

INC[®] ONB Outdoor Noise Barrier Panels

INC Panl-Wall[®] ONB Outdoor Noise Barrier Panels Suggested Construction Specification Section 13080

Bulletin # 004-1001

I.01 GENERAL – MODULAR ACOUSTICAL PANELS & COMPONENTS

A. Prefabricated outdoor acoustical structures, barriers, and enclosures that need to shed water shall be designed using INC Panl-Wall[®] ONB Outdoor Acoustical Panels and Components. The manufacturer shall have a complete pre-engineered system of components available including wall panels, doors, supports and assembly components as required to construct a complete system as designed.

B. Panels and components shall be supplied in ready to use modules manufactured by Industrial Noise Control, Inc. (INC) of North Aurora, IL.

2.01 DESIGN REQUIREMENTS

A. The completed structure shall be modular and demountable. All panel connections shall allow easy disassembly and reassembly with no degradation of acoustical or mechanical performance. All components of like function and size shall be interchangeable. Panels are intended to be assembled with the joints or seams horizontal and shall fit together with an interlocking integrated panel joint that seals acoustically and sheds water. Separate panel joiners are not required or acceptable.

3.01 MATERIALS

A. Panels shall be 2" or 4" thick as required for the specific application, of a double wall insulated unit construction consisting of a solid exterior face sheet, a perforated interior face sheet with the space between filled with acoustical sound absorbing material.

A: Steel Materials: All steel used in the panel construction shall be galvanized coated. Standard panels are electro-galvanized (EG) and may be painted without chemical wash. G-90 hot dipped galvanized is available as an option.

B. Internal Panel Frame: Shall be formed channel of 18 gauge EG sheet steel.

C. Solid Panel Face: Shall be 18 gauge EG sheet steel.

D. Perforated Panel Face: Shall be 22 gauge EG sheet steel perforated to an effective open area of 33% using 0.093" diameter holes on .156" staggered centers.

E. Absorptive Fill: Shall be a non-hygroscopic, non-wicking material with a minimum density of 4LB. Insulation shall meet ASTM C-423 Sound Absorption Coefficient of NRC-1.15 with the following properties:

1. Odor: None
2. Corrosiveness (ASTM C 665):
Does not accelerate corrosion on steel, copper or aluminum.
3. Resistance to Fungi or Bacteria (ASTM C665):
Does not promote growth of fungi or bacteria and shall be mold and vermin resistant.
4. Water Vapor Sorption (ASTM C1104):
Less than 0.01% by volume.
5. Temperature Resistance (ASTM C 411):
Will not deteriorate up to +1200° F.

4.01 CONSTRUCTION

A. Module Size: Available in 12", 24", 36" and 48" modules x 12' maximum width..

B. Module Thickness: 2" or 4" standard units.

C. Welded Module Construction: Panels shall be constructed to retain their shape such that system components will fit together and function throughout the expected life of the structure and to allow dismantle and re-assembly a minimum of three times. The internal panel frame shall be welded while firmly clamped and gauged to ensure a square module that resists racking and twisting under stress. The solid and perforated panel face sheets shall be spotwelded or cinch locked to the internal channel frame on all perimeter edges at 6" to 8" on center. Spotweld or cinch locks shall have a minimum shear breaking load strength of 1350 lbs and an approximate diameter of 0.250".

D. Panel Fill: Prior to attaching the second panel skin, the panel shall be filled with sound absorbing material without voids. The fill shall be slightly oversized and will not sag when the panel is complete and oriented in its intended design configuration.

E. Internal Panel Reinforcement: When specified, an internal 18 gauge steel reinforcement channel shall be inserted between the solid and perforated face sheets, fastened to both, to provide additional panel rigidity.

5.01 SYSTEM ASSEMBLY COMPONENTS

A. All panels are designed and manufactured to be stackable between W-flange support columns with no pockets for water accumulation using interlocking, formed tongue-in-groove style horizontal panel edges. Separate joiners are not required.

B. Pre-engineered base channel, wall cap channel, corner angles and finishing trims shall be included and supplied in manufacturer's standard lengths and shall be a minimum of 18 gauge EG steel.

C. All panel connections as indicated on the drawings shall be properly caulked and sealed during assembly using a non-hardening acoustic sealant. All voids shall be filled with insulation when specified.

6.01 FINISH

A. All components may be supplied either unpainted in EG or factory finished using manufacturer's standard paint coating systems. Specify if graffiti resistant coating is required.

B. When factory painting is required all components shall be properly cleaned and degreased, and be free of blemishes prior to applying the coating system.

7.01 PANEL ACOUSTICAL PERFORMANCE

A. All modular acoustical panels shall exhibit the following Sound Transmission Loss (STL) characteristics as tested and documented by an independent, accredited test laboratory in accordance with ASTM E90..

SOUND TRANSMISSION LOSS (dB)

Standard Module	Exterior	Interior	Thickness	STL, by Octave Band Frequency (Hz)						STC
				125	250	500	1000	2000	4000	
ONB-2-18	18GA Solid	22GA Perf	2"	20	22	32	42	50	57	35
ONB-4-18	18GA Solid	22GA Perf	4"	22	26	40	50	50	57	41
ONB-4-18-H	18GA Solid	18GA Solid	4"	28	43	55	63	63	69	52

B. All modular acoustical panels shall exhibit the following Sound Absorption Coefficients (NRC) characteristics as tested and documented by an independent, accredited test laboratory in accordance with ASTM C423.

SOUND ABSORPTION COEFFICIENTS

Standard Module	Exterior	Interior	Thickness	NR, by Octave Band Frequency (Hz)						NRC
				125	250	500	1000	2000	4000	
ONB-2-18	18GA Solid	22GA Perf	2"	0.21	0.61	1.01	1.07	1.07	0.98	0.95
ONB-4-18	18GA Solid	22GA Perf	4"	0.75	1.05	1.10	1.07	1.03	0.94	1.00
ONB-4-18-H	18GA Solid	18GA Solid	4"							N/A

8.01 STRUCTURAL PERFORMANCE & SUPPORT DESIGN

A. ONB barrier panels shall withstand wind velocities up to 100 MPH when installed in a properly designed support frame. Designs for specific wind and seismic loading is available.

B. All column posts shall be fabricated from ASTM A36 steel with appropriate base plates. Anchor bolts provided by installer.

C. Foundation or footings designed for the specific application and shall have a compressive strength exceeding 3000 psi and shall be reinforced with #4 rebar.

9.01 FIRE RATING

A. Standard panels meet ASTM E84 Class I Smoke & Fire Standards.

B. Panel acoustical fill meets the following:
 Surface Burning Characteristics (ASTM E84, NFPA 255 & UL 723)
 Flame Spread = 5
 Smoke Developed = 5

10.01 MANUFACTURER EXPERIENCE & CERTIFICATIONS

A. The manufacturer shall have designed and produced a standard pre-engineered system meeting the specifications stated herein for a minim of 10 years.

B. The manufacturer warrants that when the panels and components are assembled in strict accordance with its specifications and instructions, that the resulting completed structure shall meet the intended mechanical and acoustical performance specified for the project.

C. Products shall be warranted for a period of one year from the date of shipment against any defects in workmanship or materials.

