County of San Diego, Planning & Development Services
MINIMUM CONSTRUCTION SPECIFICATIONS
BUILDING DIVISION

BUILDING RECORD ID:
OWNER OR CONTRACTOR SIGNATURE:

CS-1
Sheet Number

A. General

1. **Applicable codes.** All projects shall comply with the *2013 California Building Code* (CBC) and/or *California Residential Code* (CRC), *2013 California Green Building Standards Code* (CalGreen), *2013 California Electrical Code* (CEC), *2013 California Mechanical Code* (CMC), *2013 California Plumbing Code* (CPC), *2013 California Fire Code* (CFC), *2013 California Building Energy Efficiency Standards* (CBEES), and all County of San Diego amendments.

B. Excavation, Plumbing, and Mechanical

1. **Sewer and/or septic.** Sewer shall comply with the County of San Diego plumbing ordinance.
2. **Water.** All fixtures shall include a backflow or cross connection device through which potable water is supplied.
3. **Combustion and solid-fuel burning appliances.** Combustion appliances shall be properly vented and be of systems which are designed to prevent back drafting. (CBEES 150.0(m))
4. **Gasoline.** HVAC systems shall include a backflow or cross connection device located in garages shall have total air leakage of no more than 6% of total flow when measured at 0.1 in. w.c. using California Title 24 (CBEES 150.0(m))
5. **Minimum Filtration.** Mechanical systems supplying air to occupiable spaces through ventilation equipment and/or through the heating and cooling equipment shall be rated in terms of airflow and sound. (CBEES 150.0(o))
6. **Air filters.** Filters shall be installed in such a way that they are accessible for inspection and cleaning. (CBEES 150.0(o))
7. **Air moving equipment.** Air moving equipment rated to meet latest state-building standards equipment and ventilation equipment shall be rated in accordance with applicable requirements of the California Energy Code.
8. **Duct and duct insulation.** All mechanical ducts and plenums shall be installed and sealed in accordance with California Energy Code requirements.
9. **Ducts and air handlers.** Ducts and air handlers located in unconditioned space shall be insulated to a minimum of R-8 and be sealed in accordance with CEC 150.0(m)11.
10. **Duct insulation.** Ducts and plenums installed in or on the building envelope shall be insulated to a minimum of R-8 and be sealed in accordance with CEC 150.0(m)11.
11. **Mechanical ventilation.** Dwelling units shall be provided with a mechanical ventilation system capable of supplying outdoor air to the dwelling unit at a rate determined in accordance with CEC 150.0(o).
12. **Kitchen ventilation.** Kitchens shall be provided with mechanical ventilation capable of exhausting a minimum of 100 cfm to the outdoors.
13. **Moisture content of building materials.** Building materials with visible signs of water damage shall not be installed. Wood that will be framed shall not be enclosed when the framing members exceed a 19 percent moisture content. Moisture content shall be verified in compliance with the California Building (CALGreen 4.505.3).
a. Moisture content shall be determined with either a pin-type or contact-type moisture meter.
b. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade stamped end of each piece to be verified.
c. Wet/Dry Bulb Temperature and Humidity Ratio Calculation. Calculations shall be performed on the wet and dry bulb temperature and humidity ratio of the outdoor air and the indoor air. Calculations shall be performed using the psychrometric equations and data provided in the ASHRAE Fundamentals Handbook.
14. **Duct Leakage.** Ducts shall be sealed in accordance with California Energy Code requirements.
15. **Heating and air-conditioning system design.** Heating and air-conditioning systems shall be sized, designed, and have their equipment selected using the following methods (CALGreen 4.507.2):
a. The heat loss and heat gain shall be established according to ANSI/ACCA 2 Manual J, ASHRAE handbooks, or other equivalent design software or methods.
b. Duct systems are sized according to ANSI/ACCA 1 Manual D, ASHRAE handbooks, or other equivalent design software or methods.
c. Select heating and cooling equipment according to ACCA 36-S Manual S or other equivalent design software or methods.

C. Foundation

1. **Foundation reinforcement.** Continuous footings and slabs shall be provided with a minimum two longitudinal No. 4 bars, one at the top and one at the bottom of the footing.

D. Foundation and Underfloor

1. **Sill.** A continuously operating and sealed at a maximum of 1.0 sone.
2. **Mechanically operated local exhaust fans** shall be rated at maximum of 3.0 sone.
3. **Mechanically operated whole-building ventilation fans** shall be rated at a maximum of 1.0 sone.
4. **Vapor retarder.** A 6-mil polyethylene or approved vapor retarder with joints lapped and sealed shall be placed between a concrete slab-on-grade and the base course or subgrade. (CGC 3.403)
5. **Anchor bolts.** Foundation plates or sills shall be bolted or anchored to the foundation in accordance with the following (CGC R403.1.6 and CGC R602.11.1):
a. Minimum 1/2-inch-diameter steel bolts.
b. Bolts embedded at least 7 inches into concrete or masonry.
c. Bolts spaced maximum 6 feet on center.
d. Minimum two bolts per plate/sill plate with one bolt located maximum 12 inches and minimum 7 bolt diameters from each end of each sill plate/piece.
e. Minimum 3-inch by 3-inch by 0.229-inch steel plate washer between sill and nut on each bolt.
6. **Hold-downs.** All hold-downs must be bolted to the footing prior to foundation inspection.
7. **Floor joists bearing.** Wood girders and floor joists shall be supported laterally at least on 4-inch by 4-inch cross bracing or approved equivalent.
8. **Floor joists lateral restraint.** Floor joists shall be supported laterally at least on 2-inch by 2-inch lateral restraint at the ends and at intervals not exceeding 6 feet.
9. **Floor joists.** Floor joists shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at intervals not exceeding 8 feet.
10. **Wall bracing.** Buildings shall be braced in accordance with the methods allowed per CGC R602.10.2, CGC R602.10.4, and/or CGC R602.10.5.
11. **Stud walls unsupported length.** The unsupported length of linear stud walls which braced or alternate provisions of CGC R602.10.1.5.
12. **Braced wall line spacing.** Spacing between braced wall lines shall not exceed 25 feet on center.
13. **Stud walls.** Stud walls shall be braced per CGC R602.10.1.
14. **Fasteners for connections.** Connections shall be made with a fastener that is at least equal to an 8d common nail.
15. **Stud walls.** Stud walls shall be located in the end of each braced wall line or in the adjacent braced wall line.
16. **Individual shear wall length.** Shear walls shall meet minimum length requirements of CGC R602.10.4.
17. **Cripple wall bracing.** Cripple walls shall be braced per CGC R602.10.9.
18. **Shear wall and diagrams nailing.** Nailing of shear walls and diagrams shall be nailed to diagrams which are located in accordance with CGC Table R602.3(1).
19. **Shear wall joins.** Wall vertical joints in shear wall sheathing shall occur over, and be fastened to, minimum 1-1/2-inch-thick blocking. (CGC R602.10.8)
20. **Framing over openings.** Headers, double joists, or trusses or adequate size to transfer loads to vertical members shall be provided over window and door openings in load-bearing shall wall and partitions. (CGC 2304.3.2)
21. **Joists under bearing partitions.** Joists under parallel bearing partitions shall be adequate size to support the load. Double joists, adequate to adequately distribute the load, shall be separated and fastened in accordance with the following:
a. Solid-blocked with minimum 2-inch nominal linear spaced at maximum of one center.
b. Bearing partitions perpendicular to floor joists shall be solid-blocked with minimum 2-inch nominal blocking at least equal to and with (CGC 2304.3.4)
22. **Joists over beams.** Joists shall have full bearing on nominal 2-inch-thick or larger sill plate with a minimum of 1.5 inches.
23. **Sill plate.** Sills shall have full bearing on nominal 2-inch-thick or larger sill plate with a minimum of 1.5 inches.
24. **Stud walls.** Stud walls shall be braced per CGC R602.10.1.2(1) for bolted sill plate and anchor bolts in accordance with CGC Table R602.10.1.2(2) for seismic design.
25. **Stud walls shall meet the provisions** of CGC Table R602.10.1.2(1) for mid-lands and CGC Table R602.10.1.2(2) for seismic design.
26. **Stud walls cumulative length.** The cumulative length of linear stud walls which braced wall line shall meet the provisions of CGC Table R602.10.1.2(1) for mid-lands and CGC Table R602.10.1.2(2) for seismic design.
27. **Floor joists bearing.** Floor joists exceeding nominal 2 inches by 12 inches shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at maximum 8-foot intervals. (CGC R502.7.1)
28. **Framing of floor openings.** Openings in floor and ceiling joists and other floor framing members shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist shall be supported by one trimmer joist. When the header joist exceeds 4 feet, the header joist shall be supported by two trimmer joists. Header joists shall be doubled and shall be sized in accordance with the following:
a. Header joists shall be sized in accordance with CGC R502.5(1) and R502.5(2).
b. Header joists shall be designed in accordance with the applicable table of the California Residential Code.
29. **Gardens.** Gardens for single-story construction or gardens supporting loads on trusses shall be designed to support loads specified in the CBC. Girder and joists shall occur over supports. When a girder is spliced over a support, an adequate splice shall be provided. The ends of joists, beams, or headers shall be self-supporting or be placed on strips of metal in securely fastened in place. The fastenings of spaces between chimneys and wood girders shall be spaced not more than 4 feet on center. Girder girders shall be designed to support the loads specified in the CBC. Girder and joists shall occur over supports.
30. **Ridges, hips, and valleys.** Rafters shall be framed to a ridge board or to each other when ridge board is not used. The ridge board shall be at least as deep as the rafter and not less than 1-inch nominal thickness and not less than the depth of the cut of the rafter. If an valley arch rafters shall be supported at the ridge by a brace to a wall or ceiling joist or a ridge board. Ridge board shall be at least as deep as the rafter and not less than 1-inch nominal thickness and be supported at the ridge by a brace to a wall or ceiling joist or a ridge board. Ridge board shall be at least as deep as the rafter and not less than 1-inch nominal thickness and be supported at the ridge by a brace to a wall or ceiling joist or a ridge board. Ridge board shall be at least as deep as the rafter and not less than 1-inch nominal thickness and be supported at the ridge by a brace to a wall or ceiling joist or a ridge board. (CGC R502.3)
31. **Collar joist or rafter connections.** Collar joists or rafters shall be nailed to each rafter or joist. Collar joists shall be nailed to the wall plate or joist. (CGC R602.3(4))
32. **Collar joists lapped.** Ends of collar joists shall be lapped minimum 3 inches or butted and nailed to a minimum of 1 inch of lapped or butted joists. (CGC R602.3(4))
33. **Collar ties.** Collar ties or tie straps or tie rods shall be connected in the upper third of the rafters and shall be spaced at maximum 4 feet on center. (CGC R602.3)
34. **Purlins.** Purlins installed to brace the span of rafters shall be sized not less than the required size of the rafters and shall be supported by braces installed to bearing walls at a minimum spacing of 4 feet on center. (CGC R602.3(4))
35. **Roof/ceiling member lateral support.** Roof/ceiling members shall be supported laterally at least on 2-inch by 4-inch bracing installed at the top and bottom of the run and spaced at maximum 10 feet on center. (CGC R602.3(4))
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38. **Braces.** Braces shall be installed at the ridge and at intervals not exceeding 10 feet. Braces shall be installed to the ridge board or to a ridge board and to the wall plate. Braces shall be installed at an angle of 45 degrees to the horizontal. Braces shall be installed in pairs at the same location. Braces shall be installed in accordance with the following:
a. Braces shall be installed in accordance with the following:
b. Braces shall be installed in accordance with the following:
c. Braces shall be installed in accordance with the following:
39. **Roof framing above shear walls.** Rafters or roof trusses shall be connected to top plates of shear walls which blocking between the rafters or trusses. (CGC R602.10.6.2)
40. **Roof diagram under fill framing.** Roof plywood shall be continuous under California fill framing.
41. **Roof diagram or ridges.** Minimum 2-inch nominal blocking required for roof diagram and at ridges.
42. **Blocking of roof trusses.** Minimum 2-inch nominal blocking required between trusses at the top plate and at points of bearing at intervals not exceed 10 feet on center. (CGC R602.7)
43. **Truss clearance.** Minimum 1/2-inch clearance required between the bottom chord of the truss and the top of the wall plate for the entire length of the truss.
44. **Drilling, cutting, not notching of roof/floor framing.** Notches in solid lumber joists, rafters, blocking, and beams shall not exceed one-sixth the member depth. Holes shall not be closer than 2 inches to the top or bottom of the member depth. Holes shall not be closer than 2 inches to the edge of the member. Holes shall not exceed one-third the member depth. Holes shall not be closer than 2 inches to the nearest hole except at member ends. The diameter of a hole bored or cut into members shall not exceed one-half the member depth. The diameter of holes bored or cut into members shall not exceed 5/8 inch (No. 26 galvanized sheet). (CRC R502.7)
45. **Exterior framing, decks, balconies, and stairs.** Stick elements shall be positively attached to the primary structure to resist both vertical and lateral forces or sand be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (CRC 2304.3.2)
46. **Ventilation.** Approved corrosion-resistant fastening shall be applied within the following structural framing components (CRC R703.6):
a. Wall framing.
b. Wall framing.
c. Wall framing.
47. **Wall fastening.** Approved corrosion-resistant fastening shall be applied within the following structural framing components (CRC R703.6):
a. Wall framing.
b. Wall framing.
c. Wall framing.
48. **Roof and ceiling.** All roof coverings shall be installed per applicable requirements of CBC 1507. Roof coverings shall be installed per manufacturer's instructions and in accordance with ASTM E 108 or UL 790, which include coverings of clay, tile or concrete roof tile, exposed fiberglass roofing, asphalt shingles, slate and slate shingles, preformed metal roofing, and cement fiber shingles, sheet metal roofing, and metal roof shingles, and mineral fiber cement roofing shingles. (CRC R302.1.1)
49. **Flashing of chimneys and fireplaces.** All spaces between chimneys and fireplaces shall be flashed with flashing which continues over the fireplace and be fastened to the chimney in such a way as to be leak and prevent water from entering behind the flashing. (CRC R703.8)
50. **Bathroom.** Bathroom walls shall be finished with a smooth, hard, nonabsorbent surface over a minimum height of 6 feet above the floor. (CRC R307.2)
51. **Bathroom.** Bathroom walls shall be finished with a smooth, hard, nonabsorbent surface over a minimum height of 6 feet above the floor. (CRC R307.2)
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E. Wood Framing

1. **Fastener requirements.** The number, size, spacing of fasteners connecting wood members/elements shall be as set forth in the table of CRC Table R602.3(1). (CRC R602.9, CRC R602.3, and CRC R602.2)
2. **Stud size, height, and spacing.** The size, height, and spacing of studs shall be in accordance with CRC Table R602.3(5).(3)(5) (CRC R602.3.1)
3. **Bearing studs.** Bearing studs shall be spaced not more than 16 inches on center, such members shall be at least equal to and with. (CRC R602.3.4)
4. **Stud walls.** Stud walls have full bearing on nominal 2-inch-thick or larger sill plate with a minimum of 1.5 inches.
5. **Stud walls joins.** Wall vertical joints in shear wall sheathing shall occur over, and be fastened to, minimum 1-1/2-inch-thick blocking. (CRC R602.10.8)
6. **Framing over openings.** Headers, double joists, or trusses or adequate size to transfer loads to vertical members shall be provided over window and door openings in load-bearing shall wall and partitions. (CRC 2304.3.2)
7. **Stud walls.** Stud walls have full bearing on nominal 2-inch-thick or larger sill plate with a minimum of 1.5 inches.
8. **Bearing walls.** Bearing walls shall be supported laterally at least on 2-inch by 4-inch cross bracing or approved equivalent.
9. **Floor joists.** Floor joists shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at intervals not exceeding 8 feet.
10. **Floor joists lateral restraint.** Floor joists shall be supported laterally at least on 2-inch by 2-inch lateral restraint at the ends and at intervals not exceeding 6 feet.
11. **Floor joists.** Floor joists shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at intervals not exceeding 8 feet.
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39. **Floor framing above shear walls.** Rafters or roof trusses shall be connected to top plates of shear walls which blocking between the rafters or trusses. (CRC R602.10.6.2)
40. **Roof diagram under fill framing.** Roof plywood shall be continuous under California fill framing.
41. **Roof diagram or ridges.** Minimum 2-inch nominal blocking required for roof diagram and at ridges.
42. **Blocking of roof trusses.** Minimum 2-inch nominal blocking required between trusses at the top plate and at points of bearing at intervals not exceed 10 feet on center. (CRC R602.7)
43. **Truss clearance.** Minimum 1/2-inch clearance required between the bottom chord of the truss and the top of the wall plate for the entire length of the truss.
44. **Drilling, cutting, not notching of roof/floor framing.** Notches in solid lumber joists, rafters, blocking, and beams shall not exceed one-sixth the member depth. Holes shall not be closer than 2 inches to the top or bottom of the member depth. Holes shall not be closer than 2 inches to the edge of the member. Holes shall not exceed one-third the member depth. Holes shall not be closer than 2 inches to the nearest hole except at member ends. The diameter of a hole bored or cut into members shall not exceed one-quarter the member depth. The diameter of holes bored or cut into members shall not exceed 5/8 inch (No. 26 galvanized sheet). (CRC R502.7)
45. **Exterior framing, decks, balconies, and stairs.** Stick elements shall be positively attached to the primary structure to resist both vertical and lateral forces or sand be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (CRC 2304.3.2)
46. **Ventilation.** Approved corrosion-resistant fastening shall be applied within the following structural framing components (CRC R703.6):
a. Wall framing.
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47. **Wall fastening.** Approved corrosion-resistant fastening shall be applied within the following structural framing components (CRC R703.6):
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48. **Roof and ceiling.** All roof coverings shall be installed per applicable requirements of CBC 1507. Roof coverings shall be installed per manufacturer's instructions and in accordance with ASTM E 108 or UL 790, which include coverings of clay, tile or concrete roof tile, exposed fiberglass roofing, asphalt shingles, slate and slate shingles, preformed metal roofing, and cement fiber shingles, sheet metal roofing, and metal roof shingles, and mineral fiber cement roofing shingles. (CRC R302.1.1)
49. **Flashing of chimneys and fireplaces.** All spaces between chimneys and fireplaces shall be flashed with flashing which continues over the fireplace and be fastened to the chimney in such a way as to be leak and prevent water from entering behind the flashing. (CRC R703.8)
50. **Bathroom.** Bathroom walls shall be finished with a smooth, hard, nonabsorbent surface over a minimum height of 6 feet above the floor. (CRC R307.2)
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F. General Material Specifications

1. **Lumber.** All plates, sheets, beams, and posts 2-inches 4-inches thick shall be No. 2 grade Douglas Fir-Larch or better. Stud, not more than 5 inches and 4 inches thick shall be No. 2 grade Douglas Fir-Larch or better. All posts and beams 5 inches and thicker shall be No. 1 grade Douglas Fir-Larch or better. Stud, not more than 5 inches and 4 inches thick shall be No. 3 grade Douglas Fir-Larch or better.
2. **Cutting.** Annular spaces around pipes, electric cables, conduits or other openings in sealed in compliance with the *California Energy Code*. (CALGreen 4.406.1)
3. **Joints and openings.** Openings in the building envelope separating conditioned space shall be sealed with a durable sealant or gasket. Sealant shall be applied to crevices of joints not requiring movement. Sealant shall be applied to crevices of joints requiring movement. Sealant shall be applied to crevices of joints requiring movement. Sealant shall be applied to crevices of joints