

INC Panl-Wall®
Modular Acoustical Plenum Panels
Tongue-and-Groove Joint Style
Suggested Construction Specification
Section 13080

Bulletin # 002-1002

I.01 GENERAL – MODULAR ACOUSTICAL PLENUM PANELS & COMPONENTS

A. Prefabricated modular acoustical structures, barriers, enclosures, and HVAC plenums that require air and noise tight joints, sleek flush appearance and the ability to withstand significant pressure differentials shall be designed using INC Panl-Wall® Modular Acoustical Plenum Panels and Components. The manufacturer shall have a complete pre-engineered system of components available including wall and roof panels, window panels, doors, 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 components of like function and size shall be interchangeable.

B. Panels shall be factory manufactured with roll-formed male and female joining edges for panel to panel interlocking joints that do not require separate joining batten. When assembled, the panel joints shall be tight, flush and true and be air, noise and water tight.

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 or 14 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 4" thick x 4LB density mineral fiber. Insulation shall meet ASTM C-423 Sound Absorption Coefficient of NRC-1.15. Insulation shall exhibit 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.

F. Fill Protection: Panel fill shall be totally encapsulated using a 1.5 mil polyethylene film. Wrap shall be separated from the panel perforated skin with a polyethylene web mesh spacer. Metal spacers, chicken wire, etc., are not acceptable

4.01 CONSTRUCTION

A. Module Size: 45" maximum width x 12' maximum length.

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 joined together via their tongue-and-groove, interlocking male and female edges.

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.

6.01 FINISH

A. All components may be supplied either unpainted in EG or factory finished using manufacturer's standard paint coating systems.

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 in dB

Standard Module	Exterior	Interior	Thickness	STL, by Octave Band Frequency (Hz)						STC
				125	250	500	1000	2000	4000	
PWL-2-18	18GA Solid	22GA Perf	2"	20	22	32	42	50	57	35
PWL-4-18	18GA Solid	22GA Perf	4"	22	26	40	50	50	57	41
PWL-4-16	16GA Solid	22GA Perf	4"	26	29	42	52	55	59	44
PWL-4-14	14GA Solid	22GA Perf	4"	26	30	42	51	55	59	44
PWL-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	
PWL-2-18	18GA Solid	22GA Perf	2"	0.21	0.61	1.01	1.07	1.07	0.98	0.95
PWL-4-18	18GA Solid	22GA Perf	4"	0.75	1.05	1.10	1.07	1.03	0.94	1.00
PWL-4-16	16GA Solid	22GA Perf	4"	0.75	1.05	1.10	1.07	1.03	0.94	1.00
PWL-4-14	14GA Solid	22GA Perf	4"	0.75	1.05	1.10	1.07	1.03	0.94	1.00
PWL-4-18-H	18GA Solid	18GA Solid	4"	-	-	-	-	-	-	N/A

8.01 PANEL STRUCTURAL PERFORMANCE

- A. Standard panels are designed for interior applications and typical loadings. The entire completed structure shall be self-supporting or will be supported as indicated on the drawings.
- B. The completed structure shall be air tight, self-supporting and capable of withstanding both positive and negative pressure differential of up to 10" w.g.
- C. Completed structure shall not deflect more than 1/360th of the longest span.
- D. For installation in seismic zones or for additional loading requirements additional seismic bracing and supports may be required.

9.01 FIRE & THERMAL PERFORMANCE

- 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
- C. Individual panels shall have a heat transfer factor of U=0.07 / R=14.

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.

