# SUGGESTED SPECIFICATION
## Modular Acoustical Plenums

## GENERAL
Furnish and install modular factory fabricated acoustical enclosures/panels/plenums as shown on plans and as specified. Acoustical panels and components shall be the product of Commercial Acoustics division of Metal Form Manufacturing, LLC. Any change in this specification must be submitted to and approved by the architect/engineer, both in writing, at least 10 days prior to the bid due date.

## MATERIALS AND CONSTRUCTION
Enclosures/panels/plenums shall be mounted on a level concrete floor or curb (furnished by others). Panels shall be 6¼", 4¼" or 2¼" thick with interior perforated and/or solid panel sheets of 22-gauge galvanized steel. Perforations shall be 3⁄32" diameter holes spaced on 3⁄16" staggered centers. Exterior solid panel sheets shall be 18-gauge G90 galvanized steel. Sound retarding and absorbing fill shall be incombustible, inert, midew-resistant and vermin-proof. Internal panel reinforcement shall be roll formed 16-gauge galvanized steel and spaced so that span does not exceed 2' 0". Perimeter and internal reinforcement and panel sheets shall be welded and/or riveted to form a rugged metal-sheathed acoustical panel. Spot welds shall not exceed 3" on center. Prior to attaching the face sheet, the panel shall be filled with sound retardant and absorbing fill as specified above. The fill shall be slightly larger and thicker than the inside dimensions of the panel. No voids will be tolerated. The face sheet shall be attached to the panel assembly so as to compress and hold the fill materials in place under severe conditions of vibration such as encountered in shipment, installation, and operation.

## DOORS
Doors shall be supplied 24" wide x 60" high or as specified on the drawings. Doors shall be 4" thick for 4¼" panels and 2" thick for 2¼" panels. Doors shall have two full perimeter neoprene gaskets around the sill, jambs, and head. Door frames shall be 6063-T6 extruded aluminum with gasket recesses. Frames shall be mitered with sealed seams to prevent leakage. Face sheets shall be G90 galvanized steel. Each door shall have a minimum of two hinges and two latches with inside release handles. Hinges shall be stainless steel designed for door size and weight. Latches shall be roller compression type with inside handles. Doors shall be installed to open against air pressure.

## WINDOWS
Windows shall be furnished for doors where shown on the drawings and shall consist of two layers of glass (one clear & one wire reinforced) separated by an air space sealed acoustically and air tight. Air space shall contain a desiccant to prevent misting.

## ACCESSORIES
Floor channels shall be rolled formed 16-gauge G90 galvanized steel. Panel connectors, if used, shall be roll formed 16-gauge G90 galvanized steel for greater strength. All panel accessories and trim shall be made of 18-gauge G90 galvanized steel furnished in standard lengths to be field cut as required. Openings for fan and duct connections, where required, shall be provided by the plenum manufacturer. Pipe and conduit penetrations shall be located and cut in the field and sealed in accordance with the manufacturer's instructions. Fasteners shall be zinc plated, #12 x 1", self-drilling, self-tapping hex head sheet metal screws located 12" on center.

## ACOUSTICAL PERFORMANCE
Acoustical panel ratings shall be determined by the dual reverberation room method in accordance with ASTM specifications E90, E413, C423, E795, or latest versions thereof. The test set-up and procedure shall be such that all effects due to flanking transmission, standing waves, and test chamber sound absorption are eliminated. Data shall be presented for tests conducted using current production samples. The minimum allowable transmission loss (TL) of the panel, including all components, when tested in accordance with ASTM E90, E413, or latest versions thereof, shall be as follows:

## TRANSMISSION LOSS IN DECIBELS

| Octave Band | 2 | 3 | 4 | 5 | 6 | 7 | |
|---|---|---|---|---|---|---|---|
| Canter Frequencies, Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 | STC |
| Transmission Loss (TL) | | | | | | | |
| 4-1/4" | 22 | 29 | 40 | 48 | 54 | 60 | 41 |
| 2-1/4" | 21 | 24 | 35 | 43 | 52 | 57 | 37 |

The composite panel assembly, when tested in accordance with ANSI/ASTM C423 and E795, or latest versions thereof, shall have minimum absorption coefficients as follows:

## SOUND ABSORPTION CHARACTERISTICS

| Octave Band | | 2 | 3 | 4 | 5 | 6 | 7 | |
|---|---|---|---|---|---|---|---|---|
| Canter Frequencies, Hz | | 125 | 250 | 500 | 1000 | 2000 | 4000 | STC |
| Absorption | 4-1/4" | .86 | 1.09 | 1.22 | 1.06 | 1.05 | 1.04 | 1.1 |
| Coefficients | 2-1/4" | .31 | .82 | 1.19 | 1.12 | 1.07 | 1.06 | 1.11 |

## STRUCTURAL PERFORMANCE

Plenum installation shall be capable of withstanding a positive or negative internal static air pressure of 10 inches w.g. The complete plenum structure shall be nominally self-supporting and air-tight up to a pressure differential of 10 iwg. Where roof spans, pressures, and wall loadings require additional structural strength, it shall be furnished either by additional panel reinforcement or additional structural members and/or pipe columns. Additional structural support shall be designed to assure that the plenum will be air-tight and not deflect more than 1/240th of the longest span. Metal surfaces shall be galvanized except exposed structural members and/or pipe columns which shall be HR steel with factory applied prime coat paint.

## THERMAL PERFORMANCE

Individual panels shall have a heat transfer factor, "U", of 0.07 BTU/hour/sq. ft./degree Fahrenheit. The completed panel plenum shall have a heat transfer factor, "U", of 0.14 BTU/hour/sq. ft./degree Fahrenheit.

## FIRE HAZARD RATING

Individual panels shall meet the following UL Fire Hazard Ratings as per ASTM specification E84, or latest version thereof.

Flame Spread - 15 Fuel Contributed - 0 Smoke Developed - 0

## INSTALLATION

Plenum manufacturer shall furnish complete erection drawings and installation instructions, including a bill of materials. Each panel shall be marked to match the drawings and the bill of material.

## WARRANTY

Plenum manufacturer shall warrant that when plenum(s) are installed in a workmanlike manner in strict accordance with these specifications and manufacturer's instructions, plenum(s) shall meet the acoustical, thermal, and air pressure performance specified. Plenum components shall be furnished clean, well made and free of any defects which may adversely affect appearance, serviceability, and/or performance.

## CERTIFICATION

The manufacturer shall supply certified test data on transmission loss and absorption coefficients to the architect/engineer, in writing, at least 10 days prior to bid due date. Test data shall be for a standard product. All rating tests shall be conducted by a nationally recognized acoustic testing laboratory in their facility, utilizing the same panels. This facility shall be open to inspection at the request of the architect/engineer. The testing laboratory shall be totally independent from the manufacturer. Data obtained in the manufacturer's test lab will not be acceptable unless substantiated by test reports conducted by a nationally recognized acoustic testing laboratory.

The manufacturer shall furnish proof, found to be satisfactory to the architect/engineer, of having manufactured similar plenums for at least five (5) years prior to this installation.


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