



Date: _____

County of San Diego, Planning & Development Services
COMMERCIAL BUILDING CODE PLAN CHECK
BUILDING DIVISION

*** CUSTOMER INFORMATION VERSION ***

Commercial, public accommodation, and multi-family housing projects

The items listed below are commonly omitted from plans submitted for review. Advance preparation by applicants to satisfy these requirements will help expedite the plan review process. Be advised: Just as specific items on this list may not apply to specific projects, this list also does not necessarily include all requirements for all projects; other items may apply. Please use this list as a guide only.

A. GENERAL REQUIREMENTS

1. Each of the items on this list requires correction before a permit will be issued. The approval of plans and specifications does not permit the violation of any section of the building code, county ordinances, or state law. The following list does not necessarily include all errors and omissions. (See the 2016 *California Building Code* 105.4)
2. The following supplements may be required for approval. Compliance with these items must be obtained prior to permit issuance:
 - Accessibility correction lists: _____
 - County of San Diego Storm Water Intake Form
 - County of San Diego Standard Project Storm Water Quality Management Plan
 - Sample stormwater BMP presentation (PDS #272)
 - Eave construction guidance document (PDS #198)
 - Special inspection summary (PDS #006)
 - List of approved special inspection agencies and construction material testing laboratories
 - Other : _____
3. **Please read your Conditions of Approval list.** We recommend **contacting the fire district early** in the project design stage to determine potential requirements. **Note: All plan approval stamps** -- e.g., this building code review, planning, fire -- **must be applied to the same two sets** to enable permit issuance; coordinate any submittals to the fire district with this in mind to minimize stamp transfers to revised sets. Additionally we recommend you retain all previously reviewed sets until permit issuance.
4. Plans must incorporate the necessary information on printed sheets. Plans in pen or pencil, with crossed out or taped on information, or with white-out will not be accepted.

B. PLAN REQUIREMENTS

1. Specify on plans the project will comply with the following building codes and associated County of San Diego amendments:
 - 2016 *California Building Code* (CBC)
 - 2016 *California Green Building Standards Code* (CalGreen)
 - 2016 *California Electrical Code* (CEC)
 - 2016 *California Mechanical Code* (CMC)
 - 2016 *California Plumbing Code* (CPC)
 - 2016 *California Fire Code* (CFC)
 - 2016 *California Building Energy Efficiency Standards* (CBEES)
2. On sheet ___ provide an itemized "Scope of Work" describing the work to be performed and identifying the buildings and structures included under this permit.
3. Scope of work on plans does not match scope on permit application. See PDS technician to revise permit application scope.
4. Provide fully dimensioned plot plan drawn to scale and indicating the following:
 - Lot dimensions with property lines and any easements identified
 - Size and use of all structures on the lot
 - Dimensions from structures to property lines (measured at right angles to structures)
 - Dimensions between structures (measured at right angles to structures)
5. Plans are incomplete. Plan check will proceed with submittal of complete plans. Use this list as a guide in preparing plans.

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6. The plans must be prepared using accepted drafting procedures and practice. You must retain the services of a California-licensed engineer or architect to help you prepare your plans and respond to the corrections on this list.
7. Provide on structural plans a basis of structural design summary per the following (CBC 1603.1):
- If basis of design is **structural calculations**, summary shall include:
 - o *Note on plans*: "Basis of design of structures is structural calculations using design parameters per California Building Code chapter 16 and ASCE 7."
 - o Building risk category specified per CBC 1604.5
 - o Design roof live load specified per CBC 1607.12
 - o Design floor live load specified per CBC 1607.10
 - o Wind design data:
 - Ultimate design wind speed specified per CBC 1609.3
 - Nominal design wind speed specified per CBC 1609.3.1
 - Exposure category specified per CBC 1609.4
 - o Seismic design data:
 - Seismic importance factor specified per ASCE 7 Table 1.5-2
 - Site class specified per ASCE 7 20.3
 - Mapped spectral response acceleration parameters, S_s and S_1 , specified per CBC 1613.3.1
 - Design spectral response acceleration parameters, S_{DS} and S_{D1} , specified per CBC 1613.3.4
 - Seismic design category specified per CBC 1613.3.5
 - Seismic force-resisting system type specified per ASCE 7 12.2.1
 - Seismic response coefficient, C_s , specified per ASCE 7 12.8.1.1
 - Response modification coefficient, R , specified per ASCE 7 Table 12.2-1
 - If basis of design is **conventional light-frame construction per CBC 2308**, summary shall include:
 - o *Note on plans*: "Basis of design of structures is conventional light-frame construction using design parameters per California Building Code section 2308."
 - o Design roof live load specified per CBC 1607.12
 - o Design floor live load specified per CBC 1607.10
 - o Wind design data:
 - Ultimate design wind speed specified per CBC 1609.3
 - Nominal design wind speed specified per CBC 1609.3.1
 - Exposure category specified per CBC 1609.4
 - o Seismic design data:
 - Site class specified per ASCE 7 20.3
 - Mapped spectral response acceleration parameters, S_s and S_1 , specified per CBC 1613.3.1
 - Design spectral response acceleration parameters, S_{DS} and S_{D1} , specified per CBC 1613.3.4
 - Seismic design category specified per CBC 1613.3.5
8. Provide on structural plans a basis of soil design summary per the following (CBC 1603.1, CRC R106.1):
- If basis of design is a **geotechnical report**, summary shall include:
 - o "The basis of soil design values is geotechnical report dated _____ by (engineer/firm preparing report)."
 - o Allowable vertical bearing pressure specified per geotechnical report
 - o Allowable lateral bearing pressure specified per geotechnical report
 - o Other soil properties specified per geotechnical report as applicable
 - If basis of design is **CBC presumptive load-bearing values**, summary shall include:
 - o *Note on plans*: "The basis of soil design values is California Building Code Table 1806.2."
 - o Class of soil materials specified per CBC Table 1806.2
 - o Allowable vertical bearing pressure specified per CBC Table 1806.2
Exception: A geotechnical report may be required for assumed values greater than 1,500 psf **or** where the building official has reason to doubt soil classification or design value
 - o Allowable lateral bearing pressure specified per CBC Table 1806.2
Exception: A geotechnical report may be required for assumed values greater than 100 psf/ft **or** where the building official has reason to doubt soil classification or design value
9. Provide two sets of calculations – addressing all applicable CBC 1605 load combinations – prepared, stamped, and signed by California-licensed civil engineer, structural engineer, or architect for:
- Vertical load supporting system
 - Lateral load (wind/seismic) resisting system
 - Retaining walls
 - Glass guardrail systems
 - Other _____
10. All sheets of the plans must bear the stamp and wet signature of a California-licensed civil engineer, structural engineer, or architect.
11. Special inspection required for the following:
- Field welding (CBC 1705.2.1)
 - Steel frame **with nondestructive testing of seismic force-resisting elements per AISC 341** (CBC 1705.2.1, CBC 1705.12.1, CBC 1705.13.1)

- High-strength bolting **with nondestructive testing of seismic force-resisting elements per AISC 341** (CBC 1705.2.1, CBC 1705.12.1, CBC 1705.13.1)
 - Cold-formed steel framing (CBC 1705.2.1, CBC 1705.11.2, CBC 1705.12.3)
Exception: Projects meeting appropriate exception criteria of CBC 1705.11.2, CBC 1705.12.1, or CBC 1705.12.3
 - High-strength concrete (1705.3)
 - Post-installed concrete anchors (CBC 1705.3)
 - Structural slabs (CBC 1705.3)
 - Pre-stressed/post-tensioned slabs (CBC 1705.3)
Exception: Non-structural pre-stressed slabs supported directly on the ground and where the effective concrete pre-stress is less than 150 psi
 - Masonry (CBC 1705.4)
 - Structural wood elements -- e.g., shear walls, diaphragms, drag struts, braces -- of main seismic force-resisting system (CBC 1705.12.2)
Exception: Wood shear walls, shear panels, and diaphragms, including nailing, bolting, anchoring, and other fastening to other components of the seismic force-resisting system, where the fastener spacing of the sheathing is more than 4 inches on center
 - Driven deep foundations (CBC 1705.7)
 - Cast-in-place deep foundations (CBC 1705.8)
 - Helical pile foundations (CBC 1705.9)
 - Sprayed fire-resistant materials (CBC 1705.14)
 - Mastic and intumescent fire-resistant coatings (CBC 1705.15)
 - Exterior insulation and finish systems (EIFS) (CBC 1705.16)
 - Fire-resistant penetrations in Risk Category III or IV buildings (CBC 1705.17)
 - Smoke-control systems (CBC 1705.18)
 - Installation and anchorage of mechanical and electrical components (CBC 1705.12.6):
 - Electrical equipment for emergency standby power systems
 - Other electrical equipment in structures in Seismic Design Category E or F
 - Piping systems or ductwork designed to carry hazardous materials
 - Vibration isolation systems with 1/4-inch or less clearance required between support frame and restraint
 - Other _____
12. Complete PDS #006 special inspection summary (or equivalent) – listing elements required per item B.11 – and make a permanent part of full-size plan sheet. **Specify certified special inspector and phone number** for each element indicated on summary as requiring special inspection.
13. Provide **large, clear** note on the **plot plan**: “Special inspection required. See special inspection summary on sheet _____.”
14. Clearly distinguish on plans between proposed (new), as-built (non-permitted), and existing (permitted) construction.
15. Specify on plans the **location and means of access** for any as-built construction to be made accessible for inspection by a PDS Building Inspector. Otherwise **any hidden or inaccessible as-built construction will require a certification report per item B.16. Note:** Some elements, such as reinforced concrete, may require a combination of access (per this comment) by a PDS Building Inspector **and** a certification report (per item B.16).
16. Provide certification report(s) per the following for any as-built construction hidden from or inaccessible to a PDS Building Inspector:
Exception: In lieu of certification report(s), the applicant may propose a **detailed** certification protocol – **subject to the plan reviewer’s approval and specified in the building plans** – indicating how as-built construction will be examined, certification documentation will be submitted to PDS, and noncompliant construction will be remedied.
- Each report shall indicate certifying parties have visited job site and list date(s) of job-site visit(s)
 - Each report shall include statement confirming the as-built construction **complies with the code(s)** applicable to the project **and matches the construction** detailed on the submitted building plans
 - Each report shall specify measures/test performed for certification with hidden construction verified by testing and/or destructive examination. **If mitigation and/or repairs are needed to achieve compliance, specify and detail on plans such mitigation and/or repairs.**
 - Each report shall include test results, photos, and other evidence supporting certification
Exception: Any code-required plumbing or gas line tests shall be performed with a PDS Building Inspector present
 - Report(s) addressing **structural/life-safety elements** shall be produced, signed, and stamped by California-licensed Civil Engineer, Structural Engineer, or Architect
 - Report(s) addressing **electrical elements** shall be produced, signed, and stamped by California-licensed Electrical Engineer or Electrical Contractor
Exception: A California-licensed Civil Engineer, Structural Engineer, or Architect may prepare, stamp, and sign a certification report for as-built electrical elements provided those elements have been evaluated by a California-licensed Electrical Engineer or Electrical Contractor, whose name and license number is specified in the certification report
 - Report(s) addressing **plumbing elements** shall be produced, signed, and stamped by California-licensed Plumbing Contractor
Exception: A California-licensed Civil Engineer, Structural Engineer, or Architect may prepare, stamp, and sign a certification report for as-built plumbing elements provided those elements have been evaluated by a California-licensed Plumbing Contractor, whose name and license number is specified in the certification report

- Report(s) addressing **mechanical elements** shall be produced, signed, and stamped by California-licensed Mechanical Engineer or Warm-Air Heating, Ventilating and Air-Conditioning Contractor
Exception: A California-licensed Civil Engineer, Structural Engineer, or Architect may prepare, stamp, and sign a certification report for as-built mechanical elements provided those elements have been evaluated by a California-licensed Mechanical Engineer or Warm-Air Heating, Ventilating and Air-Conditioning Contractor, whose name and license number is specified in the certification report
17. Specify on plans floor areas for each proposed or existing building.
 18. Provide complete dimensions on floor plans.
 19. Name, label, and specify on floor plans the use of each room or space.
 20. Specify on plans the CBC occupancy classification for each room or space.
 21. Change of occupancy or use requires existing building or space to comply with current code requirements. (California Existing Building Code 407.1)
Exception: Building official **may** allow changes of use or occupancy without code upgrades if new use is less hazardous than existing use
 22. Specify on plans the CBC occupancy classification and use of any existing rooms or spaces adjoining proposed construction.
 23. Specify on plans the CBC type of construction for each building.
 24. Specify on plans, as applicable, the type of automatic sprinkler system – NFPA 13, NFPA 13R, or NFPA 13D – installed in the building and whether the system is proposed or existing.
 25. Specify on plans, as applicable, the type of fire alarm system – manual and/or automatic – installed in the building and whether the system is proposed or existing.
 26. Provide itemized material inventory including the following to assess potential hazardous occupancy classification (CBC 307):
 - Material name
 - Material category per CBC Table 307.1(1) and/or CBC Table 307.1(2)
 - Maximum proposed quantity (in pounds, gallons, or cubic feet as applicable) per control area
 - Maximum allowable quantity per CBC Table 307.1(1) and/or CBC Table 307.1(2) per control area with any increases specified
 27. Where licensed 24-hour care facility proposed, provide the following to verify CBC occupancy classification:
 - Data table on plans specifying number of ambulatory, nonambulatory, bedridden, and elderly clients
 - At each bedroom location on floor plans, note indicating number of clients and client status – ambulatory, nonambulatory, bedridden, or elderly – proposed for housing in that bedroom
 - Copy of state license indicating approved number of clients of each client status
 - Verification no restraint practiced – including locked doors preventing egress – unless building meets all requirements for I-3 occupancy (CBC 435.2.1)
Exception: Licensed 24-hour care facilities practicing restraint may be housed in one-story buildings of type IIA, IIIA, or VA construction provided the floor area does not exceed 5,200 square feet between minimum 2-hour-rated fire walls constructed per item J.2 (CBC 408.1.2)
 28. Additional special provisions apply for the following:
 - Covered mall and open mall buildings per CBC 402
 - High-rise buildings per CBC 403
 - Atriums per CBC 404
 - Underground buildings per CBC 405
 - Motor-vehicle related occupancies per CBC 406
 - Medical care facilities per CBC 407
 - Detention facilities per CBC 408
 - Motion-picture projection rooms per CBC 409
 - Stages, platforms, and technical production areas per CBC 410
 - Special amusement buildings per CBC 411
 - Aircraft-related occupancies per CBC 412
 - Combustible storage per CBC 413
 - Hazardous materials per CBC 414
 - H-1, H-2, H-3, H-4, and H-5 occupancies per CBC 415
 - Application of flammable finishes per CBC 416
 - Live/work units per CBC 419
 - Hydrogen fuel gas rooms per CBC 421
 - Ambulatory care facilities per CBC 422
 - Children's play structures per CBC 424
 - Winery caves per CBC 446
 - Public libraries per CBC 449

- K-12 school facilities and E occupancy day care per CBC 452
- Large family day-care homes per CBC 455

29. Provide a wall legend identifying new walls, existing walls to remain, and existing walls to be removed.
30. Foundation and framing plans shall be the same orientation as the floor plan.
31. Provide legend/definitions for all symbols, shaded areas, etc., used on plans.
32. Remove all “build per code” and “not for construction” notes from plans.
33. Provide a sheet index coordinated with plans.

C. SITE REQUIREMENTS

1. Post site identification cards and call for site inspection. Once the site inspection has been completed, call (858) 565-5920 to confirm the results. Additional correction items may apply based on the results.
2. Project may be located in a watercourse or flood area. Department of Public Works (DPW) approval is required.
3. Project located in an Alquist-Priolo Earthquake Fault Zone. Provide a geotechnical report prepared, stamped, and signed by a California-licensed civil engineer demonstrating the proposed building(s) will not be constructed across the trace of an active fault.
4. Rough grading approval from PDS Land Development and DPW Private Development Construction Inspection is required.
5. Soils report required (2 copies). (CBC 1803)
6. Compaction report required (2 copies). (CBC 1804)
7. Compaction reports more than 5 years old shall include an update letter by a California-licensed civil engineer.
8. *Note on the plans:* “The inspector will recheck for expansive soils and/or grading requirements at the first foundation inspection.”
9. Project requires a completed County of San Diego Storm Water Intake Form including the following:
 - Project identification information and applicant’s signature
 - Total new/replaced impervious area
 - Total existing impervious area
 - Total area disturbed by the project
 - Waste Discharger Identification Number (WDID) (obtained from State Water Resources Control Board and required when total area of land disturbance is 1 acre or more **or** project is part of a common development with land disturbance of 1 acre or more)
 - Project type determination: Standard Project or Priority Development Project
10. Provide on plot plan impervious surface area information per the following:
 - Dimensions of all impervious elements – including building roofs, driveways, paved walkways, patios, patio covers, and decks – and constructed pervious elements to enable calculation and verification of the surface area of each element
 - Distinguish between new/replaced impervious surface area and existing impervious surface area
 - Provide table determining cumulative new/replaced impervious surface area and cumulative existing impervious surface area on entire parcel and coordinate with totals entered on County of San Diego Storm Water Intake Form (see PDS #272 for guidance)
 - Provide table indicating surface area of each constructed pervious element (see PDS #272 for guidance)
 - For any constructed pervious elements, provide on plans **all of the following** (for more information on pervious element design and strategies, please consult the [County of San Diego BMP Design Manual](#)):
 - o Manufacturer and product specifications
 - o Pervious element slope and direction of slope
 - o Cross-section of product assembly with complete dimensions and detailing
 - o Specific maintenance program – e.g., debris removal, vacuum sweeping twice per year, re-setting pavers as needed – to ensure product assembly remains pervious
 - o *Note on plans:* “Constructed pervious surfaces shall not be sealed.”
11. Indicate on plot plan the location and square footage of land disturbance and coordinate with total entered on County of San Diego Storm Water Intake Form.
12. Project qualifies as a Priority Development Project (PDP) per the following criteria and **requires submittal of a PDP Storm Water Quality Management Plan (SWQMP) to PDS Land Development** for approval:
 - Project creating or replacing 10,000 square feet or more of impervious surface
 - Redevelopment project creating or replacing 5,000 square feet or more of impervious surface on a site with 10,000 square feet or more of existing impervious surface

- New or redeveloped restaurant creating or replacing 5,000 square feet or more of impervious surface
 - New or redeveloped hillside area with minimum 25% natural slope **and** creating or replacing 5,000 square feet or more of impervious surface
 - New or redeveloped parking lot creating or replacing 5,000 square feet or more of impervious surface
 - New or redeveloped driveway and/or road creating or replacing 5,000 square feet or more of impervious surface
 - New or redevelopment project discharging directly to an Environmentally Sensitive Area (ESA) **and** creating/replacing 2,500 square feet or more of impervious surface
 - New automotive repair shop **or** redeveloped automotive repair shop creating or replacing 5,000 square feet or more of impervious surface
 - New retail gasoline outlet **or** redeveloped retail gasoline outlet creating or replacing 5,000 square feet or more of impervious surface
 - New or redevelopment project disturbing one acre or more **and** expected to generate pollutants post-construction
13. Provide BMP plan **coordinated with PDP SWQMP approved by PDS Land Development** covering proposed scope of work and including location and detailing of any Structural BMPs.
14. **After the sets have been approved and stamped by the fire district**, PDS Building plan reviewer shall confirm proposed scope of work does not qualify as a Priority Development Project.
15. Provide **two copies** of completed County of San Diego Standard Project Storm Water Quality Management Plan (SWQMP) including the following:
- Project identification information and applicant's signature
 - Proposed erosion control BMPs
 - Proposed energy dissipater (as needed where run-off is concentrated)
 - Proposed sediment control BMPs
 - Proposed BMPs preventing off-site tracking of sediment
 - Proposed site management BMPs
 - Proposed source control BMPs
 - Proposed site design BMPs
16. Provide BMP plan per the following (we recommend the PDS plot plan AutoCAD template with BMP legend available for download at <http://www.sdcounty.ca.gov/pds/bldgforms/index.html>):
- Indicating general direction of site drainage
 - Identifying location of proposed erosion control BMPs per Standard Project SWQMP
 - Identifying location of proposed energy dissipater per Standard Project SWQMP
 - Identifying location of proposed sediment control BMPs per Standard Project SWQMP
 - Identifying location of proposed BMPs preventing off-site tracking of sediment per Standard Project SWQMP
 - Identifying location of proposed site management BMPs per Standard Project SWQMP
 - Identifying location of proposed source control BMPs per Standard Project SWQMP
 - Identifying location of proposed site design BMPs per Standard Project SWQMP
 - Including table or legend defining each BMP symbol (see PDS #272 sample plan)
17. County records indicate an existing Structural BMP on the project site. For more information on the installed Structural BMP(s), call DPW Watershed at (858) 495-5323 or email Bmp.Program@sdcounty.ca.gov. **Specify on BMP plan** the location of the following installed Structural BMP(s) to confirm no encroachment by proposed construction:
- Biofilter
 - Detention basin
 - Hydrodynamic separator system
 - Infiltration device
 - Media filter
 - Trash rack and drain insert
 - Wet pond and constructed wetland
 - Other

D. ALLOWABLE BUILDING HEIGHT

1. Indicate grade plane – i.e., average finished ground level adjoining the building at exterior walls – on all building elevations. **Exception:** Where finished ground level slopes away from exterior walls, grade plane shall be calculated using the lowest points between the building and the lot line or, if the lot line is more than 6 feet from the building, the lowest points between the building and points 6 feet from the building
2. Dimension building height – measured vertically from grade plane to the average height of the highest roof surface – on all building elevations.
3. Each enclosed level of the building will be considered a story unless the level meets **all listed criteria** for **one of the following**:
 - Basement (CBC 202):
 - o Story above is not more than 6 feet above grade plane
 - o Story above is not more than 12 feet above the finished ground level at any point
 - Mezzanine (CBC 505.2):

- Aggregate area of mezzanine(s) shall not exceed one-third the floor area of the room or space in which the mezzanine is located
Exception: Aggregate area of mezzanine(s) in buildings of type I or type II construction equipped with an NFPA 13 sprinkler system and approved emergency voice/alarm communication system per CBC 907.5.2.2 shall not exceed one-half the floor area of the room or space
Exception: Aggregate area of mezzanine(s) in buildings of type I or type II construction for special industrial occupancies per CBC 503.1.1 shall not exceed two-thirds the floor area of the room or space in which the mezzanine is located
 - Open and unobstructed to the room or space in which the mezzanine is located
Exception: Walls maximum 42 inches in height, columns, and posts
Exception: Mezzanines where occupant load of aggregate area of enclosed space does not exceed 10
Exception: Mezzanines with an aggregate floor area of enclosed space not greater than 10% of the mezzanine area
Exception: Mezzanines with two or more means of egress
Exception: Mezzanines with two or more means of egress in occupancies other than H and I, no more than two stories above grade plane, and equipped throughout with an NFPA 13 sprinkler system
Exception: Mezzanines used for control equipment in industrial facilities and glazed on all sides
 - Equipment platform (CBC 505.3):
 - Unoccupied, elevated, and used exclusively for mechanical systems or industrial process equipment
 - Includes associated elevated walkways, stairs, alternating tread devices, and ladders necessary to access the platform
 - Aggregate area of equipment platform(s) shall not exceed two-thirds the floor area of the room or space in which the platform is located
 - Combined aggregate area of equipment platforms and mezzanines shall not exceed two-thirds the floor area of the room or space in which they are located
4. Specify on plans any proposed height and/or story increases. (CBC 504.3, CBC 504.4)
5. Building exceeds the following CBC 504 limits:
- Allowable height above grade plane
 - Allowable number of stories

E. ALLOWABLE BUILDING AREA

1. Provide on plans an allowable building area analysis including the following:
 - Specification of any proposed area increase per CBC 506.2 for automatic sprinkler system
 - Specification of any proposed area increase per CBC 506.3 for building frontage
 - For single-occupancy, one-story buildings: Calculation of allowable building area per CBC 506.2.1
 - For mixed-occupancy, one-story buildings: Calculation of allowable building area per CBC 506.2.2
 - For single-occupancy, multistory buildings: Calculation of total allowable building area **and** allowable building area per story per CBC 506.2.3
 - For mixed-occupancy, multistory buildings: Calculation of total allowable building area **and** allowable building area per story per CBC 506.2.4
 - Indication of any buildings on same lot considered as portions of single building per CBC 705.3
 - Indication of any fire wall – _____ hour-rated per CBC Table 706.4 and constructed per item J.2 – dividing construction into portions considered as separate buildings per CBC 706.1
 - Indication of any buildings qualifying for unlimited area per CBC 507
 - Indication of any conditions qualifying for special provisions of CBC 510
2. Building exceeds the following CBC 506 limits:

Exception: Mezzanine area need not be included in building area

Exception: Basements need not be included in total allowable building area, provided the total area of such basements do not exceed the area permitted for a building with no more than one story above grade plane

 - Allowable building area per story
 - Total allowable building area

F. TYPE OF CONSTRUCTION

1. Building elements in type I and type II construction shall be noncombustible. (CBC 602.2)
Exception: Combustible materials allowed per CBC 603.1
2. Detail the following fire-rated structural assemblies required for compliance with proposed type ____ construction per CBC Table 601:
 - Structural frame: ____ hour-rated construction required (specify CBC Table 721.1(1) assembly number or cite reference to alternate approved assembly) with detailing per CBC 704
 - Exterior bearing walls: ____ hour-rated construction required (specify CBC Table 721.1(2) assembly number or cite reference to alternate approved assembly)
 - Interior bearing walls: ____ hour-rated construction required (specify CBC Table 721.1(2) assembly number or cite reference to alternate approved assembly)
 - Floor construction: ____ hour-rated construction required (specify CBC Table 721.1(3) assembly number or cite reference to alternate approved assembly)

- Roof construction: ____ hour-rated construction required (specify CBC Table 721.1(3) assembly number or cite reference to alternate approved assembly)
 - Corner guards or noncombustible jacket not less than 5 feet above finished floor for fire-rated structural members subject to vehicular impact (CBC 704.9)
Exception: Concrete columns in open or enclosed parking garages
 - Any penetrations protected per item J.8
3. Licensed 24-hour residential care facilities require 1-hour-rated construction throughout for the following (CBC 435):
- R-2.1 occupancies
 - R-3.1 occupancies where nonambulatory clients housed above the first story **and** building has more than two stories **or** more than 3000 square feet above the first story
 - R-4 occupancies where nonambulatory clients housed above the first story **and** building has more than 3000 square feet above the first story **or** houses more than 16 clients above the first story
 - R-4 occupancies housing nonambulatory elderly clients

G. EXTERIOR WALLS

1. Dimension on the plot plan the location of any assumed imaginary lines between buildings on the same lot. (CBC 705.3)
Exception: Buildings on the same lot considered as single building per item E.1
2. Dimension on the plot plan the following fire separation distances (measured at right angles to the building face):
- Distances between building exterior walls and adjacent property lines (CBC 202)
Exception: Distance may be measured to centerline of adjacent street, alley, or public way
 - Distances between building exterior walls and assumed imaginary lines per item G.1 (CBC 705.3)
3. Exterior walls with a fire separation distance of ____ feet shall be minimum ____ hour-rated and constructed per item J.1 (CBC Table 602)
4. Exterior wall requires parapet constructed per item J.1. (CBC 705.11)
Exception: Exterior walls not required to be fire-rated
Exception: Exterior walls of building with not more than 1,000 square feet on any floor
Exception: Exterior walls with fire separation distance allowing at least 25% unprotected opening area per CBC Table 705.8
Exception: Exterior walls terminating at minimum 2-hour-rated roofs of exclusively noncombustible materials, including the deck/slab and supporting construction
Exception: Maximum 1-hour-rated exterior walls terminating at underside of roof sheathing, deck, or slab with roof and supporting construction meeting **all of the following:**
- Where roof/ceiling framing elements are parallel to the wall, such framing and supporting construction shall be minimum 1-hour-rated for minimum 4 feet for R and U occupancies and minimum 10 feet for other occupancies, measured from the interior side of the wall
 - Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and supporting construction shall be minimum 1-hour-rated
 - Openings in the roof shall not be located within 5 feet of 1-hour-rated exterior wall for R and U occupancies and within 10 feet for other occupancies, measured from the interior side of the wall
- Exception:** In R-2 and R-3 occupancies of type III, IV, or V construction, exterior walls terminating at underside of roof sheathing or deck with roof meeting **one of the following:**
- Roof sheathing or deck constructed of approved noncombustible materials or fire-retardant-treated wood for minimum 4 feet from wall
 - Roof protected with 5/8-inch type X gypsum board directly beneath underside of roof sheathing or deck, supported by a minimum of 2-inch nominal ledgers attached to sides of roof framing members for minimum 4 feet from wall
5. Area of unprotected and/or protected exterior wall openings shall be within CBC Table 705.8 limits.
6. Projections extending beyond an exterior wall (e.g., cornices, eave overhangs, exterior balconies, architectural appendages) shall comply with the following:
Exception: Projections between buildings on the same lot considered as single building per item E.1
- Minimum distance from line used to determine fire separation distance per item G.2 (CBC Table 705.2):
 - o Fire separation distance of 0 feet to 2 feet: **Projections not allowed**
 - o Fire separation distance of greater than 2 feet to 3 feet: 24 inches
 - o Fire separation distance of greater than 3 feet to less than 30 feet: 24 inches plus 8 inches for every foot of fire separation distance beyond 3 feet or fraction thereof
 - Projections from type I or type II construction shall be noncombustible materials (CBC 705.2.1)
Exception: Combustible materials allowed by CBC 1406.3 and CBC 1406.4
 - Combustible projections extending within 5 feet of line used to determine fire separation distance per item G.2 shall be minimum 1-hour-rated construction, heavy-timber construction, fire-retardant-treated wood, or as specified by CBC 1406.3 (CBC 705.2.3)
Exception: Type VB construction allowed for combustible projections in R-3 and U occupancies with a fire separation distance of minimum 5 feet

H. OCCUPANCY/USE SEPARATION

1. In buildings containing more than one occupancy, each portion of the building shall comply with **at least one of the following**:
 - Separated occupancies: Separation between _____ and _____ occupancies requires _____ hour-rated fire barrier and/or horizontal assembly constructed per item J.3 (CBC Table 508.4, CBC 711.2.4.1)
 - Nonseparated occupancies: Separation not required between _____ and _____ occupancies where entire nonseparated area complies with most restrictive provisions applicable to each occupancy for **all of the following** (CBC 508.3):
 - Exception:** R occupancies require separation per item H.3
 - Exception:** H, I, and L occupancies require separation per CBC Table 508.4
 - o Allowable building height area per section D
 - o Allowable building area per section E
 - o Fire protection per section K
 - Accessory occupancies: Separation not required between _____ main occupancy and _____ accessory occupancy where aggregate area of accessory occupancy does not exceed 10% of the building area of that story **and** accessory occupancy's allowable area in CBC Table 503
 - Exception:** R occupancies require separation per item H.3
 - Exception:** H, I, and L occupancies require separation per CBC Table 508.4
2. Area labeled _____ qualifies as an incidental use per CBC Table 509 and shall comply with the following:
 - Exception:** Incidental use areas within and serving a dwelling unit
 - Separated from remainder of building with _____ hour-rated fire barrier and/or horizontal assembly constructed per item J.3 (CBC 509.4, CBC 711.2.4.5)
 - Protected by automatic sprinkler system
 - Where CBC Table 509 permits an automatic sprinkler system without a fire barrier, separated from remainder of building by smoke-proof construction meeting **all of the following**:
 - o Walls extending from top of foundation or floor assembly below
 - o Any air-transfer openings in walls protected with smoke damper per item J.10
 - o Self- or automatic-closing doors actuated upon detection of smoke
 - o No air transfer openings in doors
 - o No undercutting of door in excess of clearance allowed per NFPA 80
 - Shall not exceed 10% of the building area of that story
3. Dwelling units and sleeping units shall be **isolated** from each other and from other occupancies contiguous to them with fire partitions and/or horizontal assemblies constructed per item J.5. (CBC 420, CBC 708, CBC 711)
 - Exception:** Separation of dwelling unit and its adjacent private garage may comply with CBC 406.3.4
4. Licensed 24-hour care facilities – R-2.1, R-3.1, and R-4 occupancies – shall comply with the following per CBC 435:
 - In R-3-1 occupancies, bedridden clients shall not be housed above or below the first story
 - Smoke barriers – constructed per item J.6 – required in the following:
 - o R-2.1 occupancies housing bedridden clients or with individual floor areas over 6000 square feet
 - o R-4 occupancies with individual floor areas over 6000 square feet
 - Any required smoke barriers shall divide floor as equally as possible with maximum 22,500 square feet and maximum 200 feet travel distance in any smoke compartment
5. Vertical openings shall be contained within a shaft enclosure constructed per item J.7. (CBC 712)
 - Exception:** Vertical openings created by unenclosed stairs or ramps allowed per item I.31
 - Exception:** In other than I-2, I-2.1, and I-3 occupancies, a floor opening complying with **all of the following**:
 - Does not connect more than two stories
 - Does not contain a stairway or ramp required for egress
 - Does not penetrate a horizontal assembly separating fire areas or a smoke barrier separating smoke compartments
 - Not concealed within the construction of a wall or floor/ceiling assembly
 - Not open to a corridor in an R or I occupancy
 - Not open to a corridor on nonsprinklered floors
 - Separated from floor openings and air transfer openings serving other floors by construction conforming to shaft enclosure per item J.7
 - Exception:** Vertical openings between a mezzanine and the floor below
 - Exception:** Unconcealed vertical openings totally within an individual residential dwelling unit and connecting four stories or less
 - Exception:** Approved masonry chimneys where annular space fireblocked at each floor level per item J.11
 - Exception:** Vertical openings protected by floor fire doors meeting CBC 712.1.13.1
 - Exception:** Automobile ramps in open parking garages constructed per CBC 406.5 or enclosed parking garages constructed per CBC 406.6
 - Exception:** Vertical openings in elevator hoistways in open parking garages constructed per CBC 406.5 or enclosed parking garages constructed per CBC 406.6
 - Exception:** Vertical openings for mechanical exhaust or supply duct systems in open parking garages constructed per CBC 406.5 or enclosed parking garages constructed per CBC 406.6 where duct system is contained within and serves only the parking garage
 - Exception:** Atriums in other than H occupancies
 - Exception:** In other than I-2, I-2.1, and I-3 occupancies and where equipped with NFPA 13 automatic sprinkler system, escalator openings protected per CBC 712.1.3.1 and CBC 712.1.3.2
 - Exception:** Vertical openings in I-3 occupancies in accordance with CBC 408.5

6. Elevators and dumbwaiters shall comply with the following:
- When required by item H.5, elevators and dumbwaiters shall be contained within a shaft enclosure constructed per item J.7 (CBC 712)
 - An enclosed elevator lobby – separating the elevator shaft enclosure doors from each floor with fire partitions constructed per item J.4 – shall be provided at each floor where an elevator shaft enclosure connects more than two stories in A, E, H, I, L, R-1, R-2, and R-2.1 occupancies and more than three stories in all other occupancies (CBC 3006.2, CBC 3006.3)
 - Exception:** Enclosed elevator lobbies not required at elevators not required to be located in a shaft per item H.5
 - Exception:** In other than A, E, H, I, L, R-1, R-2, and R-2.1 occupancies, enclosed elevator lobbies not required where building equipped with NFPA 13 or NFPA 13R automatic sprinkler system
 - Exception:** Enclosed elevator lobbies not required at level(s) of exit discharge equipped with an NFPA 13 automatic sprinkler system
 - Exception:** Enclosed elevator lobbies not required where additional doors provided at hoistway opening and meeting CBC 716.5.3.1 smoke and draft control requirements
 - Exception:** Smoke partitions constructed per CBC 710 acceptable in lieu of fire partitions where building equipped with NFPA 13 or NFPA 13R automatic sprinkler system and any openings and duct penetrations protected per item J.4
 - Exception:** In other than I-2 occupancies, enclosed elevator lobbies not required where elevator hoistway is pressurized per CBC 909.21
 - Exception:** Enclosed elevator lobbies not required where elevator serves only open parking garage constructed per CBC 406.5
 - Exception:** Enclosed elevator lobbies not required where hoistway door is 45-minute-rated and hoistway door opening is protected by a listed and labeled smoke containment system complying with ICC ES AC 77
7. Refuse, recycling, and laundry chutes shall comply with the following:
- Exception:** Chutes serving and contained within a single dwelling unit
 - Exception:** Chutes in I-2 and I-2.1 occupancies shall comply with NFPA 82, chapter 5
 - Contained with a shaft enclosure constructed per item J.7 and not used for any other purpose (CBC 713.13.1)
 - Access openings into chutes shall be located in rooms or compartments enclosed by minimum 1-hour-rated fire barriers and/or horizontal assemblies constructed per item J.3 and not located in corridors (CBC 713.13.3)
 - Discharge into an enclosed room separated from the remainder of the building by fire barriers and/or horizontal assemblies constructed per item J.3 (CBC 713.13.4)
 - Exception:** Refuse chutes may not terminate in an incinerator room

I. MEANS OF EGRESS

1. Provide egress plan addressing all occupiable spaces and indicating the following (CBC 1004):
- Occupant load at individual spaces with CBC Table 1004.1.2 occupant load factor(s) and applicable gross/net floor area specified at each space
 - Exception:** Occupant load for fixed seating areas shall be calculated per CBC 1004.4
 - Intended egress routes with cumulative occupant load specified at exit doors, corridors, stairways, and intervening rooms
 - Overall occupant load of building
2. Assembly, classroom, dining, drinking, and/or similar space labeled _____ with occupant load of 50 or more must have occupant load posted in conspicuous place near main exit or exit-access doorway from space. (CBC 1004.3)
3. Building requires _____ exits from _____ story. (CBC 1006.3, CBC Table 1006.3.1, CBC Table 1006.3.2(1), CBC Table 1006.3.2(2))
4. Space labeled _____ requires _____ exits. (CBC Table 1006.2.1)
5. Egress from licensed 24-hour care facilities -- R-2.1, R-3.1, and R-4 occupancies -- also shall comply with CBC 435.8 provisions.
6. Provide complying exits from the following spaces (CBC 1006.2.2):
- Boiler, incinerator, and furnace rooms more than 500 square feet with fuel-fired equipment exceeding 400K BTUs:
 - Minimum two exits (one may be fixed ladder or alternating tread device)
 - Refrigeration machinery rooms more than 1000 square feet
 - Minimum two exits (one may be fixed ladder or alternating tread device)
 - All portions of machinery room within 150 feet of an exit
 - Refrigerated rooms or spaces more than 1000 square feet
 - Minimum two exits
 - All portions of unsprinklered refrigerated room within 150 feet of an exit
 - Egress allowed through adjoining refrigerated rooms
 - Day care facilities, rooms, or spaces where care is provided for more than 10 children of age 2 years or less:
 - Minimum two exits
7. Dimension between exits or exit-access doors from _____ shall be least one-half the maximum overall diagonal of area served (measured in straight line between exits or exit-access doors). (CBC 1007.1.1)
- Exception:** Separation may be one-third the maximum overall diagonal in sprinklered buildings

Exception: Where interior exit stairways are interconnected by a 1-hour fire-rated corridor, the required exit separation shall be measured along the shortest line of travel within the corridor

8. Exit separation required by item I.7 must be maintained to exit discharge. (CBC 1007.1.1)
9. Exit access travel distance from space labeled _____ exceeds allowable values per CBC Table 1017.2.
10. Egress from space labeled _____ may not pass through space labeled _____. (CBC 1016.2)
11. Egress from space labeled _____ must offer **two** separate and distinct paths to **two** exits before occupants travel _____ feet. (CBC Table 1006.2.1)
Exception: Assembly seating shall comply with CBC 1029.8
12. Dimension minimum 44-inch corridor width or as required for occupant load served. (CBC 1005.1, CBC 1020.2)
Exception: Minimum 24-inch corridor width acceptable for access to mechanical, plumbing, or electrical systems or equipment
Exception: Minimum 36-inch corridor width acceptable when serving occupant load less than 50
Exception: Minimum 36-inch corridor width acceptable within a dwelling unit
Exception: Minimum 72-inch corridor width required in E occupancies when serving occupant load of 100 or more
13. Where more than one exit required, corridor dead ends may not exceed 20 feet. (CBC 1020.4)
Exception: Maximum 50 feet in B, E, F, M, R-1, R-2, R-2.1, R-4, S, and U occupancies with an NFPA 13 sprinkler system
Exception: Dead-end corridor length not limited where dead-end length is less than 2.5 times dead-end width
14. Fire-rated corridors required for the following (CBC Table 1020.1):
Exception: Corridors in E occupancies where each room used for instruction has at least one door opening directly to the exterior and rooms used for assembly have at least one half of the required means of egress opening directly to the exterior
Exception: Corridors contained within a dwelling unit or sleeping unit in an R occupancy
Exception: Corridors in open parking garages
Exception: Corridors in B occupancy spaces requiring only a single means of egress per CBC 1006.2
Exception: Corridors within suites in I-2 or I-2.1 occupancies provided with an automatic sprinkler system throughout and constructed per CBC 407.4.3.5 or CBC 407.4.3.6
 - Unsprinklered A, B, F, M, S and U occupancies with corridor occupant load greater than 30
 - A occupancies requiring rated corridors per CBC 1028.3
 - E occupancies with corridor occupant load greater than 10
 - Sprinklered R-1, R-2, R-3, R-3.1, and R-4 occupancies with corridor occupant load greater than 10
 - Sprinklered I and R-2.1 occupancies with corridor occupant load greater than 6
 - Sprinklered H-4, H-5, and L occupancies with corridor occupant load more than 30
 - Sprinklered H-1, H-2, and H-3 occupancies
15. Fire-rated corridors required by item I.14 shall be protected by fire partitions constructed per item J.4:
Exception: Exterior walls allowed to be non-rated per CBC Table 602 and exterior wall openings allowed to be unprotected per CBC Table 705.8
16. Fire-rated corridors required by item I.14 shall be continuous from point of entry to exit with no intervening rooms (CBC 1020.6)
Exception: Foyers, lobbies, or reception rooms constructed per item J.4 as required for corridors shall not be considered as intervening rooms
Exception: Enclosed elevator lobbies allowed by CBC 1016.2, item 1, shall not be considered as intervening rooms
Exception: In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one required exit without passing through the elevator lobby
17. Dimension aisle and aisle accessway width per CBC 1018 from spaces containing seats, tables, furnishings, or displays.
18. Specify width, height, and operation type of all doors. (CBC 1010)
19. All egress doors – including those provided in excess of number required – must meet the following (CBC 1005.1, CBC 1010.1, CBC 11B-404.2.7):
 - Minimum 32-inch clear width (at least one door leaf providing this width at double doors)
 - Maximum 48-inch door leaf on swinging doors
 - Minimum 6-foot-8-inch clear height
 - Hardware minimum 34 inches and maximum 44 inches above finished floor
20. Exit door _____ from space labeled _____ does not provide adequate clear width to serve occupant load shown on egress plan. (CBC 1005.1)
21. Loss of exit door _____ from space labeled _____ reduces available capacity to less than 50% required capacity. (CBC 1005.5)

22. *Note on plans:* "Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort." (CBC 1010.1.9)
23. Egress doors shall be side-hinged swinging or pivoted. (CBC 1010.1.2)
Exception: Private garages, office areas, factory areas, and storages areas with an occupant load of 10 or fewer
Exception: Doors within or serving a single dwelling unit in R-2 and R-3 occupancies
Exception: Doors serving bathroom within R-1 sleeping unit
Exception: In other than H occupancies, revolving doors per CBC 1010.1.4.1
Exception: In other than H occupancies, horizontal sliding doors per CBC 1010.1.4.3
Exception: In other than H occupancies, manually operated horizontal-sliding doors acceptable in areas with an occupant load of 10 or less
Exception: Power-operated doors per CBC 1010.1.4.2
24. Exit doors – including those provided in excess of number required – shall swing in direction of egress when serving an occupant load of 50 or more or an H occupancy. (CBC 1010.1.2.1)
25. Door _____ from space labeled _____ reduces required dimension(s) as follows (CBC 1005.7.1, CBC 1010.1.6):
 Door in fully open position reduces required width of egress component by more than 7 inches
 Door in any position reduces required width of egress component by more than 50%
Exception: Doors within R-2 dwelling units or sleeping units
26. Door at space labeled _____ does not meet egress provisions for the following special doors (CBC 1010.1.4):
 Revolving door
 Power-operated door
 Horizontal-sliding door
 Access-controlled door
27. Specify on door schedule panic hardware or fire exit hardware at each door – including those provided in excess of number required – serving the following (CBC 1010.1.10):
 Rooms/spaces with an occupant load of 50 or more in the following:
 o A occupancies
 Exception: Main exit of A occupancy meeting provisions of item I.28
 Exception: Electromagnetically locked doors per CBC 1010.1.9.9 in A and E occupancies
 o Assembly areas not classified as A occupancies
 o E, I-2, or I-2.1 occupancies
 H occupancies
 Electrical rooms with 800-amp or more equipment, width of 6 feet or more, and containing overcurrent devices, switching devices, or control devices
28. Specify on door schedule any locking or latching hardware. Locks or latches only allowed for the following (CBC 1010.1.9.3):
 Main doors(s) of the following occupancies/uses may have key-operated locking device(s) where sign posted on egress side adjacent to or on door(s) stating "THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED":
 o B, F, M, and S occupancies
 o Places of religious worship
 o A occupancies with occupant load of 300 or less
 Doors from individual dwelling/sleeping units in R occupancies with occupant load of 10 or less
 Places of detention or restraint
29. Provide at least one emergency egress door or window complying with the following in R occupancies at each basement and sleeping room below the fourth story above grade (CBC 1030):
Exception: R-1 and R-2 occupancies of type I, type IIA, type IIIA, or type IV construction and equipped with NFPA 13 sprinkler system
Exception: Basements with ceiling height of less than 80 inches
Exception: Basements without habitable spaces and having no more than 200 square feet in floor area
 Minimum 5.7-square-foot net clear opening area
 Exception: Minimum 5.0-square-foot net clear opening area acceptable for grade-level room
 Minimum 24-inch net clear opening height
 Minimum 20-inch net clear opening width
 Bottom of clear opening maximum 44 inches above floor
 Operational from inside the room and without use of key, tool, special knowledge or effort, or force greater than that required for normal operation of opening
 Opening directly to public way or yard/court opening to public way
 Where escape/rescue opening sill height is below grade level, window well provided per CBC 1030.5
30. **Interior exit stairways** – i.e., protected egress elements considered as exits – shall comply with the following:
 Enclosed within minimum 1-hour-rated fire barrier and/or horizontal assembly constructed per item J.3 (CBC 1023.2)
 Exception: Enclosure fire rating shall be at least equivalent to fire rating of any floor penetrated by enclosure

Exception: Minimum 2-hour rating required when connecting four stories or more (counting basements but not counting mezzanines)

Exception: Exterior walls of interior exit stairways may have fire rating required by item G.3 **but** any non-rated walls exposed to other parts of the building at an angle of less than 180 degrees shall be protected by minimum 1-hour-rated exterior walls and minimum 3/4-hour-rated openings within 10 feet horizontally of non-rated interior exit stairway walls or unprotected openings **and** extending from ground to point minimum 10 feet above topmost landing of stairway or to the roof line, whichever is lower

Used exclusively for egress (CBC 1023.1)

Leading directly to building exterior (CBC 1023.1)

Exception: Maximum 50% of required interior exit stairways may meet exit discharge exceptions of item I.33

Exception: Interior exit stairways extending to building exterior by exit passageway meeting **all of the following:**

Separated from building – including interior exit stairway – by minimum 1-hour-rated fire barrier and/or horizontal assembly constructed per item J.3 (CBC 1023.3.1, CBC 1024.3)

Exception: Separation from interior exit stairway not required where there are no other openings into the exit passageway

Minimum 44-inch unobstructed width (CBC 1024.2)

Exception: Minimum 36-inch unobstructed width acceptable in exit passageways serving an occupant load of less than 50

Exit passageways on level of exit discharge shall terminate at an exit discharge per item I.33

Exit passageways on other than level of exit discharge shall terminate at an exit

Openings in exit passageway limited to those necessary for exit access to exit passageway from normally occupied space and egress from exit passageway

Elevators may not open into an exit passageway

Penetrations into and openings through exit passageway are prohibited

Exception: Required exit doors

Exception: Through penetrations – provided they do not communicate between exit passageways – protected per item J.8 by equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication, and electrical raceway serving the exit passageway and terminating at maximum 16-square inch steel box

Exception: Membrane penetrations protected per item J.8

Openings in interior exit stairways limited to those providing access into or egress from interior exit stairway (CBC 1023.4)

Exception: Unprotected exterior openings

Elevators may not open into interior exit stairways (CBC 1023.4)

Penetrations into and openings through interior exit stairways are prohibited (CBC 1023.5)

Exception: Required exit doors

Exception: Through penetrations – provided they do not communicate between exit passageways – protected per item J.8 by equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication, and electrical raceway serving the exit passageway and terminating at maximum 16-square inch steel box

Exception: Membrane penetrations protected per item J.8

Equipment and ductwork serving interior exit stairways/ramps shall comply with **one of the following** (CBC 1023.6):

Located exterior to the building and directly connected to interior exit stairway by ductwork within shaft enclosure constructed per item J.7

Where located within interior exit stairway, intake air shall be taken directly from outdoors and exhaust air discharged directly to outdoors, or such air shall be conveyed through ducts within shaft enclosure constructed per item J.7

Where located within building, separated from remainder of building, including other mechanical equipment, by complying shaft enclosure constructed per item J.7

31. **Exit access stairways** – i.e., interior stairways that are not required interior exit stairways per item I.30 – shall be located in a shaft enclosure meeting item J.7. (CBC 1019.3)

Exception: In other than I-2, I-2.1, I-3, and R-2.1 occupancies, exit access stairways serving, or atmospherically communicating between, only two stories may be unenclosed

Exception: In other than I-2, I-2.1, I-3, and R-2.1 occupancies, exit access stairways meeting **all of the following:**

Building equipped with NFPA 13 automatic sprinkler system

Area or floor opening between stories does not exceed twice the horizontal projected area of the exit access stairway/ramp

Opening protected by draft curtain and closely spaced sprinklers per NFPA 13

In other than B and M occupancies, limited to openings that do not connect more than four stories

Exception: Exit access stairways may be unenclosed if serving and contained within a single R-1, R-2, R-2.1, R-3, or R-3.1 occupancy dwelling or sleeping unit and connecting four stories or less

Exception: Exit access stairways may be unenclosed if located within an atrium per CBC 404

Exception: Exit access stairways may be unenclosed if located in an open parking garage and serving only the garage

Exception: Exit access stairways may be unenclosed if located between balcony, gallery, or press box and main assembly floor in occupancies such as theaters, places of religious worship, auditoriums, and sports facilities

Exception: In I-3 occupancies, exit access stairways may be unenclosed if constructed per CBC 408.5

32. Horizontal exits designed as part of means of egress system shall comply with the following:

Horizontal exit shall not serve as the only exit from a portion of a building (CBC 1026.1)

Where two or more exits required, maximum one-half of the total number of required exits and maximum one-half of the total required exit width shall be via horizontal exits

Exception: Maximum two-thirds of the total number of required exits via horizontal exits acceptable in I-2 occupancies

Exception: All required exits via horizontal exits acceptable in I-3 occupancies with at least 6 square feet of accessible space per occupant provided on each side of horizontal exit for total number of occupants in adjoining compartments

- Separation between building or refuge areas connected by horizontal exit shall be provided by **one of the following** (CBC 1026.2):
 - Exception:** No fire rating required at horizontal exit between building and above-grade pedestrian walkway constructed per CBC 3104, provided minimum 20 feet distance between connected buildings
 - o Minimum 2-hour-rated fire wall constructed per item J.2
 - o Minimum 2-hour-rated fire barrier and/or horizontal assembly constructed per item J.3
 - Any duct or air-transfer openings protected with **smoke damper** per item J.10 (CBC 717.5.1.1)
 - Horizontal exit separation shall extend vertically through all levels of building unless terminating at minimum 2-hour-rated floor assemblies with no unprotected openings (CBC 1026.2)
 - Horizontal exit assembly shall be continuous from exterior wall to exterior wall to divide completely the floor served (CBC 1026.2)
 - Horizontal exit shall lead to a refuge area meeting **all of the following** (CBC 1026.4):
 - o Adequate to accommodate the original occupant load of refuge area plus the occupant load anticipated from adjoining compartment
 - o Anticipated occupant load from adjoining compartment based on capacity of horizontal exit doors entering refuge area
 - o Minimum 3 square feet of net floor area for each occupant accommodated
 - Exception:** Larger net floor area per occupant required per CBC 1026.4 in I-2 and I-3 occupancies
 - o Minimum 3 square feet of net floor area for each occupant accommodated
 - Refuge area shall include exits adequate to accommodate original occupant load and need not accommodate occupant load from adjoining compartments (CBC 1026.4)
 - At least one exit from refuge area shall lead directly to exterior or to an interior exit stairway (CBC 1026.4)
 - Exception:** I-3 occupancies
 - Refuge area exits shall not require the occupants of an adjoining compartment to return through that compartment (CBC 1026.4)

33. Exits shall discharge per **all of the following** (CBC 1028):

- Exit discharge shall be at grade or shall provide a direct path of egress travel to grade
- Exit discharge shall not reenter building
 - Exception:** Maximum 50% of required interior exit stairways may use the following configurations:
 - o Interior exit stairway may egress through area on level of exit discharge if **all of the following** are met:
 - Path of egress from interior exit stairway/ramp to an exterior exit door is free and unobstructed **and** such exit is readily visible and identifiable from the point of termination of the interior exit stairway
 - Entire area of the level of the exit discharge is separate from areas below by construction at least equivalent to fire rating of interior exit stairway
 - Egress path from interior exit stairway – plus all portions of level of exit discharge with access to egress path – protected throughout by NFPA 13 or 13R automatic sprinkler system
 - Exception:** Non-sprinklered areas separated from egress path with construction at least equivalent to fire rating of interior exit stairway/ramp
 - o Interior exit stairway may egress through a vestibule if **all of the following** are met:
 - Maximum 10-foot depth from exterior of building
 - Maximum 30-foot length
 - Entire area of vestibule separated from areas below by construction at least equivalent to fire rating of interior exit stairway
 - Vestibule area separated from remainder of level of exit discharge by construction at least equivalent to approved wired glass in steel frames
 - Vestibule area used only for means of egress
 - Vestibule area exits directly to the outside
- Capacity of exit discharge shall not be less than required discharge capacity of exits served
- Exit discharge shall be sufficiently open to exterior to minimize accumulation of smoke and toxic gases
- Egress courts serving as portion of exit discharge shall comply with the following:
 - o Minimum 44-inches wide or as otherwise required by CBC 1005.1
 - o Minimum 7 feet of unobstructed height for full required width
 - Exception:** Encroachments per CBC 1005.7
 - o Any reduction in width shall be gradual and accomplished with minimum 36-inch-high guard creating not more than 30-degree angle with respect to axis of egress court along path of egress travel
 - o Where an egress court is less than 10 feet in width, the egress court walls shall be minimum 1-hour fire-rated with 3/4-hour opening protection
 - Exception:** Egress courts serving occupant load of fewer than 10
- Exit discharge shall provide a direct and unobstructed access to a public way
 - Exception:** Safe dispersal areas meeting CBC 1028.5 criteria

34. Exterior egress elements shall comply with the following (CBC 1021, CBC 1027):

- Exterior egress balconies:
 - o Satisfy corridor requirements for width, headroom, and dead ends
 - o Separated from interior of building by walls and opening protection required for corridors

Exception: Separation not required where balcony served by at least two stairs and dead-end travel condition does not require travel past unprotected opening to reach stair

- Long side minimum 50% open, with open area above guards distributed to minimize accumulation of smoke/gas
- Located minimum 10 feet from adjacent lot lines and other buildings on same lot without exterior wall protection

Exterior exit stairways and ramps:

- Open on at least one side, with minimum 35 square feet of aggregate open area adjacent to each floor level and intermediate landing and located minimum 42 inches above floor/landing level
- Adjoining open areas shall be yards, courts, or public ways
- Located minimum 10 feet from adjacent lot lines and other buildings on same lot without exterior wall protection
- Separation from interior of building per CBC 1027.6

35. Provide stairway dimensions complying with the following on floor plans and building sections (CBC 1011):

- Minimum 44-inch clear width or as required for occupant load served
Exception: Minimum 36-inch clear width acceptable for stairways serving occupant load of less than 50
- Minimum 6-foot-8-inch headroom
- Landing width equivalent to stairway width
- Landing depth equivalent to stairway width (up to 48 inches)
- Maximum 12-foot vertical rise between floor levels or landings

36. Door _____ from space labeled _____ reduces required dimension(s) as follows (CBC 1011.6):

- Door in fully open position projects more than 7 inches into stairway landing
- Door in any position reduces required landing width by more than 50%

37. Dimension stairway risers and treads complying with the following (CBC 1011.5.2):

- Minimum 4-inch and maximum 7-inch riser height
- Minimum 11-inch tread depth

38. Winding stairways allowed as means of egress only for the following (CBC 1011.5.3, CBC 1011.9, CBC 1011.10):

- Curved stairways per the following:
 - Minimum 11-inch tread depth at 12 inches from inside edge and minimum 10-inch tread at any point within stairway clear width
 - Smallest radius at twice required stairway width
- Spiral stairways per the following:
 - Serving dwelling units or space not more than 250 square feet with maximum 5 occupants
 - Minimum 26-inch clear width
 - Minimum 6-foot-6-inch headroom
 - Maximum 9-1/2-inch riser height
 - Minimum 7-1/2-inch tread depth at 12 inches from inside edge

39. Detail stairway risers and treads complying with the following (CBC 1011.5.5):

- Solid risers
Exception: Openings not allowing passage of 4-inch-diameter sphere allowed between treads if stairway does not serve as accessible means of egress
Exception: Open risers acceptable in spiral stairways complying with item I.38
- Risers vertical or sloped under tread above at maximum 30 degrees from vertical
- Maximum 1-1/4-inch nosings beyond the tread below
- Maximum 9/16-inch radius of curvature at nosings
- Maximum 9/16-inch beveling of nosings

40. Dimension and detail stairway handrails complying with the following (CBC 1011.11, CBC 1014):

- Provided on each side of stairway
Exception: Handrails acceptable on one side of spiral stairways
Exception: Aisle stairs per CBC 1029.13
- Intermediate handrails provided as needed such that all portions of required stairway width within 30 inches of handrail
- Located at uniform height minimum 34 inches and maximum 38 inches vertically above tread nosings
- Maximum 4-1/2-inch projection into required stairway width
- Continuous for full length of stairway flight
- Extending minimum 12 inches horizontally beyond top riser
- Sloping for depth of one tread beyond bottom riser (plus horizontal extension if required per CBC 11A or CBC 11B)
Exception: Aisle handrails need only comply with CBC 1029.13
- Minimum 1-1/2-inch clearance between handrails and adjacent walls
- Grip size and shape per CBC 1014.3

41. Provide coordinated details specifying the following stairway elements designed for CBC Table 1607.1 stair live loads:

- Stringer sizes
- Landing joists and beams
- Hangers

42. Walls and soffits within enclosed usable spaces beneath stairways shall be minimum 1-hour rated or required rating of stairway enclosure. (CBC 1011.7.3)

43. When usable space provided beneath grandstands and bleachers, such spaces shall be separated from seating above with 1-hour-rated fire barrier and horizontal assembly. (CBC 1029.1.1.1)
Exception: Tickets booths of less than 100 square feet
Exception: Toilet rooms
44. Provide guard complying with the following at any open-sided walking surface – including mezzanines, balconies, decks, stairs, ramps, and landings – located more than 30 inches vertically above adjacent floor or grade within 36 inches horizontally of open-side edge (CBC 1015):
- Minimum 42-inches high above walking surface
Exception: Minimum 34 inches for guard at open side of stairs in R-3 occupancies and within individual R-2 dwelling units
Exception: Minimum 34 inches and maximum 38 inches for guard also serving as handrail on open side of stairs in R-3 occupancies and within individual R-2 dwelling units
Exception: Assembly seating per CBC 1029.16
 - Openings in guard may not allow passage of 4-inch-diameter sphere
Exception: From 36-inch to 42-inch guard height, openings may not allow passage of 4-3/8-diameter sphere
Exception: Triangular openings formed by riser, tread, and bottom rail of guard may not allow passage of 6-inch-diameter sphere
Exception: In areas not open to the public within I-3, F, H, or S occupancies, openings may not allow passage of 21-inch-diameter sphere
Exception: Within individual dwelling and sleeping units in R-2 and R-3 occupancies, openings may not allow passage of 4-3/8-diameter sphere
Exception: Assembly seating per CBC 1015.4, exception 5
45. Provide guard complying with the following where mechanical equipment or roof hatch opening located within 10 feet of a roof edge or open side of walking surface more than 30 inches above adjacent floor or grade (CBC 1015.6, CBC 1015.7):
- Minimum 42-inches high above walking surface
 - Openings in guard may not allow passage of 21-inch-diameter sphere
46. Provide coordinated connection details specifying the following for guardrail systems including glass (CBC 1607.8.1, CBC 2407.1):
- Glass shall be tempered
 - Glass thickness (any structural glass designed with safety of factor of 4 considering CBC 1607.8.1 guardrail loads)
 - Member sizes designed for CBC 1607.8.1 guardrail loads
 - Means of connection (member-to-member and guardrail to supporting structure) for CBC 1607.8.1 guardrail loads
47. In R-1, R-2, and R-3 occupancies, operable windows located more than 72 inches above adjacent finished grade or surface below, the lowest part of the clear window opening shall be minimum 36 inches above the finished floor. (CBC 1015.8)
Exception: Windows with openings not allowing passage of 4-inch-diameter sphere when in largest opened position
Exception: Windows provided with fall prevention devices or window opening limiting devices meeting ASTM F 2090
48. Indicate on electrical plans illumination along egress paths of minimum 1 foot-candle at walking surface. (CBC 1008.2)
Exception: U occupancies
Exception: A occupancy aisle accessways
Exception: R-1, R-2, R-3, and R-3.1 occupancy dwelling units and sleeping units
Exception: R-2.1 and R-4 sleeping units
Exception: May be reduced to minimum 0.2 foot-candle in auditoriums, theaters, concert halls, or similar occupancies provided illumination automatically restored upon activation of fire alarm system
49. Indicate on electrical plans emergency power for illumination of the following (CBC 1008.3):
- Any room or space requiring two or more means of egress
 - Corridors in areas requiring two or more means of egress
 - Exit access stairways and ramps in areas requiring two or more means of egress
 - Interior exit access stairways and ramps in buildings requiring two or more means of egress
 - Interior exit stairways and ramps in buildings requiring two or more means of egress
 - Exit passageways in buildings requiring two or more means of egress
 - Vestibules and areas on the level of discharge used for exit discharge per item I.33 in buildings requiring two or more means of egress
 - Exterior landings for exit doors leading directly to the exit discharge from buildings requiring two or more means of egress
 - Electrical equipment rooms
 - Fire command centers
 - Fire pump rooms
 - Generator rooms
 - Public restrooms with area greater than 300 square feet
50. Indicate on egress plan location of the following signage and coordinate with electrical plans as applicable (CBC 1013):
- Illuminated exit signs at the following:
Exception: Exit signs not required in rooms or spaces requiring only one exit
Exception: Main exterior exit doors or gates obviously and clearly identifiable as exits
Exception: U occupancies and within individual dwelling or sleeping units in R-1, R-2, R-3, or R-3.1 occupancies

- Where path of egress not immediately visible to occupants
- At intervening exit doors
- Within 100 feet of all points in corridors
- ❑ Tactile signs at the following locations **when illuminated exit signage required or provided**:
 - At each grade-level exterior exit door
 - At each exit door leading to grade-level exterior exit door via stair, ramp, exit enclosure, or horizontal exit
 - At each exit door from interior room or area required to have illuminated exit sign
- ❑ Floor-level exit signs per CBC 1013.7 in interior corridors of A, E, I, and R-2.1 occupancies and all areas serving guest rooms of R-1 hotel occupancies
- ❑ Path marking per CBC 1013.8 in interior rated corridors of unsprinklered A, R-1, and R-2 occupancies

J. FIRE-RATED AND SMOKE-RESISTANT ASSEMBLIES

1. Fire-rated exterior wall assemblies shall comply with the following:
 - ❑ Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly
 - ❑ Walls shall be rated for fire exposure per the following (CBC 705.5):
 - For A, E, H, I, L, and R occupancies, walls shall be rated for exposure to fire **from both sides**
 - For other than A, E, H, I, L, and R occupancies, walls with a fire separation distance of 10 feet or less shall be rated for exposure to fire **from both sides**
 - For other than A, E, H, I, L, and R occupancies, walls with a fire separation distance of more than 10 feet shall be rated for exposure to fire **from the inside**
 - ❑ Required parapets shall meet **all of the following** (CBC 705.11):
 - Fire rating equivalent to rating of supporting wall
 - Extending minimum 30 inches above the point where roof surface and wall intersect
Exception: Where roof slopes toward parapet at slope greater than 2:12, parapet shall extend to the same height as any portion of the roof within a fire separation distance where protected openings required per CBC Table 705.8, but never less than 30 inches above the point where roof surface and wall intersect
 - Noncombustible face – including counterflashing and coping materials – for uppermost 18 inches of any side adjacent to a roof surface
 - ❑ Doors:
 - _____-hour-rated per CBC Table 716.5
 - Self- or automatic-closing (CBC 716.5.9)
 - Sidelights and transoms prohibited
Exception: 3/4-hour-rated sidelights and transoms allowed in 1-hour-rated exterior walls
 - Door vision panels per CBC Table 716.5
 - ❑ Windows:
 - _____-hour-rated per CBC Table 716.6
 - ❑ For buildings on the same lot with fire separation distance of less than 15 feet, minimum 3/4-hour-rated openings where located less than 15 feet vertically above the roof of the adjacent building (CBC 705.8.6)
Exception: Buildings on the same lot considered as single building per item E.1
Exception: Opening protective not required where roof assembly of adjacent building meets criteria of CBC 705.8.6, exception 1
 - ❑ Any penetrations protected per item J.8
 - ❑ Any joints protected per item J.9
 - ❑ Any duct or air-transfer openings protected with **fire damper** per item J.10 (CBC 717.5.6)
2. Fire walls shall comply with the following:
 - ❑ Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly
 - ❑ Maintain sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicating by the wall fire rating (CBC 706.2)
Exception: Assemblies constructed as double fire walls per NFPA 221
 - ❑ Constructed of approved noncombustible materials
Exception: Type V construction
 - ❑ Horizontal continuity:
 - Continuous from exterior wall to exterior wall (CBC 706.5)
 - Extending at least 18 inches beyond the exterior surface of exterior walls (CBC 706.5)
Exception: Fire wall may terminate at interior surface of **combustible** exterior sheathing or siding if exterior wall minimum 1-hour-rated with 3/4-hour-rated openings for minimum 4 feet horizontally on both sides of fire wall
Exception: Fire wall may terminate at interior surface of **noncombustible** exterior sheathing, siding, or finish extending minimum 4 feet horizontally on both sides of fire wall
Exception: Fire wall may terminate at interior surface of **noncombustible** exterior sheathing where building on each side of fire wall is protected by NFPA 13 or NFPA 13R automatic sprinkler system
 - Where fire wall intersects exterior walls, the configuration shall comply with **one of the following** (CBC 706.5.1):
Exception: Exterior wall intersections at fire walls forming an angle equal to or greater than 180 degrees
 - Exterior walls on both sides of fire wall shall be minimum 1-hour-rated for minimum 4 feet on each side of the intersection with 3/4-hour-rated openings where opening protection required by CBC Table 705.8

- Buildings or spaces on both sides of fire wall shall assume imaginary lot line at the fire wall and extending beyond the exterior of the fire wall, with exterior wall and opening protection provided per CBC 705.5 and CBC 705.8
 - Extending to outer edge of horizontal projecting elements – e.g., balconies, roof overhangs, canopies, marquees – located within 4 feet of the fire wall (CBC 706.5.2)
 - Exception:** Horizontal projecting elements **without concealed spaces**, provided the exterior wall located behind and below the projecting element is minimum 1-hour-rated exterior wall with 3/4-hour-rated openings for a distance on both sides of the fire wall of not less than the depth of projecting element
 - Exception: Noncombustible** horizontal projecting elements **with concealed spaces**, provided minimum 1-hour-rated wall extends through concealed space **and** projecting element separated from building by minimum 1-hour-rated wall for a distance on both sides of the fire wall of not less than the depth of the projecting element (wall need not extend under projecting element where building exterior wall is minimum 1-hour-rated with 3/4-hour-rated openings for a distance on both sides of the fire wall of not less than the depth of the projecting elements)
 - Exception:** For **combustible** horizontal projecting elements **with concealed spaces**, the fire wall need only extend through the concealed space to the outer edge of the projecting element if the exterior wall located behind and below the projecting element is minimum 1-hour-rated exterior wall with 3/4-hour-rated openings for a distance on both sides of the fire wall of not less than the depth of projecting element
 - Vertical continuity:
 - Extending from foundation to termination point at least 30 inches above both adjacent roofs (CBC 706.6)
 - Exception:** Maximum 2-hour-rated fire walls may terminate at underside of roof sheathing, deck, or slab, provided **all of the following** are met:
 - Minimum 1-hour-rated lower roof within 4 feet of fire wall
 - Minimum 1-hour-rated elements supporting rated lower roof for entire span/length of such supporting elements
 - No openings in roof within 4 feet of fire wall
 - Exception:** Fire walls may terminate at the underside of **noncombustible** roof sheathing, deck, or slab, provided no openings in roof within 4 feet of fire wall
 - Exception:** In buildings of type III, IV, or V construction, fire walls may terminating at the underside of **combustible** roof sheathing or decks, provided **all of the following** are met:
 - No openings in roof within 4 feet of fire wall
 - Roof assembly meets **one of the following**:
 - Roof sheathing or deck constructed of fire-retardant wood for minimum 4 feet on both sides of fire wall
 - Roof protected with minimum 5/8-inch type X gypsum board directly beneath underside of roof sheathing or deck and supported by minimum 2-inch nominal ledgers attached to sides of roof framing members for minimum 4 feet on both sides of fire wall
 - Exception:** Where fire wall serves as an exterior wall for a building and separates buildings with different roof levels, fire wall shall terminate at a point minimum 30 inches above the lower roof level, provided **one of the following** is met:
 - Minimum 1-hour-rated exterior wall (rated from both sides) with 3/4-hour-rated openings for minimum 15 feet above lower roof
 - Minimum 1-hour-rated lower roof within 10 feet of fire wall **and** minimum 1-hour-rated elements supporting rated lower roof for entire span/length of such supporting elements **and** no openings in roof within 10 feet of fire wall
 - Exception:** Where fire wall serves as an interior wall for a building and the roof on one or both sides slopes toward the fire wall at a slope greater than 2:12, the fire wall shall extend to a height equal to the height of the roof located 4 feet from the fire wall plus an additional 30 inches
 - Combustible framing entering into fire walls shall comply with the following (CBC 706.7):
 - Adjacent combustible members entering into a concrete or masonry fire wall from opposite sides shall have minimum 4-inch clearance between embedded ends
 - Where combustible member frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled with noncombustible materials approved for fireblocking for the full thickness of the wall and for minimum 4 inches above, below, and between the structural members
 - Each opening limited to maximum 156 square feet (CBC 706.8)
 - Exception:** Opening size not limited where both buildings equipped with NFPA 13 automatic sprinkler system
 - Exception:** Openings prohibited at fire walls constructed along lot lines
 - Aggregate width of openings limited to maximum 25% of the length of the fire wall (CBC 706.8)
 - Exception:** Openings prohibited at fire walls constructed along lot lines
 - Doors:
 - _____-hour-rated per CBC Table 716.5
 - Self- or automatic-closing with actuation by smoke detectors or loss of power (CBC 716.5.9)
 - Sidelights and transoms prohibited
 - Door vision panels per CBC Table 716.5
 - Exception:** Door vision panels per CBC 716.5.8.1.2.1 in doors serving horizontal exits
 - Windows prohibited
 - Any penetrations protected per item J.8
 - Any joints protected per item J.9
 - Any duct or air-transfer openings protected with **fire damper** per item J.10 (CBC 717.5.1)
3. Fire barriers and associated horizontal assemblies shall comply with the following:
- Walls:
 - Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly

- Extending from top of foundation or floor/ceiling below to underside of floor/roof sheathing/deck/slab above and securely attached thereto (CBC 707.5)
Exception: Interior exit stairway/ramp enclosures, exit access stairway/ramp enclosures, and shaft enclosures may terminate at a top enclosure of the same fire rating as the top-most floor penetrated by the enclosure, but not less than the required fire rating of the enclosure (CBC 713.12)
Exception: Voids created at the intersection of a fire barrier and a non-fire-rated roof assembly shall be filled with an approved and secured material or system resisting the passage of fire and hot gases
- Continuous through concealed space (CBC 707.5)
- Supporting construction of equal or greater fire rating (CBC 707.5.1)
Exception: Rated supporting construction not required for maximum 1-hour fire barriers at incidental use areas in type IIB, IIIB, or VB construction
Exception: Maximum 2-hour rating acceptable for supporting construction of fire barriers separating tank storage per CBC 415.8.2.1, but not less than rating required by CBC Table 601 for construction type
- Floors/ceilings:
 - Provide horizontal assembly details – coordinated with floor plans and building sections – specifying CBC Table 721.1(3) assembly number or reference number for alternate approved assembly
Exception: Ceiling membrane not required in 1-hour-rated floor/ceiling assemblies over unusable crawlspaces
 - Continuous through concealed spaces (CBC 711.2.2)
 - Supporting construction of equal or greater fire rating (CBC 711.2.3)
Exception: Rated supporting construction not required for horizontal assemblies of maximum 1-hour-rated incidental use areas in type IIB, IIIB, or VB construction
- Each opening limited to maximum 156 square feet (CBC 707.6)
Exception: Opening size not limited where both buildings equipped with NFPA 13 automatic sprinkler system
Exception: Opening size not limited where opening protective is fire door serving enclosure for interior exit stairway or exit access stairway
Exception: Opening size not limited where opening protective is fire door in a fire barrier separating an interior exit stairway or exit access stairway from an exit passageway
Exception: Opening size not limited where opening protective has been tested to ASTM E119 or UL 263 and has fire rating not less than fire rating of wall
- Aggregate width of openings limited to maximum 25% of the length of the wall (CBC 707.6)
Exception: Aggregate width of openings not limited where opening protective is fire door serving enclosure for interior exit stairway or exit access stairway
Exception: Aggregate width of openings not limited where opening protective is fire door in a fire barrier separating an interior exit stairway or exit access stairway from an exit passageway
Exception: Aggregate width of openings not limited where opening protective has been tested to ASTM E119 or UL 263 and has fire rating not less than fire rating of wall
Exception: Aggregate width of openings not limited in atrium separation walls
- Doors:
 - _____-hour-rated per CBC Table 716.5
 - Self- or automatic-closing with actuation by smoke detectors or loss of power (CBC 716.5.9)
Exception: Heat-activated closing devices acceptable between shaft enclosures and refuse/recycling/laundry chute termination rooms (CBC 713.13.1)
 - Sidelights and transoms prohibited
Exception: Maximum 3/4-hour-rated sidelights and transoms acceptable in maximum 1-hour-rated fire barriers associated with separated occupancies, incidental uses, control areas, and fire areas
 - Door vision panels per CBC Table 716.5
Exception: Door vision panels per CBC 716.5.8.1.2.1 in doors serving horizontal exits
- Windows prohibited
- Any penetrations protected per item J.8
- Any joints protected per item J.9
- Any duct or air-transfer openings of fire barriers protected with the following (CBC 717.5.2):
 - In other than A, E, H, I, L, and R occupancies, **fire damper** per item J.10
Exception: Fire dampers not required at penetrations by minimum 26-gage steel ducts of maximum 1-hour-rated fire barriers where **all of the following** apply:
 - Located in other than H occupancies
 - Buildings equipped with NFPA 13 automatic sprinkler system
 - Duct system continuous from air-handling equipment to air outlet and inlet terminals**Exception:** Fire dampers not required at penetrations tested per ASTM E 119 or UL 263 as part of the fire barrier assembly
Exception: Fire dampers not required at ducts used as part of approved smoked control system per CBC 909 **and** where use of fire damper would interfere with system operation
 - In A, E, H, I, L, and R occupancies, **fire damper** and **smoke damper** per item J.10
Exception: Fire dampers not required at penetrations tested per ASTM E 119 or UL 263 as part of the fire barrier assembly
Exception: Fire and smoke dampers not required at ducts used as part of approved smoked control system per CBC 909 **and** where use of fire or smoke damper would interfere with system operation
- Any duct or air-transfer openings of horizontal assemblies protected with the following:
 - Through penetrations (CBC 717.6.1):
 - **Fire damper** per item J.10 installed at the floor line
Exception: Ducts within shaft enclosures constructed per item J.7

Exception: In other than I-2, I-2.1, and I-3 occupancies, ducts connecting not more than two stories and with penetration protection per item J.8

Exception: Ducts penetrating three floors or less and meeting **all of the following**:

- Duct contained within cavity of wall
 - Duct constructed of minimum 26-gage steel
 - Duct shall open into only one dwelling unit or sleeping unit
 - Duct shall be continuous from the dwelling unit or sleeping unit to the exterior of the building
 - Duct shall not exceed 4-inch nominal diameter and total area of such ducts shall not exceed 100 square inches in any 100 square feet of floor area
 - Annular space around duct shall be filled with materials preventing passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under minimum positive pressure differential of 0.01 inch of water at location of penetration for time period equivalent to fire rating of wall
 - Any grille openings in ceiling protected with **ceiling radiation damper** per item J.10
- Membrane penetrations shall be protected by **one of the following** (CBC 717.6.2):
- Shaft enclosure constructed per item J.7
 - Where a duct or diffuser with no duct penetrates the ceiling, **ceiling radiation damper** per item J.10 installed at ceiling line

Exception: Ceiling radiation dampers not required if tests in accordance with ASTM E 119 or UL 263 demonstrate ceiling radiation damper not necessary to maintain fire rating of assembly

Exception: Ceiling radiation dampers not required where exhaust duct penetrations protected per item J.8 are located within the cavity of a wall and do not pass through another dwelling unit or tenant space

4. Fire partitions protecting rated corridors and elevator lobbies shall comply with the following:

□ Walls:

- Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly
- Minimum 1-hour fire rating (CBC 708.3, CBC Table 1018.1)
- Extending from foundation/floor below to underside of floor/roof sheathing/deck/slab above, to fire-rated floor/ceiling assembly above, **or** to fire-rated roof/ceiling assembly above (CBC 708.3, CBC 708.4, CBC Table 1018.1)
Exception: Where room-side fire-rated membrane of a corridor is carried through to the underside of the floor/roof sheathing, deck, or slab of a fire-rated floor or roof above, the ceiling of the corridor may be protected by use of ceiling materials as required for a 1-hour-rated floor or roof system if any duct or air-transfer openings penetrating the corridor are additionally protected with a ceiling radiation damper per item J.10
Exception: Where a corridor ceiling is constructed as required for corridor walls, the walls may terminate at the upper membrane of such ceiling assembly if any duct or air-transfer openings penetrating the corridor are additionally protected with a corridor damper per item J.10
Exception: Fire partition need not extend into crawlspace below where floor above crawlspace has minimum 1-hour fire rating
- Supporting construction of equal or greater fire rating (CBC 708.4)
Exception: Rated supporting construction not required for corridors in type IIB, IIIB, or VB construction
- In **combustible** construction where fire partition is not continuous to sheathing/deck/slab above, the space between the ceiling and sheathing/deck/slab above shall be fireblocked per item J.11 or draftstopped per item J.12 at the partition line (CBC 708.4)
Exception: Fireblocking or draftstopping not required at partition line in buildings equipped throughout with NFPA 13 or NFPA 13R automatic fire sprinkler system with sprinklers installed in all combustible floor/ceiling and roof/ceiling spaces
Exception: Attic fireblocking or draftstopping not required at partition line in R-2 occupancy buildings not exceeding four stories above grade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3000 square feet or above every two dwelling units, whichever is smaller

□ Doors:

- 20-minute-rated (CBC Table 716.5)
Exception: 45-minute rating required for sidelights and transoms
- Self- or automatic-closing with activation by smoke detection or power loss (CBC 716.5.9)
- Smoke- and draft-control assembly with louvers prohibited and air leakage per CBC 716.5.3.1

□ Windows:

- 45-minute-rated (CBC Table 716.6)
- Cumulative glazing area of fire-rated windows shall not exceed 25% of the area of a common wall with any room (CBC 716.6.7.2)

□ Any penetrations protected per item J.8

□ Any joints protected per item J.9

□ Any duct or air-transfer openings protected with the following (CBC 717.5.4):

- In other than A, E, I, and R occupancies, **fire damper** and **smoke damper** per item J.10
Exception: In other than H and L occupancies, fire dampers not required where **any of the following** apply:
 - Corridor walls in buildings equipped with an NFPA 13 or NFPA 13R automatic sprinkler system **and** duct protected as through penetration per item J.8
 - Duct system constructed of approved materials per California Mechanical Code and duct penetrating wall meets **all of the following**:
 - Duct shall not exceed 100 square inches

- Duct shall be constructed of minimum 0.0217-inch-thick steel
- Duct shall not have openings that communicate between the corridor and adjacent rooms or spaces
- Duct shall be installed above a ceiling
- Duct shall not terminate at wall register in fire-rated wall
- Minimum 12-inch-long by 0.06-inch-thick steel sleeve shall be secured to both sides of wall and all four sides of sleeve with minimum 1.5-inch by 1.5-inch by 0.06-inch steel retaining angles and #10 screws, with the annular space between the steel sleeve and wall opening filled with mineral wool batting on all sides
- Penetrations by minimum 26-gage steel ducts of maximum 1-hour-rated fire barriers in buildings equipped with NFPA 13 automatic sprinkler system and duct system continuous from air-handling equipment to air outlet and inlet terminals

Exception: Smoke dampers not required where building equipped with approved smoke control system per CBC 909 **and** smoke dampers not necessary for operation and control of the system

Exception: Smoke dampers not required in corridor penetrations where duct is constructed of minimum 0.019-inch-thick steel and there are no duct openings serving the corridor

- In A, E, I, and R occupancies, **fire damper** and **smoke damper** per item J.10

Exception: Fire dampers not required in corridor penetrations where duct constructed of minimum 0.019-inch-thick steel **and** protected as through penetration per item J.8 **and** no duct openings serve the corridor

Exception: Fire dampers not required if duct system constructed of approved materials per California Mechanical Code and duct penetrating wall meets **all of the following:**

- For other than corridors in I-2 occupancies, duct shall not exceed 100 square inches
- Duct shall be constructed of minimum 0.0217-inch-thick steel
- Duct shall not have openings that communicate between the corridor and adjacent rooms or spaces
- Duct shall be installed above a ceiling
- Duct shall not terminate at wall register in fire-rated wall
- Minimum 12-inch-long by 0.06-inch-thick steel sleeve shall be secured to both sides of wall and all four sides of sleeve with minimum 1.5-inch by 1.5-inch by 0.06-inch steel retaining angles and #10 screws, with the annual space between the steel sleeve and wall opening filled with mineral wool batting on all sides

Exception: Smoke dampers not required where building equipped with approved smoke control system per CBC 909 **and** smoke dampers not necessary for operation and control of the system

Exception: Smoke dampers not required in corridor penetrations where duct is constructed of minimum 0.019-inch-thick steel and there are no duct openings serving the corridor

- 5. Fire partitions and associated horizontal assemblies isolating dwelling units and sleeping units from each other and from other occupancies contiguous to them shall comply with the following:

Walls:

- Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly
- Minimum 1-hour fire rating (CBC 708.3)
- Extending from foundation/floor below to underside of floor/roof sheathing/deck/slab above, to fire-rated floor/ceiling assembly above, **or** to fire-rated roof/ceiling assembly above (CBC 420.2, CBC 708.3, CBC 708.4)
Exception: 30-minute fire rating acceptable if building equipped throughout with NFPA 13 automatic sprinkler system
Exception: Fire partition need not extend into crawlspace below where floor above crawlspace has minimum 1-hour fire rating
- Supporting construction of equal or greater fire rating (CBC 708.4)
Exception: Rated supporting construction not required in type IIB, IIIB, or VB construction
- In **combustible** construction where fire partition is not continuous to sheathing/deck/slab above, the space between the ceiling and sheathing/deck/slab above shall be fireblocked per item J.11 or draftstopped per item J.12 at the partition line (CBC 708.4)
Exception: Fireblocking or draftstopping not required at partition line in buildings equipped throughout with NFPA 13 or NFPA 13R automatic fire sprinkler system with sprinklers installed in all combustible floor/ceiling and roof/ceiling spaces
Exception: Attic fireblocking or draftstopping not required at partition line in R-2 occupancy buildings not exceeding four stories above grade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3000 square feet or above every two dwelling units, whichever is smaller
- Airborne sound insulation with minimum 50 STC rating between adjacent dwelling units, sleeping units, and public/common areas (provide details specifying Gypsum Association assembly number or alternate listed assembly) (CBC 1207.2)
Exception: 45 STC acceptable if field-tested

Floors/ceilings:

- Provide horizontal assembly details – coordinated with floor plans and building sections – specifying CBC Table 721.1(3) assembly number or reference number for alternate approved assembly
- Minimum 1-hour fire rating (CBC 708.3, CBC 711.2.4.3)
- Continuous between exterior wall(s) and/or fire partition(s) (CBC 420.3, CBC 711.2.2)
Exception: 30-minute fire rating acceptable if building equipped throughout with NFPA 13 automatic sprinkler system
Exception: Ceiling membrane not required in 1-hour-rated floor/ceiling assemblies over unusable crawlspaces
- Supporting construction of equal or greater fire rating (CBC 711.2.3)
Exception: Rated supporting construction not required in type IIB, IIIB, or VB construction
- Airborne sound insulation with minimum 50 STC rating **and** impact sound insulation with minimum 50 IIC rating between adjacent dwelling units, sleeping units, and public/common areas (provide details specifying Gypsum

Association assembly number or alternate listed assembly) (CBC 1207.2, CBC 1207.3)

Exception: 45 STC or 45 IIC acceptable if field-tested

- ❑ Doors:
 - 45-minute-rated (CBC Table 716.5)
Exception: 20-minute fire rating acceptable if 30-minute fire partition assembly allowed
 - Self- or automatic-closing with activation by smoke detection or power loss (CBC 716.5.9)
Exception: Self- or automatic closers not required in fire doors within common walls separating R-1 sleeping units
- ❑ Any penetrations protected per item J.8
- ❑ Any joints protected per item J.9
- ❑ Any duct or air-transfer openings protected with **fire damper** per item J.10 (CBC 717.5.4)
Exception: Fire dampers not required in corridor penetrations where duct constructed of minimum 0.019-inch-thick steel **and** protected as through penetration per item J.8 **and** no duct openings serve the corridor
Exception: Fire dampers not required if duct system constructed of approved materials per California Mechanical Code and duct penetrating wall meets **all of the following**:
 - For other than corridors in I-2 occupancies, duct shall not exceed 100 square inches
 - Duct shall be constructed of minimum 0.0217-inch-thick steel
 - Duct shall not have openings that communicate between the corridor and adjacent rooms or spaces
 - Duct shall be installed above a ceiling
 - Duct shall not terminate at wall register in fire-rated wall
 - Minimum 12-inch-long by 0.06-inch-thick steel sleeve shall be secured to both sides of wall and all four sides of sleeve with minimum 1.5-inch by 1.5-inch by 0.06-inch steel retaining angles and #10 screws, with the annular space between the steel sleeve and wall opening filled with mineral wool batting on all sides**Exception:** Fire damper not required if duct meets **all of the following**:
 - Duct contained and located within cavity of a wall
 - Duct constructed of minimum 0.0187-inch-thick steel
 - Duct opens into only one dwelling unit or sleeping unit and is continuous from the unit to the exterior of the building
 - Duct shall not exceed 4-inch nominal diameter and total area of such ducts shall not exceed 100 square inches in any 100 square feet of floor area
 - Material used to fill remaining annular space shall prevent passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under minimum positive pressure differential of 0.01 inch of water at location of penetration for time period equivalent to fire rating of wall
 - Grille openings located in ceiling of fire-rated floor/ceiling or roof/ceiling assembly shall be protected by ceiling radiation damper per item J.10

6. Smoke barriers shall comply with the following:

- ❑ Walls:
 - Provide wall details – coordinated with floor plans and building sections – specifying CBC Table 721.1(2) assembly number or reference number for alternate approved assembly
 - Minimum 1-hour fire rating (CBC 709.3)
Exception: Smoke barriers constructed of minimum 0.10-inch-thick steel in I-3 occupancies
 - Forming effective membrane from top of foundation or floor/ceiling below to underside of floor/roof sheathing/deck/slab above (CBC 709.4)
 - Extending from outside wall to outside wall (CBC 709.4)
Exception: Smoke barriers for elevator lobbies
Exception: Smoke barriers for areas of refuge
 - Continuous through concealed space (CBC 709.4)
Exception: Smoke barrier walls not required in interstitial spaces where such spaces are designed and constructed with ceilings providing resistance to passage of fire and smoke equivalent to that provided by smoke barrier walls
 - Supporting construction of equal or greater fire rating (CBC 709.4)
Exception: Rated supporting construction not required in type IIB, IIIB, or VB construction
- ❑ Doors:
 - 20-minute-rated (CBC Table 716.5)
Exception: 45-minute rating required for sidelights and transoms
 - Self- or automatic-closing with actuation by smoke detectors or loss of power (CBC 716.5.9)
 - Smoke- and draft-control assembly with louvers prohibited and air leakage per CBC 716.5.3.1
- ❑ Windows:
 - 45-minute-rated (CBC Table 716.6)
 - Cumulative glazing area of fire-rated windows shall not exceed 25% of the area of a common wall with any room (CBC 716.6.7.2)
- ❑ Any penetrations protected per item J.8
- ❑ Any joints protected per item J.9
- ❑ Any duct or air-transfer openings protected with **smoke damper** per item J.10 (CBC 717.5.5)
Exception: Smoke dampers not required where openings in ducts limited to single smoke compartment **and** ducts are constructed of steel

7. Shaft enclosures shall comply with the following:

- ❑ Constructed as fire barriers and/or horizontal assemblies per item J.3 (CBC 713.2)
- ❑ Fire rating per **one of the following** (CBC 713.4):
 - Minimum 2-hour rating where connecting four stories or more
 - Minimum 1-hour rating where connecting fewer than four stories

- Shafts not extending to the bottom of the building shall comply with **one of the following** (CBC 713.11):
 - Enclosed at the lowest level with construction of the same fire rating as the lowest floor through which the shaft passes, but never less than rating required for the shaft enclosure
 - Terminate in a room having a use related to the purpose of the shaft and separated from the remainder of the building by fire barriers and/or horizontal assemblies constructed per item J.3 with fire rating and opening protection at least equal to protection required for the shaft enclosure

Exception: Room separation not required if there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom, with the bottom of the shaft closed off around the penetrating items with materials allowed for draftstopping per item J.12 **or** the room provided with an automatic sprinkler system

Exception: Shaft enclosures containing a refuse chute or laundry chute shall not be used for any other purposes and shall terminate in a room per item H.7

Exception: Room separation and protection at bottom of shaft not required if there are no combustibles in the shaft and no openings or other penetrations through the shaft enclosure to the interior of the building
 - Protected by approved fire dampers installed in accordance with their listing at the lowest floor level within the shaft enclosure
- Shafts not extending to the underside of the roof sheathing, deck, or slab of the building shall be enclosed at the top with construction of the same fire rating as the top-most floor penetrated by the shaft, but not less than the required fire rating of the shaft enclosure
- Any penetrations protected per item J.8
- Any joints protected per item J.9
- Any duct or air-transfer openings protected with the following (CBC 717.5.3):
 - **Fire damper and smoke damper** per item J.10

Exception: Minimum 3-hour-rated fire dampers required for fire barriers with 3-hour rating or higher

Exception: Fire dampers not required at penetrations meeting **one of the following:**

 - Steel exhaust subducts extending minimum 22 inches vertically in exhaust shaft, provided there is continuous airflow upward to the outside
 - Fire dampers not required at penetrations tested per ASTM E 119 or UL 263 as part of the shaft enclosure assembly
 - Fire dampers not required at ducts used as part of approved smoke control system per CBC 909 **and** where use of fire damper would interfere with system operation
 - Fire dampers not required in parking garage exhaust or supply shafts separated from other building shafts by minimum 2-hour-rated construction

Exception: In B and R occupancies equipped with an NFPA 13 automatic sprinkler system, smoke dampers not required at penetrations meeting **all of the following:**

 - Kitchen, clothes dryer, bathroom, and toilet room exhaust opening installed with steel exhaust subducts with minimum 26-gage wall thickness
 - Subducts extend at least 22 inches vertically
 - Exhaust fan installed at upper terminus of shaft and power continuously per CBC 909.11 to maintain upward airflow to the outside

Exception: Smoke dampers not required in parking garage exhaust or supply shafts separated from other building shafts by minimum 2-hour-rated construction

Exception: Smoke dampers not required at ducts used as part of approved smoke control system per CBC 909 **and** where use of smoke damper would interfere with system operation

Exception: Fire and smoke dampers not required in kitchen and clothes dryer exhaust systems

8. Penetrations of fire-rated assemblies shall comply with the following:

- **Noncombustible** penetrating items shall not connect to **combustible** items beyond the point of firestopping unless it can be demonstrated the fire-resistance integrity of the fire-rated assembly is maintained (CBC 714.3.3, CBC 714.4.1.3)
- Flexible ducts and air connectors shall not pass through any fire-rated assembly (CBC 717.7)
- Through penetrations of walls (CBC 714.3.1):
 - Provide penetration details – coordinated with floor plans and/or fire-rated wall details – indicating **manufacturer, product, and listing number** of through penetration firestop system **or** fire-rated assembly tested with proposed penetration
 - Through penetration firestop system shall have an **F rating** of not less than required fire rating of wall penetrated, based on testing in accordance with ASTM E 814 or UL 1479 with a positive pressure differential of 0.01 inch of water
 - Through penetration firestop system shall be approved for applicable wall materials, penetrating materials, and penetration configuration

Exception: Where steel, ferrous, or copper pipes/tubes/conduits penetrate concrete or masonry fire-rated walls, the annular space between the penetrating item and the fire-rated wall may be protected per **all of the following:**

 - Concrete, grout, or mortar installed for the full thickness of wall or thickness to achieve the required fire rating
 - Maximum 6-inch nominal diameter penetrating item
 - Maximum 144-square-inch opening in wall
 - Material used to fill remaining annular space shall prevent passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under minimum positive pressure differential of 0.01 inch of water at location of penetration for time period equivalent to fire rating of wall
- Membrane penetrations of walls (CBC 714.3.2):
 - Provide penetration details – coordinated with floor plans and/or fire-rated wall details – indicating **manufacturer, product, and listing number** of membrane penetration firestop system **or** fire-rated assembly tested with proposed penetration

- Membrane penetration firestop system shall have an **F rating** of not less than required fire rating of wall penetrated, based on testing in accordance with ASTM E 814 or UL 1479 with a positive pressure differential of 0.01 inch of water
- Membrane penetration firestop system shall be approved for applicable wall materials, penetrating materials, and penetration configuration

Exception: Membrane penetrations of maximum 2-hour-rated walls by steel electrical boxes are acceptable if **all of the following** are met:

 - Maximum 16-square-inch electrical boxes
 - Maximum 100-square-inch aggregate area of membrane openings in any 100 square feet of wall area
 - Maximum 1/8-inch annular space between wall membrane and electrical box
 - Electrical boxes on opposite sides of the wall separated by **one of the following**:
 - Minimum 24-inch horizontal distance where the wall is constructed with individual noncommunicating stud cavities
 - Horizontal distance not less than depth of wall cavity if filled with loose-fill, rock wool, or slag mineral wool insulation
 - Solid fireblocking per item J.11
 - Listed putty pads protecting both boxes with manufacturer and listing number specified on plans
 - Other listed materials and methods detailed on plans with manufacturer and listing number specified

Exception: Membrane penetrations by listed electrical boxes of any material are acceptable if **all of the following** are met:

 - Manufacturer and listing number of electrical box specified on plans
 - Maximum 1/8-inch annular space between wall membrane and electrical box
 - Electrical boxes on opposite sides of the wall separated by **one of the following**:
 - Minimum horizontal distance as specified by electrical box listing
 - Solid fireblocking per item J.11
 - Listed putty pads protecting both boxes with manufacturer and listing number specified on plans
 - Other listed materials and methods detailed on plans with manufacturer and listing number specified

Exception: Membrane penetrations by electrical boxes of any size or type listed as part of a proposed fire-rated assembly are acceptable if assembly manufacturer and listing number specified on plans

Exception: Membrane penetrations by boxes other than electrical boxes are acceptable if penetrating items and annular space between wall membrane and box are protected by approved membrane penetration firestop system having F rating and T rating of not less than required fire rating of wall penetrated, based on testing in accordance with ASTM E 814 or UL 1479 with a positive pressure differential of 0.01 inch of water

Exception: Annular space created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate
- Through penetrations of horizontal assemblies (CBC 714.4.1.1):
 - Provide penetration details – coordinated with floor plans and/or fire-rated horizontal assembly details – indicating **manufacturer, product, and listing number** of through penetration firestop system **or** fire-rated assembly tested with proposed penetration
 - Through penetration firestop system shall have an **F rating and T rating** of minimum 1 hour but not less than required fire rating of horizontal assembly penetrated, based on testing in accordance with ASTM E 814 or UL 1479 with a positive pressure differential of 0.01 inch of water

Exception: Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating

Exception: Floor penetrations by floor drains, tub drains, or shower drains contained and located within the concealed space of a horizontal assembly to not require a T rating
 - Through penetration firestop system shall be approved for applicable horizontal assembly materials, penetrating materials, and penetration configuration

Exception: Where steel, ferrous, or copper pipes/tubes/conduits or concrete/masonry items penetrate a single fire-rated horizontal assembly – or multiple horizontal assemblies if maximum 6-inch nominal diameter penetrating items and maximum aggregate opening area of 144 square inches in any 100 square feet of floor area – the annular space between the penetrating item and the fire-rated horizontal assembly may be protected by materials prevent passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under minimum positive pressure differential of 0.01 inch of water at location of penetration for time period equivalent to fire rating of the horizontal assembly

Exception: Where steel, ferrous, or copper pipes/tubes/conduits with maximum 6-inch nominal diameter penetrate a single fire-rated horizontal assembly – or multiple horizontal assemblies if maximum aggregate opening area of 144 square inches in any 100 square feet of floor area – the annular space may be filled with concrete, grout, or mortar for the full thickness of the horizontal assembly or thickness to achieve the required fire rating

Exception: Membrane penetrations by electrical boxes of any material listed as part of a proposed fire-rated assembly are acceptable if assembly manufacturer and listing number specified on plans
- Membrane penetrations of horizontal assemblies (CBC 714.4.2):
 - Provide penetration details – coordinated with floor plans and/or fire-rated horizontal assembly details – indicating **manufacturer, product, and listing number** of membrane penetration firestop system **or** fire-rated assembly tested with proposed penetration
 - Membrane penetration firestop system shall have an **F rating and T rating** of minimum 1 hour but not less than required fire rating of horizontal assembly penetrated, based on testing in accordance with ASTM E 814 or UL 1479 with a positive pressure differential of 0.01 inch of water

- Membrane penetration firestop system shall be approved for applicable horizontal assembly materials, penetrating materials, and penetration configuration
 - Exception:** Where steel, ferrous, or copper pipes/tubes/conduits or concrete/masonry items penetrate a single fire-rated horizontal assembly – or multiple horizontal assemblies if maximum 6-inch nominal diameter penetrating items and maximum aggregate opening area of 144 square inches in any 100 square feet of floor area – the annular space between the penetrating item and the fire-rated horizontal assembly may be protected by materials prevent passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under minimum positive pressure differential of 0.01 inch of water at location of penetration for time period equivalent to fire rating of the horizontal assembly
 - Exception:** Ceiling membrane penetrations of maximum 2-hour-rated horizontal assemblies by steel electrical boxes are acceptable if **all of the following** are met:
 - Maximum 16-square-inch electrical boxes
 - Maximum 100-square-inch aggregate area of membrane openings in any 100 square feet of ceiling area
 - Maximum 1/8-inch annular space between ceiling membrane and electrical box
 - Exception:** Membrane penetrations by electrical boxes of any size or type listed as part of a proposed fire-rated assembly are acceptable if assembly manufacturer and listing number specified on plans
 - Exception:** Membrane penetrations by listed electrical boxes of any material are acceptable if **all of the following** are met:
 - Manufacturer and listing number of electrical box specified on plans
 - Maximum 1/8-inch annular space between ceiling membrane and electrical box
 - Exception:** Annular space created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate
 - Exception:** Noncombustible items cast into concrete building elements and not penetrating both top and bottom surfaces of the element
 - Exception:** The ceiling membrane of maximum 2-hour-rated horizontal assemblies may be interrupted with the double wood top plate of a wall assembly sheathed with type X gypsum board, provided all penetrations of double top plates are protected as for a through penetration of the horizontal assembly **and** the ceiling membrane is tight to the top plates.

9. Joints installed in fire-rated assemblies shall comply with the following:

- Exception:** Walls permitted to have unprotected openings
- Exception:** Roofs where openings are permitted
- Exception:** Floors within a single dwelling unit
- Exception:** Floors where joint is protected by shaft enclosure constructed per item J.7
- Exception:** Mezzanine floors
- Exception:** Control joints not exceeding 0.625-inch width and tested in accordance with ASTM E 119 or UL 263
- Exception:** Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke-control purposes
- Exception:** Floors within malls
- Exception:** Floors and ramps within open parking garages constructed per CBC 406.5 and closed parking garages constructed per CBC 406.6
- Provide joint details – coordinated with floor plans and/or fire-rated assembly details – indicating **manufacturer, product, and listing number** of fire-resistant joint system
- Fire-resistant joint system – tested per ASTM E 1966 or UL 2079 – shall resist the passage of fire for a time period not less than the fire rating of the assembly in which it is installed (CBC 715.1, CBC 715.3)
- Fire-resistant joint system shall be approved for applicable assembly materials and joint configuration
- Where fire-rated floor or floor/ceiling assemblies are required, voids created at the intersection of such assemblies with exterior curtain wall assemblies shall be sealed with an approved system – tested per ASTM E 2307 – to provide an F rating for a time period not less than the fire rating of the floor assembly (CBC 715.4)
 - Exception:** Voids created at the intersection of such floor assemblies and exterior curtain wall assemblies where the vision glass extends to the finished floor level may be sealed with an approved material to prevent the interior spread of fire and capable of preventing passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 of water column for a time period not less than the fire rating of the floor assembly

10. Dampers shall comply with the following:

- Fire dampers (CBC 717.3.1, CBC 717.3.2.1, CBC 717.3.3.1)
 - Provide fire damper details – coordinated with floor plans and/or fire-rated assembly details – indicating **manufacturer, product, and listing number** of fire damper system tested per UL 555 and specifying **all of the following**:
 - Minimum 1.5-hour fire rating
 - Exception:** Minimum 3-hour-rated fire rating required for fire assemblies with 3-hour rating or higher
 - Whether system is dynamic or static
 - Means of actuation
 - Installation position
 - Airflow direction
 - Fire damper access
 - Fire damper opening identification
 - Fire damper actuation devices shall meet **one of the following**:

- Operating temperature approximately 50°F above the normal temperature within the duct system, but not less than 160°F
 - Operating temperature not more than 350°F where located in a smoke control system per CBC 909
 - Smoke dampers (CBC 717.3.1, CBC 717.3.2.2, CBC 717.3.3.2)
 - Provide smoke damper details – coordinated with floor plans and/or fire-rated/smoke-resistant assembly details – indicating **manufacturer, product, and listing number** of smoke damper system tested per UL 555S and specifying **all of the following**:
 - Class I or Class II leakage ratings with minimum 250°F elevated temperature rating
 - Means of actuation
 - Installation position
 - Airflow direction
 - Smoke damper access
 - Smoke damper opening identification
 - Smoke damper actuation devices shall meet **one of the following**:
 - Where smoke damper installed within a duct, a smoke detector shall be installed in the duct within 5 feet of the damper with no air outlets or inlets between the detector and the damper
 - Where smoke damper installed above doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening
 - Where smoke damper installed within an air transfer opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet horizontally of the damper
 - Where smoke damper installed in a corridor wall or ceiling, the damper may be controlled by a smoke detection system installed in the corridor
 - Where total-coverage smoke detector system provided within areas served by a HVAC system, smoke dampers may be controlled by a smoke detection system
 - Corridor dampers (CBC 717.3.1, CBC 717.3.2.4, CBC 717.3.3.5)
 - Provide corridor damper details – coordinated with floor plans and/or fire-rated/smoke-resistant assembly details – indicating **manufacturer, product, and listing number** of smoke damper system tested per UL 555 and UL 555S and specifying **all of the following**:
 - Minimum 1-hour fire rating
 - Class I or Class II leakage ratings with minimum 250°F elevated temperature rating
 - Means of actuation
 - Installation position
 - Airflow direction
 - Corridor damper access
 - Corridor damper opening identification
 - Corridor damper actuation devices shall meet the actuation requirements for fire dampers **and** smoke dampers
 - Ceiling radiation dampers (CBC 717.3.1, CBC 717.3.3.4)
 - Provide ceiling radiation damper details – coordinated with floor plans and/or fire-rated assembly details – indicating **manufacturer, product, and listing number** of ceiling radiation damper system tested per UL 555C and specifying means of actuation

11. In **combustible** construction, detail installation of fireblocking per the following to cut off concealed draft openings, both vertical and horizontal:

- Fireblocking shall consist of **any of the following** materials (CBC 718.2.1):
 - 2-inch nominal lumber
 - 2 thicknesses of 1-inch nominal lumber with broken lap joints
 - 1 thickness of 0.719-inch wood structural panels with joints back by 0.719-inch wood structural panels
 - 1 thickness of 3/4-inch particleboard with joints backed by 3/4-inch particleboard
 - 1/2-inch gypsum board
 - 1/4-inch cement-based millboard
 - Batts or blankets of mineral wool, mineral fiber, or other approved materials installed in such a manner as to be securely retained in place
 - Cellulose insulation installed as tested for the specific application
- Fireblocking shall be installed at **all of the following** locations:
 - Vertically at ceiling and floor levels and horizontally at intervals not exceeding 10 feet in concealed spaces of stud walls and partitions, furred spaces, and parallel rows of studs or staggered studs (CBC 718.2.2)
 - Interconnections between concealed vertical stud wall or partition spaces and concealed horizontal spaces created by floor joists/truss (CBC 718.2.3)
 - Between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, and cove ceilings (CBC 718.2.3)
 - Concealed spaces between stair stringers at the top and bottom of the run (CBC 718.2.4)
 - Openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels (using material approved to resist free passage of flame and products of combustion – specify listing number) (CBC 718.2.5)
 - Between attic spaces and chimney chases for factory-built chimneys and fireplaces (CBC 718.2.5)
 - Maximum intervals of 20 feet – with no open space exceeding 100 square feet – in concealed spaces of exterior wall finish and other exterior architectural elements (CBC 718.2.6)
 - In the spaces between the floor slab and underside of wood flooring where wood sleepers used such that no open spaces under the flooring exceed 100 square feet or communicate between rooms (CBC 718.2.7)

12. In **combustible** construction, detail installation of draftstopping per the following to subdivide floor/ceiling and/or attic assemblies:
- Draftstopping shall consist of **any of the following** materials (CBC 718.3.1):
 - Minimum 1/2-inch gypsum board
 - Minimum 3/8-inch wood structural panel
 - Minimum 3/8-inch particleboard
 - Minimum 1-inch nominal lumber
 - Cement fiber board
 - Batts or blankets of mineral wool or glass fiber
 - Other approved materials adequately supported
 - Draftstopping shall be installed in floor/ceiling assemblies per the following:
 - Above and in line with dwelling/sleeping unit separation in R-1 occupancies, R-2 occupancies with three or more dwelling units, R-3 occupancies with two dwelling units, and R-4 occupancies (CBC 718.3.2)

Exception: Draftstopping not required in buildings equipped with an NFPA 13 automatic sprinkler system

Exception: Draftstopping not required in buildings equipped with an NFPA 13R automatic sprinkler system, provided sprinklers also installed in concealed space where draftstopping omitted
 - In other than R occupancies where horizontal floor area exceeds 1,000 square feet (CBC 718.3.3)

Exception: In other than A, E, H, I, L, and R-2.1 occupancies, draftstopping not required in buildings equipped with an NFPA 13 automatic sprinkler system

Exception: In A, E, H, I, and L occupancies, the area between draftstops may be maximum 3,000 square feet with maximum 100-foot dimensions between draftstops in buildings equipped with an NFPA 13 automatic sprinkler system
 - Draftstopping shall be installed in attic assemblies per the following:
 - Above and in line with dwelling/sleeping unit separation walls not extending to roof sheathing in attics, mansards, overhangs, or other concealed roof spaces in R-1 occupancies and R-2 occupancies with three or more dwelling units (CBC 718.4.2)

Exception: Where corridor walls provide a dwelling/sleeping unit separation, draftstopping only required above one of the corridor walls

Exception: Draftstopping not required in buildings equipped with an NFPA 13 automatic sprinkler system

Exception: In R-2 occupancies not exceed four stories above grade plane, attic space may be subdivided by draftstops into areas maximum 3,000 square feet or above every two dwelling units, whichever is smaller

Exception: Draftstopping not required in buildings equipped with an NFPA 13R automatic sprinkler system, provided sprinklers also installed in concealed space where draftstopping omitted
 - In other than R occupancies such that any attic area or horizontal concealed space does not exceed 3,000 square feet (CBC 718.4.3)

Exception: In other than A, E, H, I, L, and R-2.1 occupancies, draftstopping not required in buildings equipped with an NFPA 13 automatic sprinkler system

Exception: In A, E, H, I, L, and R-2.1 occupancies, the area between draftstops may be maximum 9,000 square feet with maximum 100-foot dimensions between draftstops in buildings equipped with an NFPA 13 automatic sprinkler system
13. Specify interior wall and ceiling finish for all spaces on plans. Space labeled _____ required to have class _____ finish per CBC Table 803.9.

K. FIRE PROTECTION SYSTEMS

1. Provide the following automatic sprinkler system per CBC 903 to qualify for code exception/alternative (CBC 908.3):
 - NFPA 13
 - NFPA 13R
 - NFPA 13D
2. Provide standpipe system per CBC 905.
3. Provide the following fire alarm system(s) per CBC 907:
 - Manual
 - Automatic
4. In R occupancies, indicate smoke alarms/detectors – interconnected and hard-wired with battery back-up – in the following locations on floor plans or utility plans (CBC 907.2.11):

Exception: Smoke detectors shall not be located within areas specified in CBC 907.2.11.5

 - Within each sleeping room
 - Outside each separate sleeping area in immediate vicinity of bedrooms
 - In every room within R-1 occupancies on path of egress from sleeping room to door leading from sleeping unit
 - On each story within dwelling/sleeping unit
5. In R occupancy dwelling/sleeping units and E occupancy classrooms served by fuel-burning appliances or dwelling units with an attached garage, indicate carbon monoxide alarms – interconnected and hard-wired with battery back-up – in the following locations on floor plans or utility plans (CBC 915):
 - Outside each separate sleeping area in immediate vicinity of bedroom(s)
 - On every occupiable level of a dwelling unit, plus any basements
 - Within any bedroom with a fuel-burning appliance located within that bedroom or its attached bathroom

- Within each sleeping unit
 - Within each E occupancy classroom with signal automatically transmitted to an on-site location staffed by school personnel
- Exception:** E occupancies with occupant load of 30 or fewer

6. Provide smoke/heat vents per CBC 910.3 and/or mechanical smoke removal system per CBC 910.4 for the following (CBC 910.2):
- Buildings containing high-piled combustible storage
 - Undivided areas of F-1 or S-1 occupancy exceeding 50,000 s.f.

L. SAFETY GLAZING

1. Specify tempered glass at the following locations requiring safety glazing (CBC 2406.4):
- Glazing in swinging, sliding, and bi-fold doors

Exception: Glazed openings through which a 3-inch-diameter sphere is unable to pass

Exception: Decorative glazing

Exception: Glazing used as curved glazed panels in revolving doors
 - Glazing within 24-inch arc of door in closed position and within 60 inches of floor or walking surface

Exception: Glazing with intervening wall or barrier between door and glazing

Exception: Within R-2 and R-3 dwelling units, glazing in walls on latch side of and perpendicular to plane of door in closed position

Exception: Where door accesses closet or storage area maximum 3 feet in depth

Exception: Decorative glazing
 - Glazing adjacent to showers, bathtubs, hot tubs, swimming pools, and saunas and within 60 inches – vertically and horizontally -- of standing/walking surface
 - Glazing adjacent to stairways, ramps, and intermediate landings within 60 inches vertically and 36 inches horizontally of the travel surfaces

Exception: Where horizontal rail installed on accessible side of glazing at minimum 34 inches and maximum 38 inches above walking surface
 - Glazing adjacent to bottom stair landings within 60 inches vertically of landing surface and within 60-inch horizontal arc less than 180 degrees from bottom tread nosing

Exception: Glazing protected by complying guard and minimum 18 inches from guard
 - Glazing per the following within 36 inches horizontally of walking surfaces:

Exception: Where horizontal rail installed on accessible side of glazing at minimum 34 inches and maximum 38 inches above walking surface

Exception: Decorative glazing

 - o Exposed area of individual pane minimum 9 square feet
 - o Bottom edge of glazing within 18 inches of floor
 - o Top edge of glazing more than 36 inches above floor

M. PARTITION WALLS AND SUSPENDED CEILINGS

1. Detail the following partition wall connections:
- Connection to roof/ceiling/floor above with any partitions attached to suspended ceilings laterally braced to the building structure
 - Connection to slab/floor below
2. Provide complete details indicating the following for suspended ceiling systems (ASCE 7 13.5.6.2.2):
- Exception:** Alternative connection detailing acceptable for listed suspended ceiling systems
- Heavy duty T-bar grid system
 - Runner and cross-runner sizes and spacing
 - Vertical wires and compression struts connecting suspension runners and cross-runners to building structure
 - Perimeter support per all of the following:
 - o Minimum 2-inch closure angles
 - o Two adjacent ends of ceiling grid attached to closure angles
 - o At ends opposite those attached to closure angles, ends of ceiling grid resting upon and free to slide on closure angles
 - o At ends free to slide on closure angles, minimum 3/4-inch clearance between ends of ceiling grid and walls
 - For uninterrupted ceiling areas exceeding 1000 square feet, lateral bracing to building structure
 - For uninterrupted ceiling areas exceeding 2500 square feet, seismic separation joints
 - Connection of lighting fixtures, electrical conduits, and cable trays supported by building structure
 - Minimum 2-inch rings/sleeves/adapters for sprinkler heads and allowing minimum 1-inch movement in all horizontal directions

N. ROOF ASSEMBLIES

1. Specify roof material and underlayment.
2. Specify ICC, UL, or equivalent listing report number and manufacturer for roofing material (tile, metal, built-up, etc.).

3. *Note on roof plan or elevations:* "Roofing shall have a class A fire rating." (County Building Code 92.1.1505.1)
Exception: Class B rating acceptable for buildings not located in a wildland-urban interface fire area **and** not classified as R-3 or U occupancy
Exception: Roof coverings of slate, clay, or concrete roof tile, exposed concrete roof deck, and ferrous or copper shingles or sheets may be considered as having Class A rating
4. In roof area additions or alterations involving more than 50% of a structure's existing roof area or 2,500 square feet – whichever is less – the structure's entire roof covering – new and existing – shall meet item N.3. (County Building Code 92.1.1505.1)
5. Specify roof pitch.
6. Specify on plans layer-by-layer assembly of any built-up roofing systems – include coordinated assembly number from manufacturer's listing report – to verify required fire rating achieved at roof pitch proposed.
7. Roof pitch is not adequate for roof type specified (CBC 1507). Provide minimum pitch of _____.
8. Specify 1/4:12 minimum roof pitch for drainage on roof plan **or** design to support accumulated water. (CBC 1611.1, CBC 1611.2)
9. Detail primary and secondary (overflow) roof drainage per the following with location of each roof drainage element indicated on roof plan (CBC 1503.4, CPC 1101.12):
 - Primary roof drainage per **one of the following:**
 - o Roof drains sized per CPC Table D 101.1 – provide calculation on roof plan – and located at low point of roof
 - o Scuppers sized per CPC Table D 101.1 – provide calculation on roof plan – and placed level with roof surface in adjacent walls or parapets
 - Secondary (overflow) roof drainage with same capacity as primary roof drainage per **one of the following:**
 - o Roof drains with maximum height to prevent roof ponding and minimum 2 inches above low point of roof
 - o Scuppers with minimum 4-inch opening dimension and inlet elevation preventing roof ponding
 - Primary and secondary (overflow) roof drainage with separate outlets
10. Indicate on plans approved waterproof decking material for balconies/decks over interior spaces (CBC 1503.1). Specify manufacturer and ICC, UL, or equivalent listing report number.
11. Indicate on roof plan location and size of attic vents per the following:
 - Minimum net free vent area per the **greater of the following:**
 - o Minimum 1 s.f. of net free vent area required for every 150 s.f. of attic area (**provide calculation on roof plan**) (CBC 1203.2)
Exception: Net vent area of 1/300 attic area acceptable in **climate zone 14** with Class I or Class II vapor retarder installed on warm-in-winter side of ceiling **and** between 40% and 50% of required net free vent area located maximum 3 feet below the ridge or highest point of attic with eave or cornice vents – as allowed per item O.7 – providing balance of required net free vent area
Exception: Unvented attics complying with CBC 1203.3
 - o Net vent area indicated on CF1R form for **multi-family projects with a whole-house fan** (CBEEES 150.1(c)12)
 - Vents positioned to provide cross ventilation to each attic area
12. Specify on roof plan the following for each skylight (CBC 2405):
 - Size and location
 - Glazing material
 - Manufacturer and ICC, UL, or equivalent listing report number
 - Screening as required per CBC 2405.3 or listing report

O. WILDFIRE-RESISTIVE CONSTRUCTION REQUIREMENTS

Exception: This section not applicable to new or remodeled building located outside wildland-urban interface fire area as defined in County Building Code 92.1.702A

Exception: This section not applicable to greenhouses enclosed with translucent plastic or glass **and** located minimum 30 feet from other buildings and all property lines

Exception: This section not applicable to freestanding open-side shade covers, shed, gazebos, and similar accessory structures with area less than 250 square feet of projected roof area **and** located minimum 30 feet from other buildings and all property lines

1. Indicate on plan location and size of fuel modification zone per the following (County Fire Code 96.1.4907.2):
 - Dimension minimum 100-foot fuel modification zone from perimeter of each structure
 - Fuel modification zone may not cross property lines or encroach into open space easements
 - If lot dimensions do not allow full 100-foot fuel modification zone, *note on plot plan:* "Entire lot is fuel modified."
2. In roof coverings where the profile creates space between the roof covering and combustible roof decking, specify one of the following means of protecting spaces at eave ends (County Building Code 92.1.705A.2):
 - Fire-stopping with approved materials (e.g., non-combustible birdstops for curved tile)
 - One layer of No. 72 ASTM cap sheet installed over combustible decking

- Otherwise constructed to prevent intrusion of flames and embers
3. Exposed valley flashings shall be constructed with minimum 26-gauge corrosion-resistant metal installed over minimum 36-inch-wide single layer of No. 72 ASTM cap sheet running full length of valley. (County Building Code 92.1.705A.3)
 4. Any roof gutters shall be provided with means to prevent accumulation of leaves and debris. (County Building Code 92.1.705A.4)
 5. Skylights shall be tempered glass. (County Building Code 92.1.705A.5)
 6. All vents (roof, foundation, combustion-air, etc.) shall comply with the following (County Building Code 92.1.706A.1):
 - Protected by louvers and 1/8-inch noncombustible, corrosion-resistant mesh
 - Exception:** Approved vents resisting intrusion of flames and embers
 - Turbine attic vents equipped to allow rotation in only one direction
 7. Vents prohibited in eaves, eave overhangs, soffits, or cornices. (County Building Code 92.1.706A.2)
 - Exception:** Approved vents resisting intrusion of flames and embers
 - Exception:** Gable-end vents allowed if located minimum 12 inches below lowest eave/rake projection
 - Exception:** As allowed by building official and local fire authority and per eave details in guidance document PDS #198
 8. Detail eaves, soffits, and fascias per guidance document PDS #198. (County Building Code 92.1.706A.3)
 - Exception:** Detailed eaves and soffits meeting SFM Standard 12-7A-3
 - Exception:** Eave construction on an addition may match existing structure if addition square footage does not exceed 50% of existing structure or 2,500 square feet, whichever is less **and** any vents in new eaves meet items O.6 and O.7
 9. Specify exterior wall finish complying with **one of the following** (County Building Code 92.1.707A.1):
 - Exception:** Livestock stables of less than 2,000 square feet of total floor area and without a restroom if located minimum 100 feet from all property lines, any open space easement, and any dwelling on the parcel
 - Exception:** Repair or replacement of less than 50% of an existing exterior wall may be like-for-like unless the wall covering is wood shingle or wood shake, in which case it shall be repaired or replaced with fire-retardant, pressure-treated wood shingles or wood shakes
 - Exception:** Repair or replacement of 50% or more of an existing exterior wall shall require the **entire** wall to meet all requirements of section O
 - Noncombustible material (stucco, cement fiber board, masonry, etc.)
 - Exception:** 3/4-inch wood drop siding or 3/8-inch plywood with an underlayment of 1/2-inch fire-rated gypsum sheathing that is tightly butted or taped and mudded **or** other ignition-resistant material approved by the building official
 - Ignition-resistant material
 - Log wall construction (smallest horizontal dimension minimum 6 inches)
 10. Enclose underfloor areas to the ground with exterior wall construction per item O.9. (County Building Code 92.1.709A.4.2.2)
 11. Specify on window and door schedules exterior windows, exterior glazed doors, glazed openings within exterior doors, and glazed openings within exterior garage doors complying with **one of the following** (County Building Code 92.1.708A.2):
 - Multi-paned glass with minimum one tempered pane (glazing frames made of vinyl materials shall have welded corners, metal reinforcement in interlock area, and be certified to ANSI/AAMA/NWDA 101/I.S.2-97 structural requirements)
 - Glass block units
 - Minimum 20-minute fire-rated (provide listing or test report)
 - Meet performance requirements of SFM Standard 12-7A-2
 12. Specify on door schedule exterior doors complying with **one of the following** (County Building Code 92.1.708A.3):
 - Exterior surface or cladding of noncombustible or ignition-resistant material
 - Solid-core wood minimum 1-3/8-inch thick
 - Minimum 20-minute fire-rated
 - Meet performance requirements of SFM Standard 12-7A-1
 13. Specify on plans exterior garage doors shall include weather stripping as necessary to reduce any gaps at the bottom, sides, and top of the door to 1/8 inch or less. (CBC 708A.4)
 14. Detail patio cover, carport, and trellis construction complying with **any of the following** (County Building Code 92.1.709A.1):
 - Exception:** Freestanding trellis of less than 250 square feet in area and located minimum 30 feet from nearest structure **and** all property lines
 - Noncombustible material
 - 1-hour fire-rated material
 - Approved exterior fire-retardant treated wood
 - Modified heavy timber (minimum 2x tongue-and-groove sheathing, 4x6 rafters/beams, 6x6 posts/columns)
 15. Detail deck, balcony, and exterior stair construction complying with the following (County Building Code 92.1.709A.1):
 - Exception:** Freestanding deck of less than 250 square feet in area and located minimum 30 feet from nearest structure **and** all property lines

Exception: Detached deck meeting **all of the following:** Separated from any building by minimum 5 feet of noncombustible surface, decking surface material minimum 1-1/2-inches thick, located at or below elevation of building ground floor and not exposed to underfloor area or basement opening, skirted with noncombustible material from deck walking surface to ground, and underdeck area vented in conformance with items O.6 and U.4

Exception: Deck repair or replacement involving 50% or more of the existing deck or 1,000 square feet of deck area, whichever is less, shall require the entire deck to meet all requirements of this item

Framing (any of the following):

Exception: Structural supports of decks, balconies, and similar projections skirted from floor level to ground level with noncombustible material with any underdeck area vented in conformance with items O.6 and U.4

- Noncombustible material
- 1-hour fire-rated material
- Approved exterior fire-retardant treated wood
- Modified heavy timber (minimum 4x8 joists/treads, 4x10 or 6x8 beams/stringers, 6x6 posts/columns)

Decking and tread material (any of the following):

- Noncombustible material
- 1-hour fire-rated material
- Approved exterior fire-retardant treated wood
- Approved alternative decking material meeting test requirements of County Building Code 92.1.709A.1.4

16. Paper-faced insulation prohibited in attics or other ventilated spaces. (County Building Code 92.1.711A.1)

17. Specify on plans any portion of a fence or other structure within five feet of building shall be constructed per one of the following (County Building Code 92.1.712A.1):

Exception: Vinyl fencing as allowed by building official

- Noncombustible material
- Approved exterior fire-retardant treated wood
- Material meeting same fire-resistive standards as exterior walls of building

18. Paints, coatings, stains, or other surface treatments are not acceptable means of compliance with any wildfire-resistive construction requirement. (County Building Code 92.1.703.4)

P. ELECTRICAL, MECHANICAL, AND PLUMBING REQUIREMENTS

1. Provide adequate natural or artificial lighting in all spaces per CBC 1205.

2. *Note on plans:* "The project will comply with the County of San Diego lighting ordinance."

3. Provide adequate natural or mechanical ventilation of all spaces per CBC 1203 and CBEES 120.1.

4. Building requires the following per CPC Table 422.1:

- Unisex restroom
- Separate gender restrooms
- Note:** All single-user restrooms shall be labeled on plans as unisex
- Drinking fountain

5. Indicate on plans location of mechanical units and water heaters.

6. Specify manufacturer, model, and ICC, UL, WH, or equivalent listing report number – UL and ANSI *standard* numbers are insufficient – demonstrating the following for each prefabricated fireplace, wood stove, or pellet stove (CBC 2111.13.1, CalGreen 4.503.1):

- Gas fireplaces are direct-vent sealed-combustion type (applies to new buildings only)
- Wood stoves and pellet stoves comply with U.S. EPA Phase II emission limits (applies to new buildings only)
- Chimney shrouds are part of the approved fireplace assembly

7. Masonry fireplaces must be constructed per county details (make completed PDS #180 a permanent part of plans) **or** per engineered design with coordinated structural details and calculations. (CBC 2111)

Q. ENERGY EFFICIENCY REQUIREMENTS

NONRESIDENTIAL PROJECTS

1. Provide complete energy efficiency compliance documentation demonstrating design compliance with the **2016** California Building Energy Efficiency Standards (CBEES) for nonresidential and hotel/motel buildings. (CBEES 100.0)

Exception: 1 occupancies

Exception: Qualified historic buildings, except lighting compliance per CBEES 140.6(a)3Q required

2. Proposed design shall comply with energy efficiency requirements applicable to climate zone _____. (CBEES 100.1)

3. Existing buildings and their envelopes -- including shell buildings and unconditioned spaces -- occupied and conditioned for the first time shall comply as new construction. (CBEES 100.0(a), CBEES 141.0)

4. The following energy efficiency compliance forms shall be completed and made a permanent part of plans (CBEES 10-103):
- Mandatory certificates of compliance:
 - NRCC-CXR-01-E: Design review kickoff (required for newly constructed buildings)
 - NRCC-CXR-02-E: Construction documents (required for newly constructed buildings)
 - NRCC-CXR-03-E or NRCC-CXR-04-E: Simple HVAC or complex mechanical systems (required for newly constructed buildings)
 - NRCC-CXR-05-E: Design review signature page (required for newly constructed buildings)
 - NRCC-SRA-01-E: Solar-ready areas
 - NRCC-SRA-02-E or NRCC-SPV-01-E or NRCC-STH-01-E: Minimum solar zone area worksheet or solar photovoltaic system or solar water heating system
 - Performance certificates of compliance:
 - NRCC-PRF-01-E: Performance calculations covering building envelope, mechanical system, domestic hot water, indoor lighting of conditioned spaces, and select covered processes
 - Prescriptive certificates of compliance:
 - NRCC-ENV-01-E: Envelope component approach
 - Supplemental certificates of compliance:
 - NRCC-ENV-02-E: Fenestration worksheet (required for prescriptive submittals to complete NRCC-ENV-01-E)
 - NRCC-ENV-03-E: Solar Reflectance Index (required for prescriptive submittals using SRI in lieu of emittance/reflectance to complete NRCC-ENV-01-E)
 - NRCC-ENV-05-E: Fenestration certificate label (required for submittals where NFRC label certificates not available)
 - NRCC-ENV-06-E: Area weighted average calculation worksheet (required for prescriptive submittals where envelope features use weighted-area compliance to complete NRCC-ENV-01-E)
 - NRCC-PRC-01-E: Process compliance forms and worksheets
5. Energy efficiency compliance forms shall be signed by **all of the following** (CBEES 10-103):
- Energy efficiency documentation author
 - Project designer or owner
6. Building orientation indicated on NRCC-ENV-01-E form shall match orientation shown on plot plan. (CBEES 100.1)
7. Glazing areas indicated on NRCC-ENV-01-E form shall match floor plan. (CBEES 100.1)
8. Proposed design as indicated on NRCC-ENV-01-E form shall comply with the following glazing measures:
- Prescriptive (CBEES 140.3(5), CBEES Table 140.3-B):
 - Maximum U-factor:
 - Exception:** 0.47 for replacement glazing per CBEES Table 141.0-A
 - Exception:** Hotel/motel facilities per CBEES Table 140.3-C
 - Exception:** Chromogenic glazing shall comply with CBEES 140.3(a)5B exception
 - Fixed windows: 0.36
 - Operable windows: 0.46
 - Curtainwalls or storefronts: 0.41
 - Glazed doors: 0.45
 - Swinging exterior doors: 1.45
 - Non-swinging exterior doors: 0.70
 - Glass curb-mounted skylights: 0.58
 - Glass deck-mounted skylights: 0.46
 - Plastic curb-mounted skylights: 0.88
 - Maximum Relative Solar Heat Gain Coefficient (RSHGC) per CBEES Table 140.3-B:
 - Exception:** 0.31 for replacement glazing per CBEES Table 141.0-A, with exemption for maximum 150 s.f. of replacement glazing or maximum 50 s.f. of added glazing or maximum 50 s.f. of added skylight area
 - Exception:** Hotel/motel facilities per CBEES Table 140.3-C
 - Exception:** Window assemblies with built-in shading methods with RSHGC calculated per CBEES Equation 140.3-A
 - Exception:** Maximum RSHGC = 0.56 for windows forming display perimeter on exterior walls of first story
 - Exception:** Chromogenic glazing shall comply with CBEES 140.3(a)5Cexception
 - Fixed windows: 0.25
 - Operable windows: 0.22
 - Curtainwalls or storefronts: 0.26
 - Glazed doors: 0.23
 - Glass curb-mounted skylights: 0.25
 - Glass deck-mounted skylights: 0.25
 - Plastic curb-mounted skylights: No limit
 - Minimum Visible Transmittance (VT) per CBEES Table 140.3-B
 - Exception:** Exemption for maximum 150 s.f. of replacement glazing or maximum 50 s.f. of added glazing or maximum 50 s.f. of added skylight area
 - Exception:** Hotel/motel facilities per CBEES Table 140.3-C
 - Exception:** Windows complying with CBEES Equation 140.3-B
 - Fixed windows: 0.42
 - Operable windows: 0.32
 - Curtainwalls or storefronts: 0.46

- Glazed doors: 0.17
 - Glass curb-mounted skylights: 0.49
 - Glass deck-mounted skylights: 0.49
 - Plastic curb-mounted skylights: 0.64
 - Maximum total glazing area = 40% of gross exterior wall area or 6 feet times display perimeter, whichever is greater
 - Maximum total west-facing glazing area = 40% of gross west-facing exterior wall area or 6 feet times west-facing display perimeter, whichever is greater
 - Maximum skylight area = 5% of gross exterior roof area
9. Proposed design as indicated on NRCC-ENV-01-E form shall comply with the following roof/ceiling insulation measures:
- ❑ Mandatory (CBEES 120.7(a)):

Exception: Alterations where roof is exposed to the roof deck shall comply with minimum insulation requirements of CBEES 141.0(b)2Biii

 - Metal building: Maximum U-factor = 0.098 per applicable CBEES joint appendix table
 - Wood-framed and others: Maximum U-factor = 0.075 per applicable CBEES joint appendix table
 - Insulation shall not be placed on top of a suspended ceiling with removable ceiling panels

Exception: Conditioned spaces with a combined floor area no greater than 2,000 s.f. in an otherwise unconditioned building when the average height of the space between the ceiling and roof over these conditioned space is greater than 12 feet
 - ❑ Prescriptive (CBEES 140.3(a)1B, CBEES Table 140.3-B):

Exception: Hotel/motel buildings per CBEES Table 140.3-C

 - Metal building: Maximum U-factor = 0.65 per applicable CBEES joint appendix table
 - Wood-framed and others:
 - **Climate zone 7** projects: Maximum U-factor = 0.067 per applicable CBEES joint appendix table
 - **Climate zone 10, 14, and 15** projects: Maximum U-factor = 0.039 per applicable CBEES joint appendix table
10. Proposed design as indicated on NRCC-ENV-01-E form shall comply with the following wall insulation measures:
- Exception:** Minimum R-13 insulation required in demising partitions between conditioned and enclosed unconditioned spaces per CBEES 110.8(f)
- ❑ Mandatory (CBEES 120.7(b)):

Exception: Alterations shall comply with minimum insulation requirements of CBEES 141.0(b)1B

 - Metal building: Maximum U-factor = 0.113 per applicable CBEES joint appendix table
 - Metal-framed: Maximum U-factor = 0.151 per applicable CBEES joint appendix table
 - Light mass walls (heat capacity ≥ 7 and <15): Maximum U-factor = 0.440 per applicable CBEES joint appendix table for 6-inch or greater hollow core CMU
 - Heavy mass walls (heat capacity ≥ 15): Maximum U-factor = 0.690 per applicable CBEES joint appendix table for 8-inch or greater hollow core CMU
 - Wood-framed and others: Maximum U-factor = 0.110 per applicable CBEES joint appendix table
 - Spandrel panels and glass curtain walls: Maximum U-factor = 0.280 per applicable CBEES joint appendix table
 - Demising walls:
 - Wood-framed walls: Maximum U-factor = 0.099 per applicable CBEES joint appendix table
 - Metal-framed walls: Maximum U-factor = 0.151 per applicable CBEES joint appendix table
 - ❑ Prescriptive (CBEES 140.3(a)2, CBEES Table 140.3-B):

Exception: Hotel/motel buildings per CBEES Table 140.3-C

 - Metal building:
 - **Climate zone 7** projects: Maximum U-factor = 0.113 per applicable CBEES joint appendix table
 - **Climate zone 10 and 14** projects: Maximum U-factor = 0.061 per applicable CBEES joint appendix table
 - **Climate zone 15** projects: Maximum U-factor = 0.057 per applicable CBEES joint appendix table
 - Metal-framed:
 - **Climate zone 7** projects: Maximum U-factor = 0.098 per applicable CBEES joint appendix table
 - **Climate zone 10, 14, and 15** projects: Maximum U-factor = 0.062 per applicable CBEES joint appendix table
 - Light mass walls (heat capacity ≥ 7 and <15):
 - **Climate zone 7** projects: Maximum U-factor = 0.440 per applicable CBEES joint appendix table
 - **Climate zone 10, 14, and 15** projects: Maximum U-factor = 0.170 per applicable CBEES joint appendix table
 - Heavy mass walls (heat capacity ≥ 15):
 - **Climate zone 7** projects: Maximum U-factor = 0.690 per applicable CBEES joint appendix table
 - **Climate zone 10** projects: Maximum U-factor = 0.650 per applicable CBEES joint appendix table
 - **Climate zone 14 and 15** projects: Maximum U-factor = 0.184 per applicable CBEES joint appendix table
 - Wood-framed and others:
 - **Climate zone 7** projects: Maximum U-factor = 0.110 per applicable CBEES joint appendix table
 - **Climate zone 10 and 14** projects: Maximum U-factor = 0.059 per applicable CBEES joint appendix table
 - **Climate zone 15** projects: Maximum U-factor = 0.042 per applicable CBEES joint appendix table
11. Proposed design as indicated on NRCC-ENV-01-E form shall comply with the following raised-floor insulation measures:
- ❑ Mandatory (CBEES 120.7(c)):

Exception: Alterations shall comply with minimum insulation requirements of CBEES 141.0(b)1C

 - Raised mass (minimum 3-inch lightweight concrete over metal deck): Maximum U-factor = 0.269 per applicable CBEES joint appendix table
 - Others: Maximum U-factor = 0.071 per applicable CBEES joint appendix table
 - ❑ Prescriptive (CBEES 140.3(a)4, CBEES Table 140.3-B):

Exception: Hotel/motel buildings per CBEES Table 140.3-C

- Raised mass (minimum 3-inch lightweight concrete over metal deck):
 - **Climate zone 7 and 10** projects: Maximum U-factor = 0.269 per applicable CBEES joint appendix table
 - **Climate zone 14 and 15** projects: Maximum U-factor = 0.092 per applicable CBEES joint appendix table
- Others:
 - **Climate zone 7 and 10** projects: Maximum U-factor = 0.071 per applicable CBEES joint appendix table
 - **Climate zone 14 and 15** projects: Maximum U-factor = 0.039 per applicable CBEES joint appendix table

12. Specify on building sections the R-values of the following insulation assemblies – cavity and/or continuous as applicable – as indicated on NRCC-ENV-01-E form:

- Roof/ceiling
- Wall
- Raised-floor
- Slab-perimeter (if required per performance method)

13. The following nominal framing depths will be required in order to accommodate cavity insulation as indicated on NRCC-ENV-01-E form:

- Roof rafters: _____ nominal depth to accommodate _____ cavity insulation
- Stud walls: _____ nominal depth to accommodate _____ cavity insulation

14. *Note on building sections for **climate zone 7** projects:* “Class I or Class II vapor retarder shall be installed on the interior side of framed walls.” (CBC 1405.3.1)

Exception: Basement walls

Exception: Below-grade portion of any wall

Exception: Construction where moisture or its freezing will not damage its materials

Exception: Class III vapor retarder acceptable per CBC 1405.3.2 on interior side of framed walls where minimum R-10 insulated sheathing applied over 2x4 framing or minimum R-15 insulated sheathing applied over 2x6 framing

15. Proposed design as indicated on NRCC-ENV-01-E form shall comply with the following cool roof measures:

Exception: Existing roofs with 50% or less **and** 2000 s.f. or less of roof area altered

- Prescriptive (CBEES 140.3(a)1Ai):

Exception: Hotel/motel facilities per CBEES 140.3(a)1Aii

Exception: If aged solar reflectance value not available from Cool Roof Rating Council, aged value shall be determined by CBEES 110.8(i)2 equation using initial solar reflectance

Exception: Roof areas covered by building-integrated photovoltaic panels or solar thermal panels are exempt

- Steep-sloped roofs (i.e., greater than 2:12 slope):

- Minimum thermal emittance = 0.75

Exception: Roofing with minimum SRI = 16 calculated per NRCC-ENV-03-E worksheet

- Minimum **aged** solar reflectance = 0.20

Exception: Roofing with minimum SRI = 16 calculated per NRCC-ENV-03-E worksheet

- Low-sloped roofs (i.e., 2:12 or less slope):

Exception: Roof assemblies with thermal mass of minimum 25 psf are exempt

- Minimum thermal emittance = 0.75

Exception: Roofing with minimum SRI = 75 calculated per NRCC-ENV-03-E worksheet

- Minimum **aged** solar reflectance = 0.63

Exception: A lesser aged solar reflectance is allowed provided the roof/ceiling assembly meets trade-off values of CBEES 140.3

Exception: Roofing with minimum SRI = 75 calculated per NRCC-ENV-03-E worksheet

- Performance (CBEES 110.8(ii)):

- Roofing products not certified by Cool Roof Rating Council shall assume the following values:

Exception: Solar Reflectance Index (SRI) calculated per NRCC-ENV-03-E worksheet may be used as alternative

- Asphalt shingles: 0.75 thermal emittance, 0.08 **aged** solar reflectance

- Other roofing products: 0.75 thermal emittance, 0.10 **aged** solar reflectance

16. For projects with cool roofing indicated on NRCC-ENV-01-E form, specify the following cool roof product information on roof plans (CBEES 110.8(i)):

- Cool Roof Rating Council (CRRC) product ID number
- Manufacturer brand
- Product model
- Product color

17. Provide **large, clear** note on **plot plan:** “Properly completed and signed Certificates of Installation (NRCI) and Certificates of Acceptance (NRCA) shall be provided to the inspector in the field.” (CBEES 10-103)

LOW-RISE RESIDENTIAL PROJECTS

18. Provide complete energy efficiency compliance documentation demonstrating design compliance with the **2016** California Building Energy Efficiency Standards (CBEES) for low-rise residential buildings. (CBEES 100.0)

19. Proposed design shall comply with energy efficiency requirements applicable to climate zone _____. (CBEES 100.1)
20. The following energy efficiency compliance forms shall be completed and made a permanent part of plans (CBEES 10-103):
- Prescriptive certificate of compliance:
 - o CF1R-NCB-01-E (applies to newly constructed buildings and additions greater than 1000 s.f.)
 - o CF1R-ADD-01-E (applies to additions up to 1000 s.f.)
 - o CF1R-ADD-02-E (may be used for additions up to 300 s.f. with no HERS verification required)
 - o CF1R-ALT-01-E (applies to alterations)
 - Performance certificate of compliance:
 - o CF1R-PRF-01-E
21. Energy efficiency compliance forms shall be signed by **all of the following** (CBEES 10-103):
- Energy efficiency documentation author
 - Project designer or owner
22. Building orientation indicated on CF1R form shall match orientation shown on plot plan. (CBEES 100.1)
23. Glazing areas indicated on CF1R form shall match floor plan. (CBEES 100.1)
24. Proposed design as indicated on CF1R form shall comply with the following glazing measures:
- Mandatory (CBEES 150.0(q)):
 - o Maximum U-factor = 0.58
Exception: Fenestration area of up to 10 s.f. or 0.5% of conditioned floor area – whichever is greater – is exempt
Exception: Fenestration area of up to 30 s.f. is exempt for dual-glazed greenhouse or garden windows
 - Prescriptive (CBEES 150.1(c)3, CBEES Table 150.1-A, CBEES 150.2(a)1, CBEES 150.2(b)1):
 - o Maximum U-factor = 0.32
Exception: Up to 3 s.f. of new glazing area in doors is exempt
Exception: Up to 3 s.f. of new tubular skylight area with dual-pane diffusers is exempt
Exception: Maximum U-factor of 0.55 acceptable for up to 16 s.f. of new skylight area
Exception: Maximum U-factor of 0.40 acceptable for up to 75 s.f. of replacement glazing
Exception: Maximum U-factor of 0.55 acceptable for replacement skylights
 - o Maximum Solar Heat Gain Coefficient (SHGC) = 0.25
Exception: Window assemblies with built-in shading methods with SHGC calculated per CF1R-WKS-03-E worksheet
Exception: Up to 3 s.f. of new glazing area in doors is exempt
Exception: Up to 3 s.f. of new tubular skylight area with dual-pane diffusers is exempt
Exception: Maximum SHGC of 0.30 acceptable for up to 16 s.f. of new skylight area
Exception: Maximum SHGC of 0.35 acceptable for up to 75 s.f. of replacement glazing
Exception: Maximum SHGC of 0.30 acceptable for replacement skylights
 - o Maximum total glazing area = 20% of conditioned floor area
Exception: In additions greater than 700 s.f. and up to 1000 s.f., new glazing area may be larger of 175 s.f. or 20% of addition's conditioned area
Exception: In additions greater than 400 s.f. and up to 700 s.f., added glazing area may be larger of 120 s.f. or 25% of addition's conditioned area
Exception: In additions up to 400 s.f., added glazing area may be larger of 75 s.f. or 30% of addition's conditioned area
Exception: Alterations adding maximum 75 s.f. of glazing are exempt
 - o Maximum total west-facing glazing area = 5% of conditioned floor area
Exception: In additions greater than 700 s.f. and up to 1000 s.f., added west-facing glazing area may be 70 s.f.
Exception: In additions up to 700 s.f., added west-facing glazing area may be 60 s.f.
Exception: Alterations adding maximum 75 s.f. of glazing are exempt
25. Proposed design as indicated on CF1R form shall comply with the following roof/ceiling insulation measures:
- Mandatory per **one of the following** (CBEES 150.0(a)):
 - Exception:** Where existing attic roof space is not large enough to accommodate required R-value, the entire accessible space shall be filled with insulation except 1-inch air space maintained between insulation and roof sheathing
 - o Minimum R-22 between wood framing members (installed at ceiling level for vented attics and ceiling or roof level for unvented attics)
Exception: Minimum R-19 between wood framing members in alterations
 - o Maximum U-factor = 0.043 per applicable CBEES joint appendix table (installed at ceiling level for vented attics and ceiling or roof level for unvented attics)
Exception: Maximum U-factor = 0.054 in alterations
 - Prescriptive (CBEES 150.1(c)1A, CBEES Table 150.1-A):
 - Exception:** Additions 700 s.f. or less
 - o If **any** space conditioning equipment and ducts located in ventilated attic:
 - **Climate zone 7:** Minimum R-30 ceiling insulation between attic and conditioned space
 - **Climate zones 10, 14, and 15** per **one of the following** options:
 - Option A:
 - ❖ Minimum R-38 ceiling insulation between attic and conditioned space
 - ❖ Continuous insulation installed above roof rafters and in contact with roof deck: Minimum R-6 (with air space between roofing and roof deck) **or** minimum R-8 (no air space between roofing and roof deck)

- Option B:
 - ❖ Minimum R-38 ceiling insulation between attic and conditioned space
 - ❖ Insulation installed between roof rafters and in contact with roof deck: Minimum R-13 (with air space between roofing and roof deck) **or** minimum R-18 (no air space between roofing and roof deck)
 - If **all** space conditioning equipment and ducts located in conditioned space and confirmed by HERS verification:
 - **Climate zones 7 and 10:** Minimum R-30 ceiling insulation between attic and conditioned space
 - **Climate zones 14 and 15:** Minimum R-38 ceiling insulation between attic and conditioned space
26. Proposed design as indicated on CF1R form shall comply with the following wall insulation measures:
- Mandatory per **one of the following** (CBEES 150.0(c)):
 - Minimum R-13 between 2x4 wood studs
Exception: Existing walls with minimum R-11
 - Minimum R-19 between 2x6 or larger wood studs
 - Maximum U-factor = 0.102 per applicable CBEES joint appendix table between other 2x4 framing assemblies
 - Maximum U-factor = 0.074 per applicable CBEES joint appendix table between other 2x6 or larger framing assemblies
Exception: Minimum R-13 acceptable on inside of rim joists in multi-story buildings
 - Prescriptive (CBEES 150.1(c)1B, CBEES Table 150.1-A):
Exception: Demising walls between conditioned and unconditioned space – e.g., between dwelling and garage – need only meet mandatory requirements
 - Framed walls in **climate zone 7** per **one of the following:**
Exception: Minimum R-15 between 2x4 wood studs and minimum R-19 between 2x6 wood studs acceptable in additions 700 s.f. or less per CBEES 150.2(a)1B
 - Minimum R-13 between 2x4 wood studs at 16" o.c. **plus** minimum R-5 continuous
 - Minimum R-19 between 2x6 wood studs at 16" o.c. **plus** minimum R-2 continuous
 - Maximum U-factor = 0.065 per applicable CBEES joint appendix table
 - Framed walls in **climate zones 10, 14, and 15** per **one of the following:**
Exception: Minimum R-15 between 2x4 wood studs and minimum R-19 between 2x6 wood studs acceptable in additions 700 s.f. or less per CBEES 150.2(a)1B
 - Minimum R-13 between 2x4 wood studs at 16" o.c. **plus** minimum R-10 continuous
 - Minimum R-19 between 2x6 wood studs at 16" o.c. **plus** minimum R-5 continuous
 - Maximum U-factor = 0.051 per applicable CBEES joint appendix table
 - Above-grade mass walls per **one of the following:**
 - Minimum R-13 installed on inside surface of wall
 - Minimum U-factor = 0.070 per applicable CBEES joint appendix table installed on inside surface of wall
 - Minimum R-8 installed on outside surface of wall
 - Minimum U-factor = 0.125 per applicable CBEES joint appendix table installed on outside surface of wall
 - Below-grade mass walls in **climate zones 7 and 10** projects per **one of the following:**
 - Minimum R-13 installed on inside surface of wall
 - Minimum U-factor = 0.070 per applicable CBEES joint appendix table installed on inside surface of wall
 - Minimum R-5 installed on outside surface of wall
 - Minimum U-factor = 0.200 per applicable CBEES joint appendix table installed on outside surface of wall
 - Below-grade mass walls in **climate zones 14 and 15** projects per **one of the following:**
 - Minimum R-13 installed on inside surface of wall
 - Minimum U-factor = 0.070 per applicable CBEES joint appendix table installed on inside surface of wall
 - Minimum R-10 installed on outside surface of wall
 - Minimum U-factor = 0.100 per applicable CBEES joint appendix table installed on outside surface of wall
27. Proposed design as indicated on CF1R form shall comply with the following raised-floor insulation measures:
- Mandatory and prescriptive per **one of the following** (CBEES 150.0(d), CBEES 150.1(c)1C):
 - Minimum R-19 between wood framing members
 - Maximum U-factor = 0.037 per applicable CBEES joint appendix table
28. Specify on building sections the R-values of the following insulation assemblies – cavity and/or continuous as applicable – as indicated on CF1R form:
- Roof/ceiling
 - Wall
 - Raised-floor
 - Slab-perimeter (if required per performance method)
29. The following nominal framing depths will be required in order to accommodate cavity insulation as indicated on CF1R form:
- Roof rafters: _____ nominal depth to accommodate _____ cavity insulation
 - Stud walls: _____ nominal depth to accommodate _____ cavity insulation
30. Detail on plans the following for any continuous insulation assemblies:
- Continuous insulation of the roof deck: Structural connection of roofing material to framing considering insulation layer between
 - Continuous insulation outside exterior walls: Structural connection of exterior finish material – e.g., stucco, siding – to framing considering insulation layer between

31. *Note on building sections for **climate zone 14** projects:* "Class I or Class II vapor retarder shall be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation." (CBEES 150.0(g)2)
32. Proposed design as indicated on CF1R form shall comply with the following radiant barrier measures:
- Prescriptive (CBEES 150.1(c)2, CBEES Table 150.1-A):
 - Exception:** Alterations **not** proposing added radiant barrier to qualify for cool roof exception per item O.34
 - o Radiant barrier shall be installed below the roof deck and on all gable-end walls
 - Exception:** Radiant barrier not required in **climate zone 10, 14, or 15** if complying with prescriptive roof/ceiling insulation Option B per item Q.25
33. For projects with radiant barrier indicated on CF1R form, *provide **large, clear** note on **roof plan or elevations**:* "Radiant barrier is required."
34. Proposed design as indicated on CF1R form shall comply with the following cool roof measures:
- Prescriptive (CBEES 150.1(c)11, CBEES 150.2(b)1H):
 - Exception:** Additions of 300 s.f. or less
 - Exception:** Alterations replacing 50% or less of roofing
 - Exception:** Areas with building-integrated photovoltaic panels or solar thermal panels
 - Exception:** Roof assemblies with minimum 25 psf thermal mass over roof membrane
 - o Steep-sloped roofs (i.e., greater than 2:12 slope) on **climate zones 10, 14, and 15** projects:
 - Exception:** Existing/modified assemblies with R-38 roof/ceiling insulation **or** radiant barrier **or** no ducts in attic **or** existing ducts insulated and sealed with HERS verification **or** minimum R-2 insulation above roof deck **or** 1-inch air space between top of roof deck and bottom of roofing product **or** installed roofing product with rise-to-width ratio of 1:5 for 50% or more of roofing product width
 - Exception:** If aged solar reflectance value not available from Cool Roof Rating Council, aged value shall be determined by CBEES 110.8(i)2 equation using initial solar reflectance
 - Minimum thermal emittance = 0.75
 - Exception:** Roofing with minimum SRI = 16 calculated per CF1R-WKS-04-E worksheet
 - Minimum **aged** solar reflectance = 0.20
 - Exception:** Roofing with minimum SRI = 16 calculated per CF1R-WKS-04-E worksheet
 - o Low-sloped roofs (i.e., 2:12 or less slope) on **climate zone 15** projects:
 - Exception:** Existing/modified assemblies with no ducts in attic **or** roof deck insulation per CBEES Tables 150.2-A
 - Minimum thermal emittance = 0.75
 - Exception:** Roofing with minimum SRI = 75 calculated per CF1R-WKS-04-E worksheet
 - Minimum **aged** solar reflectance = 0.63
 - Exception:** Roofing with minimum SRI = 75 calculated per CF1R-WKS-04-E worksheet
 - Performance (CBEES 110.8(i)):
 - o Roofing products not certified by Cool Roof Rating Council shall assume the following values:
 - Exception:** Solar Reflectance Index (SRI) calculated per CBEES 110.8(i)3 may be used as alternative
 - Asphalt shingles: 0.75 thermal emittance, 0.08 **aged** solar reflectance
 - Other roofing products: 0.75 thermal emittance, 0.10 **aged** solar reflectance
35. For projects with cool roofing indicated on CF1R form, specify the following cool roof product information on roof plans (CBEES 110.8(i)):
- Cool Roof Rating Council (CRRC) product ID number
 - Manufacturer brand
 - Product model
 - Product color
36. Specify on **plot plan** the following special features indicated on CF1R form: _____
37. *Provide **table or summary** on **plot plan*** indicating HERS verification required for the following energy efficiency measures (CBEES 10-103):
- Duct sealing
 - Cooling system refrigerant charge
 - Cooling system minimum airflow
 - Cooling system fan efficacy
 - Cooling system SEER and/or EER above minimum
 - Indoor air quality (IAQ) mechanical ventilation
 - Building envelope air leakage
 - Quality insulation installation (QII)
 - Other:
38. For projects requiring HERS verification, CF1R forms must be registered with a California-approved HERS provider data registry. (CBEES 10-103)
39. *Provide **large, clear** note on **plot plan**:* "Properly completed and signed Certificates of Installation (CF2R forms) shall be provided to the inspector in the field. For projects requiring HERS verification, the CF2R forms must be registered with a

California-approved HERS provider data registry.” CF2R forms are available at <http://www.sdcounty.ca.gov/pds/bldg/energy-stds.html>. (CBEEES 10-103)

40. Provide **large, clear note on plot plan**: “HERS verification required. Properly completed Certificates of Verification (CF3R forms) shall be provided to the inspector in the field. CF3R forms must be registered with a California-approved HERS provider data registry.” CF3R forms are available at <http://www.sdcounty.ca.gov/pds/bldg/energy-stds.html>. (CBEEES 10-103)

R. GREEN BUILDING REQUIREMENTS

NONRESIDENTIAL PROJECTS

1. Indicate on plans the following construction waste management requirements (CalGreen 5.408.1) (for more information, please consult the [County of San Diego Construction & Demolition Recycling Guide](#)):
 - Note on plans*: “A minimum of 65 percent of nonhazardous construction and demolition waste shall be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.”
 - Note on plans*: “Unless verifiable documentation from a waste management company is provided demonstrating a minimum 65 percent of construction and demolition waste has been diverted from landfills, a construction waste management plan shall be maintained on site and shall identify the waste materials to be diverted from disposal, determine if waste materials will be sorted on-site or bulk mixed, identify the diversion facilities where materials collected will be taken, and specifies the amount of materials diverted shall be calculated by weight or volume, but not both.”
 - For additions and alterations, *note on plans*: “Universal waste items, such as fluorescent lamps and ballast, thermostats containing mercury, and other California-prohibited universal waste materials, shall be disposed of properly and diverted from landfills.”
 - Note on plans*: “100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled unless such material is contaminated by disease or pest infestation.”
2. Items R.3 through R.8 shall apply to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of \$200,000 or above; provisions relevant to additions and alterations shall apply only to the portions of building being added or altered within the scope of the permitted work. (CalGreen 301.3)
3. Provide bicycle parking per the following (CalGreen 5.106.4.1):
 - For new projects, additions, or alterations anticipated to generate visitor traffic, provide short-term bicycle parking per **all of the following**:
 - Exception**: Additions or alterations adding nine or fewer visitor vehicular parking spaces
 - o Permanently anchored bicycle racks located within 200 feet of visitors' entrance and readily visible by passers-by
 - o Accommodating number of bicycles equivalent to at least 5% of new visitor vehicular parking spaces added, minimum one two-bike capacity rack
 - For new buildings with 10 or more tenant-occupants **or** for additions/alterations adding 10 or more tenant vehicular parking spaces, provide long-term bicycle parking per **all of the following**:
 - o Secure bicycle parking for at least 5% of tenant vehicular parking spaces added, minimum one space
 - o Acceptable bicycle parking facilities shall be convenient from the street and include covered, lockable enclosures with permanently anchored bicycle racks **or** lockable bicycle rooms with permanently anchored bicycle racks **or** lockable, permanently anchored bicycle lockers
4. In new projects or additions/alterations adding 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles per the following (CalGreen 5.106.5.2):
 - Exception**: Designated electric vehicle charging spaces provided per item R.3 qualify toward this total
 - Number of spaces – indicate location on plans – per CalGreen Table 5.106.5.2
 - In same color as parking stall striping, painted characters reading "CLEAN AIR/VANPOOL/EV" such that lower edge of last word aligns with end of stall striping and is visible beneath a parked vehicle
5. In newly constructed nonresidential buildings, indicate on plans designated electric vehicle charging spaces per CalGreen Table 5.106.5.3.3.
 - Exception**: Locations with insufficient electrical supply
 - Exception**: Where local enforcement agency determines utility infrastructure design requirements related to implementing this provision may adversely affect the project construction cost
6. Indicate on plans readily accessible location of trash collection area(s) with minimum 50% of the area(s) dedicated to recycling. (PRC 42911, PRC 42910-12)
7. For new buildings 10,000 square feet or more, submit building commissioning plan **including all of the following** to verify building systems and components meet owner's or owner representative's project requirements (CalGreen 5.410.2, CBEEES 120.8):
 - Exception**: Unconditioned warehouses of any size
 - Exception**: Within unconditioned warehouses, areas under 10,000 square feet used for offices or other conditioned accessory spaces
 - Exception**: Initial tenant improvements under 10,000 square feet
 - Exception**: Open parking garages or open parking garage areas within a structure
 - General project information
 - Commissioning goals

- Systems to be commissioned and plans to test per the following:
 - Explanation of original design intent
 - Equipment and systems to be tested, including extent of tests
 - Functions to be tested
 - Conditions under which tests shall be performed
 - Measurable criteria for acceptable performance
 - Commissioning team information
 - Commissioning process activities, schedules, and responsibilities, including plans for commissioning completion

8. Finish materials shall comply with VOC and formaldehyde limits per CalGreen 5.504.4.

RESIDENTIAL PROJECTS

9. Include in plans notes I.1 through I.15 from attached PDS #081 to indicate compliance with CalGreen mandatory residential requirements. (CalGreen 301.1)

10. For multifamily residential projects with five or more dwelling units, indicate on plans readily accessible location of trash collection area(s) with minimum 50% of the area(s) dedicated to recycling. (CalGreen 4.410.2, PRC 42911, PRC 42910-12)

11. For multifamily residential projects with 17 or more dwelling units constructed on a site, indicate on plans the following to support future installation of electric vehicle charging stations (CalGreen 4.106.4.2):

Exception: Locations with insufficient electrical supply

Exception: Where local enforcement agency determines utility infrastructure design requirements related to implementing this provision may adversely affect the project construction cost

- Electrical vehicle charging spaces of at least 3% of total number of parking spaces provided but not less than one
 - At least one electrical vehicle charging space shall be located in common-use area and available for use by all residents
 - Electrical vehicle charging spaces shall be minimum 18-foot long and minimum 9-foot wide
 - One in every 25 electric vehicle charging spaces – but not less than one – shall be accessible and have minimum 8-foot-wide aisle with maximum 2.1% slope in all directions for both charging space and aisle
- Exception:** Minimum 5-foot-wide aisle acceptable if minimum 12-foot-wide charging space provided
- If electric vehicle chargers are installed as part of this project, required accessible electrical vehicle charging spaces shall be located adjacent to an accessible parking space meeting CBC 11A to allow use of the electric vehicle charger from the accessible parking space

S. VERTICAL LOAD SUPPORTING SYSTEM REQUIREMENTS

1. Provide a complete roof/floor framing plan.
2. Structure exceeds conventional framing limits of CBC 2308.2. Provide engineered design per *California Building Code*.
3. Framing shall comply with all recommendations made in engineering calculations.
4. Justify the following loads used in design (CBC 1606, CBC 1607):
 - Roof live load (psf)
 - Roof dead load (psf)
 - Floor live load (psf)
 - Floor live load (concentrated loads)
 - Floor dead load (psf)
5. Provide complete structural detailing for the project.
6. Cross-reference all framing details with the appropriate plans.
7. Delete all non-applicable details from plans.
8. Specify plywood grade, thickness, panel span rating, and nailing for roof/floor sheathing. (CBC Table 2304.8(3))
9. *Note on plans:* "Plywood shall be continuous under California fill."
10. Specify on framing plans the size, orientation, span, and spacing as applicable for the following structural elements:
 - Rafters
 - Ceiling joists
 - Beams
 - Floor joists
 - Headers
 - Posts
 - Columns
11. Provide two complete sets of truss drawings and coordinate with roof framing plan. (CBC 2303.4)

12. Identify trusses on roof framing plan by file/ID/sequence number **or** make truss layout a permanent part of plans.
13. Design trusses for bearing at perpendicular interior shear walls.
14. Detail 1/2-inch clearance between trusses and non-bearing walls.
15. Indicate on roof framing plan support for ridge/hip/valley intersections. (CBC 2308.7)
16. Detail rafter-tie connections at conventionally framed areas with connection nailing per CBC Table 2308.7.3.1.
17. Provide metal straps across ridge beam and rafters.
18. Specify camber requirements and combination symbol for all glue-laminated wood members on plans.
19. *Note on plans:* "A certificate of conformance is required prior to framing inspection for glue-laminated wood members."
20. Specify the make and model number of all proposed truss/beam/joist hangers.
21. Specify size and type (double stud, post, etc.) of support for beams/headers – 4x12 and larger – and girder trusses.
22. Detail all beam-to-post, post-to-beam, and post-to-footing connections.
23. Specify stud size and spacing for all walls. (CBC Table 2308.5.1)
24. Balloon frame walls of rooms with sloping ceilings (rake walls). Specify on plans which walls are balloon framed.
25. Specify on plans fasteners – including nuts and washers – for preservative-treated-wood (in all applications) and fire-retardant-treated-wood (in exterior applications) shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CBC 2304.10.5)
Exception: Plain carbon steel fasteners in SBX/DOT and zinc borate preservative-treated wood in dry, interior environment
Exception: Fasteners other than nails, timber rivets, wood screws, and lag screws may be mechanically deposited zinc-coated steel

T. LATERAL LOAD RESISTING SYSTEM REQUIREMENTS

1. Provide engineered lateral design per *California Building Code*. Building does not meet the following bracing requirements of CBC 2308:
 - Braced wall lines not provided in perpendicular transverse and longitudinal directions per CBC Figure 2308.6.1
 - Shear walls not constructed per acceptable bracing methods of CBC Table 2308.6.1 and CBC Table 2308.6.3(1)
 - Shear walls exceed maximum height of CBC 2308.2.2
 - Shear walls do not meet minimum width of CBC 2308.6.4 and do not meet alternative bracing requirements of CBC 2308.6.5
 - Braced wall line spacing exceeds 25 feet per CBC Table 2308.6.1
 - Insufficient cumulative shear wall length within braced wall line(s) per CBC Table 2308.6.1
 - Shear wall spacing within braced wall line(s) exceeds 25 feet per CBC Figure 2308.6.1
 - Shear walls located more than 8 feet from ends of each wall line per CBC Table 2308.6.1
 - Shear walls offset more than 4 feet from braced wall line(s) per CBC 2308.6.2 and CBC Figure 2308.6.1
2. Justify the 0.2-second spectral response acceleration, S_s , and 1-second spectral response acceleration, S_1 , used in the engineering calculations. (CBC 1613.3.1)
3. Justify the response modification coefficient, R , used in the engineering calculations. (CBC 1613.1)
4. Justify the redundancy factor, ρ , used in the engineering calculations. (CBC 1613.1)
5. Justify the wind speed and exposure category used in the engineering calculations. (CBC 1609)
6. Justify the importance factor, I , used in the engineering calculations. (CBC 1613.1)
7. Shear walls and lateral load resisting elements shall comply with all recommendations made in engineering calculations.
8. Cumulative capacity of base-level shear walls is less than the calculated wind and/or seismic base shear in the structural calculations.
9. Specify on framing plans location, type, and length of all shear walls and coordinate with shear-wall schedule.
10. Shear wall types proposed may not be mixed within the same braced wall line. (CBC Table 2308.6.1)

11. Specify nail size and spacing for all shear walls and roof/floor diaphragms. Specify any required blocking. (CBC 2306.2, CBC 2306.3)
12. The aspect ratio of roof/floor diaphragms shall not exceed the following (AF&PA SDPWS Table 4.2.4):
 - 3:1 for unblocked wood structural panel diaphragms
 - 4:1 for blocked wood structural panel diaphragms
13. The aspect ratio of shear walls and shear wall segments shall not exceed the following (AF&PA SDPWS Table 4.3.4):
 - 3.5:1 for wood structural panel shear walls with capacity reduced per SDPWS Table 4.3.4 for aspect ratios exceeding 2:1
 - 2:1 for other shear wall sheathing types
14. Provide shear-transfer connection details for shear walls (interior and exterior) at roof, floors, and foundation. Cross-reference all shear-transfer details with the appropriate plans. (CBC 2308.6.7)
15. Make manufacturer's structural detail sheet(s) for engineered shear panels (e.g., Strong-Wall, Hardy Frame, TJ, Shear Max, etc.) a permanent part of the plans.
16. Provide details for interior shear walls indicating shear transfer from roof/floor diaphragm above.
17. Provide shear-transfer details at openings in shear walls. (CBC 2305.1.1)
18. Provide drag straps on each side of bay windows and flush beams where plate lines are interrupted.
19. Where shear wall forces exceed 350 pounds per foot, all framing members receiving edge nailing from abutting panels shall be minimum 3-inch nominal members or double 2-inch nominal members. (AF&PA SDPWS 4.3.7.1.5)
20. Specify construction of cripple walls per the following (CBC 2308.5.6, CBC 2308.6.6.2):
 - Framed with studs equivalent to studs above
 - If more than 4 feet high, framed with studs required for an additional story
 - If less than 14 inches high, framed with solid blocking
 - Considered an additional story and braced per CBC Table 2308.6.1
21. Specify location/type of all hold-downs on foundation plan (grade-level hold-downs) and framing plan (upper-level hold-downs).

U. FOUNDATION REQUIREMENTS

1. Provide a complete foundation plan.
2. Foundation elements shall comply with all recommendations made in soils/compaction report and engineering calculations.
3. Site inspection revealed presence of expansive soils. Provide soils report with foundation design recommendations.
Exception: Single-story structures at locations where moderately expansive soil conditions exist may comply with the requirements for expansive soil foundation design per form PDS #65 in lieu of providing a soils report
4. Indicate on foundation plan location and size of underfloor vents per the following (CBC 1203.3):
 - Minimum 1 foot of net vent area required for every 150 square feet of underfloor area (as demonstrated by calculation provided on foundation plan)
 - Located to provide adequate cross-ventilation to all underfloor areas
5. Indicate on foundation plan location of minimum 18-inch by 24-inch access openings to all underfloor areas. (CBC 1209.1)
6. Dimension underfloor clearance off grade of 18 inches for floor joists and 12 inches for floor girders **or** specify preservative-treated wood. (CBC 2304.12.1.1)
7. Dimension the following vertical clearances for wood framing, sheathing, and siding at exterior walls **or** specify preservative-treated wood (CBC 2304.12.1.2, CBC 2304.12.1.5):
 - Minimum 8 inches for wood sill plates and sheathing above adjacent natural grade
 - Minimum 6 inches for wood siding above adjacent natural grade
 - Minimum 2 inches for wood studs, sheathing, and siding above adjacent concrete slab
8. Specify preservative-treated wood for any wood posts and columns. (CBC 2304.12.2.2)
Exception: Posts and columns not exposed to weather **and** supported by concrete piers or metal pedestals projecting minimum 1 inch above an adjacent slab or deck and minimum 8 inches above adjacent exposed earth **and** separated from slab, deck, and exposed earth by an impervious moisture barrier
9. Detail wall sill plate anchorage to foundations per the following (CBC 2308.3.1, CBC 2308.3.2, CBC 2308.6.7.3):
 - Minimum 1/2-inch-diameter anchor bolts
Exception: Minimum 5/8-inch-diameter anchor bolts required in Seismic Design Category E
 - Minimum 7-inch embedment into concrete or masonry

- Bolts spaced maximum 6 feet on center
Exception: Maximum 4 feet on center for buildings more than two stories in height
 - Minimum two bolts per sill plate section with one bolt located maximum 12 inches and minimum 4 inches from each end of each section
 - Steel plate washers per the following provided between sill plate and nut of each anchor bolt:
 - o Minimum 3 inches by 3 inches by 0.229 inch
 - o If standard cut washer placed between plate washer and nut, hole in plate washer may be diagonally slotted with maximum 3/16-inch larger width than bolt diameter and maximum 1-3/4 inch slot length
10. Provide footing details specifying all dimensions and reinforcement. Cross-reference all details with foundation plan.
 11. Provide a step footing detail. (CBC 2308.6.8.3)
 12. Unless otherwise specified by soils report, dimension minimum 7-foot horizontal distance from bottom leading edge of footings to daylight.
 13. Provide adequate footings under all bearing walls and shear walls.
 14. Provide adequate spread footings under posts/columns (where required due to post/column load).
 15. Specify on foundation plan slab thickness, reinforcement, and moisture barrier. (CBC 1805.2.1)
 16. Provide details specifying the following for concrete or masonry wall construction:
 - Maximum overall height
 - Maximum height of any retained soil
 - Maximum stem wall height
 - Wall type (cantilevered or restrained)
 - Wall material (concrete or masonry) with required material strength
 - Wall thickness
 - Vertical and horizontal reinforcement:
 - o Bar size and spacing
 - o Bar position (edge or center) with dimension from face of wall
 - Footing/key dimensions and reinforcement
 - Means of restraint (restrained walls)
 - Drainage system behind walls retaining soil
 - Waterproofing for walls retaining soil and adjacent to usable space

V. SUPPLEMENTAL ADDITION AND ALTERATION REQUIREMENTS

1. Provide floor plan for existing rooms adjacent to addition/alteration with door sizes, window sizes, and types indicated – including doors/windows to be removed – to verify compliance with light, ventilation, and egress requirements.
2. Provide framing and/or foundation plans for existing structure at _____ to verify existing construction adequate to support proposed added loads.
3. Detail means of achieving positive connection between addition(s) and existing construction at the following:
 - Plate lines (detail on framing plans)
 - Footings and slabs (detail on foundation plans)
4. Detail installation of hold-downs and/or anchor bolts in existing foundations. Specify manufacturer and listing number of epoxy, expansion anchors, wedge anchors, etc., as applicable.

W. DISABLED ACCESS – PUBLIC ACCOMMODATIONS AND COMMERCIAL BUILDINGS

1. Provide complete plans, details, dimensions, and notes per the following for disabled access elements serving public accommodations or commercial buildings (CBC Chapter 11B):
 - Accessibility correction list 1B: Site accessibility and exterior routes of travel
 - Accessibility correction list 2B: Parking and passenger drop-off and loading zones
 - Accessibility correction list 3B: Curb ramps
 - Accessibility correction list 4B: Ramps
 - Accessibility correction list 5B: Entrances, exits, and interior routes of travel
 - Accessibility correction list 6B: Doors and gates
 - Accessibility correction list 7B: Stairways
 - Accessibility correction list 8B: Elevators and platform lifts
 - Accessibility correction list 9B: Toilet facilities
 - Accessibility correction list 10B: Shower, bathing, and locker room facilities
 - Accessibility correction list 11B: Drinking fountains
 - Accessibility correction list 12B: Miscellaneous elements
 - Accessibility correction list 13B: Alarms (if alarm required per item H.3)
 - Accessibility correction list 14B¹ - 14B⁸: Occupancy/use-specific disabled access requirements

- Accessibility correction list 15B: Existing and historical buildings

X. DISABLED ACCESS – MULTI-FAMILY HOUSING

1. Provide complete plans, details, dimensions, and notes per the following for disabled access elements serving public accommodations or commercial buildings (CBC Chapter 11B):
 - Accessibility correction list 1A: Code applicability, site accessibility, and exterior routes of travel
 - Accessibility correction list 2A: Parking facilities
 - Accessibility correction list 3A: Curb ramps
 - Accessibility correction list 4A: Ramps
 - Accessibility correction list 5A: Entrances, exits, and interior routes of travel
 - Accessibility correction list 6A: Doors and gates
 - Accessibility correction list 7A: Stairways
 - Accessibility correction list 8A: Elevators and platform lifts
 - Accessibility correction list 9A: Common-use toilet facilities
 - Accessibility correction list 10A: Common-use shower, bathing, and locker room facilities
 - Accessibility correction list 11A: Drinking fountains
 - Accessibility correction list 12A: Miscellaneous elements
 - Accessibility correction list 13A: Alarms
 - Accessibility correction list 14A: Common-use amenities
 - Accessibility correction list 15A: Dwelling units