

# IMPORTANT INFORMATION & GENERAL NOTES

## Instructions to the Designer

- The allowable load is typically limited to an average test load at  $\frac{1}{8}$ " deflection, an average or lowest test value (*nominal load*) divided by a safety factor or the calculation value. The safety factor is prescribed by Section F1 of the 2001 AISI NAS.
- Allowable simultaneous loads in more than one direction on a single connector must be evaluated as follows:  
Design Uplift/Allowable Uplift + Design Lateral Parallel to Track/Allowable Lateral Parallel to Track + Design Lateral Perpendicular to Track/Allowable Lateral Perpendicular to Track  $\leq 1.0$ . The three terms in the unity equation are due to the three possible directions that exist to generate force on a hurricane tie. The number of terms that must be considered for simultaneous loading is at the sole discretion of the Designer and is dependant on their method of calculating wind forces and the utilization of the connector within the structural system.
- Loads are based on the 2001 AISI Standard – North American Specification for the Design of Cold-Formed Steel Structural Members (NAS), unless otherwise specified. Other code agencies may use different allowable loads.
- The term "Designer" used throughout this catalog is intended to mean a licensed/certified building design professional, a licensed professional engineer, or a licensed architect.
- All connected members and related elements shall be designed by the Designer.
- Unless otherwise noted, member strength is not considered in the loads given and, therefore, reduce allowable loads when member strength is limiting.
- The average ultimate breaking strength for some models is listed under "nominal tension load".
- Simpson Strong-Tie strongly recommends the following addition to construction drawings and specifications: "Simpson Strong-Tie connectors and fasteners are specifically required to meet the structural calculations of plan. Before substituting another brand, confirm load capacity based on reliable published testing data or calculations. The Engineer/Designer of Record should evaluate and give written approval for substitution prior to installation."
- Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners, and develop the top flange bearing length.
- Simpson Strong-Tie will provide, upon request, code testing data on all products that have been code tested.
- Most of the allowable loads published in this catalog are for use when utilizing the traditional Allowable Stress Design (ASD) methodology. A method for using Load and Resistance Factor Design (LRFD) for cold-formed steel is also included in the 2001 AISI NAS. When designing with LRFD, the nominal connector strength multiplied by the resistance factor must be used. If not listed or noted in a table footnote, contact Simpson for the LRFD values of products listed in this catalog.
- All steel-to-steel connector screws must comply with ASTM C1513.
- Screw strength shall be calculated in accordance to 2001 AISI NAS Section E4 or shall be based upon manufacturers design capacity determined from testing.
- Simpson Strong-Tie recommends that hanger height be at least 60% of joist height for stability.
- Local and/or regional building codes may require meeting special conditions. Building codes often require special inspection of anchors installed in concrete and masonry. For compliance with these requirements, it is necessary to contact the local and/or regional building authority. Except where mandated by code, Simpson's products do not require special inspection.
- When connectors are attached to 2 CFS members of different thicknesses, the Designer shall use the thinner of the 2 members for selecting allowable loads.

## Additional Important Information & General Notes for Hybrid (Steel-to-Wood) Connections

These notes are in addition to the previous notes for steel to steel connections and are provided to ensure proper installation of Simpson Strong-Tie® Company Inc. products and must be followed fully.

- Unless otherwise noted, allowable loads are for Douglas Fir-Larch under continuously dry conditions. Allowable loads for other species or conditions must be adjusted according to the code. In many cases, Simpson Strong-Tie code reports will indicate loads derived from Douglas Fir header material only. However under ICC-ES AC13, loads for Douglas Fir are the same as LVL, LSL, PSL, Glulam's and Southern Pine, since the specific gravity of these wood species fall within the specific gravity range of the AC13 criteria. The chart below gives specific gravity for the different wood species as listed by NDS (National Design Specifications). For your convenience we have placed the section from the AC13 criteria indicating the range of specific gravity. 3.2.3 The species of lumber used shall have a specific gravity of, but not greater than 0.55 as determined in accordance with the NDS.
- For face-mount hangers and straight straps, use 0.86 of table loads for Spruce-Pine-Fir.
- A fastener that splits the wood will not take the design load. Evaluate splits to determine if the connection will perform as required. Dry wood may split more easily and should be evaluated as required. If wood tends to split, consider pre-boring holes with diameters not exceeding .75 of the nail diameter (2005 NDS 11.1.5.3).
- Wood shrinks and expands as it loses and gains moisture, particularly perpendicular to its grain. Take wood shrinkage into account when designing and installing connections. Simpson Strong-Tie manufactures products to fit common dry lumber dimensions. If you need a connector with dimensions other than those listed in this catalog, Simpson Strong-Tie may be able to vary connector dimensions; contact the Simpson Strong-Tie. The effects of wood shrinkage are increased in multiple lumber connections, such as floor-to-floor installations. This may result in the vertical rod nuts becoming loose, requiring post-installation tightening.
- Top flange hangers may cause unevenness. Possible remedies should be evaluated by a professional and include using a face mount hanger, and routing the beam or cutting the subfloor to accommodate the top flange thickness.
- Built-up lumber (*multiple members*) must be fastened together to act as one unit to resist the applied load (*excluding the connector fasteners*). This must be determined by the Designer/Engineer of Record.

Species	Fc <sub>⊥</sub>	Specific Gravity
Douglas Fir-Larch (DFL)	625 psi	0.50
Southern Pine (SP)	565 psi	0.55
Spruce-Pine-Fir (SPF)	425 psi	0.42
Hem Fir (HF)	405 psi	0.43
Glulam	560 psi	0.50
LVL (DF/SP)	750 psi	0.50
TimberStrand® LSL (E=1.3x106)	680 psi	0.50
TimberStrand® LSL (E>1.5x106)	880 psi	0.50
Parallam® PSL	750 psi	0.50

## Additional Instructions for the Installer for Hybrid (Steel-to-Wood) Connections

- Bolt holes into wood members shall be at least a minimum of  $\frac{1}{32}$ " and no more than a maximum of  $\frac{1}{16}$ " larger than the bolt diameter (per the 2005 NDS 11.1.2.2).
- The joist shall bear completely on the connector seat, and the gap between the joist end and the header shall not exceed  $\frac{1}{8}$ " per ICC-ES AC 13 and ASTM D1761 test standards.
- For holdowns, anchor bolt nuts should be finger-tight plus  $\frac{1}{8}$  to  $\frac{1}{2}$  turn with a hand wrench, with consideration given to possible future wood shrinkage. Care should be taken to not over-torque the nut, impact wrenches should not be used. This may preload the holdown.

## Additional Instructions for the Designer for Hybrid (Steel-to-Wood) Connections

- Loads are based on the 2001 AISI Standard - North American Specification for the Design of Cold-Formed Steel Structural Members (NAS) and the 2005 AF&PA National Design Specifications (NDS), unless otherwise specified. Other code agencies may use different allowable loads.
- Duration of load adjustments for fasteners into wood as specified by the code are as follows:  
"FLOOR" and "DOWN" (100) — no increase for duration of load.  
"SNOW" (115) — 115% of design load for 2 month duration of load.  
"ROOF LOAD" (125) — 125% of design load for 7 day duration of load.  
"EARTHQUAKE/WIND" (160) — 160% of design load for earthquake/wind loading.
- Some catalog illustrations show connections that could cause cross-grain tension or bending of the wood during loading if not sufficiently reinforced. In this case, mechanical reinforcement should be considered.
- Most of the allowable loads published in this catalog are for use when utilizing the traditional Allowable Stress Design (ASD) methodology. A method for using Load and Resistance Factor Design (LRFD) for cold-formed steel is also included in the 2001 AISI NAS. When designing with LRFD, the nominal connector strength multiplied by the resistance factor must be used. If not listed or noted in a table footnote, contact Simpson for the LRFD values of products listed in this catalog. For more information, refer to the American Forest and Paper Association "Guideline to Pre-engineered Metal Connectors" and ASCE 16. The "Guideline" contains a soft-conversion procedure that can be used to derive reference lateral resistances.
- Simpson Strong-Tie recommends that hanger height be at least 60% of joist height for stability.
- Pneumatic or powder-actuated fasteners may deflect and injure the operator or others. Powder-actuated fasteners should not be used to install connectors. Pneumatic nail tools may be used to install connectors, provided the correct quantity and type of fasteners are properly installed in the fastener holes. Tools with fastener hole-locating mechanisms should be used. Follow the manufacturer's instructions and use the appropriate safety equipment. Over driving fasteners may reduce allowable loads. Contact Simpson Strong-Tie.