



City of Huntington Beach  
Department of Planning & Building  
**COMMERCIAL PLAN CHECK CORRECTION LIST (2010 CBC)**  
2000 Main Street, Huntington Beach, CA 92648  
Office: (714) 536 - 5241 Fax: (714) 374 - 1647

<b>PERMIT #:</b> .....	<b>ADDRESS:</b> .....
Date: .....	<b>OWNER:</b> .....
<b>Plan Checker:</b> .....	Contact Person: .....
Plan Checker Tel: .....	Contact Tel: .....
Description: .....	

---

**INSTRUCTIONS**

- **Please see corrections on submitted plans. Red marked set must be returned with revised plans.** Plans resubmitted without the red markup set may result in delayed review time and additional plancheck fees.
- Please note that additional corrections may be required following review of the revised plans. Completion of the corrections and/or submittal of revised plans do not presume approval.
- To expedite your project, please provide a written or oral response. Incomplete response may delay approval.
- Appointments need to be made prior to counter checks. Please call the plan checker to schedule an appointment.
- All substantial revisions or additions must be fully clouded with a revision mark.
- Three wet signed sets are required for permit issuance.
- Projects with Zoning Entitlements, Conditions of Approval and Code Requirements identified herein (*see Notice of Action*) and Code Requirements identified in separately transmitted memorandums from each department: Planning and Building, Fire and Public Works, shall be printed verbatim on one of the first three (3) pages of all the working drawing sets used for issuance of permits (i.e.: Architectural / Structural, Mechanical, Electrical and Plumbing), and shall be referenced in the title block index. The minimum font size utilized for printed text shall be 12 point.

**PLEASE ADDRESS ALL CHECKED CORRECTION ITEMS BELOW**

**APPROVALS**

- Planning Department:** Obtain Planning approval on the final plans prior to issuance of building permit. Call 714-536-5271 for status.
- Public Works Department:** Obtain Public Works approval prior to issuance of building permit. Call 714-536-5431 for status.
  - Clinics, Hospitals and Dialysis Centers:** Submit a letter to Public Works acknowledging that at times they distribute water from MWD that uses Chloramines.
- Fire Department:** Obtain Fire Department approval prior to issuance of building permit. Call 714-536-5411 for status.
- County Health Department:** A food service type of occupancy requires a letter of approval from the County Health Department, which must be submitted before building permit may be issued. Call (714) 433-6000 for their plan check processing requirements.
- Cal/OSHA:** Note on the plans that a Cal/OSHA permit is required for elevators or wheelchair lifts. This maybe obtained from the State Division of Occupational Safety & Health – Cal/OSHA Elevator Unit. Call (714) 562-7212.

**GENERAL**

- 1. The following plans are required for plan review and shall be drawn to scale with sufficient clarity.
  - a) Site plans: 1/8"=1'-0" or 1"=10'
  - b) Floor plans: 1/4"=1'-0"
  - c) Framing plans: 1/4"=1'-0"
  - d) Details: 1/2"=1'-0"
  - e) Minimum 3-sets are required for review
  - f) Minimum size: 11"x17"
  - g) Provide complete details (including disabled access and structural), notes, and specifications.
- 2. Submitted plans and related documents are not complete. Additional reviewing time may be necessary upon re-submittal. Please submit complete plans for review. (107.2.1)
- 3. Plans are illegible and/or prints are to light/dark to microfilm. Provide clear legible plans for review. (107.2.1)

## COMMERCIAL CORRECTION LIST (2010 CBC)

---

- 4. Designer wet signature required on all sheets. (107.1) & (California Business & Professional Code Engineers and Architect 6735, 5536)
- 5. Designer / Architect / Engineer contact information required on title sheet and calculations cover page. (California Business & Professional Code 6735)
- 6. The final sets of plans must be signed by an engineer or architect licensed by the State of California. Plans for elements of the structure designed by others must be reviewed and approved by engineer or architect of record for general conformance to the structural design. (California Business and Professional Code 5536.1, 6735)
- 7. Submit **soil report** for soil bearing capacity required by California Building Code Section 1803. Place copy of all recommendations onto the plans. Wet signature is required on the report. Soil report must include corrosivity analysis with recommendations for buried pipe protection. Soil report must include liquefaction potential. (1603.1.6, 1605.1 #6, 1803)
- 8. **Approved grading plan:** When a grading plan is required by Public Works, a copy of the approved grading plan shall be required prior to permit issuance and shall be made a part of the plans. The building site/plot shall be consistent with the approved grading plan regarding location of structure, setbacks, pad elevations and drainage. Two copies required prior to permit issuance. Attach grading plans to building sets for microfilming. (107.2.5) & (HBMC 17.05)

### TITLE SHEET

- 1. Provide the following **Project Information** on the first sheet of the plans: (107.2.1)
  - Full description
  - Job address
  - Owner's name
  - Legal Description
  - Square footage of new area (for each occupancy & the total area)
  - Accurate description of project scope
  - Identify all deferred submittals
- 2. Note on the plans the following **Building Statistics** (building data) on the first sheet of the plan: (107.2.1)
  - Construction type
  - Floor area per Occupancy Group & total Occupant Load
  - Classification of Occupancy Group
  - Fire sprinkler – specify type
- 3. On Title Sheet, show justification to exceed the basic allowable floor area listed in Table 503.
- 4. On Title Sheet, show justification to exceed the number of stories or building height listed in Table 503.
- 5. When sprinkler increases are applied for an additional 20 feet in height or for an additional story in accordance with 504.2, sprinklers may not also be used for an area increase in 506.3 for Group A, E, H, I, L, & R Occupancies and high-rises.
- 6. Provide a **Table of Content** (Sheet/Drawing Index) in accordance with the sheet numbers.
- 7. Provide a statement on the title sheet of the plans that: *This project shall comply with Title 24 and 2010 California Building Code (CBC), California Mechanical Code (CMC), California Plumbing Code (CPC), California Electrical Code (CEC), California Energy Code (CEnC), and Calgreen.*

### PLOT PLAN

- 1. Provide building and building element setbacks to finish of exterior walls:  Front yard  Side yards  Rear yard
- 2. Provide North arrow and centerline of labeled street(s) and alley
- 3. On Site Plan dimension distances from building(s) to all property lines, street center lines, and adjacent existing or proposed structures on the site.
- 4. Show the size, use, occupancy, and type of construction of all existing buildings on the site.
- 5. On Site Plan show all interior assumed lot lines, any designated flood plains, open space easements or development restricted areas.
- 6. On Site Plan, clearly delineate any frontage used to justify allowable area increases per CBC 506.2.
- 7. Note on plans: *"Frontage used for allowable area increases per CBC Section 506.2 shall be permanently maintained".*
- 8. Provide grades around the building or structure and proper site drainage, else refer to approved grading plan for drainage info
- 9. Finish grade around the structure/addition shall slope away from the foundation a minimum of 5% for a minimum distance of 10 feet. Include a note on the site plan or show on a foundation detail. (1804.3)

### TITLE 24

- 1. Print State Energy Forms ENV-1, ENV-2, MECH-1, and LTG-3 on the plans. Forms must be wet signed by the person responsible for its preparation.

**CAL-GREEN** (*Applies to Newly Constructed Non-Residential Buildings*)

- 1. Site Development (5.106)
  - a) Storm Water Pollution Prevention Plan (SWPPP) shall be implemented during construction. (5.106) Plans shall also indicate construction best management practices (BMP's) on the plans.
  - b) Bicycle Parking shall indicate the locations on the plans (5.106.4) for either short-term bicycle parking (5.106.4.1) or long-term bicycle parking (5.106.4.2).
  - c) Clean Air Vehicle Parking (5.106.5.2) shall be designated and the locations shall be identified on the plans for any combination of low-emitting, fuel efficient, and carpool / van pool vehicles as shown on Table 5.106.6.2.
    - i. Parking Stall Marking (5.106.5.2.1): "CLEAN AIR VEHICLE"
  - d) Light Pollution Reduction (5.106.8) shall comply with lighting requirements in the California Energy Code, CCR, Part 6, and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Plans to meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the California Administrative Code, using the following strategies:
    - i. Shield all exterior luminaires or use cutoff luminaires.
    - ii. Contain interior lighting within each source.
    - iii. Allow no more than .01 horizontal lumen foot-candles 15ft beyond the site.
    - iv. Contain all exterior lighting within property boundaries.

(Specify types of exterior light fixtures on plans.)
- 2. Indoor Water Use (5.303)
  - a) Separate meters shall be shown on the Plumbing plans and shall be installed for the uses described in Section 503.1.1 through 503.1.3.
    - i. Buildings in excess of 50,000 square feet shall be installed with separate sub-meters as follows:
      - For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day.
      - For spaces used for laundry or cleaners, restaurants or food service, medical or dental office, laboratory, or beauty salon or barber shop projected to consume more than 100 gal/day.
    - ii. Excess consumption is for any buildings within a project or space within a building that is projected to consume more than 1,000 gal/day.
  - b) For 20% Indoor Water Use Savings (5.303.2), provide a schedule of plumbing fixtures on the plans that demonstrate that the overall use of potable water within the building has been reduced by at least 20% - by either:
    - i. Specifying plumbing fixtures with reduced flow rates per Table 4.303.2; or
    - ii. Provide a water usage calculation that demonstrates a 20% reduction in building baseline water use.
      - Please show the combined flow rate of multiple showerheads serving one shower shall not exceed the maximum flow rates specified in the 20% reduction column of Table 4.303.2 on the plans.
  - c) Wastewater reduction (5.303.4): Each building shall reduce the generation of wastewater by one of the following methods:
    - i. The installation of water-conserving fixtures (5.303.2 or 5.303.3); or
    - ii. Utilizing non-potable water system complying with the current California Plumbing Code or other methods described in Section A5.304.
- 3. Outdoor Water Use (5.304)
  - a) A water budget shall be developed for landscape irrigation use based on the California Department of Water Resources Model Water Efficient Landscape Ordinance. (5.304.1) Outdoor water budget shall be provided on the plans.
  - b) For new water service, separate meters or sub-meters shall be installed for indoor and outdoor water use for landscaped areas between 1,000 square feet and 5,000 square feet. (5.304.2) Separate water meters shall be identified on the Plumbing plans.
  - c) Irrigation design is required to be in new non-residential construction with between 1,000 and 2,500 square feet of landscaped area (the level at which the MLO applies), install irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.
    - i. Automatic irrigation system controllers to be installed at the time of FINAL INSPECTION and shall comply with the following (5.304.3.1):
      - Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.
      - Weather-based controllers without internal rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.

(Note this requirement on plans and show locations of irrigation controllers)
- 4. Water Resistance and Moisture Management (5.407)
  - a) Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 and California Energy Code Section 150, manufacturer's installation instruction, or local ordinance, whichever is more stringent. (5.407.1) Provide details of exterior walls and flashing materials on the plans.
  - b) Employ moisture control measures by the following methods (5.407.2) and incorporate these design features onto the construction plans:

## COMMERCIAL CORRECTION LIST (2010 CBC)

- i. Sprinklers (5.407.2.1): Prevent irrigation spray on structures.
  - ii. Entries and openings (5.407.2.2): Design exterior entries and openings to prevent water intrusion into buildings
    - Use features such as overhangs and recessed, and flashing integrated with a drainage plane.
    - Use non-absorbent floor and wall finishes within at least two (2) feet around and perpendicular to such openings.
- 5. Construction Waste Reduction, Disposal, and Recycling (5.408)
- a) Construction waste diversion is to establish a construction waste management plan for the diverted materials, or meet local construction and demolition waste management ordinance, which ever is more stringent. (5.408.1) Note these requirements on the plans.
  - b) Construction Waste Management Plan (5.408.2): Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan for approval by the enforcement agency that:
    - i. Identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
    - ii. Determine if materials will be sorted on-site or mixed.
    - iii. Identifies diversion facilities where material collected will be taken.
    - iv. Specifies that the amount of materials diverted shall be calculated by weight or volume, but not by both.
  - c) Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 5.408.2, Item 1 through 4. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency. (5.408.2.1)
  - d) Isolated jobsites (5.408.2.2): The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries or the diversion facility.
    - i. Sample forms found in Chapter 8 may be used to assist in documenting compliance with the waste management plan.
    - ii. Mixed construction and demolition debris (C & D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).
  - e) Construction waste reduction of at least 50% (5.408.3): Recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent. Calculate the amount of materials diverted by weight or volume, but not by both.
  - f) Excavated soil and land clearing debris (5.408.4): 100% of trees, stump, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycle. For a phased project, such material may be stockpiled on site until the storage site is developed.
- 6. Building Maintenance and Operation (5.410)
- a) Recycling by Occupants (5.410)
    - i. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling. (5.401.1) Note these requirements on the plans.
    - ii. Provide on plans the commissioning report for all new buildings 10,000 square feet and over, building commissioning for all building systems covered by T24, Part 6, process system, and renewable energy systems that shall be included in the design and construction processes of the building project. Commissioning requirements shall include items listed in 5.410.2:
      - Owner's Project Requirements (OPR): Documented before the design phase of the project begins the OPR shall include items listed in 5.410.4.
      - Basis of Design (BOD): A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project and updated periodically to cover the systems listed in 5.410.2.2.
      - Commissioning plan: A commissioning plan describing how the project will be commissioned shall be started during the design phase of the building project and shall include items listed in 5.410.2.3.
      - Functional performance testing: This shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications.
      - Documentation and training: A Systems Manual and Systems Operations Training are required.
      - Systems Manual: The Systems Manual shall be delivered to the building owner or representative and facilities operator and shall include the items listed in 5.410.2.5.1.
      - Systems operations training: The training of the appropriate maintenance staff for each equipment type and/or system shall include items listed in 5.410.2.5.2.
      - Commissioning report: A complete report of commissioning process activities undertaken through the design, construction and reporting recommendations for post-construction phases of the building projects shall be completed and provided to the owner or representative. Testing and adjusting: Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.
      - Testing and adjusting: Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.

## COMMERCIAL CORRECTION LIST (2010 CBC)

- Systems: Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include, as applicable to the project, the systems listed in 5.410.3.2.
  - Procedures: Perform testing and adjusting procedures in accordance with industry best practices and applicable national standards on each system.
  - HVAC balancing: Before a new space-conditioning system serving a building or space is operated for normal use, the system should be balanced in accordance with the procedures defined by national standards listed in 5.410.3.3.1.
  - Reporting: After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.
  - Operation and maintenance manual: Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.
  - Inspection and reports: Include a copy of all inspections verifications and reports required by the enforcing agency.
- 7. Fireplaces (5.503)
- a) Gas fireplaces shall be direct-vent sealed combustion type. Any woodstove or pellet stove shall comply with U.S.EPA Phase II emission limits as well as South Coast Air Quality Management District (SCAQMD) rules. (5.503.1 and 5.503.1.1) Note these requirements on the plans.
- 8. Pollutant Control (5.504)
- a) Note on the plans duct openings and other related air distribution component openings that shall be covered during construction. (5.504.3)
  - b) Note on the plans all adhesives, sealants and caulks that shall be compliant with VOC and other toxic compound limits. (5.504.4.1)
  - c) Note on the plans all paints, stains and other coatings that shall be compliant with VOC limits. (5.504.4.3)
  - d) Note on the plans for all aerosol paints and coatings that shall be compliant with product weighted PWMIR limits for ROC and other toxic compounds. (5.504.4.3.1)
  - e) Note on the plans all carpet and carpet systems that shall be compliant with VOC limits. (5.504.4.4) (*i.e.: Carpet and Rug Institute's Green Label Plus Program*)
  - f) Documentation shall be provided to the City building inspector verifying that compliant VOC limit finish materials have been used. (5.504.4.3.2 and 5.504.4.5.2) Note this requirement on the plans.
  - g) Particleboard, medium density fiberboard (MDF), and hardwood plywood used in interior finished systems shall comply with low formaldehyde emission standards. (5.504.4.5) note this requirement on the plans and specify testing/approval standard on the plans. (*i.e.: Resilient Floor Covering Institute [RFCI] Floor Score Program*)
  - h) 50% of the floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or be certified under the Resilient Floor Covering institute (RCFI) Floor score Program. (5.504.4.6) Note this requirement on the plans.
  - i) Hazardous particulates and chemical pollutants. Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.
  - j) Filters. In mechanically vented buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a MERV of 8. Specify type and efficiency of filters on the Mechanical plans.
- 9. Indoor Air Quality and Exhaust (5.506)
- a) Carbon dioxide (CO<sub>2</sub>) monitoring. For buildings equipped with demand control ventilation, CO<sub>2</sub> sensors and ventilation controls shall be specified and installed in accordance with the requirements of the current edition of the California Energy Code, CCR, Title 24, Part 6, Section 121(c). (5.5006.2) Show CO<sub>2</sub> sensor on the plans.
- 10. Environmental Comfort (5.507)
- a) Acoustical control. Employ building assemblies and components with Sound Transmission Coefficient (STC) values determined in accordance with ASTM E 90 and ASTM E 413. (5.507.4) Note this requirement on the plans.
  - b) Exterior noise transmission. Wall and roof-ceiling assemblies making up the building envelope shall have an STC of at least 50, and exterior windows shall have a minimum STC of 30 for any of the following building locations (5.507.4.1):
    - i. Within 1,000 feet of right-of-ways of freeways.
    - ii. Within 5 miles of airports serving more than 10,000 commercial jets per year.
    - iii. Where sound levels at the property line regularly exceed 65 decibels, other than occasional sound due to church bells, train horns, emergency vehicles and public warning systems.(Provide details of tested wall and roof-ceiling sound assemblies on the plans)
  - c) Interior sound. Wall and floor-ceiling assemblies separating tenant spaces and public places shall have an STC at least 40. (5.504.4.2) Provide details of tested wall and floor-ceiling assemblies on the plans.
- 11. Outdoor Air Quality (5.508)
- a) Ozone depletion and greenhouse gas reduction. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Section 5.508.1.1 and 5.508.1.2 and shall be specified on the plans. (5.508.1)

- b) Chlorofluorocarbons (CFC's). Install HVAC, refrigeration and fire suppression equipment that do not contain CFC's shall be specified on the plans. (5.508.1.1)
  - c) Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons shall be specified on the plans. (5.508.1.2)
12. Install Training/Qualifications (702.1)
- a) HVAC system installers are trained and certified in the proper installation of HVAC systems.  
Examples of acceptable HVAC training and certification programs include but are not limited to the following and shall be noted on the plans:
    - i. State certified apprenticeship programs.
    - ii. Public utility training programs.
    - iii. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
    - iv. Programs sponsored by manufacturing organizations.
    - v. Other programs acceptable to the enforcing agency.
  - b) Verification (703)
    - i. Verification of compliance with this code may include construction documents, plans specifications builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency that show substantial conformance.
    - ii. Contractor – installer certification forms must be completed and submitted to the building inspector prior to final inspection.

### BUILDING OCCUPANCY & AREA ALLOWED

- 1. Provide a Building Code Analysis on the title sheet. Include the following code information for each building proposed: Description of use, Occupancy, whether separated or un-separated, number of stories, type of construction, sprinklers, floor area, height, and allowable floor area.
- 2. When two or more buildings are on the same property and they are not analyzed to comply as one building, the building shall have an assumed property line between them for determining wall and opening protection, and roof cover requirements or treated as a single building. (CBC 705.3)
- 3. When a new building is constructed adjacent to an existing building, show the required wall and opening protection requirements for the existing building will be maintained. (CBC 503.1.2, Table 508.4, 705.5, and 705.8)
- 4. For buildings with mixed occupancies, the allowable area per story shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to CBC 508.3 (un-separated). If treated per CBC 508.4 (separated) the maximum total building area shall be such that the sum of the ratios for each of the actual to allowable are does not exceed 1.

### FLOOR PLAN

- 1. Specify on Floor Plans uses of all rooms or areas.
- 2. Clearly label and identify on the plans the fire-resistive corridors, fire walls, shaft enclosures, fire barriers, fire partitions, smoke barriers and smoke partitions along with their hourly ratings.
- 3. Provide notes and details for the following items:
  - a) Identify all occupancies and mixed uses per CBC Section 508
    - a. Incidental Uses (508.2.5)
    - b. Mixed Occupancies (508-509): Accessory Occupancies (508.2), Non-separated Occupancies (508.3), Separated occupancies (508.3.3)
    - c. Required Occupancy separation (Table 508.3.3)
  - b) Exterior walls and allowable openings. (705.8.1). Exceptions: Table 705.8
  - c) Identify all fire walls (706), fire barriers (707), shaft enclosures (708), fire partitions (709)
  - d) Horizontal Assemblies (712), Penetrations (713), Fire-resistive Joints (714), Fire-resistive rating of structural members (704)
  - e) Mezzanines. (505)
  - f) Interior wall & ceiling finish requirements by Occupancy (Table 803.9)
  - g) Special use and occupancy. (Chapter 4)
- 4. Indicate how mezzanine complies with area, enclosure and exit requirements [505].
- 5. Unenclosed openings connecting 3 or more levels qualify as atriums and shall comply with provisions of section 404 of CBC.
- 6. **Doors:**
  - a) Specify minimum door size – 3'-0" x 6'-8". (1008.1.1)
  - b) Provide level landing on each side of the door not more than ( ) below the threshold. [1008.1.1, 1008.1.7].
  - c) Door swinging over landing shall not reduce the width by more than seven inches when fully open. When serving 50 or more, the door in any position shall not reduce the required width to less than one-half. CBC 1008.1.6

- d) Doors shall swing in the direction of egress travel where serving an occupant load of 50 or more persons or a Group H occupancy. (1008.1.2)
- e) Exit doors from Group A, assembly areas not classified as an A occupancy, E, I-2 and I-2.1 occupancies having an occupant load of 50 or more and any H occupancies shall not be provided with latch or lock unless it is panic hardware or fire exit hardware. (1008.1.10)
- f) Dimension on the plan – clear length on each side of the door – on door swing side, 60” clear length with 18” jamb (24” at exterior); opposite door swing, 48” clear length. (1133.2 b)
- 7. Provide a window and door schedule: List size and type of opening.
- 8. **Walking deck:** List manufacturer and ICC/ICBO number and show all materials, plywood, and nailing required. Specify 1/4 unit in 12 units (2%) slope for drainage; show method of drainage and location of discharge without crossing over property lines.
- 9. **Ceilings:**
  - a) Detail suspended ceiling with seismic bracing and vertical compression strut, light fixtures independently supported, etc.
- 10. **Glazing:**
  - a) Support glass on all four sides; or submit design to the building official for approval. (2403.2)
  - b) Show location of safety glass in hazardous locations (2406) – i.e. glazing in doors (including wardrobe doors) and within 24” of the door, glazing less than 18” above the floor, in railings, enclosing stairway landings or within five feet of the bottom & top of stairways, etc.
- 11. Provide a note on the plans indicating if any **hazardous materials** (414) will be stored and/or used within the building, which will exceed the quantities listed in CBC Tables 307.1(1) and 307.2(2).
- 12. Provide separate Floor Plans identifying hazardous material quantities, types and locations prepared by a qualified person in accordance with 414.1.3 CBC.

#### FIRE-RESISTANCE RATED CONSTRUCTION

- 1. For all walls, at or near a property line, provide a complete wall section from the foundation to the roof and locate the property line on the cross section. (107.2.4)
- 2. **Exterior Walls:**
  - a) The maximum area of unprotected or protected openings permitted in an exterior wall in any story shall not exceed the values in Table 704.8. Where both unprotected and protected openings are located in the exterior wall in any story, verify compliance with equation 7-2 of CBC 704.8. The allowable area of unprotected opening may be assumed as protected if the building is sprinklered. (705.8.1)
  - b) Provide ¾ hour opening assembly rating for exterior walls required to be 1-hour fire rated and 1 ½ hour openings assembly rating for exterior walls greater than a 1-hour fire rating. (705.8)
  - c) Specify that exterior walls shall have no openings when closer than a \_\_\_\_\_ feet fire separation distance. Openings include windows, doors, scuppers, vents, etc. (Table 705.8)
  - d) Projections beyond the exterior wall shall not extend more than 12 inches into the area where openings are prohibited nor beyond a point one-third the distance to the lot line from an assumed vertical plane located where protected openings are required. (705.2)
- 3. Clearly identify the locations of the **Fire Areas, Fire Walls, Fire Barriers and Fire Partitions** on the plans. Provide complete legends and details (702)
- 4. **Fire Walls** (705): Provide details showing:
  - a) Fire Rating shall be per Table 706.4.
  - b) Fire walls must remain structurally stable in the event of collapse of construction on either side during a fire. (706.2)
  - c) Provide a detail to show that joist supported by the fire wall is spliced and not continuous (plywood membrane may be continuous), or provide double fire walls or provide justification for any other method used. (706.3)
  - d) Shall be noncombustible material, except in Type V construction per 706.3
  - e) Shall have horizontal continuity per 706.5
  - f) Shall extend vertically from the foundation to a point 30 inches above the roof per 706.6
  - g) The area of each opening in Fire Walls is limited to 120 sf. Total width of the openings is limited to 25 percent of the wall length in the story under consideration. (706.8)
  - h) All openings in fire walls shall be protected with fire assemblies having a fire-resistive rating of (1-1/2) (3) hours. (706.8)
  - i) Ducts and air transfer openings through Fire Walls should be avoided. If allowed, duct and air transfer opening penetrations shall be protected as required in Section 712 and 716. Dampers are required. (706.11)
  - j) Exits must be provided independently for each area bounded by fire walls except for horizontal exits per section 1022. (707.3.4)
  - k) Fire Walls shall be continuous from exterior wall to exterior wall and shall extend 18” beyond the exterior surface of exterior walls. The fire wall shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is sprinklered. (706.5.3)
  - l) Fire Walls shall extend to the outer edge of horizontal projections (balconies, roof overhangs, canopies marquees and architectural projections) that are within 4 feet of the fire wall. See section 706.5.2 for exceptions.

- m) Fire Walls shall extend from the foundation to a termination point at least 30 inches above both adjacent roofs. See section 706.6 for exceptions.
- n) **Openings** through a (3) (2) hour Fire Walls shall be protected with a (3) (1 ½) hour fire door assembly. Windows are not permitted in fire walls. (Table 715.4)
- o) Fire Wall can not create a separate building for the purpose of automatic fire sprinkler system requirements as set forth in chapter 9, unless the fire wall is 4- hours w/ no openings (707)
- 5. **Fire Barriers** (706): Provide a Fire Barrier in accordance with 706 CBC for the:
  - a) Shaft enclosure per 708.4
  - b) Exit enclosure per 1022.1
  - c) Exit passageway per 1023.3
  - d) Horizontal exit per 1025.1
  - e) Atrium per 404.6
  - f) Incidental use area per 508.2.5
  - g) Control areas per 414.2.4
  - h) Occupancy separation per 508.4
  - i) Fire area separation per 707.3.9
  - j) Fire Barriers shall be used for shaft enclosures, exit enclosures, exit passageways, horizontal exits, separation of mixed occupancies and incidental use areas. (707.3)
  - k) **Openings** shall be limited to a maximum width or 25 percent of the length of the wall with a maximum area of any single opening of 156 sq ft. (707.6)
  - l) Structural system supporting Fire Barriers shall have an equivalent fire-resistive construction. (707.5.1)
  - m) The Fire Barrier or Horizontal Assembly, or both, separating a single occupancy into different fire areas shall have a fire resistance rating of not less than that indicated in Table 707.3.6
  - n) Fire Barriers shall extend through under-floor, attic areas, and suspended ceiling areas including areas where fire-resistive ceilings are provided. (707.5)
- 6. **Fire Partitions** (708): Fire partitions shall be used for walls separating dwelling units, corridor walls and elevator lobby separation. Provide a Fire Partition in accordance with 709.1 for:
  - a) Walls separating dwelling units (420.2)
  - b) Walls separating sleeping units in R-1 hotels, R-2's and I-1's (420.2)
  - c) Walls between mall tenant spaces (402.7.2)
  - d) The corridor per 1018.1
  - e) The elevator lobby per 708.14.1
- 7. Detail how fire resistance of wall construction is maintained at built-in wall fixtures and behind mailboxes, fire extinguisher cabinets, electric panels exceeding 16 square inches in area, etc. (713.3.2)
- 8. Fire rated assemblies shall be per Table 720, generic assemblies of Gypsum Handbook, or have ICC approval.
- 9. Occupancy separation is required in Group B and M when storage area exceed 10 percent of floor area, or exceeds 3000 square feet with sprinklers or exceeds 1000 square feet without sprinklers. CBC Table 508.3.3, footnote b. (508.2.1)

**SPECIAL HAZARD REQUIREMENTS**

- 1. **Fire sprinklers:**
  - a) Fire sprinklers are required for any story or basement greater than 1,500 sq ft, where there is not provided at least 20 sq ft of opening entirely above grade in each 50 lineal feet or fraction thereof of exterior wall on at least one side or two sides when opposite wall is more than 75 feet from such openings. (903.2.11.1)
  - b) Provide sprinklers at rubbish and linen chutes and terminating rooms. (903.2.11.2)
  - c) Provide sprinklers throughout buildings with a floor level having more than 30 occupants or that is located 55 feet above the lowest level of fire department access. (903.2.11.3)
- 2. **Smoke and fire dampers:** Smoke and fire dampers must be installed in the following locations: (716.5)
  - a) Duct penetrations of fire walls in accordance to section 716.5.1
  - b) Duct penetrations of fire barriers, except exit enclosures and exit passageways where they are not allowed to penetrate. (716.5.2)
  - c) Ducts penetrating shafts. (716.5.3)
  - d) Ducts penetrating fire partitions and fire-rated corridor walls. See exception for steel ducts with no openings into corridor (716.5.4)
  - e) Ducts penetrating smoke barriers. (716.5.5)
  - f) Ducts penetrating horizontal assemblies. (716.6)
- 3. **Fire dampers, smoke dampers,** combination fire/smoke dampers and ceiling radiation dampers shall be provided at the locations prescribed in Sections 716.5.1 through 716.5.5. Where an assembly is required to have fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be shown with the applicable rating on the mechanical plans.

## COMMERCIAL CORRECTION LIST (2010 CBC)

- 4. **Fire-blocking** (717.2.2 through 717.2.7): In combustible construction, fire-blocking shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space. Provide details on plans or complete notes on the drawings.
  - a) In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels.
  - b) In concealed spaces of stud walls and partitions, including furred spaces, at 10-foot intervals along the length of the wall.
  - c) At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
  - d) In concealed spaces between stair stringers at the top and bottom of the run.
  - e) In openings around vents, pipes, ducts, chimneys, fireplaces and similar openings which afford a passage for fire at ceiling and floor levels, with materials tested for the form and manner they are intended.
- 5. Provide approved protection details for **through penetrations** of fire-resistive assemblies [712.3.1.1, 712.3.1.2]. Also, provide a note on the plans stating: *"Penetrations of fire-resistive walls, floor-ceilings and roof ceilings shall be protected as required in CBC Section 713.*
- 6. Penetrations in walls requiring protected openings must be fire-stopped with an approved material in accordance with Section 713.2.
- 7. Prescriptive Fire Resistance. (720.1) & Table 720.1 (1)
- 8. Rubbish and linen chutes shall terminate in rooms separated from the remainder of the building by an occupancy separation having a fire resistance of (1)-hour. Openings into chutes and chute termination rooms shall not be located in corridors or stairways. (708.13)
- 9. Show **draft stop** location on plans. Also, provide these notes on the plans:
  - a) In buildings used for other than residential occupancies, draft stops must be installed in wood frame floor construction containing concealed space. Such draft stops must be installed so that the area of the concealed space does not exceed (1000) square feet (717.3.3).
  - b) In buildings used for other than residential occupancies, draft stops must be installed in the attic (mansards) (overhangs) (false fronts set out from walls) (similar concealed spaces) formed by combustible construction. Such draft stops must be installed so that the area of the concealed space does not exceed (3000) square feet (717.4.3).
  - c) Draft-stopping materials must not be less than ½-inch gypsum board, 3/8-inch plywood, 3/8-inch particle board or other materials approved by the building department. Draft-stopping must be adequately supported. (717.3.1)
- 10. **Draft stops** shall be provided within attics, mansards, overhangs and similar concealed spaces formed of combustible construction, unless the building is sprinklered with NFPA13 sprinkler system (3000 sf between draft stops) (717.4.3)
- 11. **Draft stop** shall be provided within a concealed floor-ceiling assembly formed of combustible construction, unless the building is sprinklered with NFPA 13 sprinkler system (1000 sf between draft stops) (717.3.2 & 3) see exceptions 1 & 2
- 12. Provide **smoke and heat venting** in F-1 or S-1 occupancies with undivided floor areas greater than 50,000 sq. Ft CBC 910.2.1 with exceptions. Skylights do not meet vent standards unless specifically tested and labeled.

### MEANS OF EGRESS

- 1. **Exit Plan** (1001.1): Submit an Exit Plan that labels and clearly shows compliance with all required egress features such as, but not limited to:
  - a) Number of occupants & total width of egress requirements
  - b) Required number of exits
  - c) Location of means of egress elements
  - d) Fire-resistance-rated construction
  - e) Component design
  - f) Hardware
  - g) Lighting & signage
- 2. Show detailed summary of the floor area and all deductions (is used) for Gross and/or Net floor area. (1004.1)
- 3. The total width of means of egress in inches shall not be less than the total occupant load served by the means of egress multiplied 0.3 inches per occupant for stairways and 0.2 inches per occupant for other egress components. (1005.1)
- 4. No point in the building shall exceed the distances in Table 1016.1 from an exterior exit, horizontal exit, enclosed stairway, exit passageway, exterior exit stair or ramp measured along the path of travel. The travel distance shall include travel within unenclosed stairways. (1016.1) Note: Travel distance and common path of egress travel each share the same starting point.
- 5. Exit through intervening rooms shall comply with CBC Section 1014.2 provisions.
- 6. Exit doors must swing in the direction of egress when serving an occupant load of 50 or more. (1008.1.9)
- 7. Plans must specify exit doors are openable from the inside without the use of a key, special knowledge or effort. (1008.1.8)
- 8. Every required exit doorway must be of a size to permit the installation of a 3'-0" by 6'-8" door. A minimum clear width of 32 inches must be provided. (1008.1.1)

## COMMERCIAL CORRECTION LIST (2010 CBC)

- 9. Plans must indicate the floor or landing on each side of doors is not more than ½ inch lower than the threshold of the doorway. (1008.1.7)
- 10. Landings must have a width not less than the width of the stairway, or the width of the door, whichever is greater. Doors in the fully open position must not reduce a required dimension by more than 7 inches. With an occupant load of 50 or more, doors in any position must not reduce the landing dimension to less than half its required width. (1008.1.6)
- 11. Enclosed exit access "**Corridor**" shall be enclosed with 1-hr enclosure in non-sprinklered buildings. CBC Table 1018.1
  - a) Enclosure walls to be one hour fire partitions and doors to be 20 min. rated with automatic closer and self latching hardware.
  - b) Provide a section through rated corridor fire partition (And lid if tunnel corridor)
  - c) Provide a door schedule and specify hardware for each door.
  - d) Corridor door(s) # to be 20 minutes rated with smoke and draft protection and automatic closer CBC 715.4.3
  - e) Fixed windows in corridor fire partitions to be ASTM E 199 or UL263 (1018.1, 709.6, & 715.2)
  - f) Corridors must have a minimum width of 44 inches (where it serves 50 or more persons) & 36 inches (where it serves less than 50 persons). (1017.2)
- 12. Except for groups A, B, F, M, S, U occupancies located in sprinklered buildings, walls and ceilings of corridors must be of one-hour fire-resistive construction. Provide architectural section through the corridor to show how this is accomplished. (Table 1081.1)
- 13. Except when only one exit is required provide exit signs complying with Sections 1011 for the exit sign graphics, illumination and power source.
- 14. Multiple means of egress (including stairs) shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. (1005.1)
- 15. Limit dead ends in hallways/corridors to not more than 20' (50' in sprinklered buildings) when more than one exit access is required. (1018.4)
- 16. All occupants shall have access to two exits from the floor. CBC Tables 1021.1 Exceptions:
  - a) Single story building with maximum occupant load of 49 and less than 75 ft travel distance to exit. (Table 1021.2)
  - b) Two story building with maximum occupant load of 30 occupants per floor and maximum travel distance of 75 ft to exit. (Table 1022.2)
- 17. Two exit access doors are required from an office tenant space when the occupant load exceeds 49. (Table 1015.1)
- 18. Exit access doorways and exits from floor shall be separated by a distance equal to or greater than 1/2 the diagonal of the suite or floor respectively in non-sprinklered building CBC 1015.2.1. The minimum separation between required exit access doors or exits shall be equal or greater than 1/3 of the diagonal of the space or floor it serves in sprinklered buildings. (CBC 1015.2.1 Exp. 2)
- 19. When more than one exit or exit access doorway is required, exit access shall be arranged such that there is no dead end in a corridor exceeding 20 ft. (50 ft in sprinklered building). (1018.4)
- 20. Maximum common path of travel distance which the occupants are required to traverse before two separate and distinct path of egress travel to two exits are available shall not exceed:
  - a) 100 ft, when the occupant load is 30 or less. (1014.3 (2))
  - b) 75 ft, when the occupant load exceeds 30. (1014.3 (2))
- 21. For B occupancy, the maximum travel distance to at least one exit shall be: (Table 1016.1)
  - a) 200 ft. in non-sprinklered building
  - b) 300 ft. in sprinklered building
- 22. No point in the building shall exceed the distances in Table 1016.1 from an exterior exit, horizontal exit, enclosed stairway, exit passageway, exterior exit stair or ramp measured along the path of travel. The travel distance shall include travel within unenclosed stairways. (1016.1) Note: Travel distance and common path of egress travel each share the same starting point.
- 23. **Exit Access:** The portion of the means of egress system that leads from any occupied point in a building or structure to an exit. Comply with the following exit access requirements:
  - a) Provide a minimum corridor width of 44" serving an occupant load of 50 or greater. (1018.2)
  - b) Limit projection doors when fully opened into the required corridor width a maximum of 7". Doors in any position shall not reduce the required width by more than one half of the required corridor width. (1018.3 & 1005.2)
  - c) Limit dead ends in hallways/corridors to not more than 20' (50' in sprinklered buildings) when more than one exit access is required. (1018.4)
  - d) Except in groups A, B, F, M, S, U occupancies located in sprinklered buildings, walls and ceilings of corridors must be of one-hour fire-resistive construction. Provide architectural section through the corridor to show how this is accomplished. (1018.1)
  - e) Provide a complete architectural section of the corridor showing all fire-resistive materials and details of construction for all floor, walls, and roof assemblies.
  - f) Corridor walls may terminate at the ceiling only if the ceiling is an element of a one-hour fire-resistive floor or roof system. (709.4 Exception 3)
- 24. **Exit:** The portion of the means of egress that provides a protected path of egress travel between the exit access and the exit discharge. Comply with the following exit requirements for the following:

- a) Exit stairs, exterior exit doors at level discharge, exit enclosures, exit passageways, horizontal exits, and exterior exit stairs/ramps.
  - b) Maintain ( ) hour fire resistive exit enclosure with ( ) hour protected openings until egress is provided from the building. (1020.1)
  - c) Provide a barrier in the exit enclosure to prevent accidental entry into the basement. (1022.7)
  - d) Maintain ( ) hour fire resistive construction for walls, floor and ceiling of exit passageways and their supporting structural elements. (1023.3)
25. **Exit Discharge:** The portion of the means of egress between the termination of an exit and a public way. Comply with the following exit discharge requirements for the following:
- a) Egress courts & Yards
  - b) Exterior balconies, stairways and ramps shall be located at least 10 feet from adjacent lot lines and from other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 704 based on fire separation distance. (1027.3)
  - c) Exterior exit ramps and stairways shall be separated from the interior of the building as required in Section 1022.1. Openings shall be limited to those necessary for egress from normally occupied spaces. (1026.6)
  - d) All openings in the exterior wall below and within 10', measured horizontally, of an exterior exit stairway serving a building over two stories or a floor level having such openings in two or more floors below shall be protected by a fixed or self-closing fire assembly having a ¾-hour rating. (1022.6)
  - e) Exterior stairways shall be open on at least one side. (1026.3)
  - f) Where an exit court has an occupant load of 10 or more, provide not less than one-hour fire-resistive construction exit court walls for a height of 10 feet above the floor of the court when exit court is less than 10 feet in width (1027.5.2).
26. **Exterior balconies, stairways and ramps** shall be located at least 10 feet (3048 mm) from adjacent lot lines and from other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 704 based on fire separation distance. (1026.5 & 1027.3)
27. Balconies used for egress purposes shall conform to the same requirements as corridors for width, headroom, dead ends and projections. (1019.1)
28. Exterior egress balconies shall be separated from the interior of the building by walls and opening protection as required by corridors. (1019.2)
29. **Means of egress illumination:** The means of egress, including the exit discharge, shall be illuminated at all times the building space is occupied.
- a) Provide means of egress lighting with **emergency power** back-up supply where two or more exits are required. (1006.3)
  - b) Show location of exit signs when two exits are required. Specify an alternate power source. (1011.1 & 1011.5.3)
  - c) Provide low level exit signs and exit path marking in corridors serving assembly occupancy and in hotels. Sign to be 6 to 8 inches above the floor and 4 inches from the door frame. (1011.6 & 1011.7)

## GUARDRAIL AND STAIRWAY

1. Show the following stair details: (1009.3)
- a) Minimum 11" run & maximum 7" rise. The largest rise or run in a flight of stairs may not exceed the smallest by more than 3/8" (1009.4.2 & 1009.4.4)
  - b) Minimum of 6'-8" headroom clearance at tread nosing (1009.2)
  - c) Minimum of 36" x 36" landing at the top and bottom of each stairway (1009.5)
  - d) Handrails for the length of the stairs (required for 4 or more risers). The top of the handrail shall be placed not less than 34" nor more than 38" above tread nosing (1012.2)
  - e) Minimum of 36" clear width (1009.1)
  - f) Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches and not greater than 2 inches or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6.25 inches with a maximum cross-section dimension of 2.25 inches. Edges shall have a minimum radius of 0.01 inch. (1012.3.1)
  - g) Handrails shall extend horizontally at least 12" beyond the top riser and 12 inches plus the tread width beyond the nosing at the bottom. Handrails shall return to a wall, guard or the walking surface. (1012.6)
2. Spiral stairways are permitted as a means of egress only from a space not more than 250 square feet in area and serving not more than 5 occupants. (1009.9)
3. Vertical distance between stairway landings is limited to 12 feet. (1009.7)
4. Stairways from upper levels which extend below the level of exit discharge shall have an approved barrier to preclude exiting into such lower levels. Directional exit signs shall be provided. (1020.1.5)
5. Provide guards at floor and roof openings, landings, balconies, and at open sides of stairs, which are more than 30" above grade, or floor below. Guardrails shall be not less than 42" in height. (1013.1)

## COMMERCIAL CORRECTION LIST (2010 CBC)

---

- ❑ 6. Open guards shall have intermediate rails or an ornamental pattern such that a sphere 4" in diameter cannot pass through. (1013.3)
- ❑ 7. Buildings four or more stories in height are required to have one stairway extended to the roof unless the roof has a slope steeper than 4 to 12. Provide stairway identification signs. (1009.13)
- ❑ 8. In buildings 4 or more stories: One stair must extend to the roof. (1009.13)
- ❑ 9. Stairs in buildings over 55 feet in height shall be in a "Pressurized Enclosure" per CBC 909.20.4. See 202 for high-rise definition.

### MISCELENEOUS

- ❑ 1. Provide detail of skylights to show compliance with CBC Chapter 2606 and Section 2610.1, or show on plans ICC or other approval number.
- ❑ 2. Plastic skylights shall be separated from each other by not less than 4 feet. (2610.6)
- ❑ 3. Where exterior wall openings are required to be protected in accordance with Section 704, a skylight shall not be installed within 6 feet of such exterior wall. (2610.7)
- ❑ 4. Lateral bracing for suspended ceiling must be provided. Where ceiling is not supporting interior partitions, ceiling bracing shall be provided by four No. 12 gauge wires secured to the main runner within 2 inches of the cross runner intersection and splayed 90 degrees from each other at an angle not exceeding 45 degrees from the plane of the ceiling. A strut (adequate to resist the vertical component from lateral loads) fastened to the main runner shall be extended to and fastened to the structural members of the roof or floor above. These horizontal restraint points shall be placed 12 feet o.c. in both directions with the first point within 6 feet of each wall. Attachment of restraint wires to the structure above shall be adequate for the load imposed. Otherwise, provide a structural design in conformance with (808 & ASTM C-635/6)

### ELEVATORS

- ❑ 1. Elevators shall comply with the requirements of CBC Chapter 30 and 1116B. State amendments require a gurney-size elevator for any number of stories.
- ❑ 2. Elevators opening into a corridor shall be provided with an elevator lobby at each floor containing such a corridor. The lobby shall completely separate the elevators from the corridor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. (708.14.1)
- ❑ 3. Elevator lobby is required at each floor where an elevator enclosure connects more than 2- stories, unless the provided building is sprinklered with 903.3.1.1. or 903.3.1.2 and it is not a high-rise. (708.14.1)
- ❑ 4. An Elevator Lobby is required in accordance with 708.14.1 when serving over three floors and for Group A, E, H, I, L, R-1, R-2 Occupancies or high-rises serving over two floors.
- ❑ 5. Elevators must open into lobbies that separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire resistance rating of the corridor and the required opening protection. (708.14.1)
- ❑ 6. A minimum of 2 areas of refuge with one at an elevator must be provided in accordance with Section 1007.1, 1007.2.1, 1007.4 and 1007.6 CBC since your project is four or more stories above grade.

### ROOF PLAN

- ❑ 1. Show roof specifications, Specify roof covering material. All roofs shall be Class A or B roofing assemblies in accordance with chapter 15.
- ❑ 2. Fasteners for roof covering shall comply with sections 1507.3.6 of the California Building Code (Nails for slate shingle and clay or concrete tiles shall be corrosion resistant such as copper, brass or stainless steel).
- ❑ 3. Provide a minimum of 20" x 30" attic access opening. Opening shall be located in a corridor, hallway or other readily accessible location. (1209.2)
- ❑ 4. Provide cross ventilation for attic and enclosed rafter spaces equal to 1/150 of the area of the ventilated space. (1203.2)
- ❑ 5. Provide positive roof drainage (minimum 1/4" per ft) and roof drains at each low point of the roof. (1502.1)
- ❑ 6. Provide overflow drains or scuppers per section 1101.11.2 of the California Plumbing Code. Overflow drain shall be installed with the inlet flow line 2" above the low point of the roof, and shall not be connected to the roof drain lines. (CPC 1101.11.2.2.1)

### ELEVATIONS & SECTIONS

- ❑ 1. Specify on elevations the proposed exterior wall finish. Specify material and thickness. (1403.2)
- ❑ 2. **Projections** beyond the exterior wall shall not extend more than 12 inches into the area where openings are prohibited (<3') nor beyond a point one-third the distance to the lot line from an assumed vertical plane located where protected openings are required (3' for sprinklered buildings, 5' for non-sprinklered). (705.2)
- ❑ 3. **Balconies** and similar projections of combustible construction shall be fire-resistance rated in accordance with Table 601 floor construction or shall be heavy timber. The aggregate length shall not exceed 50 % of the buildings perimeter on each floor. In Type III and V buildings, the construction is permitted to be of Type V where sprinkler protection is extended to these areas. (1406.3)
- ❑ 4. Combustible projections located where openings are not permitted or where protection of openings is required shall be of one-hour fire-resistance, heavy timber construction or fire-retardant treated wood. (705.2.3)

## COMMERCIAL CORRECTION LIST (2010 CBC)

---

- 5. Opening for scuppers, mechanical equipment vents and similar openings shall be protected per Section 716 where openings are required to be protected. (705.10)
- 6. Provide details for a corrosion-resistant weep screed on all exterior stud walls at or below the foundation plate line a minimum of 4" above grade, or 2" above paved areas. (2512.1.2)
- 7. Indicate two layers of Grade D paper between plywood shear panel and exterior lath. (2510.6)
- 8. Provide veneer design and installation details: thickness, anchors, backing, lintels and support systems. (Chapter 14)
- 9. Exterior walls, including basement walls, shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. (1403.2)

### INTERIOR ENVIRONMENT

- 1. For all occupied spaces provide exterior openings for natural light (8% of floor area) per 1205.2 or artificial lighting per 1205.3. Natural ventilation (4% of floor area) (1203.4) or a mechanical system for all occupied spaces is also required. (1203, 1205)
- 2. Required ceiling height is 7'-6" minimum and 7'-0" minimum in kitchens, bathrooms, storage rooms and laundry rooms. (1208.2)
- 3. Provide a hard nonabsorbent floor surface such as concrete or ceramic tile in all toilet room. (1210)
- 4. Foam plastics shall not be used as interior finish except as provided in Sections 2603.9 or 2604. (801.2.2)
- 5. When walls and ceiling are required to be fire-resistive or noncombustible, the finish material shall be applied directly against such fire-resistive or noncombustible construction or to furring strips not exceeding 1-3/4 inches. The furred space shall be filled with inorganic or Class A material or fire blocked not to exceed 8 feet in any direction. (803.11.1)
- 6. Hangers and assembly members of dropped ceilings below a fire rated ceiling shall be noncombustible materials except in Types III and V construction, where fire-retardant treated wood may be used. (803.11.2)
- 7. All interior wall or ceiling finishes (except Class A) less than 1/4 inch thick shall be applied directly against a noncombustible backing unless it is in accordance with an approved tested assembly. (803.11.4)
- 8. Provide complete details and note on the plans that suspended ceilings shall comply with Section 808.1.1.1 and ASTM C-635/6
- 9. Show installation, flame spread and smoke density rating of interior wall and ceiling finish. (803.1.1)

### GARAGES & CARPORTS

- 1. Maintain minimum access and parking headroom clearance of not less than 7' (406.2.2) and 8' 2" for accessible parking. (1109A.8.1, 1130B)
- 2. Parking garages shall have an unobstructed headroom clearance of not less than 7'-0" above the finish floor to any ceiling, beam pipe or similar construction. (406.2.2)

### TITLE 24 DISABLED ACCESS

#### SITE DEVELOPMENT & ACCESSIBLE ROUTE OF TRAVEL

- 1. Show on site plan the accessible path of travel from parking to building entrance. Show all grade changes, ramps, etc.
- 2. Provide detectable warning strip 36" wide where a walk crosses or adjoins a vehicular way and the walking surface is not separated by curbs, railing or other approved elements at the following locations: (1133B.8.5).
- 3. Specify detectable warning product and submit evidence of State approval, or apply for Alternate Materials approval per city policy.

#### ACCESSIBLE PARKING

- 1. Provide accessible parking per §1129B in each lot or parking structure where parking is provided for the public or employees 1129B.1. Paint "NO PARKING" on the ground within each 5' or 8' (2438 mm) access isle. Use 12" (154 mm) minimum high white letters that are visible to traffic enforcement officials. See Fig 11B-18A C.B.C. 1129B.3 (1 & 2).
- 2. Parking spaces must be located so that the disabled are not compelled to walk or wheel behind parked cars other than their own. CBC Section 1129B.3, Item 3.
- 3. In buildings with multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located closest to the accessible entrances. CBC Section 1129B.1.
- 4. Revise the drawings to show disabled accessible parking spaces loading/unloading aisle on the passenger side. CBC Section 1129B.3 (1 & 2).
- 5. Provide the correct number of disabled parking spaces as required by Table 11B-6. (1129B.1)
- 6. Accessible parking spaces serving a particular building shall be located on the shortest accessible route of travel from adjacent parking to an accessible entrance (as near as practical to an accessible entrance). (1129B.1 & 1114B.1.2)

- ❑ 7. One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96" wide minimum and shall be designated "van accessible". All such spaces may be grouped on one level of a parking structure. The words, "No parking" shall be painted within the loading area with 12" high letters located where it is visible to parking enforcement official.(1129B.3(2))
- ❑ 8. Curb ramps shall not encroach into any parking space beyond the wheel stop. (1129B.3(3) See figures 11B-18A, B, C
- ❑ 9. Each parking space reserved for persons with disabilities shall be identified by a reflectorized sign permanently posted immediately adjacent to and visible from each stall or space, consisting of a profile view of a wheelchair with occupant in white on dark blue background. The sign shall not be smaller than 70 square inches in area and, when in a path of travel, shall be posted at a minimum height of 80" from the bottom of the sign to the parking space finished grade, (1129B.4, Fig 11B- 18A, B & C). Signs to identify accessible parking spaces may also be centered on a wall at the interior end of the parking space at a minimum height of 36" from the parking space finished grade, ground or sidewalk. (1129B.4)
- ❑ 10. Van accessible parking spaces shall have an additional sign stating "Van Accessible" mounted below the symbol of accessibility. (1129B.4)
- ❑ 11. An additional sign shall also be posted, in a conspicuous place, at each entrance to off-street parking facilities, or immediately adjacent to and visible from each stall or space. The sign shall be not less than 17" by 22" in size with lettering not less than 1" in height, which clearly and conspicuously states the following: (1129B.4): "Unauthorized vehicles parked in designated accessible spaces not displaying distinguishing placards or license plates issued for persons with disabilities may be towed away at owner's expense. Towed vehicles may be reclaimed at the Police Dept."
- ❑ 12. The surface of each accessible parking space or stall shall have a surface identification duplicating either of the following schemes: (1129B.4, Fig 11B-18A, B & C)
  - a) By outlining or painting the stall or space in blue and outlining on the ground in the stall or space in white or suitable contrasting color a profile view depicting a wheelchair with occupant, *OR*
  - b) By outlining a profile view of a wheelchair with occupant in white on blue background. The profile view shall be located so that it is visible to a traffic enforcement officer when a vehicle is properly parked in the space and shall be 36" high by 36" wide.

#### **RAMP (EXTERIOR OR INTERIOR)**

- ❑ 1. The maximum slope of a ramp that serves any exit way, provides access for persons with disabilities, or is in the path of travel shall be 1" rise in 12" of horizontal run. (1133B.5.3)
- ❑ 2. The width of ramps shall be as required for stairways and exits, minimum clear width of 48". (1133B.5.2, Fig 11B-38 & 39)
- ❑ 3. Pedestrian ramps serving primary entrances to buildings having an occupant load of 300 or more shall have a minimum clear width of 60". (1133B.5.2)
- ❑ 4. Intermediate landings shall be provided at intervals not exceeding 30" of vertical rise and at each change of direction in excess of 30 degrees. (1133B.5.4.1, Fig 11B-38 & 39, &1133B.5.4.6)
- ❑ 5. Top landings shall be not less than 60" wide and shall have a length of not less than 60" in the direction of ramp run. (1133B.5.4.2, Fig 11B-38 & 39)
- ❑ 6. Doors in any position shall not reduce the minimum dimension of the ramp landing to less than 42" and shall not reduce the required width by more than 3" when fully open. (1133B.5.4.3, Fig 11B-39(b))
- ❑ 7. The width of the landing shall extend 24" past the strike edge of any door or gate for exterior ramps and 18" past the strike edge for interior ramps. (1133B.5.4.4, Fig 11B-39(b))
- ❑ 8. Intermediate landing at a change of direction in excess of 30 degrees and bottom landings shall have a dimension in the direction of ramp run of not less than 72" to accommodate the handrail extension. (1133B.5.4.6, Fig 11B-38)
- ❑ 9. Other intermediate landings shall have a dimension in the direction of ramp run of not less than 60". (1133B.5.4.7 Fig 11B-38)
- ❑ 10. Handrails are required on ramps that provide access if the ramp slope exceeds 1" rise in 20" of horizontal run, except that at exterior door landings, handrails are not required on ramps less than 6" rise or 72" in length. (1133B.5.5.1)
- ❑ 11. Handrails shall be placed on each side of each ramp, shall be continuous the full length of the ramp, shall be 34" to 38" above the ramp surface, shall extend a minimum of 12" beyond the top and bottom of the ramp. The extension may be turned 90o if it creates a hazard or returned smoothly to wall, floor, or post. (1133B.5.5.1 Fig 11B-27(b) &(c)
- ❑ 12. The grip portion of handrails shall be not less than 1-1/4" nor more than 1 1/2" nominal diameter, or the shape shall provide an equivalent gripping surface, and all surfaces shall be smooth with no sharp corners. Handrails shall not rotate within their fittings. (1133B.5.5.1, Fig 11B-36)
- ❑ 13. Handrail projecting from a wall shall have a space of 1 1/2" between the wall and the handrail. (1133B.5.5.1, Fig 11B-36)

#### **ENTRANCES & EXITS**

##### **Entrance: 1133B.1.1.1.1**

##### **Exit**

- ❑ 1. Every required exit doorway, which is located within an accessible path of travel, shall be of a size as to permit the installation of a door not less than 3' in width and not less than 6'-8" in height. (1133B.1.1.1.1)

#### **DOORS**

- ❑ 1. Latching and locking doors that are hand activated and which are in a path of travel shall be operable with a single effort by lever type hardware, by panic bars, push-pull activating bars, or other hardware designed to provide passage without requiring the ability to grasp the opening hardware. (1133B.2.5.2)
- ❑ 2. When installed, exit doors shall be capable of opening so that the clear width of the exit is not less than 32". (1133B.1.1.1.1, Fig 11B-33)
- ❑ 3. Where a pair of doors is utilized, at least one of the doors shall provide a clear, unobstructed opening width of 32" with the leaf positioned at an angle of 90 degrees from its closed position. (1133B.2.3.1)
- ❑ 4. There shall be a level and clear floor or landing on each side of a door. The level area shall have a length in the direction of door swing of at least 60" and the length opposite the direction of door swing of 48" as measured at right angles to the plane of the door in the closed position. (1133B.2.4.2, Fig 11B-26A, 26B, 26C)
- ❑ 5. The width of the level area on the side to which the door swings shall extend 24" past the strike edge of the door for exterior doors and 18" past the strike edge for interior doors. Doors recessed 8" or more require this clearance within the recessed area adjacent to the door. (1133B.2.4.3, Fig 11B-26(a), & 1133B.2.4.5, Fig 11B-33A)
- ❑ 6. Provide clear space of 12" past strike edge of the door on the opposite side to which the door swings if the door is equipped with both a latch and a closer. (Fig. 11B-26(a))
- ❑ 7. The floor or landing shall be not more than ½" lower than the threshold of the doorway. (1133B.2.4.1)
- ❑ 8. The bottom 10" of all doors except automatic and sliding shall have a smooth, uninterrupted surface to allow the door to be opened to a wheelchair footrest without creating a trap or hazardous condition. Where narrow frame doors are used, a 10" high smooth panel shall be installed on the push side of the door, which will allow the door be installed on the push side of the door, which will allow the door to be opened by a wheelchair footrest without creating a trap or hazardous condition. (1133B.2.6, Fig 11B-29)
- ❑ 9. Maximum effort to operate exterior or interior doors with closers shall not exceed five pounds. This may be increased to 15 pounds for fire-rated doors. (1133B.2.4.1, 2, 3)

## STAIRWAYS

- ❑ 1. Handrails shall extend a minimum of 12" beyond the top nosing and 12" plus the tread width beyond the bottom nosing and ends shall be returned or terminate in newel posts or safety terminals. (1133B.4.2.3)
- ❑ 2. The orientation of at least one handrail shall be in the direction of the run of the stair and perpendicular to the direction of the stair nosing, and shall not reduce the minimum required width of the stairs. (1133B.4.2.4, Fig 11B-37)
- ❑ 3. The handgrip portion of handrails shall be not less than 1-1/4" nor more than 1-1/2" in crosssectional nominal dimension or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners. Gripping surfaces (top and sides) shall be uninterrupted by newel posts, other construction elements, or obstructions. Any wall or other surface adjacent to the handrail shall be free of sharp or abrasive elements. Edges shall have a minimum radius of 1/8. (1133B.4.2.6, Fig 11B-36)
- ❑ 4. Interior Stairs: the upper approach and the lower tread of each stair shall be marked by a strip of clearly contrasting color at least 2" wide and not more than 4" wide placed parallel to and not more than 1" from the nose of the step or landing to alert the visually impaired. The strip shall be of material that is at least as slip resistant as the other treads of the stair. (1133B.4.4, Fig 11B-35)
- ❑ 5. Where stairways occur outside a building, the upper approach and all treads shall be marked by a strip of clearly contrasting color at least 2" wide and not more than 4" wide placed parallel to and not more than 1" from the nose of the step or landing to alert the visually impaired. The strip shall be of a material that is at least as slip-resistant as the other treads of the stair. A painted strip shall be acceptable. (1133B.4.4, Fig 11B-35)
- ❑ 6. Open risers are not permitted. (1133B.4.5.2)

## ACCESSIBLE RESTROOM

### Multiple Accommodation Toilet Facilities

- ❑ 1. A clear space measured from the floor to a height of 27 inches (686 mm) above the floor, within the sanitary facility room, of sufficient size to inscribe a circle with a diameter not less than 60 inches (1524 mm in size. Other than the door to the accessible water closet compartment, a door, in any position, may encroach into this space by not more than 12 inches (305 mm). (1115B.3.1 Fig. 11B-1B)
- ❑ 2. Doors shall not swing into the clear floor space required for any fixture. (1115B.3.1 (2))
- ❑ 3. Accessible water closet compartments shall comply with the following: (1115B.3.1 (4))
  - a) The compartment shall be a minimum of 60 inches (1524 mm) wide. (1115B.3.1 (4.1))
  - b) If the compartment has a side-opening door, a minimum 60-inches-wide (1524 mm) and 60 inches-deep (1524 mm) clear floor space shall be provided in front of the water closet. (1115.3.1 (4.2))
  - c) If the compartment has an end-opening door (facing the water closet), a minimum 60-inches-wide (1524 mm) and 48-inches-deep (1219 mm) clear floor space shall be provided in front of the water closet. the door shall be located in front of the clear floor space and diagonal to the water closet, with a maximum stile width of 4 inches (102 mm). (1115.3.1 (4.3))
  - d) The water closet compartment shall be equipped with a door that has an automatic-closing device, and shall have a clear, unobstructed opening width of 32 inches (813 mm) when located at the end and 34 inches (864 mm) when located at the end and 34 inches (864 mm) when located at the side with the door positioned at an angle of 90 degrees from its closed position. (1115.3.1 (4.4))

- e) Maneuvering space at the compartment door shall comply with Sections 1133B.2.4.2 and 1133B.2.4.3, except that the space immediately in front of a water closet compartment shall not be less than 48 inches (1219 mm) as measured at right angles to the compartment door in its closed position. (1115.3.1 (4.5))
- 4. Where six or more compartments are provided within a multiple-accommodations toilet room, at least one compartment shall comply with CBC 1115B.3, Items 3 and 4 and at least one additional ambulatory accessible compartment shall be 36 inches (914 mm) wide with an outward swinging self-closing door and parallel grab bars complying with Section 1115B.4.1, Item 3.

#### Single Accommodation Toilet Facilities

- 5. Provide required accessible lavatory in compliance with Section 1115B.4.3.
- 6. The centerline of the water closet fixture shall be 18 inches (457 mm) from the side wall or partition. On the other side of the water closet, provide a minimum of 28 inches (711 mm) wide clear floor space if the water closet is adjacent to a fixture or a minimum of 32 inches (813 mm) wide clear floor space if the water closet is adjacent to a wall or partition. This clear floor space shall extend from the rear wall to the front of the water closet. (1115B.4.1 (1))
- 7. Water closets required to be accessible shall comply with 1115B.4.1. (2).
- 8. The height of accessible water closets shall be a minimum of 17 (432 mm) and a maximum of 19 inches (483 mm) measured to the top of a maximum 2-inch (51 mm) high toilet seat. (1115B.4.1 (1))
- 9. Grab bars for water closets not located within a compartment shall comply with Section 1115B.7 and shall be provided on the side wall closest to the water closet and on the rear wall. (1115B.4.1 (3))

#### FIXED OR BUILT-IN SEATING, TABLES & COUNTERS

- 1. Where fixed or built-in seating, tables, or counters are provided for the public, and in general employee areas, 5% but never less than 1 must be accessible, as required in Section 1122B.1.
- 2. If seating spaces for people in wheelchair are provided at fixed tables or counters, clear floor space complying with Section 118B.4 shall be provided. Such clear floor space shall not overlap knee space by more than 19". (1122B.2, Fig 11B-13)
- 3. If seating for people in wheelchairs is provided at fixed tables or counters, knee spaces at least 27" high, 30" wide, and 19" deep shall be provided. (1122B.3, Fig 11B-13)
- 4. The tops of tables and counters shall be 28" to 34" from the floor or ground. (1122B.4)
- 5. Where a single counter contains more than one transaction station, such as a bank counter with multiple teller windows or a retail sales counter with multiple cash register stations, at least 5%, but never less than 1, of each type of station shall be located at a section of counter that is at least 36" long and no more than 28" to 34" high. (1122B.4)

#### SIGNS & IDENTIFICATION

- 1. Signs must comply to 1117B.5 & 1117B.5.1
- 2. Tactile exit signs shall be provided at the following locations:
  - a) Primary entrances and directional signs on the accessible route and path of travel.
  - b) Each grade level exterior door shall be identified by a tactile exit with the word "EXIT".
  - c) Each exit access door from an interior room or area to a corridor or hallway that is required to have a visual exit sign, shall be identified by a tactile exit sign with the words: "EXIT ROUTE".
  - d) Each exit door that leads directly to a grade-level exterior exit by means of a stairway or ramp shall be identified by a tactile exit sign with words as appropriate.

#### DINING, BANQUET & BAR FACILITIES

- 1. Accessibility shall be provided in all areas where a different type of functional activity occurs. Provide wheelchair access to . (1104B.5.1)
- 2. Provide seats/spaces for people using wheelchairs (at least one space for each 20 seats, with at least one space per functional area) integrated with general seating to avoid having one area specifically highlighted as the area for person with disabilities. (1104B.5.(4))
- 3. Access to disabled seating shall be provided with main aisles not less than 36" in clear width. (1104B.5.(4))
- 4. Food service aisles shall be a minimum of 36" in clear width with a preferred width of 42" where passage of stopped wheelchairs by pedestrians is desired. Tray slides shall be mounted no higher than 34" above the floor. If self-service shelves are provided, at least 50% of each type must be within the ranges shown in Fig. 11B-16. (1104B.5.(5))

#### SALES FACILITIES

- 1. Employees' workstations shall be located on accessible levels and shall be sized and arranged to provide access to employees in wheelchairs. (1110B.1.2)
- 2. The customer side of sales and checkout stations shall be accessible. (1110B.1.2)
- 3. Where fitting or dressing rooms are provided for male or female customers, patients, employees, or the general public, 5 percent, but never less than one, of dressing rooms for each type of use in each cluster of dressing rooms shall be accessible by providing the following: (1117B.8)

## COMMERCIAL CORRECTION LIST (2010 CBC)

- 4. Entry doors conforming to the requirements of Section 1133B.2 and aisles leading to such doors conforming to Section 1133B.6.1 & 1133B.6.2. (1117B.8)
- 5. Full-length mirrors at least 18" wide by 54" high, the bottom of which is no higher than 20" from the floor, and mounted in a position affording a view to a person on the bench as well as to a person in a standing position. (1117B.8)
- 6. Clothing hooks located no higher than 48" from the floor. (1117B.8)
- 7. A 24" by 48" bench mounted to the wall along the longer dimension of the room 17" to 19" above the floor with a clear space alongside the bench to allow a person using a wheelchair to make a parallel transfer onto the bench. The structural strength of the bench and attachments shall comply with Section 1115B.8.

### STRUCTURAL

- 1. **Licensed Architect or Engineer:** Provide complete plans, specifications, and calculations that are prepared by a California licensed architect or professional engineer for review.
- 2. **Approved Plans and Documents Requirements:** All sheets of the final plans, calculations, and documents submitted (including subsequently corrected and revised plans) need the wet-stamp, date of signing, and expiration date of license, and signature of State of California licensed architect, civil or structural engineer who is responsible for the preparation of the plans, calculations and/or any documentation.
- 3. **Soils Report (1803):** Submit a foundation and soils investigation report by a registered design professional and conducted in conformance with CBC Sections 1803.2 through 1803.7. The report shall comply with CBC Section 1803.6.
  - a. Questionable Soil – CBC Section 1803.5.2
  - b. Expansive Soil – CBC Section 1803.5.3
  - c. Ground-water Table – CBC Section 1803.5.4
  - d. Pile & Pier foundation – CBC Section 1803.5.5
  - e. Rock strata – CBC Section 1803.5.6
  - f. Seismic Design Category D, E, or F – CBC Section 1803.5.12
- 4. **Structural Observation (1710A):** Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to *Seismic Design Category D, E, or F*, as determined in Section 1613, where one or more of the following conditions exist:
  - a. The structure is classified as *Occupancy Category II or IV* in accordance with Table 1604.5.
  - b. The height of the structure is greater than 75 feet (22 860 mm) above the base.
  - c. The structure is assigned to *Seismic Design Category E*, is classified as *Occupancy Category I or II* in accordance with Table 1604.5, and is greater than two stories above grade plane.
  - d. When so designated by the *registered design professional* responsible for the structural design.
  - e. When such observation is specifically required by the *building official*.
- 5. **Special Inspections (1704):** The architect or engineer of record shall indicate on the plans the portion of work requiring special inspection. Identify if they are "*Continuous Special Inspections*" or "*Periodic Special Inspections*".
  - a. Special inspection (by a certified inspector) is required for: Steel (1704.3), Concrete (1704.4), Masonry (1704.5.1 & 1704.5.3), Soils (1704.7), Pile Foundations (1704.8), Pier Foundations (1704.9), and high load wood diaphragm (Table 2306.2.1 note g). Please note on the plans.
  - b. The following additional systems and components in structures:
    - i. Anchorage of electrical equipment used for emergency or standby power systems.
    - ii. Exterior wall panels and their anchorage.
    - iii. Suspended ceiling systems and their anchorage.
    - iv. Access floors and their anchorage.
    - v. Steel storage racks and their anchorage, where the importance factor is equal to 1.5 in accordance with Section 15.5.3 of ASCE 7.
    - vi. Electrical Equipment
- 6. **Statement of Special Inspections (1705):** The registered design professional in responsible charge shall prepare a statement of special inspections in accordance with Section 1705 for submittal by the permit applicant.
- 7. **Special Inspections for Seismic Resistance (1707):** Unless exempted by the exceptions of Section 1704.1, special inspections are required for the following:
  - a. The seismic-force-resisting system in structures assigned to SDC C, D, E or F
  - b. Designated seismic system in structures assigned to SDC D, E or F
- 8. **Add notes to plan:**
  - a. *Structural observation per section 1710 of the CBC shall be provided when so designated by the Architect or Engineer of record or, when such observation is specifically required by the Building Official.*
  - b. *Each contractor responsible for the construction of a main wind or seismic force resisting system, designated seismic system or a wind or seismic resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain the following: (1706.1)*

- i. *Acknowledgement of awareness of the special requirements contained in the statement of special inspections.*
    - ii. *Acknowledgement that control will be exercised to obtain conformance with the construction documents approved by the building official.*
    - iii. *Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports.*
    - iv. *Identification and qualification of the person(s) exercising such control and their position(s) in the organization.*
  - c. *Continuous Special Inspection by a registered deputy inspector is required for field welding, concrete strength  $f'c > 2500$  psi, high strength bolting, sprayed-on fireproofing, engineered masonry, high-lift grouting, pre-stressed concrete, high load diaphragms and special moment-resisting concrete frames. (1704 & Chapters 19, 21, and 22)*
  - d. *Periodic Special Inspection is required for wood shear walls, shear panels, and diaphragms, including nailing, bolting, anchoring, and other fastening to components of the seismic force resisting system where the fastener spacing is  $< 4$  inches on center. (1707.3)*
  - e. *Excavations shall be made in compliance with CAL/OSHA Regulations.*
  - f. *All bolt holes shall be drilled 1/32 to 1/16" oversized (11.1.2.2, '05 NDS)*
9. **Material Specification:** Provide complete material notes and specifications. As a minimum:
- a. Type of soil and bearing value per soils report or Table 1806.2 (where applicable)
  - b. Wood framing members: Grading & species of all framing lumber
  - c. Glue Laminated beams: Identify grade symbol and lamination species
  - d. Plywood diaphragm: PS 1-95, Douglas Fir Larch, Structural I (or CDX)
  - e. Structural steel: ASTM A-36 (A-552); Structural Pipe: ASTM A-53 Grade B; Tubing: ASTM A-501 Grade B
  - f. Reinforcing bars: ASTM A-615 Grade 40 or 60 ksi
  - g. Concrete: Minimum 28-day strength of concrete (standard: 2,500 psi, grade beams/caissons: 3,000 psi) Cement: ASTM C-150; Aggregate: ASTM C-33
  - h. Bolts: ASTM A-307
  - i. Masonry
10. For a **metal deck**, specify the manufacturer, product name, and ICC Approval number on plans: Specify on plans and calculations the deck designation of which tables were used to determine the allowable loads. Provide complete welding information on plans.
11. Provide ICC ES approvals for all alternate materials used or provide general notes that detail the necessary procedures and installation instructions per ICC ES Evaluation Reports.
12. **Deferred Submittals:** List all deferred submittals on cover sheet and note on the plan: *"Deferred submittals to be reviewed by project architect or engineer of record and certified prior to submittal for plan review."*
13. **Pre-fabricated trusses:** Drawings, layout plan and calculations required to complete plan check. Shall be wet stamped and signed by a licensed Civil Engineer and must be reviewed and accepted by the Project Engineer or Architect with stamp and wet signature.
14. **Trusses** – provide the following notes on the plans:
- a. Submit two (2) sets of truss calculations and plans to the city for separate plan check.
  - b. The truss calculations and plans shall include review of roof, mechanical and lateral loads (chord/strut & brace loads); also include review of top chord and bottom chord for axial + flexure between panel joints.
  - c. The truss calculations and plans shall be "wet" stamped and signed (include expiration date) by a licensed civil/structural engineer.
  - d. The truss plans shall be "review stamped" and "wet" signed by the engineer of record.

**STRUCTURAL CALCULATIONS**

15. **Calculation:**
- a. Provide complete structural calculations to verify the adequacy of the structural system in resisting seismic, wind and gravity loads. (1604)
  - b. Revise the calculations to comply with the 2010 CBC (Chapter 16) & ASCE 7-05
  - c. **Load Combination** (1605): Use the correct load combinations per Section 1605.
  - d. To help facilitate plan check of calculations, please provide a building schematic in the calculations showing framing directions and spans; beam locations and spans; posts and footings, etc.
  - e. Note the design parameters, allowable design values and any supporting documents used for the design in the structural calculations.
  - f. **Suspended ceilings:** Provide complete notes and details (design for Seismic Design Category D). (ASCE 7-05, Sec. 13.5.6)
16. **Foundation:**

- a. Check foundation stability due to overturning moment from shear walls. Add pad footings or design continuous footings/ grade beams as required.
- b. Review foundation to distribute the overturning forces to the soil, include review of the continuous footing as a grade beam. (1808.1)

□ **17. Framing:**

- a. **Live Loads (1607):** Provide correct Uniform Live Load per CBC Table 1607.1.
  - i. The basic roof live load is 20 psf which can be reduced for slopes or areas over 200 sf. (1607.11.2.1)
  - ii. Exterior balconies: Table 1607.1
  - iii. Floors supporting vehicles not exceeding 9 passengers shall be designed for both a live load of 40 psf or a 3,000 lb concentrated load acting on a 4.5 inch by 4.5 inch area, which ever produces the greater load effect. (Table 1607.1 & Note a)
- b. **Rain Loads (1611.1):** Provide roof design that addresses rain loads for blocked roof drains using a 2" per hour rainfall.

□ **18. Wall framing:**

- a. Please calculate (state all assumptions) and detail wall framing to support vertical plus lateral (out-of-plane) loads – review studs, headers, posts, etc.
- b. Provide shrinkage calculations for wood stud walls and bearing partitions supporting more than two floors and roof. (2304.3.3)

□ **19. Wind & Seismic Design (1609 & 1613):** Submit lateral design of the structure due to the governing lateral force determined by the following:

- a. **Wind Design:**
  - i. Provide a lateral analysis for wind loads using 85 MPH (3-second gust) per CBC Section 1609.3 and exposure B or C. [Exposure D within and including 600' from coast line, Exposure C greater than 600' to 2600' from coast line (1500' if H<30'), Exposure B all others]
  - ii. Provide calculations for wind loading on the building showing compliance with ASCE 7 Chapter 6. Indicate in the calculations which method is being used. (1609.1.1)
- b. **Seismic Design:**
  - i. Seismic load effect, E, shall be determined in accordance with CBC 1613 and ASCE 7 (Section 12.4.2).
  - ii. Mapped Accelerations  $S_S$  &  $S_1$  (1613.5.1): Provide documentations showing the longitude & latitude of the building site used in determining the  $S_S$  &  $S_1$  map parameters. Please note that using the zip code is not acceptable.
  - iii. Occupancy Category (1604.5): Identify the Occupancy Category
  - iv. Seismic Design Category (1613.5.6): Determine the SDC factor based on the seismicity of the site, occupancy, and the soil type. Use the most severe of:
    - 1. SDC based on "short" period accelerations (functions of  $S_{DS}$  & Occupancy)
    - 2. SDC based on "1 second" period accelerations (functions of  $S_{D1}$  & Occupancy)
- c. **Redundancy  $\rho$**  (ASCE 12.2.4): Use  $\rho = 1.3$  or provide calculations to justify using  $\rho = 1.0$  (section 12.3.4.2 of ASCE 7).
- d. A value of R that is used for design in a specific direction shall not exceed the lowest value of R for any of the lateral force resisting systems utilized in that same direction. (ASCE 12.2.3.1 and 12.2.3.2)
- e. **Shear wall vertical/plan irregularity:** Consider shear wall overturning reactions on the beam/columns. Use over-strength factor  $\Omega$ . (ASCE 7, Sec. 12.3.3.3)
- f. **Cantilevered columns** resisting seismic forces shall be designed with a R factor per ASCE Table 12.2-1 and shall be limited to a maximum inelastic response displacement per ASCE Table 12.12-1. Foundation and other elements used to provide overturning resistance at the base of cantilever column elements shall have the strength to resist the load combinations with over strength factor of ASCE 12.4.3.2
- g. Submit structural calculations and connection details for the structural members that provide support for the seismic forces generated by **elevators**. The seismic forces must be determined in accordance with ASCE 13.3. The calculations and details provided must show the complete load path from the rail supports to the building's lateral-force-resisting system. (1604.4)
- h. Allowable plywood shear wall values shall comply with Table 2306.3.
- i. Allowable shear wall values of walls sheathed with lath, plaster or gypsum board (e.g. stucco) shall comply with Chapter 25 and CBC Table 2306.4.7.
- j. Include shear wall table with allowable shear values in the calculations.
- k. Provide design for shear transfer from the roof diaphragm or upper shear wall to shear wall below. (ASCE Sec. 12.1.3)
- l. Check shear wall hold-downs to include the overturning moments produced by the shear walls from stories above. (ASCE Sec. 12.1.3)
- m. Limit shear wall/ frame drift. Where applicable account for the vertical deflection of the support beam. (ASCE Sec. 12.8.6; SDPWS Sec. 4.1.3, 4.3.1)
- n. Follow through with all tie-downs. Where tie-downs are not followed through and are not attached to the foundation, please show how the loads are resisted (justifying the dead loads required to resist the uplift forces).

- o. Where tie-downs from upper floor do not continue to the foundation, special seismic load combination shall be checked for elements supporting discontinuous systems. (ASCE Sec. 12.3.3.3)
- p. Collector members (drags) should be designed and detailed on the drawings. (ASCE Sec. 12.1.3, 12.1.4, 12.10.2)
- 20. **Shear wall Design:**
  - a. **Wood Shear Walls** (SDPWS Sec. 4.3.1): Design the shear wall with openings and identify which method is used (FTAO: force transfer around openings or PSW: perforated shear wall).
  - b. Limit the height-width ratio of the plywood (wood structural panels) shear walls, perforated shear wall segments, perforated shear walls and shear wall piers to 2:1. (See Table 2308.12.4, footnote a). Provide complete calculations (including deflection) and details for shear wall with openings. (SDPWS Sec. 4.3.1)
  - c. Shear capacity of perforated shear walls – modify shear capacity (SDPWS Sec. 4.3.3.4)
- 21. **Tie-downs:** Provide design of the shear wall hold-downs. (ASCE Sec. 12.1.3)
  - a. Hold-downs are required for shear walls with any uplift force. Provide calculations.
  - b. Use  $(0.6-0.14S_{DS})$  D.L. for earthquake and 0.67 D.L. for wind to resist overturning (service level) forces. (ASCE Sec. 12A.2.3)
  - c. Hold-downs shall maintain a continuous path to the foundation. Provide details on the plans.
  - d. Provide design of the hold-downs for stacked shear wall condition. (For example, the overturning-moment from the 2nd floor shear wall above shall be accounted for in the 1st floor shear wall hold down below.)
  - e. Reference and detail hold-down on the plans.
  - f. Use SSTB hold-down anchor bolts or provide design of the anchor bolts shown in the details.
  - g. Check foundation stability due to overturning moment from shear walls. Add pad footings OR design continuous footings/grade beams as required. (ASCE 12.1.5)
  - h. Review foundation to distribute the overturning forces to the soil. Include review of the continuous footing as a grade beam. (ASCE 12.1.15)
- 22. **Diaphragms:** Provide design of the horizontal diaphragms and diaphragm chords and chord splices.
  - a. Provide a rigid diaphragm analysis. The building does not meet the conditional criteria under which a diaphragm can be idealized as flexible. (1613.6.1 CBC, 12.3.1.1 ASCE 7)
  - b. The diaphragm aspect ratio shall comply with Table 4.2.4 SPDWS.
  - c. The allowable shear value for the wood diaphragms shall comply with Table 2306.2.1(1) or 2306.2.1(2).
  - d. The force  $F_{px}$  determined from ASCE 7, Equation 12.10-1 need not exceed  $0.4SDS_{wp}$ , but shall not be less than  $0.2SDS_{wp}$ .
  - e. Design the diaphragm to transfer seismic forces from the vertical-resisting element above the diaphragm to the vertical-resisting elements below the diaphragm due to offsets or changes in stiffness in the vertical elements. (ASCE 7 Sec. 12.10.1.1)
  - f. The redundancy factor shall be applied to the design of the transfer forces and in structures having horizontal or vertical irregularities of types indicated in ASCE 7, Section 12.3.4.2.
  - g. In wood-frame construction where diaphragm rotation for distribution of lateral forces is provided for, the diaphragm depth normal to the open side is limited to maximum 25 feet or  $2/3$  the diaphragm width. One story structures may have a depth equal to the width. (Sec. 4.2.5 SPDWS)
- 23. **Chords/collector and struts:** Provide calculations and details to show that collector elements, splices, and connections to resisting elements have the strength to resist the combined loads resulting from the special seismic load of ASCE 7-05 Section 12.14.7.3, 12.14.3.2.2., and 12.10.2 (1605.2, 1605.3)
  - a. Collector members (drags) should be designed and detailed on the drawings.
  - b. Design and detail for chord/strut loads.
  - c. Design and detail chord/struts around diaphragm openings.
- 24. **Handrails (1607.7):**
  - a. Provide design of handrail assemblies and guards to resist a load of 50 plf applied in any direction.
  - b. **Concentrated Load** (1607.7.1.1): Handrail assemblies and guards shall be designed for a single concentrated load of 200 lbs. applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this load to appropriate elements of the building.
  - c. **Components** (1607.7.1.2): Design the intermediate rails, balusters and panel fillers for a horizontally applied normal load of 50 psf, including openings and space between rails).
  - d. The glass handrails and assemblies railing shall comply with CBC 2407. Provide design and details.
- 25. Miscellaneous:
- 26. Match plans with calculations or revise calculations to match the plans.

## STRUCTURAL PLANS

- 27. **Construction Documents** (1603.1): The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.9 shall be indicated on the construction documents. As a minimum show:
  - a. roof, floor and rain loads,

- b. Wind and earthquake design data including  $S_s$ ,  $S_1$ ,  $S_{DS}$ ,  $S_{D1}$ ,  $C_s$ ,  $R$  and  $SDC$ , the base shear and the analysis procedure.
- 28. Provide a complete and consistent grid system with grid lines for each lateral line of resistance on structural framing plans. Lack of grid lines makes the review process difficult and may delay the plan review and permit process.
- 29. **Shoring Plans:** Provide complete shoring plans for the subterranean excavation or provide plans and sections showing cut slopes as recommended per approved soils report. Before commencing the excavation, proof of notification to adjoining property owners shall be submitted. (3307)
- 30. **Foundation:**
  - a. Show on the building or grading plans the name, address and phone number of the Project Geotechnical Consultant and a list of all applicable geotechnical reports.
  - b. Provide details for stepped footings when slope of top and/or bottom of footing exceeds 1:10. Top surface of the stepped footing shall be level. (1809.3)
  - c. Provide complete specifications for the concrete slab-on-grade; specify thickness, reinforcements, vapor-barrier, base, etc.
  - d. Show all shear walls, call out anchor bolt size & spacing, hold-downs & required 3x sills areas on the foundation plan.
  - e. Provide pile ties to interconnect individual pile caps and caissons. Ties shall be capable of resisting, in tension or compression, a minimum horizontal force of 10% of the larger column vertical load multiplied by  $S_{DS}$ . (1810.3.13)
  - f. Foundation attachments:
    - i. Foundation sill to be treated wood or foundation grade redwood. (2304.11)
    - ii. Fasteners in preservative-treated wood (i.e. anchor bolts, nails, screws, etc.) shall be approved silicon bronze or copper, stainless steel, or hot-dipped zinc-coated steel. (2304.9.5)
    - iii. Provide design of the foundation anchor bolts.
    - iv. Provide minimum  $\frac{1}{2}$ " diameter steel bolts embedded 7 inches into the foundation.
    - v. Provide minimum 3" x 3" x 0.229" thick plate washer for the anchor bolts. (2308.12.8)
    - vi. List ICC/ICBO number for shear and tension anchors. Note on plans special inspection when required by the report.
    - vii. **Adhesive/expansion anchors:** Dimension edge and end distances and spacing of the adhesive/expansion anchors per their approval reports.
  - g. Provide typical foundation details for two-pour system *OR* note on plans that the foundation will be mono-pour only.
  - h. Specify foundation dimensions and reinforcement in the continuous and pad footings
  - i. Add pad footing(s) as required under point loads where missing and/or required.
  - j. The placement of structures on or adjacent to slopes steeper than 1 unit vertical to 3 units horizontal (33% slope).
  - k. Note on plan that: "*Shear wall anchor bolts and hold-down hardware must be secured in place prior to foundation inspection.*"
- 31. **Framing:**
  - a. Show size of headers and beams over all openings.
  - b. Show support for all beams and connecting hardware.
  - c. Provide positive connections at all post-beam connections to account for uplift forces and lateral displacements. (2304.9.7)
  - d. Call out all metal straps and hangers.
  - e. Show panel index, type, orientation and nailing of floor / roof / shear wall plywood.
  - f. Show location of purlins and struts (kickers) to reduce rafter spans and support ridges, hips, valleys, etc.
  - g. Show on plans, rafter & ceiling joist size, spacing, span direction, and support locations
  - h. Provide lapped ceiling joist splice detail.
  - i. Provide beams (structural framing) where conventional framing is not used.
  - j. Provide detail of California framing.
  - k. Where existing bearing walls/beams have been removed, provide new beams. Provide calculations as necessary.
  - l. Vaulted ceiling areas: Specify balloon (full height) studs at interior and exterior walls.
  - m. Pre-fabricated truss joists and engineered wood products: Note the ICC number on the plans. Provide complete notes and installation details.
  - n. Show drag trusses with additional lateral loads over shear walls. Callout drag load on plans.
- 32. **Wall framing:**
  - a. Studs in bearing walls are limited to 10 feet in height unless an approval design is submitted. (Table 2308.9.1)
  - b. Specify on plan, at vaulted ceiling areas, balloon (full height) studs at interior and exterior walls.
  - c. Please calculate (state all assumptions) and detail wall framing to support vertical plus lateral (out-of-plane) loads – review studs, headers, posts, etc.
  - d. Provide shrinkage calculations for wood stud walls and bearing partitions supporting more than two floors and roof (2308.9).
  - e. Bearing wall studs cannot be notched more than 25% of their width. Bored holes cannot have a diameter greater than 40% of the stud width.



