

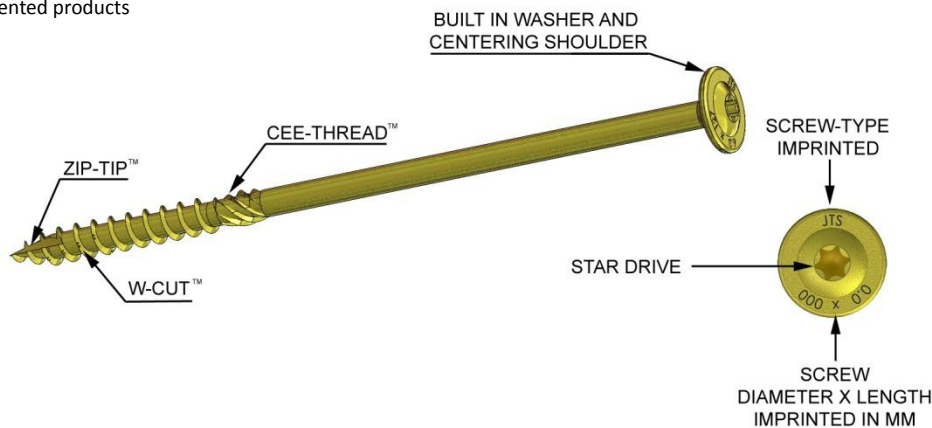
Connections for Side-Loaded Beams

Intro:

GRK's Joist and Truss Screw is the ideal fastener for heavy duty roof and floor construction. GRK's RSS™ Rugged Structural Screw is made of specially hardened steel to provide you with high tensile, torque and shear strength. The ZIP-TIP™ bites instantly into the beam face and the W-CUT™ leading threads, in combination with the sharp thread profile and reduced thread root diameter, reduce the splitting effect and usually eliminate the need for pre drilling. RSS™ JTS screws which are 5" and longer have a six threaded CEE thread that enlarges the screw hole for the non-threaded portion of the fastener, allowing the wood to settle easily and increasing the screw's drawing strength. The CEE thread also reduces the likelihood of splitting the wood and reduces the friction on the screw shank which can result in lowering the required driving torque. Our dome head with built-in shield (washer type head) has no sharp edges such as on conventional lag screws. The added shoulder (nominal diameter) underneath the washer has the ability to center the RSS™ screw in pre-drilled hardware such as brackets and connector plates.

Product info:

- Material : Casehardened carbon steel
- Finish: Climatek™ coated
- Identification: Screw type , Diameter and Length imprinted for easy inspection after installation
- Screw Sizes and Dimensions : Provided in ICC - ES #2442
- Patented products



Installation:

- Install screw with a standard low speed/ high torque drill with matched star drive bit.
- Allow underside of washer to pull plies firmly together. Do not countersink - this may damage the beam and reduces the connection capacity.
- Typically no pre-drilling required.

General Notes:

1. Multi beam connection capacities are based on the National Design Specification (NDS) for wood construction, 2005 edition or GRK-Fasteners ICC-ES #2442 report or third party independent testing.
2. Multi beam connections for manufactured structural composite lumber (MFR) are based on a specific gravity (G) of 0.50.
3. Capacities are designed @ 100% stress level. Adjustments in stress level for duration of load may apply where permissible by code.
4. A design professional should be consulted when designing multi-ply beams or connections not shown in this bulletin.
5. Nominal design values are for connections in wood seasoned to a moisture content of 19% or less and used under continuously dry conditions (refer NDS 10.3.3)
6. Multi-ply beams are assumed to bear fully on supports of the same width or wider than the total width of the beam.
7. Single side-loaded beams and beams with unequal side loads applied on opposite faces may undergo torsion when loaded. A design professional should be consulted to consider the affects of torsion on multi-ply beams.
8. In addition to the fasteners specified in tables 1-6 a row of fasteners should be provided at the ends, of beams and each side of any splice location.
9. The design loads in the tables do not take into account any effects of splicing in the plies. Consult a design professional to design splices and to confirm the required connectors and connection geometry.
10. Do not use multi -ply beams as diaphragm chords or drag-ties unless specifically designed to do so by a design professional.
11. A design professional should always be consulted for the sizing and specification of the multi-ply beam and for the design of the joist hangers or brackets.

Minimum Spacing Geometry - perpendicular to grain loading

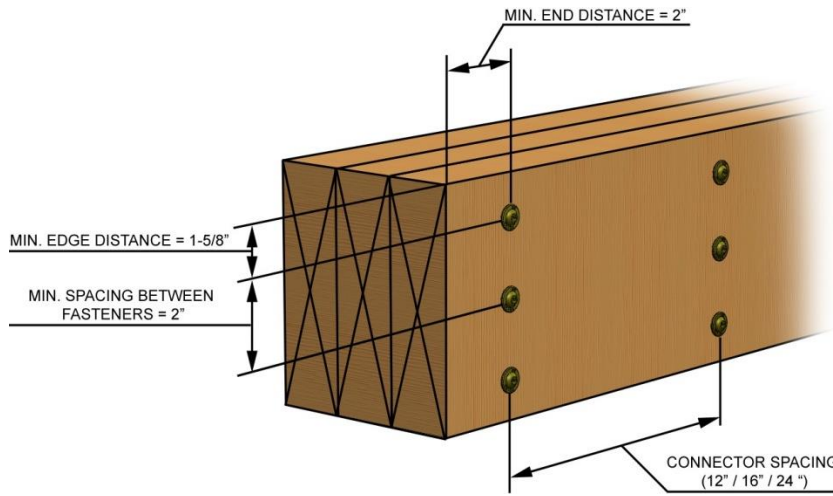


Figure 1 a

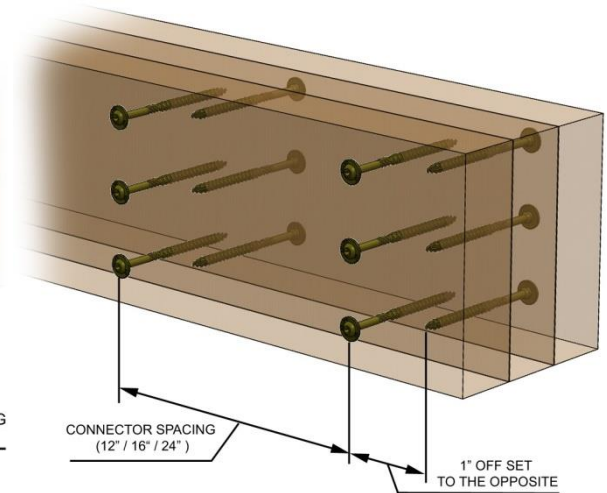


Figure 1 b

Multi-Ply Beam with One Face Loaded

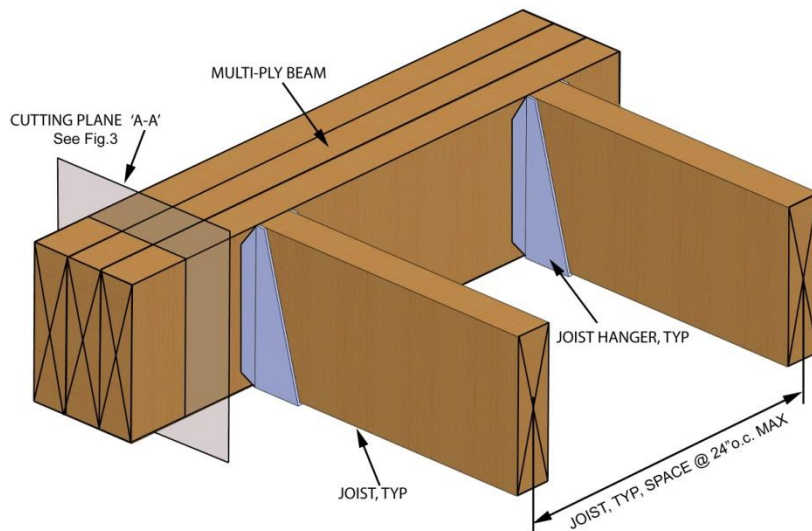


Figure 2

Cutting Plane 'A-A'

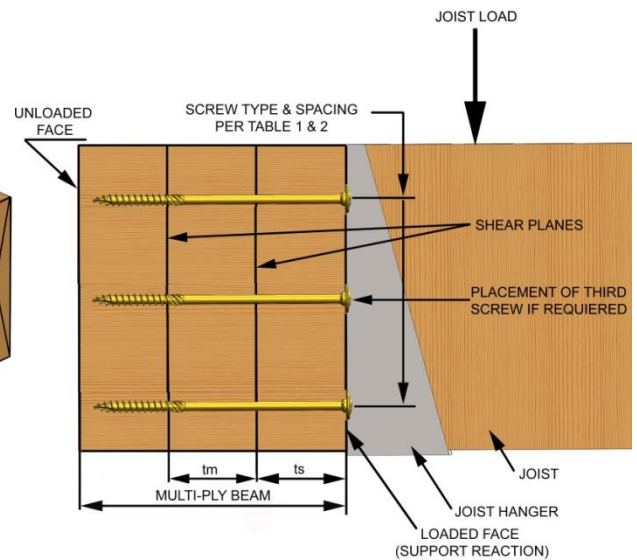


Figure 3

II

Table 1 **MFR Lumber G=0.5**

JTS Screw	# of Screw rows	Fastener Spacing in inches	Allowable Face Mounted Loads Per Foot (PLF) Assembly per Table 3					
			A	B	C	D	E	F
¼ x 3-3/8"	2	24	212	X	X	X	X	X
	2	16	318					
	2	12	424					
	3	24	318					
	3	16	477					
	3	12	636					
¼ x 5"	2	24	212	X	X	X	X	X
	2	16	318					
	2	12	424					
	3	24	318					
	3	16	477					
	3	12	636					
¼ x 6-3/4"	2	24	212	X	X	X	X	X
	2	16	318					
	2	12	424					
	3	24	318					
	3	16	477					
	3	12	636					

Note: 1. Applied load from joist are assumed to be uniform
2. Fastener capacity is based on fastener spacing , not joist spacing

Table 2 **Sawn Lumber with Varying Specific Gravity values**

RSS	# of Screw rows	Fastener Spacing in inches	Allowable Face Mounted Loads Per Foot (PLF)			Assembly per Table 3
			S.Pine G=0.55	D.Fir G=0.50	SPF G=0.42	
¼ x 2-3/4"	2	24	190	165	127	G
	2	16	285	248	191	
	2	12	380	330	254	
	3	24	285	248	191	
	3	16	428	372	286	
	3	12	570	495	381	
5/16 x 4"	2	24	257	214	210	H
	2	16	386	321	315	
	2	12	514	428	420	
	3	24	386	321	315	
	3	16	578	482	473	
	3	12	771	642	630	
5/16 x 6"	2	24	257	214	210	I
	2	16	386	321	315	
	2	12	514	428	420	
	3	24	386	321	315	
	3	16	578	482	473	
	3	12	771	642	630	

Note: 1. Applied load from joist are assumed to be uniform
2. Fastener capacity is based on fastener spacing , not joist spacing

Table 3 **Assembly Types** (Cutting Plane 'A-A' per Fig.3)

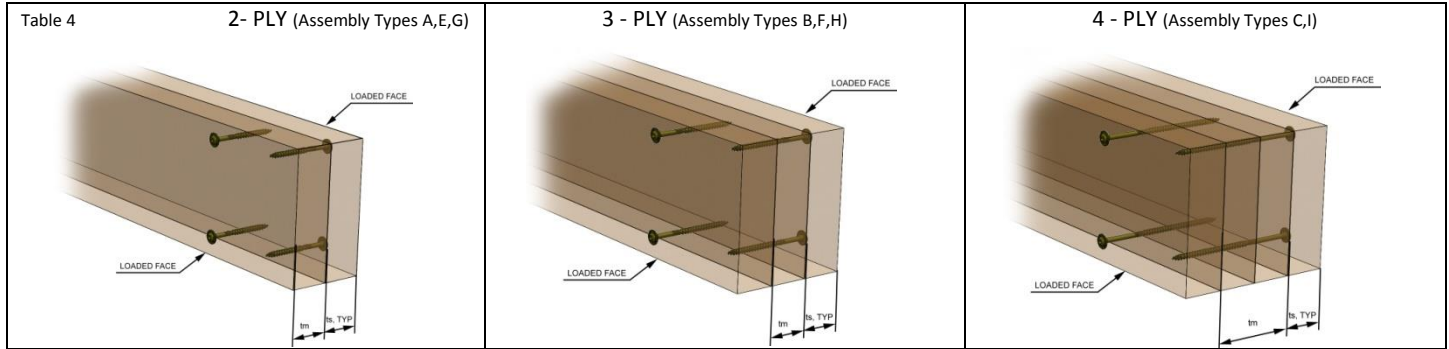
MFR Lumber		
A	B	C
2 x 1-3/4"	3 x 1-3/4"	4 x 1-3/4"
D	E	F
1 x 1-3/4" to 3-1/2"	2 x 3-1/2"	1-3/4" ES of 3- 1/2"
Sawn Lumber		
G	H	I
2 x 1-1/2"	3 x 1-1/2"	4 x 1-1/2"

Note: Load should be applied to the face w/the screw head

ABBREVIATIONS:

- D.Fir = Douglas Fir-Larch
- ES = each side
- H. Fir = Hem -Fir
- JTS = Joist and Truss Screw
- MFR = Manufactured structural composite lumber
- PLF = Pounds per linear foot
- RSS = Rugged Structural Screw
- SPF = Spruce-Pine-Fir
- S.Pine = Southern Pine
- tm = Thickness of main member
- ts = Thickness of side member
- TYP = Typical
- o.c. = on center

Multi-Ply Beams w/loads on Both Faces



Note: 1. See Tables 1 & 2 for load carrying capacity.
 2. RSS/JTS screws shall be sized to penetrate laminations from both sides.

Multi-Ply Beam Point Load

Table 5 MFR Lumber G=0.5

JTS Screw	# Screws	Max Point Load to One Side of Member **					
		A	B	C	D	E	F
1/4 x 3-3/8"	4	848					
	6	1272					
	8	1696					
1/4 x 5"	4		848		952		
	6		1272		1428		
	8		1696		1904		
1/4 x 6-3/4"	4			848		1020	952
	6			1272		1530	1428
	8			1696		2040	1904

Table 6 Sawn Lumber with Varying Specific Gravity values

RSS	# Screws	Max Point Load to One Side of Member **			
		S.Pine G=0.55	D.Fir G=0.50	SPF G=0.42	Assembly
1/4 x 2-3/4"	4	760	660	508	G
	6	1140	990	762	
	8	1520	1320	1016	
5/16 x 4"	4	1028	856	840	H
	6	1542	1284	1260	
	8	2056	1712	1680	
5/16 x 6"	4	1028	856	840	I
	6	1542	1284	1260	
	8	2056	1712	1680	

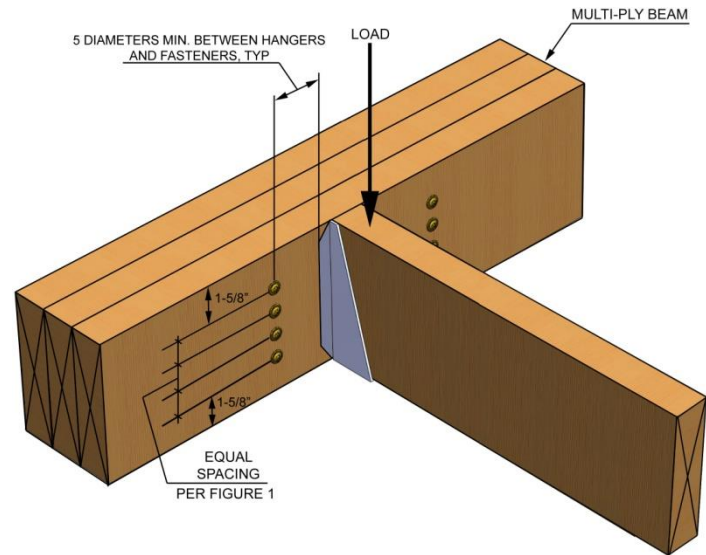


Figure 5

** Note when applying loads on both faces of built up beam, screws determined from table 5 & 6 shall be installed on both sides 1" offset for rows on opposite face.

Multi-Ply Beam Top-Loaded

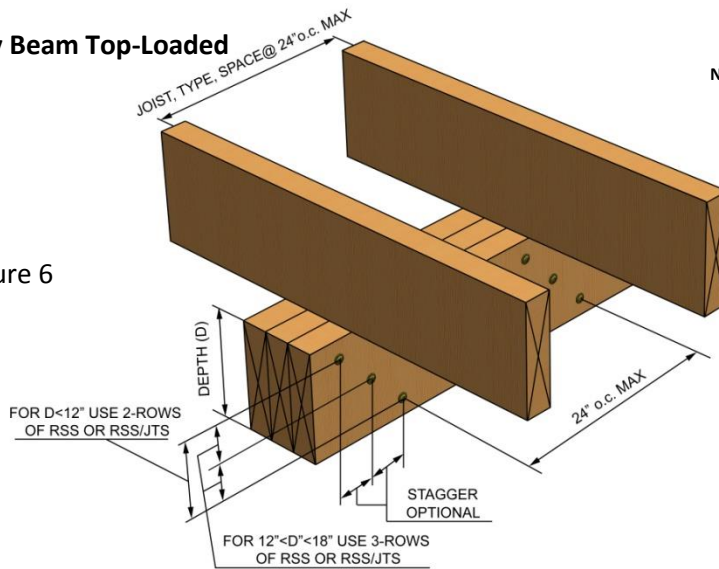


Figure 6

Note: 1. Load must be applied evenly across entire beam width. Otherwise, use connection for side-loaded beams.
 2. RSS/JTS screw shall be sized to penetrate through all plies
 3. For beams with 4 or more plies, install screws on both faces 1" offset between rows on opposite faces.



Scan code for the ICC Report ESR-2442

Flyer effective until Oct.31, 2015
 Updates should be obtained after this date.