

# RT-Tower Rules and Reasons

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**Rule:** Pipe Legs 6.63" diameter and smaller shall be 20 ft in Length.  
Pipe Legs 8.63" diameter and larger shall be 30 ft or 60 ft in Length.  
This rule can be broken if required. Material will need to be bought on the spot market.

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**Rule:** K-braced sections can be single or 2-bolt connections for connection of Main Horizontal and Main Diagonals to legs, but not as a combination of single & 2-bolt.

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**Rule:** Bolt spacing for all 2-bolt connections is 2.00".

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**Rule:** 2-bolt connections must be 5/8" bolts.

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**Rule:** Horizontal girts for sections RTS02, RTS04, RTS06, RTT04, & RTT06

- 1/2" bolt = Use L1.50 x .19 for RTS02, RTS04, RTT04, & RTT06
- 1/2" & 5/8" bolts = Use L1.75 x .19 for RTS06

**Reason:** This applies to Top Sections and Transition Sections

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**Rule:** Connector bolts for back-to-back angles shall be pretensioned from the clip throughout the angle.

**Reason:** Cost to ROHN is the same for a pretensioned bolt assembly or for buying everything separately. Required pretensioning of connector bolts means bolts are reduced by approximately 2/3rds.

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**Rule:** All bolts within a section shall be the same diameter. (Excluding flange bolts – plan braces will be 1/2 Diameter if section is 1/2", will be 5/8" if section is 5/8" or 3/4").

**Reason:** The cost savings of using smaller bolts is offset but requiring to have angles run through machine for each hole diameter.

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**Rule:** When the force in a brace exceeds 45 kips, and then an investigation of clip must be performed. This investigation will determine if plate clips are required or if standard clips are acceptable.

**Reason:** Through testing, it was determined that this was the maximum capacity of the formed clip. MORE EXPLANATION of 45 KIPS.

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**Rule:** In transition sections from straight to taper bevels are on the bottom of the straight section.

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**Rule:** Step Bolts begin at... on one leg for all other sections that are not below.

- 4-Bay sections below RTT12 will have 3-step legs
- 3-Bay sections below RTT06 will have 3-step legs
- 2-Bay sections all have 3-step legs

**Rule:** Any and all plates shall be specified as A572 GR50.

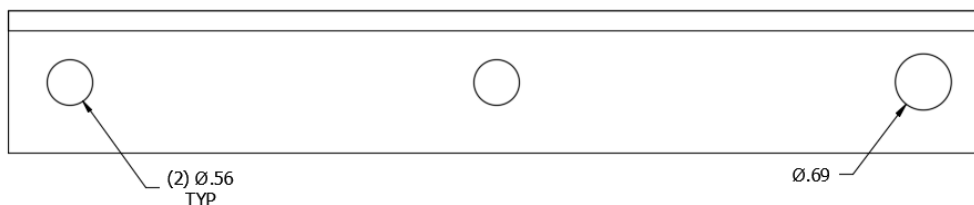
**Rule:** Any and all angles should be specified as A529 GR50.

**Rule:** Any and All pipe should be specified as A500 gr. C 50KSI

**Rule:** The Following note should be added to all Section assemblies for back-to-back angles

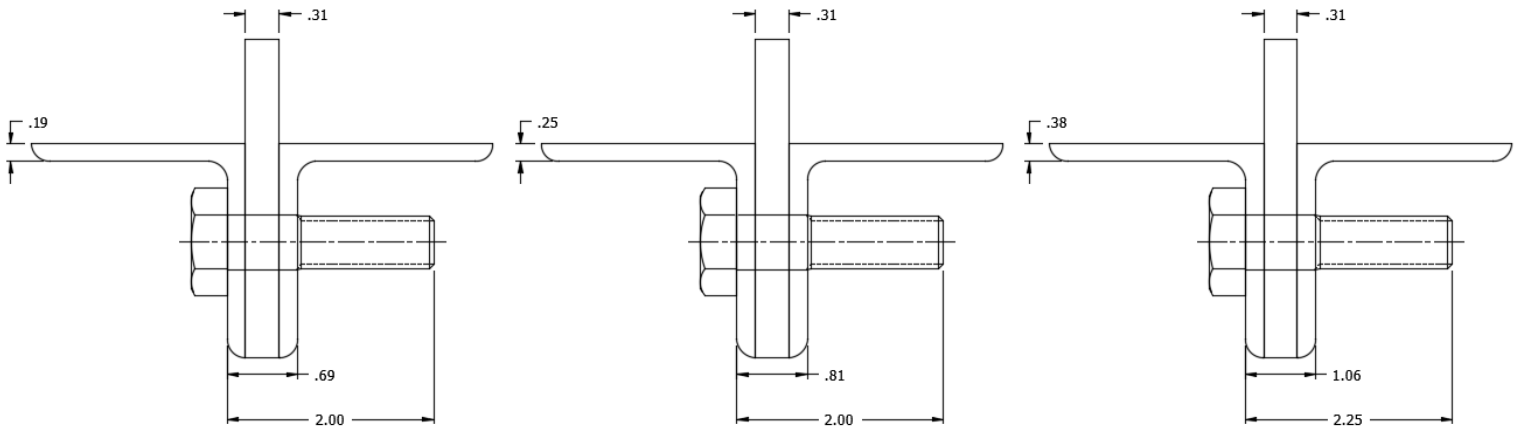
**Note:** All bolt assemblies for back-to-back angles shall be pretensioned by nut rotation from the snug-tight condition in accordance with AISC, 1/3 turn for bolt lengths up to 4 times their diameter and 1/2 turn for longer bolts.

- Edge Distance
    - Single Braces
      - 1/2" Diameter = 1.25
      - 5/8" Diameter = 1.50
      - 3/4" Diameter = 1.50
    - Plan Braces
      - 0.75 for 1/2" bolt
      - 1.00 for 5/8" bolt
    - 2-bolt connections
      - 1.13
- } See Page 3,  
For clarity
- Individual brace clip plates to be used on STR to TAP in 6 to 8 or bigger sections with STR to TAP transitions. Smaller sections will not go across joints.
  - All redundant braces use a 4.50" separation.
  - Clipping of angle should only be clipped when necessary.
    - 1/2" off heel & 60° for most & all horizontal mounted to inside of clip
    - 72° for most any back-to-back diagonal.
    - All outstanding braces shall have no clips unless required.
  - All plan braces will be required for any K-braced sections or panel.
  - When bolt size changes across joint for example, 1/2-5/8. The brace will have (2) different hole sizes.



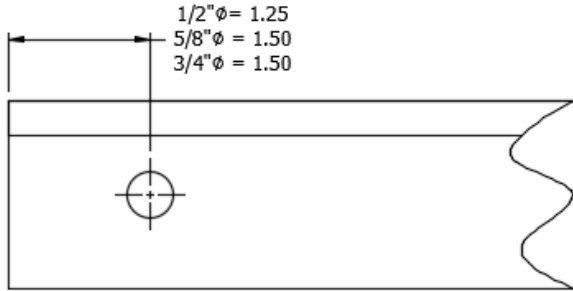
- Ringfills
  - At Center hole of braces for sections 2 & 4 tapered only. (Use standard round Ringfills see B770314)
  - Special rectangular plate (5/16" thick) with hole for back-to-back braces & ease of erecting & bolting braces.
- When & where to use plate clips Vs formed clips
  - STR/TAP – Top of TAP (ref: transition 6 to 8, 8 to 10, etc.)
  - Base sections

- Future issue: at what size do we switch entirely to plate clips all going to center line of leg (TBD)
- Clip Spacing Rules
  - Starts at top to 2<sup>nd</sup> clip
  - 6", 9", 12", 15", etc. rules on clip to flange spacing per section.
  - Formed clips
    - 1/4" thick for single 1/2" & 5/8" only.
    - 3/8" thick for (1) 3/4" & (2) 5/8".
- Heavy face climbing ladders will "not" work on RT02 or RT04 sections
- 8-hole waveguide ladder will "not work on RS02 or RT04.
- Stitch Bolts
  - 66" maximum between stitch bolts.
  - See RT Design for actual stitch locations.
  - YJ001 for all back-to-back stitch bolt locations.
  - No redundant shall be less than 1/4" thick.
  - Pre-tensioned bolts throughout all stitch bolt locations.
  - Stitch bolts in plan braces.
    - Braces may be 3/16" thick.
    - Use 5/16" spacers (YJ001).
  - Bolt sizes used for stitch bolts
    - 5/8" bolt
      - For B-B 3/16" thick braces with 5/16" spacer use a 5/8 x 2
      - For B-B 1/4" thick braces with 5/16" spacer use a 5/8 x 2
      - For B-B 3/8" thick braces with 5/16" spacer use a 5/8 x 2-1/4

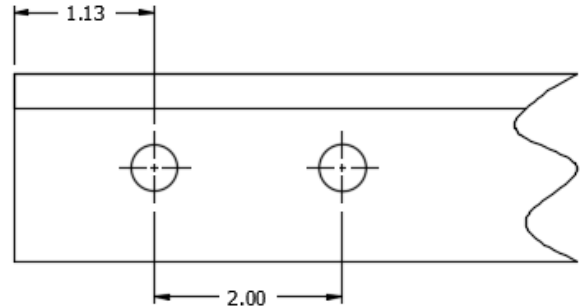


- RT Braces (Unequal Angles)
  - Main Horizontal – Long Leg Vertical
  - Main Diagonal – Long Leg Out
  - Plan – Short leg back-to-back, long legs vertical
  - Use the same guideline for single unequal angles, unless told otherwise.

**Main, Redundant & Back-to-back Angles**  
(End Distances)



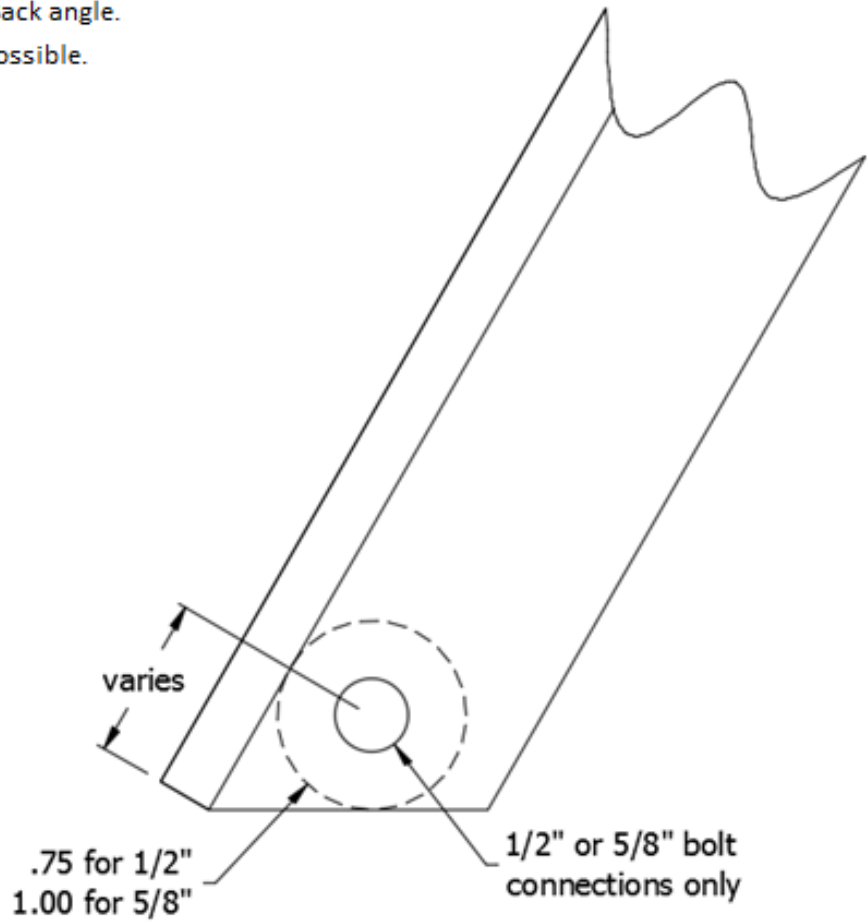
**Single L's**



**Single or Back-to-Back L's**

**Plan Braces**

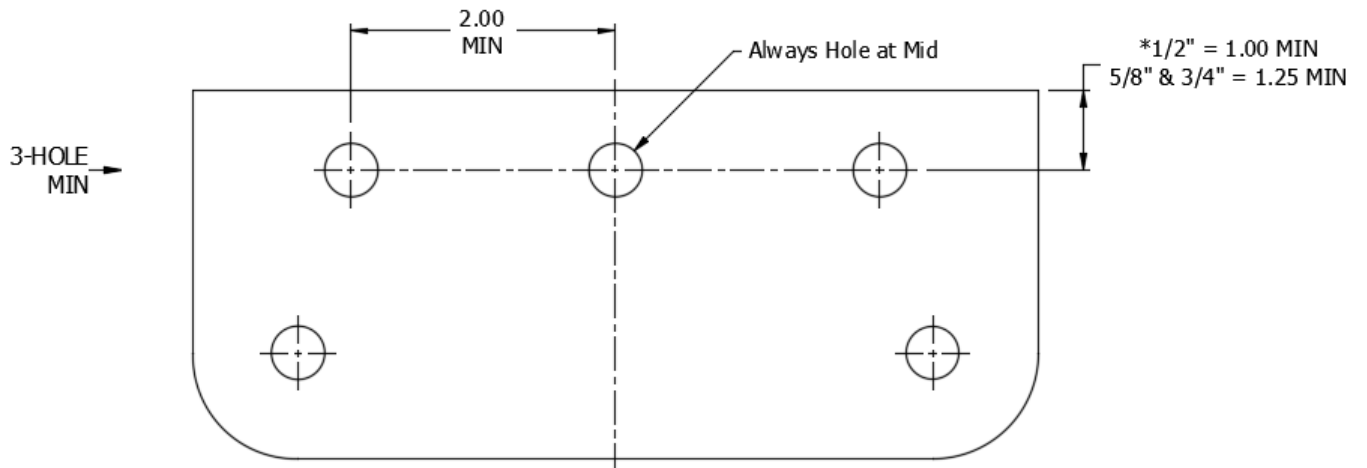
- May be single or Back-to-Back angle.
- Minimize Clipping when possible.



Note: This is just a guide on how the center plate criteria was determined, reference only

**Center plate: "Single" Bolt Connection**

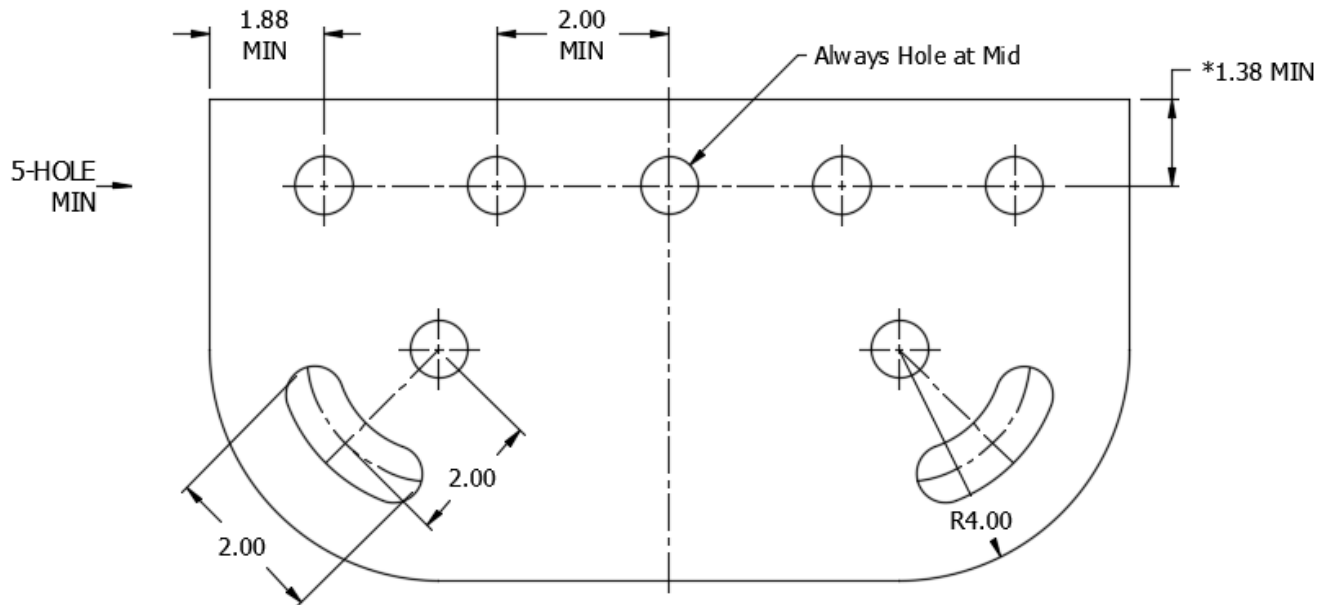
[1/2", 5/8" or 3/4"φ]



\*Shown as Min. Should be  $\geq$  main horizontal gauge  
Mat'l: 1/4" for 1/2" & 5/8"φ  
3/8" for 3/4"φ

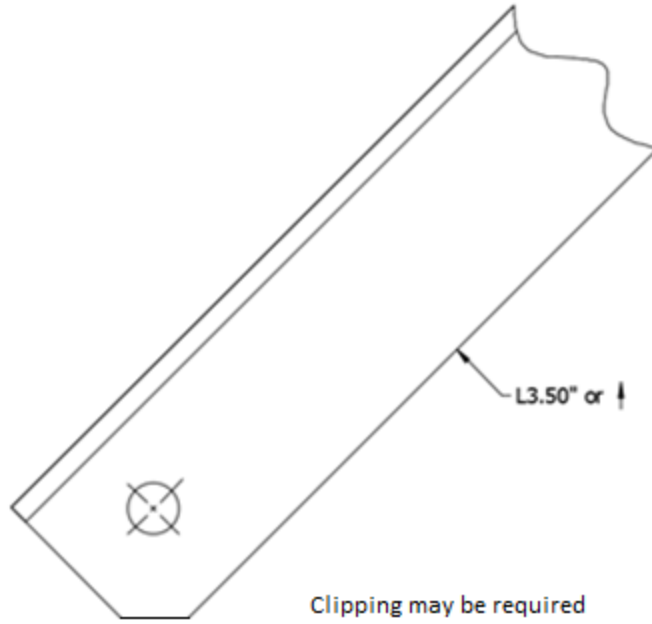
**Center plate: "Back-to-Back" Bolt Connection**

[(2) 5/8"φ Only]



\*Shown as Min. Should be  $\geq$  main horizontal gauge  
Mat'l: 3/8"

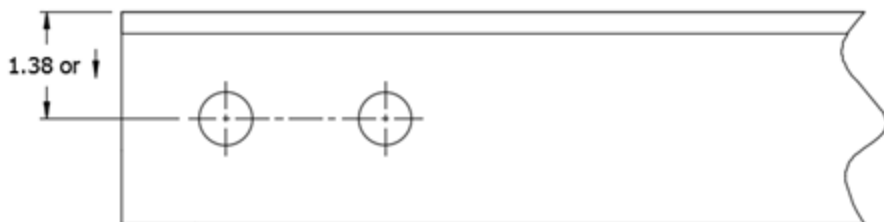
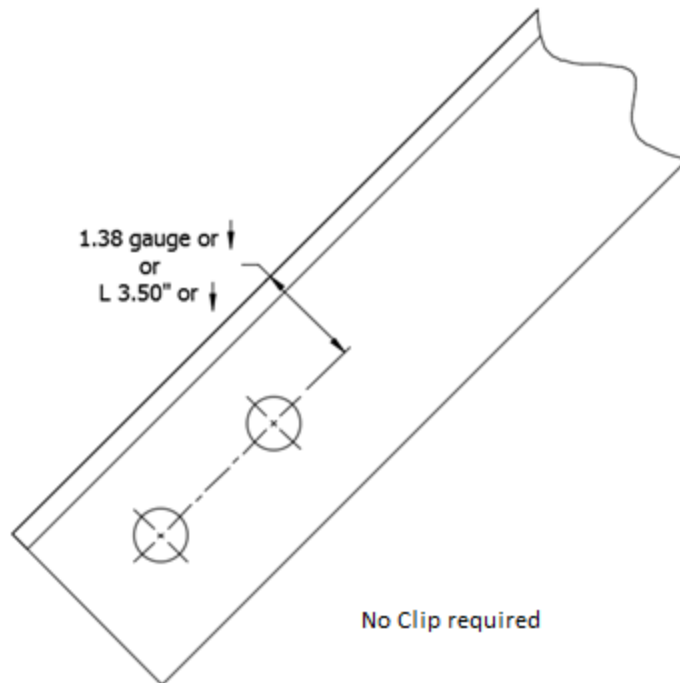
**Single Bolt**

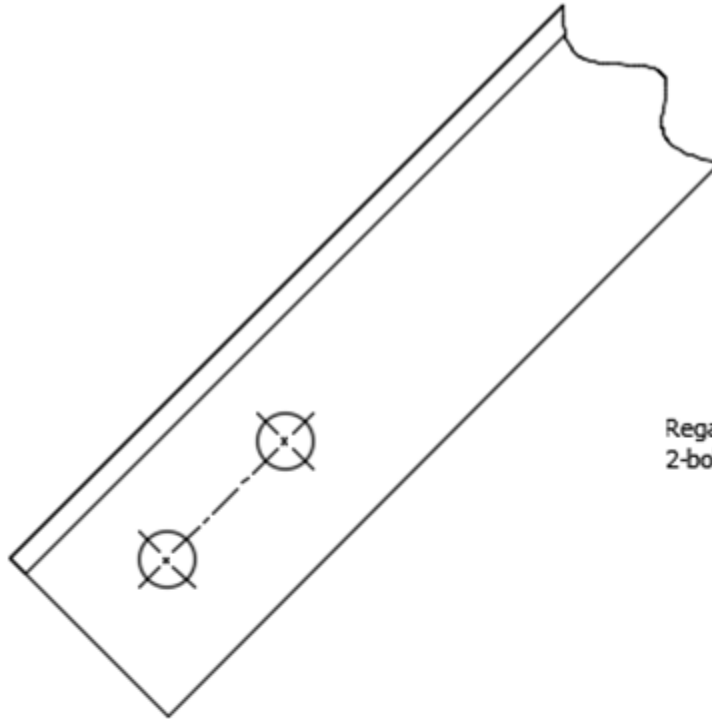


Note: Clipping shown is a guide only. User to determine appropriate clip when required.



**Back-to-Back**

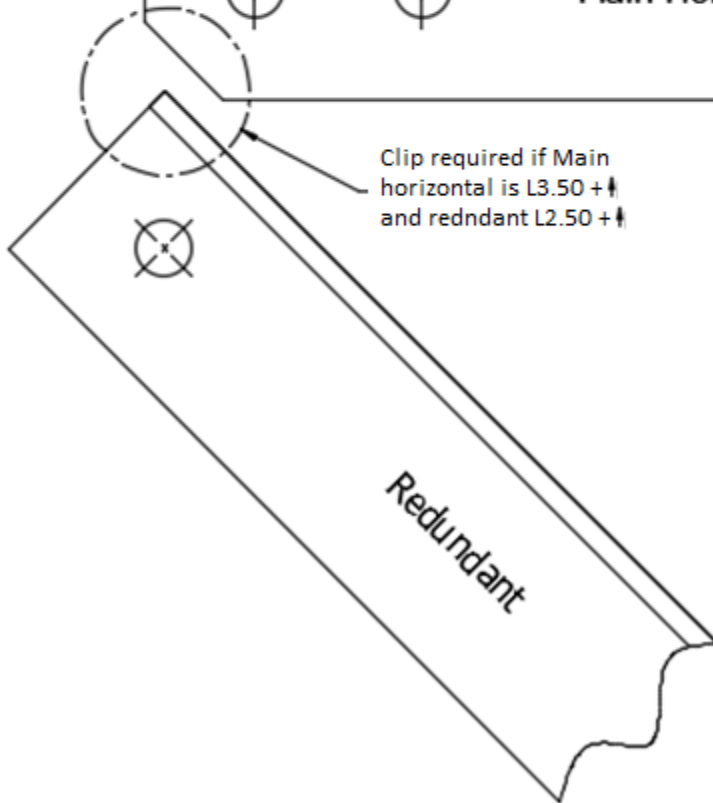




Regardless if one or  
2-bolt connection



Main Horiz

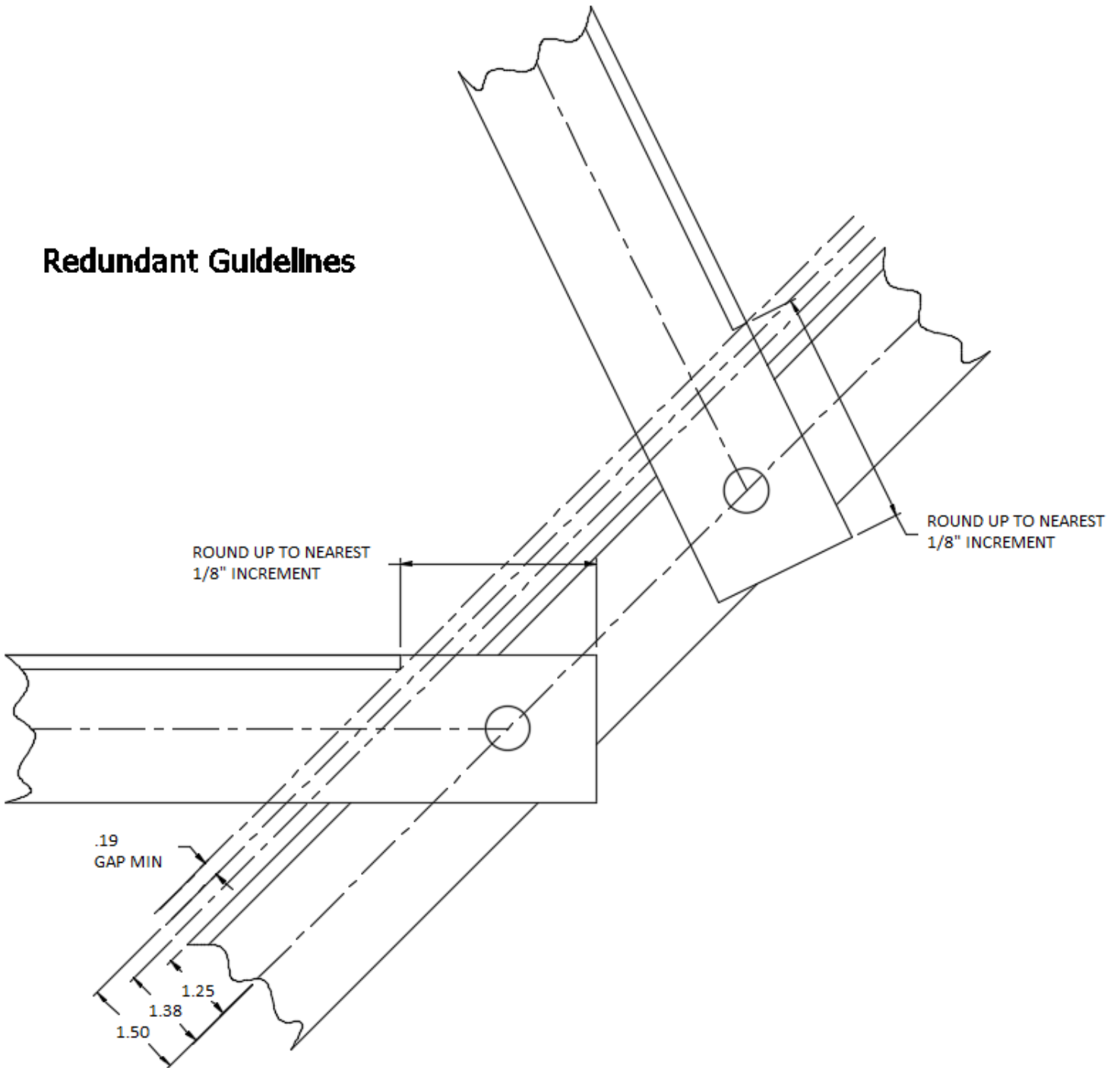


Clip required if Main  
horizontal is  $L3.50 + \updownarrow$   
and redndant  $L2.50 + \updownarrow$

Redundant

Note: Clipping shown is  
a guide only. User to  
determine appropriate  
clip when required.

# Redundant Guidelines





Base angle, when to clip

