

# TRAPEZE BRACING

## Trapeze Assembly Bracing

- 1). Layout piping and/or conduit runs and determine number, size and location of items to be supported by the trapeze
- 2). Determine trapeze support spacing ( $L_T$ ). This is usually determined by the maximum support spacing of the smallest pipe or conduit on the trapeze.
- 3). Select trapeze supports.
  - a). Determine the total vertical load ( $T_L$ ) for each trapeze.
 
$$T_L = L_T \times W_T$$

$T_L$  = Total vertical load for each trapeze support (lbs.)

$L_T$  = Trapeze support spacing (ft.)

$W_T$  = Weight of all piping, cable tray, ductwork, conduit, etc. in lbs./ft. supported by the trapeze
  - b). Determine length of trapeze, making sure sufficient length is added to attach the all threaded rod and bracing attachments. All channel nuts shall be fully engaged within strut.  
( $1\frac{3}{16}$ " (20mm) minimum distance from edge of strut to center line of bolt.)
  - c). Select type of trapeze member (B22, B22AMIG, etc.) by selecting a member with loading greater than the total load ( $T_L$ ). See Table 4 on page 22 for strut loading data, noting that the trapeze beam span is the distance between the hanger rods. Also determine whether the applied load is uniform or concentrated, and follow notes on page 22 accordingly. Variations in pipe sizes (similar to concentrated load assembly on page 22) shall be treated as a concentrated load, where as same sized pipes evenly distributed across the span (similar to uniform load assembly on page 22) may be treated as a uniform load. Uniform loads on page 22 are converted to a concentrated load by a 50% reduction. Do not exceed the beam span length given by Table 4A on page 22, which limits overloading due to longitudinal seismic force.
  - d). Determine hanger rod size from Appendix 2 based on total weight ( $W_T$ ) and trapeze support spacing ( $L_T$ ). Rod sizes are given for trapeze supports with braces attached and unbraced trapezes.
  - e). Select a hanger rod connection to structure (pages 39 thru 56) that is greater than the hanger rod loads listed in Appendix 2.
- 4). Select transverse and longitudinal bracing.
  - a). Select bracing detail from Figures 9 - 11.
  - b). Determine spacing of transverse / longitudinal bracing from Appendix 2 based on total weight ( $W_t$ ) and the trapeze support span ( $L_t$ ). Note the corresponding structure attachment type (Roman numeral I - V) for each possible brace interval. When supporting multiple pipe sizes, do not exceed the maximum spacing for the smallest pipe as given in Appendix 1.  
Verify that the specific forces do not exceed the capacity of the pipe clamps on pages 70 & 71.  
Take care not to exceed maximum allowable brace beam spans as noted on page 11.  
Consult Table 4 and Table 4A, page 22, for trapeze design considerations.
  - c). Determine if rod stiffener is required (pages 57 & 58).
  - d). Engineer of record for a site specific project shall verify that the structure can support the connection loads in addition to all other loads.
- 5). Review the design and revise layout where loads exceed the limitations of the hanger rods, strut trapeze supports, or connection details.



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