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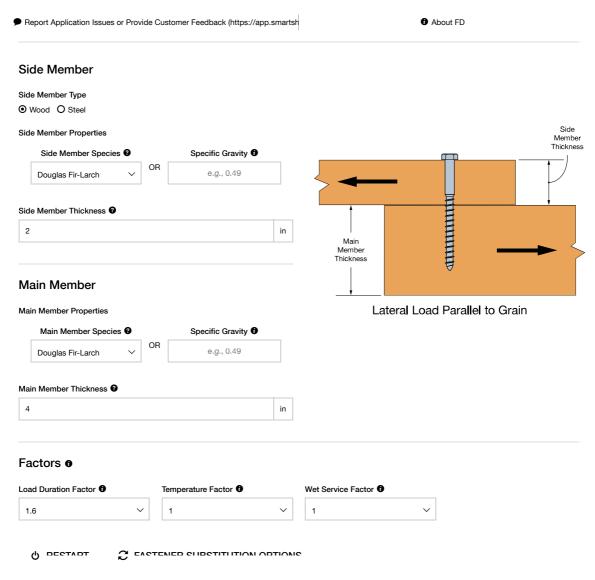
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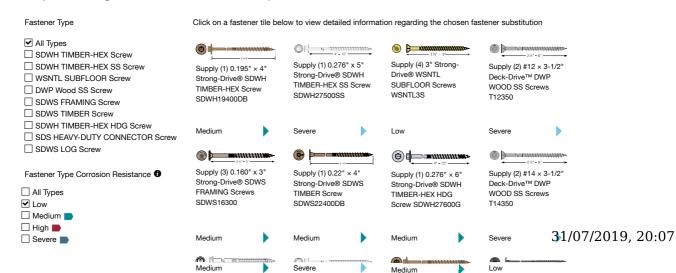
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Fastener Designer is a quick, easy-to-use tool for providing Simpson Strong-Tie structural screw alternatives to specified standard NDS fasteners in withdrawal, lateral load parallel-to-grain, lateral load perpendicular-to-grain, multi-ply, ledger connections and sole plate to rim board. This application provides detailed load calculations for both the NDS fastener and the recommended Simpson Strong-Tie structural screw.



Simpson Strong-Tie Fastener Substitution Options



CALCULATION RESULTS	FASTENER DESIGNER	JULY 31, 2019	
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Input		SST Fastener Capacity	
Design Method		Allowable Stress Design (ASD)	
Code		NDS 2012/2015	
Main Member Thickness, t _m (in)		4	
Side Member Thickness, t _s (in)		2	
Dowel Length, I (in)		4.0	
Main Member Bearing Angle, θ_{m} (deg)		0	
Side Member Bearing Angle, θ_{s} (deg)		0	
Main Member Specific Gravity, G _m		0.5	
Side Member Specific Gravity, G _s		0.5	
Actual Diameter, D (in)		0.194	
Load (lb)		450	
Load Duration Factor, C _D		1.6	
Temperature Factor, C _t		1	
Wet Service Factor, C _M		1	
End Grain Factor, C _{eg}		1	
Calculation			
Calculation		SST Fastener Capacity	
Dowel Root Diameter, D _r (in)		0.174	
Main Member Dowel Bearing Length, I _m (in)		2.000	
Side Member Dowel Bearing Length, I _s (in)		2.000	
Main Member Dowel Bearing Strength, F _{em} (psi)		4637	
Side Member Dowel Bearing Strength, F _{es} (psi)		4637	

Dowel Bending Yield Strength, F_{yb} (psi)

Penetration Check Detail	SST Fastener Capacity	
Penetration, p (in)	2.00	
Minimum Penetration Requirement, p _{min} (in)	6D = 1.16	
Minimum Penetration Requirement Met	Yes	

165000

0.41

1.13

End/Edge Distance and Spacing

End Distance, Edge Distance, and Spacing SST Fastener Capacity

Calculated Reference Design Value

Yield Mode 1	Yield Limit Equation ூ	SST Fastener Capacity		
		Yield Limit, Z	Reduction Term, R _D	
Mode I _m		Z = 720 lb	R _D = 2.2	
Mode I _s		Z = 720 lb	R _D = 2.2	
Mode II		Z = 298 lb	R _D = 2.2	
Mode III _m		Z = 271 lb	R _D = 2.2	
Mode III _s		Z = 271 lb	R _D = 2.2	
Mode IV		Z = 216 lb	R _D = 2.2	

Minimum Yield Value ②

Tested Yield Value ② Z = 300 lb

Adjusted Yield Value **②** Z = 480 lb

Solution

Supply (1) 0.195" x 4" Strong-Drive® SDWH TIMBER-HEX Screw SDWH19400DB



Strong-Drive® SDWH TIMBER-HEX Screw (https://www.str

Structural Wood-to-Wood Connections Including Ledgers

Ideal for structural and general-purpose fastening applications where a hex-head drive is preferred. The SDWH structural wood screws are ideal for the contractor and do-it-yourselfer alike.

Features:

- Bold thread design that provides superior holding power.
- Patented SawTooth™ point ensures fast starts, reduces installation torque and eliminates the need for pre-drilling in most applications.
- Under-head nibs that offer greater control when seating the head.
- Large washer head provides maximum bearing area (0.64" head diameter).
- Size identification on all SDWH screw heads.

Double-barrier coating provides corrosion resistance equivalent to hotdip galvanization, making it suitable for certain exterior and preservative-treated wood applications, as described in the evaluation report.

Notes:

- Loads are based on installation into side grain of the wood with the screw axis perpendicular to the face of the member.
- Adjusted yield value includes the adjustment factors selected above.
- 3. The tested yield value is based on testing conducted in accordance with AC233. It is the average ultimate test value divided by 5. If no testing was done for the selected thickness then the minimum yield value is calculated based on National Design Specification for Wood Construction.
- 4. View our literature for more information on
 - ledger connections (https://www.strongtie.com/resources/software/ledgerconnections)
- 5. For all other general information refer to the $% \left\{ 1,2,...,n\right\}$

Fastening Systems Catalog (http://www.strongtie.com/resources/literature/fastening-systems-catalog)

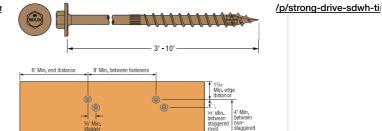
Codes/Standards:

IAMPO-UES ER-192 (http://www.iapmoes.org/Documents/ER_0192.pdf);
State of Florida FL 13975 (http://www.strongtie.com/ftp/coderpts/FL13975(ER-0192).pdf)

Product Information

Strong-Drive SDWH TIMBER-HEX Screw (https://www.strongtie.com/strongdrive_exteriorwoodscrews/sdwh-db_screw/p/strong-drive-sdwh-timber-hex-screw)

U.S. Patents: 5,897,280 and 7,101,133



Z = 216 lb

SDWH Spacing Requirements

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4 of 4 31/07/2019, 20:07