as follows:
 - b) Shop Drawings – Before beginning construction submit for approval shop drawings showing fabrication details and handling transportation, construction procedures for all wall elements including connections.
 - c) Fabrication – Prior to fabrication, submit shop drawings for review and approval. Fabricate the panels in accordance with approved drawings and Quality Control plan.
- 3) **GENERAL REQUIREMENT: MATERIAL**
 - a) Metal Shell: The metal shell shall be constructed of a perforated face panel and a solid back panel. The face panel shall have perforation pattern of round holes on staggered centers in a grid border pattern. The perforated area shall be arranged in a pattern as indicated on the approved fabrication drawings. Drainage holes shall be provided at the bottom edge of the panel. Face and back panels shall be fastened together with the use of aluminum rivets, with spacing as indicated on approved calculations and approved shop drawings.
 - b) Shell material shall be aluminum as indicated on approved calculations and approved shop drawings.
 - c) Fill material: High density semi-rigid non-hygroscopic fibrous mineral wool.
 - d) Powder Coat: Powder coat all surfaces with TGIC polyester prior to assembly, with approximately 3 mil coating. Select from manufacturer's color standard color chart. Alternate powder coat available at additional cost.
 - e) End caps: same metal as shell. Powder coating of end cap not required.
 - f) Caulking: Mortite preformed caulk
- 4) **GENERAL REQUIREMENT: WORKMANSHIP**
 - a) The Noise Barrier panel shall exhibit good workmanship and be free of burrs, cracks, or other objectionable defects, which would adversely affect the barrier's performance or serviceability. Panels assembled together with caulked joint shall not permit light leaks through horizontal joints.

- b) All damaged panels will be rejected either at the fabrication shop or the construction site even after installation, but prior to acceptance of the project.
- 5) GENERAL REQUIREMENT: PHYSICAL AND MECHANICAL REQUIREMENTS
- a) Width: The nominal width of the panel shall be steel post center to center spacing minus 2 inches (+/- 1/4") as indicated on approved shop drawings up to a maximum of 9' 10", with existing tooling.
 - b) Height: The nominal height of each panel shall be 12 inches
 - c) Thickness: The nominal thickness of each panel shall be 3 inches
 - d) Weight: The nominal weight of each panel will be
 - i) 3.0 lb per SF in aluminum construction (nominal)
 - e) Mechanical Properties: the metal components of the panel shell shall have the minimum mechanical properties as follows:
 - i) Aluminum 5052 H32 $F_y = 28,000$ psi
 - ii) Aluminum 5052 H32 $F_b = .6 F_y = 28,000$ psi
 - iii) Aluminum 5052 H32 $F_v = .4 F_y = 11,200$
 - iv) Aluminum 5052 H32 $E = 10,200,000$ psi
- 6) GENERAL REQUIREMENTS: COLOR
- a) The color of the panel shall be selected from manufacturer's standard colors. Separate colors may be specified for face panel and back panel. The lowest available gloss in the specified color shall be selected.
- 7) ACOUSTICAL PROPERTIES
- a) NRC Rating – Sound Absorption: The AcoustaX Noise Barrier shall have an NRC (Noise Reduction Coefficient) rating of 1.0 as measured per ASTM C423 with a type A mounting per ASTM E795.
 - b) STC Rating – Transmission Loss: The AcoustaX Noise Barrier in aluminum construction shall have an STC rating as measured per ASTM E90.
 - i) STC standard aluminum construction STC 33