

# Tech Bulletin *Roof Joist or Roof Truss to Top Plate or Stud Connection*



## Intro:

The International Residential Code (IRC R802.10.5) requires minimum fastening for roof joists and roof trusses connected to the top plates of walls to resist wind uplift.

Common design wind loads on roof joists or roof trusses to top plate connections can be found in the AF & PA Wood Frame Construction Manual, High Wind Zone Exposure B, Wall Connection at Load Bearing Walls.

## General Notes:

1. The values in Table 1 can be used by a licensed design professional to determine suitability of this fastener in a truss or roof joist to top plates wall connection.
2. Metal plate truss connectors must be able to transfer wind forces on the truss top chord. This includes components for uplift and shear see figure 1.
3. Double top plate assembly must be designed as a build-up beam spanning between supports for detail C.
4. A design professional should always be consulted for the sizing and specification of framing members and connection designs in accordance with local building codes and ordinances. It is the responsibility of the licensed design professional to calculate the required design uplift and shear load at each connection.
5. This bulletin does not consider lateral forces that may result from an earthquake.
6. Values are based on ICC-ES ESR-2442 , and independent testing
7. A standard wind load duration factor is applied to these values per NDS Table 2.3.2 Any other applicable NDS adjustment factors are at the discretion of a design professional.
8. Values assume that the fasteners are properly installed as shown in Figure 1, detail A, B or C of this bulletin

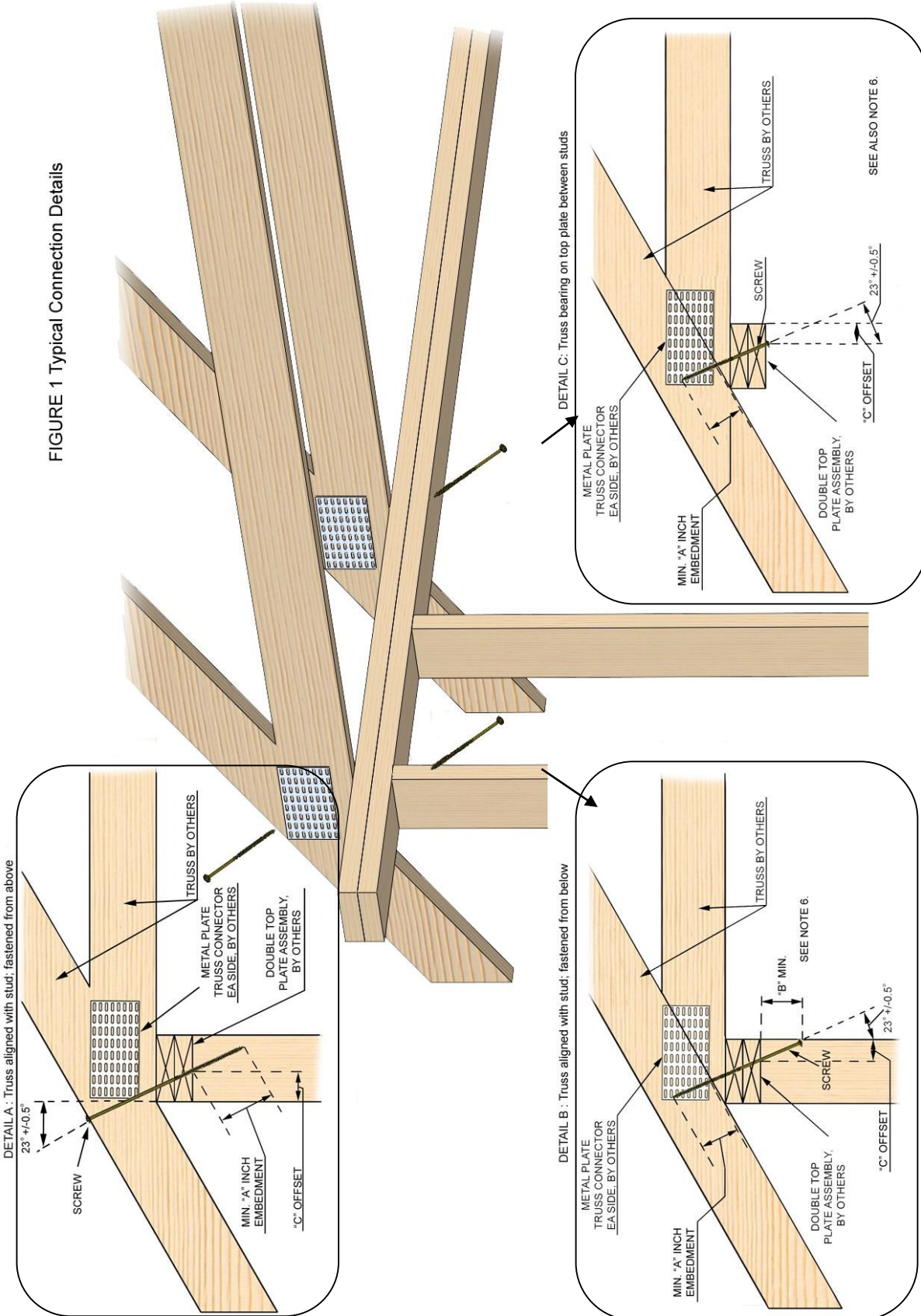
Table 1 **Allowable Design Loads for Roof Joist or Roof Truss to Top Plate Connections**

Load Type	Screw Type	Wood Species			
		SP (Southern Pine)	DFL (Douglas Fir Larch)	HF (Hem Fir)	SPF (Spruce Pine Fir)
Allowable Uplift in lbs	Ø3/8 RSS	1230	1017	752	717
Allowable Shear / Lateral in lbs		528	480	409	393
Allowable Uplift in lbs	# 12 R4	873	722	534	509
Allowable Shear / Lateral in lbs		352	322	280	273
Allowable Uplift in lbs	Ø1/4 LPS/RSS	562	465	344	328
Allowable Shear / Lateral in lbs		242	221	192	188

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FIGURE 1 Typical Connection Details



Fasteners	Embedment "A"	Offset "B"	Offset "C"
Ø 3/8 RSS	3"	5"	1" 1/2 MIN to 2" MAX
Ø 1/4 LPS	3"	5"	1" MIN to 2" 1/2 MAX
#12 R4	3"	5"	1" MIN to 2" 1/2 MAX

- Note:**
1. Use screw listed in table 1 with proper length.
  2. Install the screw from the top through the center of the truss @ a 23° +/- 0.5° angle the double top plate assembly into the stud (DETAIL A). **OR**
  3. Install the screw from the underside of the top plate assembly @ a 23° +/- 0.5° angle into the center of the truss (DETAIL B and C).
  4. The screw must be installed flush with the wood surface.
  5. Roof joist connections to top plates are similar, but not shown for brevity.
  6. The double top plate shall be adequately designed to transfer uplift and shear forces to the wall studs, a header or other element not shown to adequately complete the load path. A complete load path design is beyond the scope of this bulletin. A registered design Professional should be consulted to design the load path.



Flyer effective until Oct. 31.2015  
Updates should be obtained after this date.