SECTION 15893

HVAC FLEXIBLE DUCTWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions, Division 1, Specification Sections, and the Mechanical General Requirements Section 15050 apply to work of this Section, as if repeated herein.

1.02 DEFINITIONS

A. Ductwork sizes on Drawings state inside clear dimension.

1.03 REFERENCES

A. Fabricate ductwork in accordance with latest edition of SMACNA HVAC Duct Construction Standards and ASHRAE handbooks unless more stringently detailed.

B. Construct ductwork to conform to NFPA 90 A, NFPA 90 B, UL 181 Class 1, SBCC, ICBO AND BOCA.

C. Ductwork shall be seismically supported and braced per SMACNA "Guidelines of Seismic Restraints of Mechanical Systems and Plumbing Piping Systems."

1.04 SUBMITTALS

A. Submit in accordance with Division 1 and Section 15050.

B. Submit typical shop standards and/or SMACNA details including particulars such as joint details, and supporting methods prior to start of work.

C. Submit written report confirming ductwork has been fabricated and installed in accordance with SMACNA Standards.

D. Submit shop drawings of ductwork only when it is necessary to deviate from the intent of the design Drawings.
1.05  **FLOW DIAGRAMS**

A. Predicted upon Project magnitude, Construction Documents may include flow diagrams as a part of the working Drawings. These flow diagrams are not for the purpose of giving physical dimensions or locations but rather to make clear the interconnections, by the duct systems, of the various units of the process. If an item is shown on either the flow diagram for the Drawings, but not on both, it will be assumed that the contract has included such item in his estimate of the cost of the work and that he shall provide same.

**PART 2 - PRODUCTS**

2.01  **ACCEPTABLE MANUFACTURERS**

A. Insulated Flexible Duct:

1. General Flex Corp., SLR-25M
2. Thermaflex, MK-C
3. Or equal.

B. Uninsulated Flexible Duct:

1. General Flex Corp., AFG
2. Thermaflex, S-LD
3. Or equal.

2.02  **MATERIALS**

A. Insulated Flexible Duct:

1. Insulated flexible duct acoustically designed to provide high insertion loss characteristics. Published flexible duct acoustical data shall be obtained in accordance with Air Diffusion Council Flexible Air Duct Test FD72R1, paragraphs 3.2.1, Sound Attenuation; 3.2.2, Sound Generation; 3.2.3, Radiated Noise Reduction. Duct shall be rated for 4000 FPM velocity minimum.

2. Flexible ducts shall consist of an exterior reinforced laminated vapor barrier, 1-1/2” thick fiber glass insulation (K=.25 @ 75°) encapsulated spring steel wire helix and impervious, smooth, non-perforated interior vinyl liner. Individual lengths of flexible ducts shall contain factory fabricated steel connection collars.
B. Uninsulated Flexible Duct: Ducts shall consist of a two-ply laminate encapsulating a zinc-coated high carbon steel helix. Duct shall be rated for 4000 FPM velocity minimum.

C. Construction: In accordance with SMACNA flexible ductwork classification for -1" to 4" WG.

2.03 DUCTWORK APPLICATION

A. Insulated Flexible Ductwork: Use for supply air ductwork connections to air devices and inlet ductwork connections to terminal units.

B. Uninsulated Flexible Ductwork: Use for clean room supply air ductwork connections to air devices.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Clean ductwork as it is installed to remove dirt and dust. During installation, close duct openings and open ends with temporary covers to keep construction dust out of duct systems.

B. Construct ductwork with sufficient clearance around equipment to allow normal operating and maintenance activities of equipment.

C. At each point where ducts pass through partitions, seal joints around duct with noncombustible material.

D. Connect diffusers, troffer boots, registers, and grilles to low pressure ducts with 7'-0" maximum length of flexible duct.

E. Independently support terminal devices connected by flexible duct.

F. Attach flexible duct to collars having a minimum length of 2". Securely attach inner core to collar.

G. Insert collars into flexible duct minimum of 1" and secure flexible duct to collar using a worm drive draw band.

H. Securely attach insulation and vapor barrier to the collar.
I. Flexible ducts shall be supported at or near mid-length with 2” wide, 28 ga. steel hanger collar attached to the structure with an approved duct hanger. Installation shall minimize sharp radius turns or offsets. The maximum length will be seven feet and can be used at the terminal ends only, except that flexible ducts properly installed may be used to cross seismic joints without offsets.

J. To prevent tearing of vapor barrier, do not support entire weight of flexible duct on any one hanger during installation. Avoid contact of flexible duct with sharp edges of hanger material. Damage to vapor barrier may be repaired with system compatible tape. If internal core is penetrated, replace flexible duct or treat as a connection.

K. Factory-installed suspension systems integral to the flexible duct are and acceptable alternative hanging method when manufacturer's recommended procedures are followed.

L. Install ducts and supports in accordance with SMACNA Standards. Adequately attach hangers to the building structure. Refer to Section 15140.

M. Install air devices provided with ceiling-type fire dampers with sheet metal ductwork. Do not use flexible duct.

**END OF SECTION**