

**Part 1            General**

**1.1                SHOP DRAWINGS AND PRODUCT DATA**

- .1        Submit shop drawings and product data in accordance with Section 26 05 01.
- .2        Manufacturer shall provide a complete set of shop drawings for this specific project. Drawings shall include, but not be limited to, equipment supplied, wiring diagrams, installation instructions, and operating instructions produced specifically for this project. Drawings shall be approved by the Electrical Consultant before fabrication and supply of equipment.

**1.2                OPERATING AND MAINTENANCE DATA**

- .1        Provide data for incorporation into Electrical Maintenance Manual specified in Section 16010.
- .2        Submit a detailed operating, maintenance and testing procedure document prepared specifically for this project.
- .3        The Owner's operating personnel shall be instructed in the operation of the systems for a minimum period of one (1) hour. Written documentation bearing name and signature of Owner's personnel who received the above instructions shall be included in the operating instructions and service manuals.

**1.3                CODES AND STANDARDS**

- .1        American National Standards Institute (ANSI):
  - .1        ANSI S1.4-1983(R1997), American National Standard Specification for Sound Level Meters.
  - .2        ANSI S1.11-1986(R1998)/ASA 65, American National Standard Specification for Octave-Band and Fractional-Octave-Band Analogue and Digital Filters.
- .2        American Society for Testing and Materials (ASTM):
  - .1        ASTM E1041-85(1998) Standard Guide for Measurement of Masking Sound in Open Offices.
  - .2        ASTM E1573-93(1998) Standard Test Method for Evaluation Masking Sound in Open Offices Using A-Weighted and One-Third Octave Band Sound Pressure Levels.

**1.4                SYSTEM DESCRIPTION**

- .1        The intent of this specification is to provide a complete and satisfactory modular stand-alone sound masking system for the floors and areas identified on the drawings or within this document.
- .2        The electrical contractor shall coordinate all installation requirements with the manufacturer prior to start of work on site.
- .3        This electronics sound masking system shall be used for two basic purposes:

- To achieve a stated degree for speech privacy in the open office areas between adjacent and defined work stations.
  - To unobtrusively mask or block out normal unwanted office noises.
- .4 Electronic sound masking shall be used to achieve the appropriate background sound level in the open office areas. Masking shall provide uniform work privacy throughout the area without being readily apparent or objectionable to the open office occupants.
  - .5 It shall be the responsibility of the contractor to ensure that all necessary components are provided to result in a fully operational sound masking system.
  - .6 All equipment furnished shall be the standard products of the manufacturer.
  - .7 The sound masking system shall be a distributed direct field system.
  - .8 The system shall be comprised of (1) one zone with 1 control module.

**1.5 PERFORMANCE REQUIREMENTS**

- .1 Provide, in areas indicated to receive sound masking, as many units as are necessary to meet specified acoustical performance requirements.
- .2 Provide Octave Band Sound Pressure Levels in Open Areas, Private Offices and Meeting Rooms as follows:

Octave Band Centre Frequency (Hz)	Average Sound Pressure Level (dB)			Tolerances (dB)
	Open Areas	Private Offices	Meeting Rooms	
125	[52]	[49]	[46]	+4 -4
250	[49]	[46]	[43]	+2 -2
500	[45]	[42]	[39]	+1 -1
1000	[40]	[37]	[34]	+1 -1
2000	[33]	[30]	[27]	+1 -1
4000	[26]	[23]	[20]	+1 -1
8000	[18]	[15]	[12]	+3 -2

**1.6 SUPPLIER / INSTALLER QUALIFICATIONS**

- .1 The supplier shall be fully qualified in the performance of work specified herein and shall have maintained sales and service departments for a minimum 5 years.
- .2 System components shall be installed by qualified installers approved by the system manufacturer. Technicians shall be experienced installing and adjusting self-contained sound masking systems.

## **1.7 VERIFICATION TESTING**

- .1 Upon completion of installation of the system, the sound masking system vendor shall inspect, test and verify that all system components operate in accordance with the specifications and submit a corresponding written report. The above verification shall be conducted in the presence of an Owner's Representative. The Contractor shall furnish all necessary equipment and personnel required to complete the verification. Should any of the system components fail to operate as per the requirements of the specifications, the Contractor shall correct the deficiencies, make all necessary adjustments and then perform another test.

## **Part 2 Products**

### **2.1 EQUIPMENT**

- .1 Operation of zones shall be via a wireless infrared remote control with four volume control preset buttons. Each module shall have two output levels configured via an internal switch.
- .2 Ranges shall be (36db – 45db) and (48db – 57db).
- .3 Control modules shall be power by the supplied wall adapter power supply.
- .4 No more than 250 transducers/emitters shall be connected to each module.

### **2.2 TRANSDUCERS/EMITTERS**

- .1 Transducers/emitters shall have a 3-5/16" diameter face and shall not require additional load bearing support when mounted in ceiling tiles. Each emitter shall have one input RJ45 jack and one output RJ45 jack.
- .2 Finish color white.

## **Part 3 Execution**

### **3.1 TESTING, ADJUSTING AND BALANCING**

- .1 Calibrate measuring microphone and related test equipment prior to testing.
- .2 Test, adjust and balance system with mechanical system and other noise generating equipment shut down in areas receiving sound masking.
- .3 Test, adjust and balance system until sound spectrum and levels meet specified performance requirements. Adjust settings of installed units, relocate installed units or add additional units, if and as required.
- .4 Upon completion of tests, perform walk-through verification of areas that will be covered by sound masking. Adjust and re-test areas having abnormal characteristics or levels.

### **3.2 TESTS AND TEST METHODS**

- .1 Test to determine spatial average overall sound pressure levels. Take minimum of one reading for each enclosed room covered by sound masking and minimum of one reading per 20 m<sup>2</sup> (215 ft<sup>2</sup>) of floor area in all open spaces covered by sound masking.

### **3.3 MEASURE SOUND PRESSURE LEVELS USING ONE OF THE FOLLOWING METHODS**

- .1 Equivalent Continuous Sound Level (Leq) mode for minimum interval of 15 seconds.
- .2 IEC 651 'slow' time constant; average reading of the highest and lowest level during 15 second interval.

### **3.4 TEST EQUIPMENT**

- .1 Sound Level Meter: to ANSI S1.4-1983, Type 1 or better.
- .2 Octave Band Filter: to ANSI S1.11, Class II or better.
- .3 Accuracy of Acoustic Calibrator: within  $\pm 0.3$ dB at 25°C.

**END OF SECTION**