

# Roof Truss/Joist to Top Plate

## Structural Screws

# Tech Bulletin

## Connection Details

### USES/FASTENER INFO:

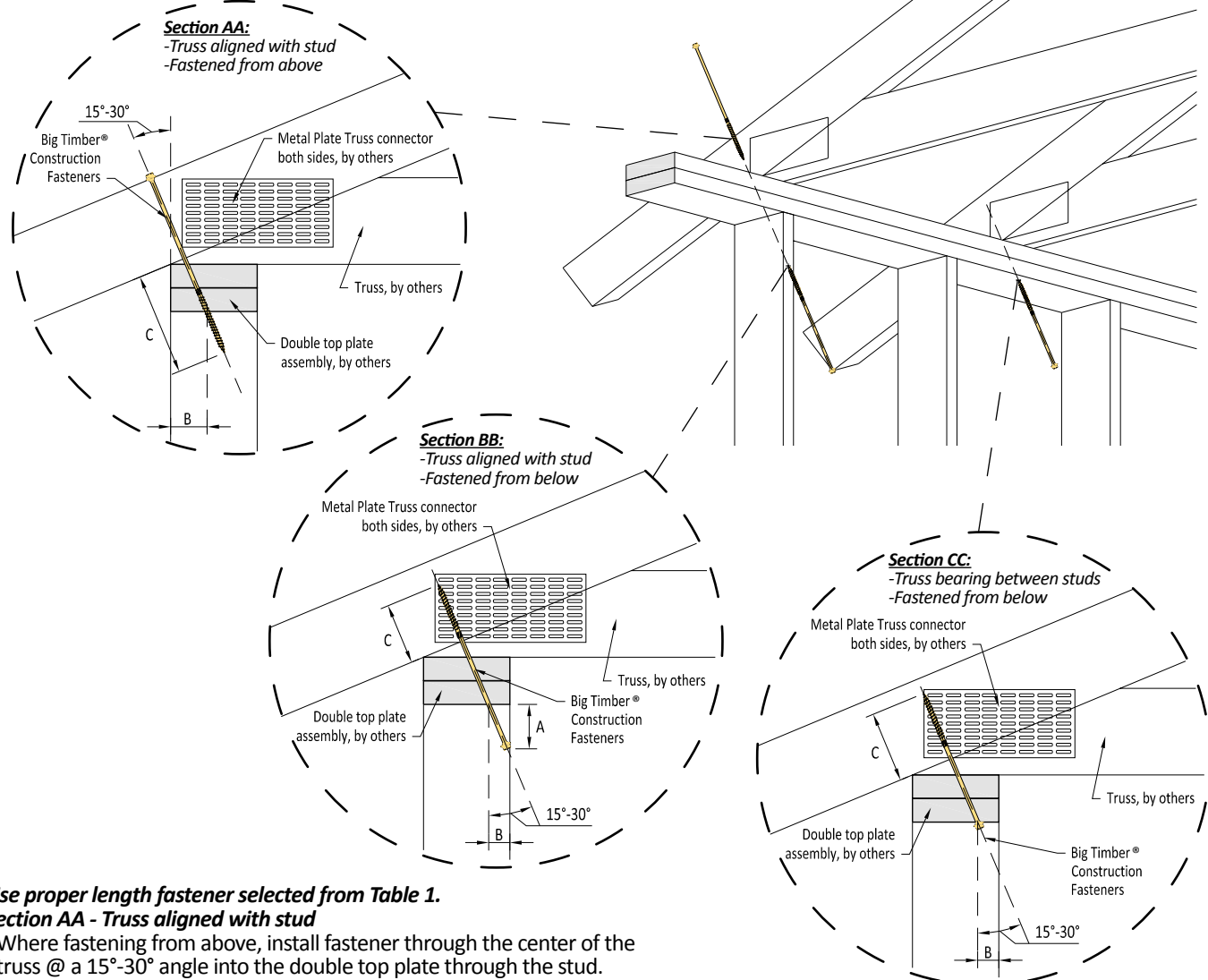
- The Big Timber® screws are used in Structural wood-to-wood connections.

Big Timber® screws can increase the strength and integrity of a connection by providing a more secure, durable joining of the connecting members. The Big Timber® screw threads, knurl, and proprietary Triple Ceramic Coating have features which tighten efficiently and provide more resistance to weather related corrosion.

The Big Timber® screws comply with, or are suitable alternatives to what is specified in, the 2015/2012/2009 International Building Code (IBC) and 2015/2012/2009 International Residential Code (IRC), 2016 California Building Code (CBC) and the 2016 California Residential Code (CRC); also meet additional requirements of the CBC Chapters 16, 16A, 17, 17A, and 23, as applicable. 2014 Florida Building Code - Building and the 2014 Florida Building Code - Residential; also in compliance with the High-Velocity Hurricane Zone provisions of each.

### FASTENING PATTERN:

FIGURE 1



- Use proper length fastener selected from Table 1.
- Section AA - Truss aligned with stud**  
Where fastening from above, install fastener through the center of the truss @ a 15°-30° angle into the double top plate through the stud.
- Section BB - Truss aligned with stud**  
Where fastening from below, install fastener through the center of the truss @ a 15°-30° angle into the double top plate through the stud.
- Section CC - Truss bearing on top plate between studs**  
Where fastening from below, install fastener through the center of the truss @ a 15°-30° angle into the double top plate.
- Fastener washer head must be brought flush with the wood surface.
- Roof Joist connections to top plates similar, not shown.

Consult with a registered design professional to determine project specific loads and assure adequate transfer of uplift/shear forces to the wall studs or other elements as required.

Fastener Designation	"A" Offset Min. (inches)	"B" Offset Min/Max (inches)	"C" Min. Embedment (inches)
CTX #14	4 1/8"	1 3/4" to 2 1/2"	1 1/2"
CTX #15	4 3/8"	1 3/8" to 2 5/8"	2"
CTX #17	5 1/4"	2 1/4" to 2 3/4"	3 1/2"
BL "Black Log"	4 1/8"	1 3/4" tp 2 1/2"	2"
GL "Grey Log"	4 3/4"	2" to 2 1/2"	3"

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53 N. 15th St.  
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Tested Fasteners "CTX"  
as reported in ICC-ES Report ESR-3534  
www.icc-es.org  
"Black Log"  
"Gray Log"



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### FASTENING DESIGN LOADS:

Table 1

The Big Timber® Construction Fastener allowable design load values listed in *Table 1* can be used by a **licensed design professional** to determine suitability for each fastener in a Roof Truss/Joist to Top Plate wall connection.

- **The 2009-2015 International Building Code (IBC) and International Residential Code (IRC) require minimum fastening for roof trusses/joists connected to the top plates of walls to resist wind uplift.** Pull-out values have been tested and the results published by Western Builders Supply in the ICC-ES Report ESR-3534. They can be compared to the uplift resistance requirements in the code for a specific application.
- For project specific uplift and/or lateral design loads that have been provided by a **design professional**, the allowable loads in *Table 1* can be used as a guide to compare values and make sure they are met or exceeded by the intended use.
- In regions where wind speeds equal or exceed 100 MPH, **design loads determined by a design professional** referencing IRC Figure 301.2(4) can be compared to the values in *Table 1*. With respect to wind design, the Big Timber® Construction Fasteners can increase the strength and integrity of a connection by providing a more secure, durable joining of the connection members.
- A standard wind load duration factor has been applied to these values per National Design Specification for wood construction (NDS) Table 2.3.3. Other applicable NDS adjustment factors are at the **discretion of a design professional**.
- *Table 1* values listed for each of the Big Timber® Construction Fasteners are based on ICC-ES Report ESR-3534. It is the responsibility of a **licensed design professional** to calculate the required design uplift and shear load at each connection.
- This bulletin does not consider lateral forces that may result from an earthquake.
- The values from *Table 1* assume that the fasteners are properly installed per the instructions on this bulletin.

Allowable Design Loads for Roof Truss/Joist to Top Plate Connection							
Fastener Designation		Load Type (lbs)	Wood Species				
			Spruce-Pine Fir	Hem Fir	Douglas Fir	Southern Pine	
CTX #14	#14x5"	Uplift	546	601	663	780	
		Lateral/Shear	637	701	774	910	
	#14x6"	Uplift	546	601	663	780	
		Lateral/Shear	637	701	774	910	
CTX #15	#15x5"	Uplift	641	705	778	915	
		Lateral/Shear	840	924	1020	1200	
	#15x6"	Uplift	693	842	842	990	
		Lateral/Shear	903	993	247	1290	
CTX #17	#17x7"	Uplift	1274	1401	1547	1820	
		Lateral/Shear	924	1016	1122	1320	
	#17x8"	Uplift	1274	1401	1547	1820	
		Lateral/Shear	928	1020	1126	1325	
	#17x10"	Uplift	1274	1401	1547	1820	
		Lateral/Shear	956	1051	1160	1365	
		#17x12"	Uplift	1274	910	1547	1820
			Lateral/Shear	956	1051	1160	1365
BL "Black Log"	14x6"	Uplift	546	601	663	780	
		Lateral/Shear	155	855	944	1110	
	14x8"	Uplift	546	601	663	780	
		Lateral/Shear	777	855	944	1110	
	14x10"	Uplift	546	601	663	780	
		Lateral/Shear	777	855	944	1110	
	14x12"	Uplift	546	601	663	780	
		Lateral/Shear	777	855	944	1110	
	14x14"	Uplift	546	601	663	780	
		Lateral/Shear	777	855	944	1110	
GL "Grey Log"	17x5"	Uplift	595	655	723	850	
		Lateral/Shear	840	924	1020	1200	
	17x7"	Uplift	595	655	723	850	
		Lateral/Shear	1344	1478	1632	1920	
	17x9"	Uplift	595	655	723	850	
		Lateral/Shear	1344	1478	1632	1920	
	17x11"	Uplift	595	655	723	850	
		Lateral/Shear	1645	1806	1998	2350	

### GENERAL NOTES:

- Select screw size and length with shear and pull out strength capable of withstanding severe loads.
- **Comply with all applicable building codes.**
- Use of all necessary **engineering, architectural and technical support services** to assure truss joint integrity for the load service life intended.
- Use truss members in good condition, free from adverse material conditions such as cracks, warping or other variances which would inhibit proper joining and load carrying.
- Assure screw finish and condition are free from damage during handling and installation.
- Use tools and driver bits that are in good condition and fit properly.
- Take all necessary safety precautions and use good safety practices during installation.
- Screw point should engage the truss member surface squarely and be driven in straight.
- Avoid bending during installation.
- Screw head should seat properly with even clamp load distribution.
- Truss member moisture content influences joint performance.
- Use joint members which meet building code and structural performance requirements.
- Periodic inspection and maintenance as required should be performed.

Always consult a registered design professional for critical assembly/fastening requirements and follow all local building codes.

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