

## **DIVISION 15 - MECHANICAL**

### **Section 15840 - Ductwork**

#### **Introduction**

Ductwork Systems including:

METAL DUCTWORK, FLEXIBLE DUCTWORK, EXHAUST DUCTWORK.

#### **Part 1 - General**

- All exhaust ductwork within the building shall be under negative pressure. Exhaust ductwork connections to equipment shall allow for proper drainage flow. Exhaust ductwork can be manifolded only if multiple exhaust fans are used.
- Special applications of products other than those listed must be submitted to U of A for consideration.
- Restrict use of duct liner as per Section 15250 requirements.
- Design exhaust systems in accordance with ANSI/AIHA 29.5 latest edition.
- Ductwork downstream of air handling units shall be constructed in accordance with 100% effective duct length as per ASHRAE and *latest* SMACNA standards.
- Use single thickness turning vanes only *in ductwork up to 2" pressure class*. Install per SMACNA.
- Do not use turning vanes in reducing elbows.
- Utilize 45° branch duct entries with main duct size reduction downstream for medium and high velocity systems.
- Utilize 45° branch duct entries or full conical taps for low pressure ductwork. No Bellmouth, Flanged or Notch Spin-In connections permitted except at terminal/diffuser take-offs.
- No extractors allowed.
- Exhaust system designs shall conform to AIHA Industrial Ventilation manual.
- Design with 15° convergence and divergence preferred. Absolute maximum of 30° divergence or 45° convergence.
- *Use Pittsburg construction on longitudinal seams. Button punch snaplock construction is not acceptable.*

#### **Part 2 - Products**

- Duct Schedule
- Galvanized Steel shall be ASTM A 527, G90 of lock forming quality.
  - Heating & cooling supply and return, non-chemical exhausts – *minimum 24 gauge*.
- Stainless Steel shall be ASTM A 240, type 316
  - Spiral or welded for *fumehood* applications. *Fittings shall be continuously welded – liquid tight.*
  - All welded seams for perchloric applications

- Coated Galvanized Steel
  - Under special circumstances, with U of A permission, coated galvanized steel ducts may be used for manifolded general chemical exhaust plenums which are large enough to allow duct internal inspection and repair of coating.
- Flexible Ductwork
  - Ductwork to be constructed in accordance with NFPA 90A, 90B, UL181 Class 1.
  - High pressure application (over 2" static pressure) Thermaflex *M-KC*
  - Low pressure application (less than 2" static pressure) Thermaflex *M-KC*

### **Part 3 - Execution**

- Chemical exhaust ductwork to conform with ANSI/AIHA standard 29.5 - 1992
- Ductwork to be constructed per latest SMACNA HVAC Duct Construction Standards.
- High pressure flexible ductwork shall not be used for changes in direction.
- Low pressure flexible ductwork may only be used to accommodate a total of a 45° change in direction. Hard elbows shall be used at diffusers.
- *Flexible ductwork shall be secured utilizing steel draw-band clamp.*
- Maximum flexible ductwork lengths - 18" on high pressure systems, 48" on low pressure systems.
- Use center radius of 1.5 times duct width (minimum) on tees, bends, elbows.
- Use Hardcast AFG-1402 Foil-Grip tape or Hardcast DT-Tape with FTA-20 adhesive for indoor use, or RTA-50 adhesive for outdoor use, to seal all duct joints.
- Ductwork shall be stored in a clean location prior to installation. Openings shall be covered to prevent entry of dust, moisture and general construction dirt/debris. Plastic sheeting securely taped over open ends will be acceptable.
- Provide balancing dampers at all branch ducts.

### **End of Section 15840**