

Tuf Barrier™ Noise Wall Specifications

6 & 8 Feet in Height

This Noise Barrier specification should be used only by qualified professionals who are competent in evaluating the significance and limitations of the following specifications and who will accept responsibility for the application of its requirements to the products being considered.

GENERAL: The Tuf Barrier™ noise wall system meets or exceeds AASHTO requirements as listed in the “Guide Specifications for Structural Design of Sound Barriers”.

1.0 SCOPE:

This specification covers the design, construction, and installation of the Tuf Barrier™ noise abatement system, comprised of structural steel post system and vinyl STC 32 wall panels. The noise barrier panels are manufactured out of PVC materials by Harder Luckey & Hargrave Inc. (HLH) Steel post components will be manufactured by North American steel facilities.

2.0 SUBMITTALS:

2.2 Tuf Barrier™ shall submit complete design calculations and shop drawings in accordance with the requirements specified in the contract document and contract document special provisions.

2.3 Design: Tuf Barrier™ noise walls shall be designed in accordance with the current AASHTO "*Guide Specifications for Structural Design of Sound Barriers*" and in accordance with the requirements specified in the contract documents and contract document special provisions.

2.4 Proprietary Materials: Materials used in the fabrication of proprietary noise barriers shall conform to the material specification of the manufacture.

2.5 Non-Proprietary Materials: Non-proprietary wall materials shall conform to the AASHTO Specifications for noise walls and the specification of the contract document.

2.6 Color samples: If required, HLH will supply the necessary set of color chips for review and color choice.

2.7 Sample Panels: Submit the appropriate number and size of wall samples as required and manufactured to the specifications of the contract document.

2.8 Test Reports: Submit test reports conducted and certified by an independent testing laboratory verifying sound transmission loss per ASTM E-90.

2.9 Other Test Reports: Submit additional test reports as needed or requested, including NRC, ASTM's (plastic's, flammability etc)

3.0 STORAGE AND SHIPPING:

3.1 Noise Barrier components shall be stored, handled, and shipped per the manufacturer's recommendations. Additionally, Noise Wall components shall be shipped, unloaded, handled, and stored in such a manner as to minimize the dangers of chipping, scratching, and excessive bending stresses.

4.0 MATERIALS:

4.1 All Tuf Barrier™ vinyl materials are manufactured with the highest of quality PVC products, supplied by North American resin suppliers. The Tuf Barrier™ is manufactured in a co-extruded manner, using re-cycled virgin resins for the substrate and pure virgin resins for the cap stock. The cap (exterior layer) has excellent UV resistance with the use of TiO₂ to protect the colors from extreme fading due to the ultra violet rays of the sun.

4.2 Tuf Barrier panel wind load is 82 PSF on 10' centers.

4.3 Tuf Barrier sound transmission is rated at STC 32.

4.4 Profile Sizes: Below are the dimensions of the Tuf Barrier™ profiles.

- T&G Rails: 2.7" wide x 6" high face. Wall thickness of .190"
- Post Sleeves: 5"x5" square "H" posts with 2.7" openings for acceptance of T&G rails. Wall thickness is .125"
- Top Rails: 2.7" wide x 5.5" high face. Wall thickness of .100"

4.5 Colors: Tuf Barrier™ is available in multiple standard colors. Please contact HLH for the current list of standard colors.

4.6 Custom Colors: Available upon request. Minimum quantities may apply. Additional costs may apply. Please note this may cause additional production time.

5.0 TECHNICAL INFORMATION:

5.1 HLH will provide all documentation as requested.

6.0 TUF-BARRIER™ NOISE WALL COMPONENTS:

6.1 Steel Post Stiffeners: Structural steel will be manufactured in North America and will be designed to the AASHTO guidelines. Post design will depend on height of wall, location as per the AASHTO wind load chart and wind exposure as per AASHTO chart.

- a) 72" HIGH: 96" long, 1.5" x 2.5" tube steel at .125 wall thickness spaced at 120".
- b) 96" HIGH: 144" long, 4 x 4 W13 I-Beam steel spaced at 120".

6.2 Vinyl Post Sleeves: 5"x5" Color matched PVC H posts manufactured as per the material specifications in section 4.0. Post sleeves are intended to be placed over structural steel post stiffeners and fastened as per manufactures installation instructions. Post sleeves will sit on top of concrete footings and can be cut on site for proper height adjustment.

- a) 72" HIGH: 84" long 5"x5" post sleeve
- b) 96" HIGH: 108" long 5"x5" post sleeve

6.3 Corner and extra end posts: To be indicated as per drawings and are manufactured as in sections 6.1 and 6.2.

6.3 Vinyl Tongue and Groove Panels: Tuf Barrier™ noise wall panels are made by stacking individual Tongue and Groove rails that measure 2.7" thick x 6" high x specific length as per center to center spacing. T&G rails weigh approximately 4.12 lbs per square foot or 2.06 lbs per linear foot of single rail. Length and quantity of rails is dictated by width and height of panel sections. Each section is then capped with a "female" only top rail.

- a) 72" HIGH: 11 x 117.75" long T&G rails and 1 x 119.50" top rail (120" centers)
- b) 96" HIGH: 15 x 93.75" long T&G rails and 1 x 119.50" top rail (120" centers)

7.0 FOOTING DESIGN:

7.1 All footings to be engineered and designed on a job by job basis by an independent geotechnical engineer. Said footings will be designed based on wall height, soil conditions, exposure conditions and wind load requirements for the installation site location.

7.2 Ground mounted: Post stiffeners to be set in the concrete footing.

7.3 Flange mounted: Post stiffeners to have a flange plate welded to bottom of stiffener to accommodate the mounting of the Tuf Barrier to existing or new structures. These structures may include concrete caissons, retaining walls, Jersey barriers, concrete (or other) pads etc.

8.0 FASTENERS:

8.1 Panel Fasteners: Rails to be fastened to posts with #10 self drilling screws that will be supplied with wall system by HLH. Said fasteners will not be exposed and are installed through an access hole that will be capped by a color matched vinyl plug.

8.2 Flange Fasteners: If flange mount is utilized, the anchor bolts or J bolts will be designed by the geotechnical engineer and must be purchased by the contractor or installer. Said fasteners must comply with engineer's specifications.

9.0 INSTALLATION:

9.1 The Tuf Barrier™ noise wall system shall be installed per the manufactures recommendation to the lines and grades shown in the contract documents or otherwise specified.

9.2 Manufacturer's Installation Instructions:

- a) Wall components shall be installed and handled in accordance with the manufacturer's instructions. Extreme care shall be exercised to protect the sound wall components from damage during shipment or erection.
- b) Installer shall before ordering any wall component, inspect the job site and verify in writing to the manufacturer that site conditions permit the original plan of installation and erection of wall components. Additionally, the installer shall identify any underground utility or overhead obstruction that could affect job site safety. The installer is responsible to correct any site conditions that would compromise site safety and cause an accident.
- c) The installer is responsible for accepting and inspecting delivered wall components prior to installation.
- d) The installer shall notify the manufacturer of any wall components received in damaged condition. Any damaged wall component installed without proper manufacturer notification and site inspection is the responsibility of the installer.
- e) Installer acknowledges the importance of accurate footing and post spacing as panels can be shortened on site, however, a spacing to large will require either an extra footing/post or customized panels from the manufacturer, in which case, also may need to have engineers approval for structural stability.

10.0 ACCEPTANCE:

10.1 Final inspection and acceptance of the Tuf Barrier™ noise wall shall be made by the owner's representative. A written list of all items requiring corrections shall be submitted to the barrier manufacture. The barrier manufacture, upon receiving the list, shall review the list with the owner's representative and schedule any corrective work.

10.2 The barrier manufacturer will notify the owner's representative in writing when the corrective work is completed.

11.0 MEASUREMENT AND PAYMENT:

11.1 Measurement for payment shall be calculated from approved contract plans.

11.2 Method of Panel Measurement: The quantity to be paid for Tuf Barrier panels shall be based upon the number of square feet of wall surface area supplied and calculated from the noise wall's starting station to the noise wall's ending station multiplied by the height of the wall.

11.3 Method of Post Measurement: The quantity to be paid for noise wall posts shall be calculated upon the number of linear feet of post supplied, measured from the bottom of the post to the top of the post.

11.4 Work or materials performed in addition to supplying noise wall post and panels will be measured and paid for as a separate item.

12.0 WARRANTY:

12.1 Tuf Barrier™ noise wall system carries a 20 year warranty.

13.0 MAINTENANCE:

13.1 No aftercare treatment (painting / staining) required with PVC materials. Rain will wash most of accumulated (environmental) residue away. Excessive dirt can be power-washed away if desired. Most graffiti (felt / paint) can be washed off with minimal effort.