



City of Santa Monica Building and Safety Division

Wood Frame Shear Diaphragm Guide

This list is to be used as a general guide.

It is not inclusive of all code requirements and inspection criteria.

Per California Building Code (CBC), American Society of Testing Materials (ASTM) F1667 American Society of Civil Engineers (ASCE) 7 & National Design Standard (NDS) for wood and the Santa Monica Municipal Code (S.M.M.C.)

California Codes available at www.bsc.ca.gov

- Call rough building inspection prior to cover of any boundary nailing by window and door flashings, also prior to slammer studs at intersecting shear walls.
- Verify from the structural framing plans the location and length of all shear walls.
- Verify and collect properly completed structural observation.
- Collect and review deputy report(s), verify deputy registration with City of Santa Monica.
- Verify the nail spacing at the boundaries, edges and field of the sheathing agrees with the shear wall schedule. (boundary=edge of diaphragm and collector lines)
- Identify nail type (common nails or galvanized common nails only). SMMC&ASTM F1667
- Hot dipped galvanized fasteners and connectors, including nuts and bolts, in treated wood (or stainless, silicone bronze, or copper fasteners). CBC 2304.10.5
- Check nail shank diameter (ASTM1667 Table 5: 8d is 2 1/2" long, 0.131 dia. & 10d common is 3" long, shank 0.148-box labeled F1667NLCMS-09B to be a 10d common).
- Nail Placement:
 - Driven flush but not overdriven CBC 2304.10.2
 - Minimum 3/8" from sheath edge to center of nail (1/2" for walls >300lb uplift)
 - View the stud side of wall to check for nails that missed framing (shiners).
 - Staggered (1/2") along edges where nail spacing is 3 inches o.c. or less.
 - Boundary nails into hold-down posts, top plates, collector lines and perimeters of all shear diaphragms. CBC 2306.2 & 2306.3
- Verify sheathing material agrees with the structural notes. WSP-wood structural panel Type (Plywood or OSB, other products must meet DOC PS-1 or PS-2); Grade Thickness (3/8, 15/32, 1/2) Span Rating (32/16); Number of Ply's=3 minimum CBC 2304.6, 2304.8, 2303.1.5, 2308.6.2 and S.M.M.C.



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- Verify lumber size and grade agrees with the structural notes. (typically #1 w/ 19% max. moisture to avoid derating of allowable capacity (30%) per NDS-05 (grade stamp must indicate 'DRY')
 - Framing Grade of Studs & Posts (No. 2 or better)
 - Lumber Species (Douglas Fir Larch only...S.M.M.C.)
 - Framing Size (3x studs & sill at heavily nailed panel edges, 4x or 6x at HD).
 - Blocking (matching studs) on all edges of panels and openings (S.M.M.C.& CBC 2305.1)
- Verify bottom of wall shear transfer (sill/sole plate connection):
 - Fastener size and spacing of shear wall sole plate to floor framing below per plan.
 - Foundation sill bolt diameter and spacing from shear wall schedule or notes.
 - Anchor bolts minimum 4" from ends of sill plates (not more than 12 inches from ends); not less than 1 3/4 inches to (outside) edge of concrete foundation. CBC 2308.3.1
 - Verify 3"X3" square plate washers on anchor bolts in shear walls. CBC 2308.3.2
 - Verify bolt holes are not more than 1/16" larger than bolt diameter.
- Proper installation of shear hardware per manufacturer (no deflection of LTP4, proper placement and number of SDS screws, proper location on post etc...)
- Detail(s) required for openings in shear. (CBC 2305.1.1)