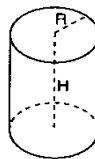
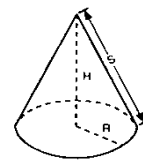
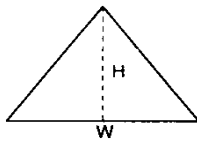


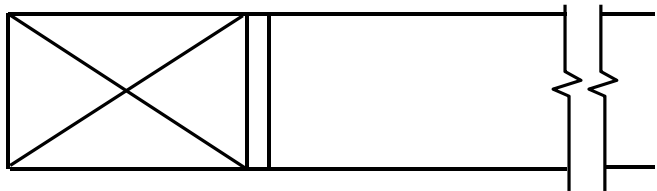


# Symbols & Formulas

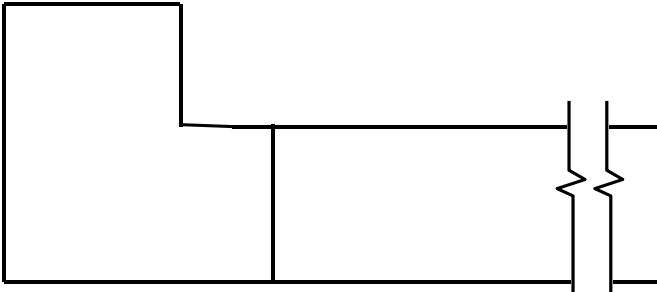
$$E=MC^2$$



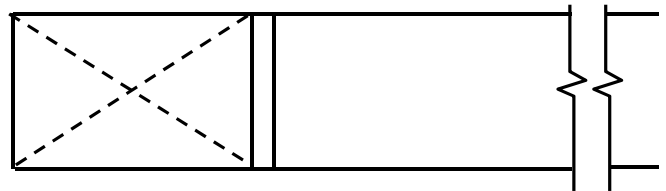
9865 WAYNE AVENUE • CINCINNATI, OHIO 45215  
PHONE (513) 733-5955 FAX (513) 733-8050



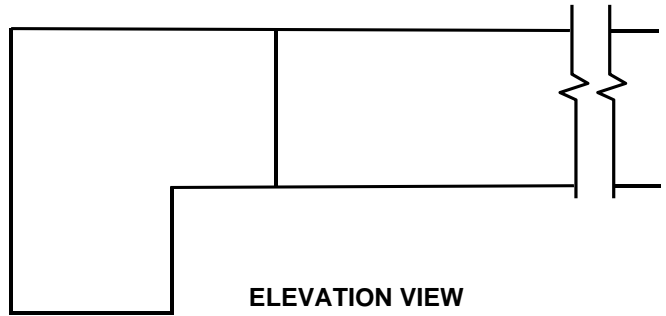
PLAN VIEW



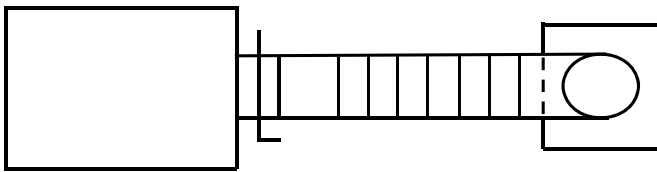
ELEVATION VIEW



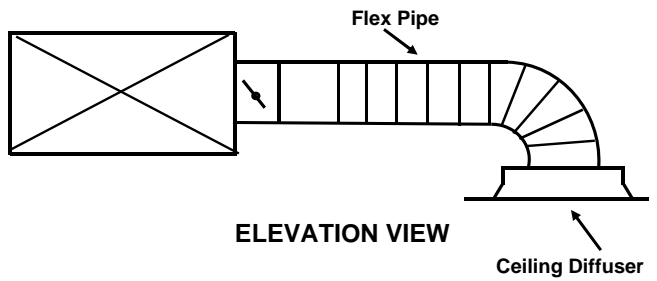
PLAN VIEW



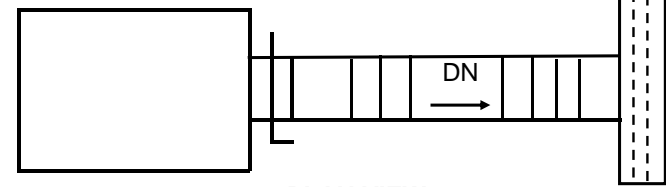
ELEVATION VIEW



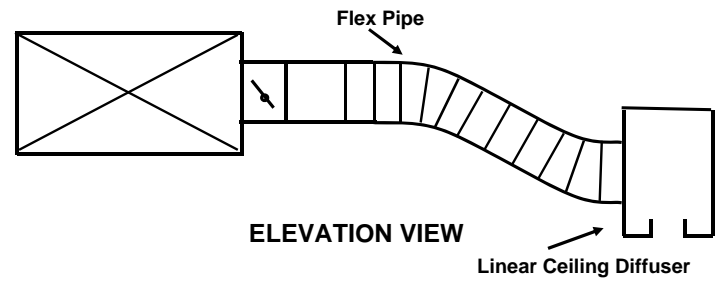
PLAN VIEW



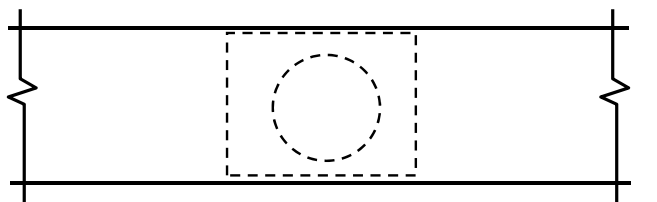
ELEVATION VIEW



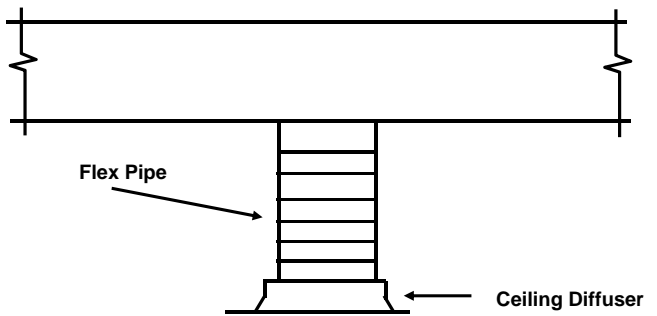
PLAN VIEW



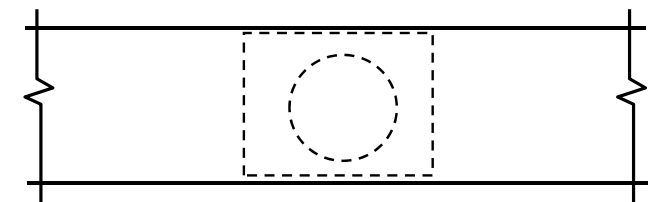
ELEVATION VIEW



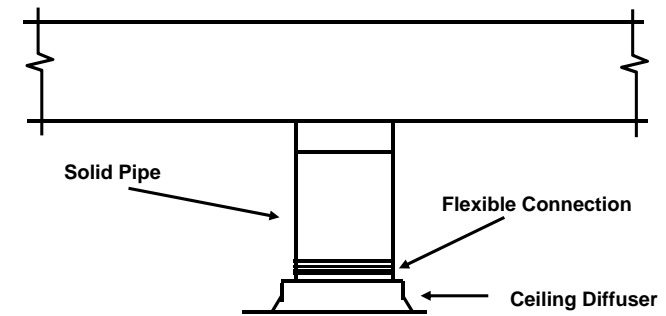
PLAN VIEW



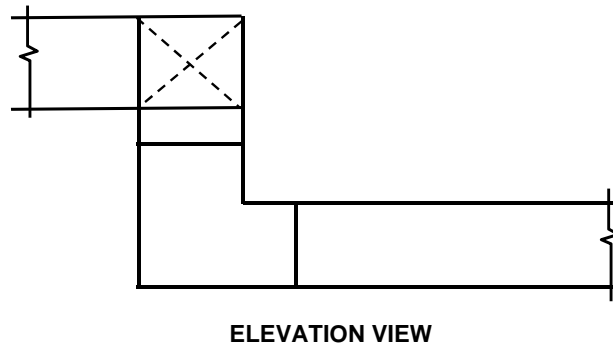
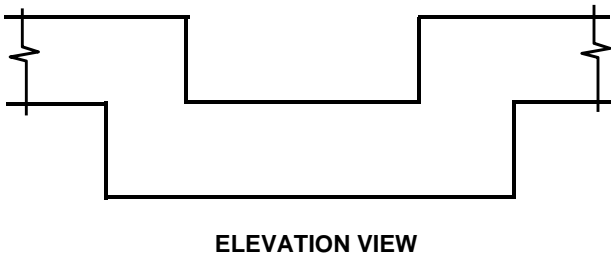
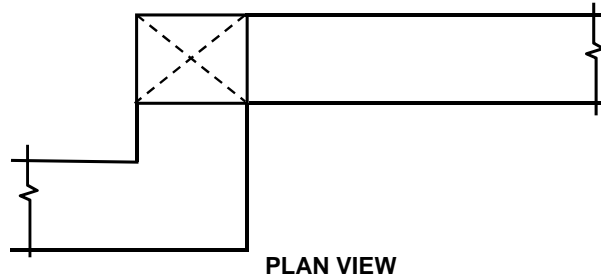
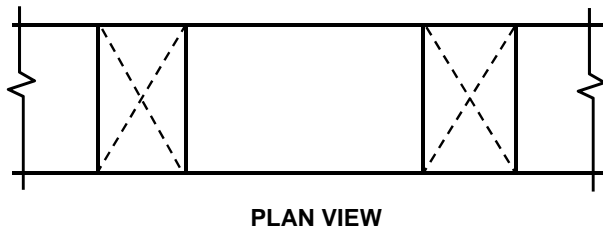
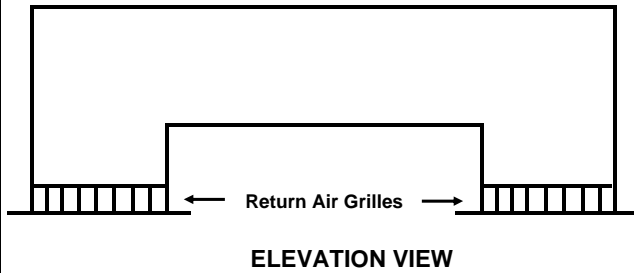
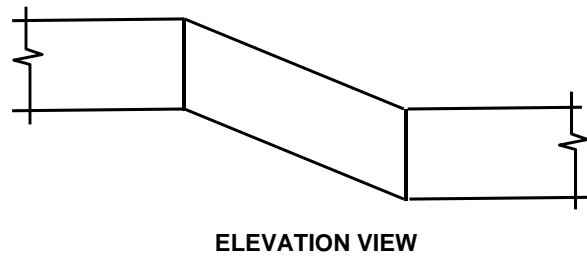
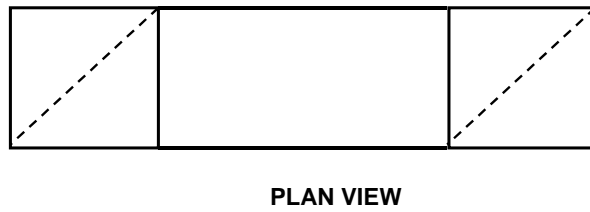
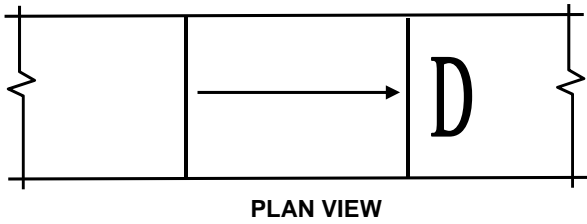
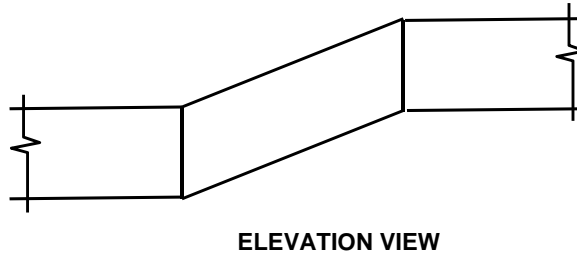
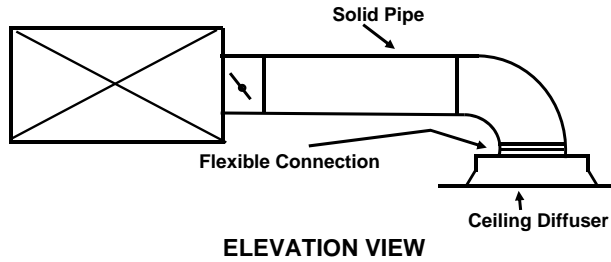
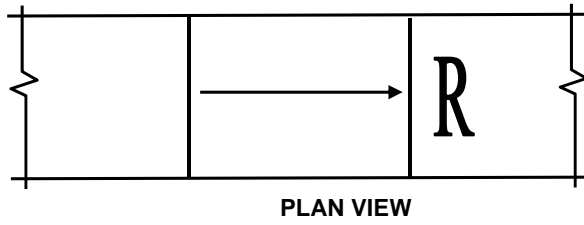
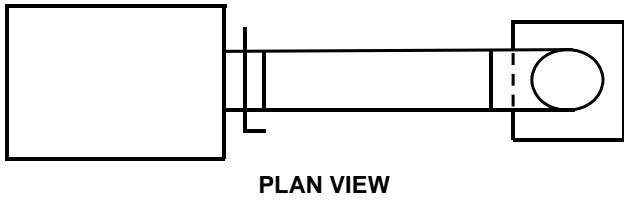
ELEVATION VIEW

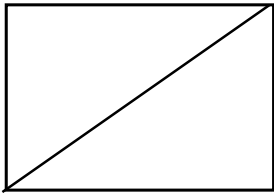


PLAN VIEW

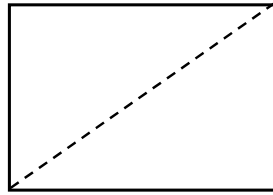


ELEVATION VIEW

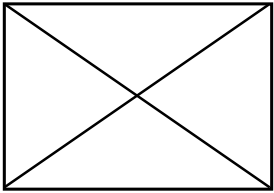




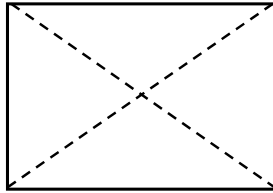
**RETURN OR EXHAUST  
AIR DUCT ( UP )**



**RETURN OR EXHAUST  
AIR DUCT ( DOWN )**



**SUPPLY DUCT ( UP )**

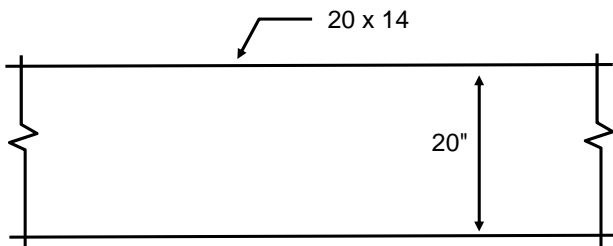


**SUPPLY DUCT ( DWN )**



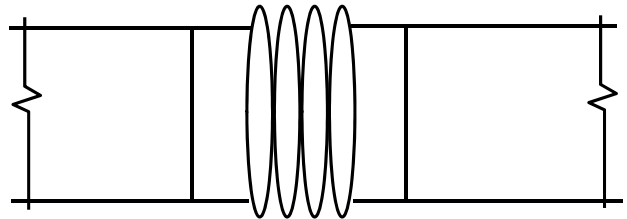
**LINER / INSULATION**

*DIMENSIONS SPECIFIED WILL BE CLEAR INTERNAL*

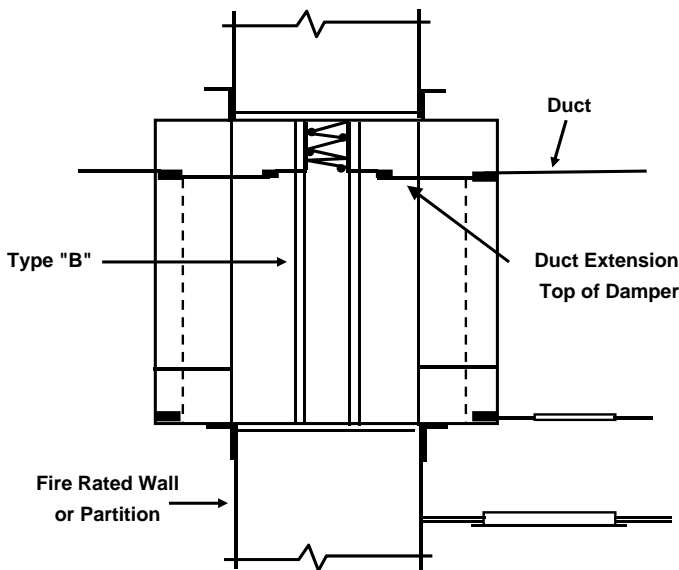


**DUCT SIZE**

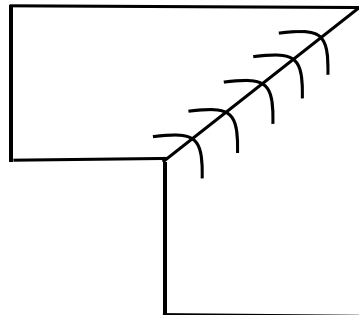
*FIRST NUMBER LISTED IS THE DIMENSION OF SIDE SHOWN.*



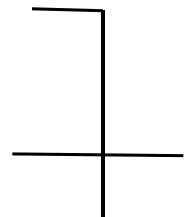
**FLEXIBLE CONNECTION**



**FIRE DAMPER TYPE "B"**

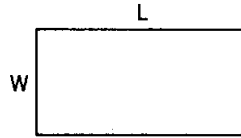


**ELBOW WITH VANES**



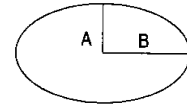
**VOLUME OR BALANCING DAMPER**

Rectangle  
 $A = W \times L$

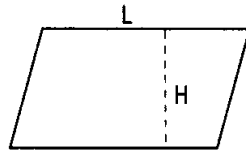


Ellipse  
 $A = 3.142 \times A \times B$

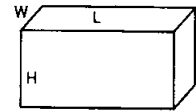
$$C = 6.283 \times \sqrt{\frac{A^2 + B^2}{2}}$$



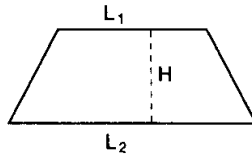
Parallelogram  
 $A = H \times L$



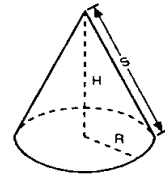
Rectangular solid  
 $A_1 = 2[W \times L + L \times H + H \times W]$   
 $V = W \times L \times H$



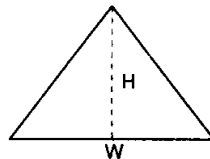
Trapezoid  
 $A = H \times \frac{L_1 + L_2}{2}$



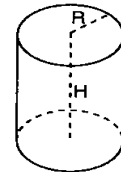
Cone  
 $A_1 = 3.142 \times R \times S + 3.142 \times R \times R$   
 $V = 1.047 \times R \times R \times H$



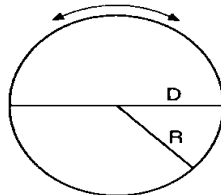
Triangle  
 $A = \frac{W \times H}{2}$



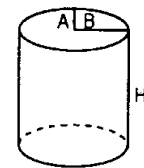
Cylinder  
 $A_1 = 6.283 \times R \times H + 6.283 \times R \times R$   
 $V = 3.142 \times R \times R \times H$



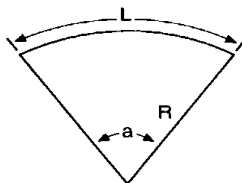
Circle  
 $A = 3.142 \times R \times R$   
 $C = 3.142 \times D$   
 $R = \frac{D}{2}$   
 $D = 2 \times R$



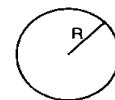
Elliptical Tanks  
 $V = 3.142 \times A \times B \times H$   
 $A_1 = 6.283 \times \sqrt{\frac{A^2 + B^2}{2}} \times H + 6.283 \times A \times B$



Sector of circle  
 $A = \frac{3.142 \times R \times R \times a}{360}$   
 $L = .01745 \times R \times a$   
 $a = \frac{L}{.01745 \times R}$   
 $R = \frac{L}{.01745 \times a}$



Sphere  
 $A_1 = 12.56 \times R \times R$   
 $V = 4.188 \times R \times R \times R$



For above containers:

Capacity in gallons =  $\frac{V}{231}$  when V is in cubic inches.  
Capacity in gallons =  $7.48 \times V$  when V is in cubic feet.