

**SECTION 44 21 13 / 32 35 16**

**ACOUSTICAL BARRIER WALL**  
**V-STACK**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS:**

- A. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY:**

- A. Acoustic barrier field assembled from 4+or 5+thick (refer to drawings) pre-manufactured components. Barrier is designed to meet performance criteria specified herein as a complete assembly.
- B. Provide labor, material, tools, equipment, scaffolding, transportation, inspection, certificates, and temporary protection necessary to:
  - 1. Provide Acoustical Barrier as shown on Drawings and as specified in these Specifications. Provide accessories and appurtenances required for complete working installation.
  - 2. Connectors and flashing shall make holes in walls acoustically tight in accordance with barrier wall manufacturer's instructions.
- C. Structural steel support frame to be provided by barrier wall supplier. Refer to Specification Section \_\_\_\_ for general steel requirements.

**1.3 SUBMITTALS:**

- A. Product Data: Manufacturer's product specifications.
- B. Shop Drawings: Complete drawings showing components including mechanical and electrical requirements.
- C. Certificate of Compliance: Certify completed assembly meets requirements specified herein.
- D. Stamped (P.E.) calculations for all structural and panel components certifying compliance with \_\_\_\_-MPH wind load. P.E. stamp by engineer licensed in \_\_\_\_.
- E. Submit in accordance with Section 01300.

**1.4 QUALITY ASSURANCE:**

- A. Regulatory Requirements:
  - 1. Acoustical performance: Minimum NRC (Noise Reduction Coefficient) rating of 0.95 and minimum STC (Sound Transmission Class) of 38 after panel fabrication.

2. Structural requirements: design panels and attachment system for this installation to withstand wind load of \_\_\_\_ pounds per square foot, both positive and negative.
3. Reference Standards:
  - a. ASTM E90-99 or ASTM E90-02 and E413-87 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
  - b. ASTM C423-90A and ASTM E795-00, Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- A. Advise the manufacture of any special delivery conditions prior to shipment. Special requests will be additional.
- B. Deliver products in sufficient quantity and time to maintain approved construction schedule.
- C. Materials shall be in original containers with seals unbroken and labels intact until time of use. Wrapped or bundled materials shall bear name of manufacturer and product. Damaged or otherwise unsuitable material, when so ascertained, shall be removed from project site.
- D. Store products in secure, dry location, out of way of construction operations. Store products off ground and protect from elements. Wetting of elements not permitted.
- E. Prevent damage to materials, to other stored products, to existing construction, and project work.

#### **1.6 WARRANTY:**

- A. Provide manufacturer's warranty covering failures of materials and workmanship for a period of two (2) years from installation. Acts of nature, misuse, or abuse are not covered. Acts of nature, misuse, or abuse are not covered.
- B. Finish warranty: Furnish panel manufacturer's written warranty covering failure of the factory-applied finish on metal panels within the warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

**Finish Warranty Period: 10 years**

#### **1.7 ACOUSTICAL PERFORMANCE**

- A. All tests for validation of barrier panel performance for compliance with these specifications shall be conducted by an independent NVLAP certified testing laboratory, National Institute of Standards (NIST) accredited to the most current standard of testing. At a minimum the testing results must conform and be tested to ASTM E90-09 and ASTM E413-87.

- B. Submit certified laboratory test including absorption and transmission loss values for specified panel type and construction of not less than following:

<b>Sound Transmission Loss, dB</b>							
OCTAVE BAND Center Frequencies, HZ	125	250	500	1K	2K	4K	STC
<b>V-Stack 4" thick</b>	22	26	35	45	47	48	38

<b>Sound Absorption Coefficients</b>							
OCTAVE BAND Center Frequencies, HZ	125	250	500	1K	2K	4K	NRC
<b>V-Stack 4" thick</b>	0.86	1.20	1.17	1.07	1.08	1.02	0.95 <b>(1.05)</b>

**1.8 EXPERIENCE:**

- A. Acoustical Barrier Wall supplier must provide a list of ten (10) similar successful installations of Acoustical Barrier Walls supplied within the last two (2) years.
- B. Materials requiring testing shall be manufactured in the same location, with the same equipment for at least five (5) years and have 3<sup>rd</sup> party, independent testing results no more than ten (10) years old.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Acoustical Barrier Wall shall be constructed of type “**QuietMod**” “**V**”-**STACK** Barrier Panels manufactured by **Noise Barriers, LLC.**, Libertyville, IL.

**Manufacturer:**

Noise Barriers, LLC  
2001 Kelly Court  
Libertyville, IL 60048

Phone: (847) 843-0500

www.noisebarriers.com

**Contact:**

John Finnegan  
Email: info@noisebarriers.com

Phone: (315) 682-3821

**2.2 PANEL CONSTRUCTION**

- A. Except as shown on Drawings or at locations described below, use 4+thick or 5+thick acoustical panels. Exterior surfaces are solid sheet 16-ga. Galvanized steel. Interior surfaces are 22 ga. Perforated galvanized steel.
- B. Sound-retarding and absorbing fill material shall be noncombustible, inert mildew-resistant and vermin proof.

- C. Lateral panel reinforcement, if necessary to meet wind load requirements, shall be minimum of 18 ga. Cold rolled steel spaced evenly.
- D. Spot welds shall be no more than 2 in. apart.
- E. Prior to attaching face sheet, panel shall be dampened and filled with sound-retarding and absorbing elements. Fill shall be slightly larger and thicker than inside dimensions of panel. No voids will be tolerated.
- F. Weld and rivet face sheet to panel assembly to acoustically compress and hold fill materials in place. Panel assembly shall hold fill materials in place under severe conditions of vibration encountered in shipping, installation, and in operation of completed structure.
- G. Acoustic fill material shall be held back from inside perforated surface by means of an open mesh spacer.
- H. Weep holes to permit water runoff shall be provided on all horizontal surfaces.

### 2.3 PANEL CONNECTION

- A. Panel to panel connection shall be accomplished through interlocking panel edges. Panel design and fit shall prevent noise leakage while acoustically and structurally joining panels together. **No "H" joiners between panels will be permitted.**
- B. No mechanical fasteners shall be permitted in the face skins of the barrier panels.
- C. Weep holes to permit water runoff shall be provided on all horizontal surfaces that may trap water.

### 2.4 PANEL COMPONENTS

- A. All accessory trim items shall be of 18 gauge minimum galvanized steel, type G90 and shall be furnished in factory standard lengths to be field cut to specified dimensions. Location and quantity of sheet metal screws and trim requirements shall be in accordance with the barrier wall system manufacturer's installation details.
- B. All external panel connections, trim items, accessories, panel interfaces and other sections as noted on the drawings shall be sealed with an acoustical sealant that shall not harden and prevent disassembly in the future.

### 2.5 STRUCTURAL STEEL

- A. Steel posts shall be hot rolled wide flange structural sections in accordance with shapes, sizes, details, and method of connection as shown on the drawings. All structural steel work shall conform to ASTM A572 Grade 50 or ASTM A992, and bracing and anchor bolts to ASTM A36. All welds shall conform to American Welding Society D1.1 and Electrodes shall be E70XX. Structural steel components to be hot dipped galvanized after fabrication. The post design shall be sealed by a Licensed Professional Engineer.

- B. The Steel posts shall be installed plumb to within +/- 1/16". The posts shall be located to the lines and grades specified on the drawings to within a tolerance of +/- 1/16". Any accidental coating of concrete on the above grade surfaces shall be washed off on the same day of installation.
- C. All steel post footing engineering and design is by others.
- D. Provide cross bracing and wind bracing where necessary.

## **2.6 FINISH PAINT and PACKAGING**

- A. Manufacturer's high performance Polyester Powder Paint coating for applications to meet warranty requirements.
- B. Apply coatings before, during, or after forming and fabricating panels, as required by coating process and as required for maximum coating performance capability. Fully coat all edges of perforations in face sheet.
- C. Where detailed in the drawings apply finish coatings to hot dip galvanized structural steel as noted.
- D. Protect coating either by application of strippable film or by packing plastic film or other suitable material between panels to protect the finish during shipment. Provide air-drying spray finish in matching color for touch up.

**Color: Architect will select from manufacturer's standard color chart.**

- E. Provide sufficient paint to touch-up panels after installation of the Barrier Wall.
- F. All panel materials shall be shipped in covered wooden crates.

## **2.7 INTERCHANGEABILITY AND REUSE**

- A. Acoustic components having same part numbers shall be completely interchangeable.
- B. Acoustic Barrier Wall shall be such that no components will be damaged upon disassembly. Design shall allow structure to be assembled, disassembled and reassembled minimum of 3 times without detracting from acoustic performance.

# **III. PART 3 - EXECUTION**

## **3.1 PANEL INSTALLATION**

- A. Install panels according to manufacturer's instructions noting type, color, length, and recommendations, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.
  - 1. Field cutting of exterior panels should be approved by manufacturer.
  - 2. Install panels with exposed fasteners pre-finished to match panel finishes.

- B. Accessories: Install components required for a complete acoustical barrier panel system, including trim, coping, supports and attachments, connections between panels, seam covers, sealants, fillers, closures strips and similar items.

### **3.2 CLEANING AND ADJUSTMENT**

- A. Damaged units: Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch up or similar minor repair procedures.
- B. Cleaning: Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

**END OF SECTION**