**2022 *CAL*Green**

**NONRESIDENTIAL MANDATORY MEASURES CHECKLIST**

**(Effective January 1, 2023)**

| **SECTION** | **MEASURES** | **REQUIREMENTS** | **Measures provided on plan sheet1:** |
| --- | --- | --- | --- |
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| **GREEN BUILDING** | | | |
| 301.3 | Application | * Applies to nonresidential projects that meet one of the following: newly constructed buildings, building additions of 1,000 square feet or greater, or building alterations with a permit valuation of $200,000 or more. * Requirements for additions and alterations only apply to the portion of the building being added or altered. |  |
| **PLANNING AND DESIGN (Site Development)** | | | |
| 5.106.1 | Storm Water Pollution Prevention Plan | **Newly constructed projects and additions which disturb less than one acre of land** **and are not part of larger common plan of development or sale** shall prevent the pollution of stormwater runoff from the construction activities through local ordinance in Section 5.106.1.1 or Best management practices (BMP) in Section 5.106.1.2. |  |
| 5.106.2 | **For projects that disturb one or more acres of land or disturb less than one acre of land but are part of a larger common plan of development or sale** comply with the postconstruction requirements detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit. |  |
| 5.106.4 | Bicycle Parking | Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet local ordinance, whichever is stricter.  **5.106.4.1.1 Short-Term bicycle parking.**  If the new project or addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 ft of the visitors’ entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.  **Exception:** Additions or alterations which add 9 or fewer visitor vehicular parking spaces.  **5.106.4.1.2 Long-Term bicycle parking. For new buildings** with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupants vehicular parking spaces with a minimum of one space.  **5.106.4.1.3 For additions or alterations that add 10 or more tenant-occupant vehicular parking spaces**, provide secure bicycle parking for 5% of the tenant-occupants vehicular parking spaces being added, with a minimum of one bicycle parking facility.  **5.106.4.1.4 For new shell buildings in phased projects,** provide secure bicycle parking for 5% of the anticipated tenant-occupants vehicular parking spaces with a minimum of one bicycle parking facility.  **5.106.4.1.4** Acceptable parking facilities shall be convenient from the street and shall meet one of the following:   1. Covered, lockable enclosures with permanently anchored racks for bicycles; 2. Lockable bicycle rooms with permanently anchored racks; or 3. Lockable, permanently anchored bicycle lockers. |  |
| 5.106.5.3 | Electric Vehicle (EV) Charging | **5.106.5.3 Electric Vehicle (EV) Charging**  **[N]** Construction to provide electric vehicle infrastructure and facilitate electric vehicle charging shall comply with Section 5.106.5.3.1 and shall be provided in accordance with regulations in the 2022 California Building Code and the 2022 California Electrical Code.  **Exceptions:**   1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:    1. Where there is no local utility power supply.    2. Where the local utility is unable to supply adequate power.    3. Where there is evidence suitable to the local enforcement agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project. 2. Parking spaces accessible only by automated mechanical car parking systems are not required to comply with this code section. |  |
| 5.106.5.3.1 | EV Capable Spaces | **5.106.5.3.1 EV Capable Spaces**  **[N]** EV capable spaces shall be provided in accordance with Table 5.106.5.3.1 and the following requirements:   1. Raceways complying with the California Electrical Code and no less than 1-inch (25 mm) diameter shall be provided and shall originate at a service panel, or a subpanel(s) serving the area and shall terminate in close proximity to the proposed location of the EV capable space and into a suitable listed cabinet, box, enclosure or equivalent. A common raceway may be used to serve multiple EV capable spaces. 2. A service panel or subpanel(s) shall be provided with panel space and electrical load capacity for a dedicated 208/240 volt, 40-ampere minimum branch circuit for each EV capable space, with delivery of 30-ampere minimum to an installed EVSE at each EVCS. 3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space. 4. The service panel or subpanel circuit directory shall identify the reserved overcurrent protective device space(s) as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."   **Note:** A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by an enforcement agency. See Vehicle Code Section 22511.2 for further details.  **TABLE 5.106.5.3.1**   |  |  |  | | --- | --- | --- | | **TOTAL NUMBER OF ACTUAL PARKING SPACES** | **NUMBER OF REQUIRED EV CAPABLE SPACES** | **NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE)2** | | 0—9 | 0 | 0 | | 10—25 | 4 | 0 | | 26—50 | 8 | 2 | | 51—75 | 13 | 3 | | 76—100 | 17 | 4 | | 101—150 | 25 | 6 | | 151—200 | 35 | 9 | | 201 and over | 20 percent of total1 | 25 percent of EV capable spaces1 |  1. Calculation for spaces shall be rounded up to the nearest whole number. 2. The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count toward the total number of required EV capable spaces shown in column 2. |  |
| 5.106.5.3.2 | Electric Vehicle Charging Stations (EVCS) | **5.106.5.3.2 Electric Vehicle Charging Stations (EVCS)**  EV capable spaces shall be provided with EVSE to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 may be provided with EVSE in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.  One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger.  The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel. |  |
| 5.106.5.3.3 | Use of Automatic Load Management Systems (ALMS) | **5.106.5.3.3 Use of Automatic Load Management Systems (ALMS)**  ALMS shall be permitted for EVCS. When ALMS is installed, the required electrical load capacity specified in Section 5.106.5.3.1 for each EVCS may be reduced when serviced by an EVSE controlled by an ALMS. Each EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and shall deliver a minimum 3.3 kW while simultaneously charging multiple EVs. |  |
| 5.106.5.3.4 | Accessible EVCS | **5.106.5.3.4 Accessible EVCS**  When EVSE is installed, accessible EVCS shall be provided in accordance with the California Building Code, Chapter 11B, Section 11B-228.3.  **Note:** For EVCS signs, refer to Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s). |  |
| 5.106.5.4 | Electric Vehicle (EV) Charging: Medium-Duty and Heavy-Duty | **5.106.5.4 Electric Vehicle (EV) Charging: Medium-Duty and Heavy-Duty**  **[N]** Construction shall comply with Section 5.106.5.4.1 to facilitate future installation of electric vehicle supply equipment (EVSE). Construction for warehouses, grocery stores and retail stores with planned off-street loading spaces shall also comply with Section 5.106.5.4.1 for future installation of medium- and heavy-duty EVSE.  **Exceptions:**   1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:    1. Where there is no local utility power supply.    2. Where the local utility is unable to supply adequate power.    3. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project. |  |
| 5.106.5.4.1 | Electric Vehicle Charging Readiness Requirements for Warehouses, Grocery Stores and Retail Stores With Planned Off-Street Loading Spaces | When EVSE(s) is/are installed, it shall be in accordance with the 2022 California Building Code, the 2022 California Electrical Code and as follows:  **5.106.5.4.1 Electric Vehicle Charging Readiness Requirements for Warehouses, Grocery Stores and Retail Stores With Planned Off-Street Loading Spaces**  **[N]** In order to avoid future demolition when adding EV supply and distribution equipment, spare raceway(s) or busway(s) and adequate capacity for transformer(s), service panel(s) or subpanel(s) shall be installed at the time of construction in accordance with the 2022 California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:   1. The transformer, main service equipment and subpanels shall meet the minimum power requirement in Table 5.106.5.4.1 to accommodate the dedicated branch circuits for the future installation of EVSE. 2. The construction documents shall indicate one or more location(s) convenient to the planned off street loading space(s) reserved for medium- and heavy-duty ZEV charging cabinets and charging dispensers, and a pathway reserved for routing of conduit from the termination of the raceway(s) or busway(s) to the charging cabinet(s) and dispenser(s), as shown in Table 5.106.5.4.1. 3. Raceway(s) or busway(s) originating at a main service panel or a subpanel(s) serving the area where potential future medium- and heavy-duty EVSE will be located and shall terminate in close proximity to the potential future location of the charging equipment for medium- and heavy-duty vehicles. 4. The raceway(s) or busway(s) shall be of sufficient size to carry the minimum additional system load to the future location of the charging for medium- and heavy-duty ZEVs as shown in Table 5.106.5.4.1.   **TABLE 5.106.5.4.1 RACEWAY CONDUIT AND PANEL POWER REQUIREMENTS FOR MEDIUM- AND HEAVY-DUTY EVSE [N]**   |  |  |  |  | | --- | --- | --- | --- | | **BUILDING TYPE** | **BUILDING SIZE (SQ. FT.)** | **NUMBER OF OFF-STREET LOADING SPACES** | **ADDITIONAL CAPACITY REQUIRED (KVA) FOR RACEWAY & BUSWAY AND TRANSFORMER & PANEL** | | Grocery | 10,000 to 90,000 | 1 or 2 | 200 | | 3 or Greater | 400 | | Greater than 90,000 | 1 or Greater | 400 | | Retail | 10,000 to 135,000 | 1 or 2 | 200 | | 3 or Greater | 400 | | Greater than 135,000 | 1 or Greater | 400 | | Warehouse | 20,000 to 256,000 | 1 or 2 | 200 | | 3 or Greater | 400 | | Greater than 256,000 | 1 or Greater | 400 | |  |  |  |  | |  |
| 5.106.8 | Light Pollution Reduction | **[N]** outdoor lighting systems shall be designed and installed to comply with the following:   1. The minimum requirements in the *California Energy Code* for Lighting Zones 0–4 as defined in Chapter 10, section 10-114 of the *California Administrative Code*; and 2. Backlight (B) rating as defined in IES TM-15-11 (shown in table A-1 in Chapter 8); 3. Uplight and Glare ratings as defined in *California Energy Code* (shown in Tables 130.2-A and 130.2-B in Chapter 8) and 4. Allowable BUG ratings not exceeding those shown in Table 5.106.8[N], or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.   **Exceptions:**   1. Luminaires that qualify as exceptions in Sections 130.2 and 140.7 of *California Energy Code* 2. Emergency lighting 3. Building façade meeting the requirements in Table 140.7-B of the *California Energy Code,* Part 6*.* 4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction. 5. Luminaires with less than 6,200 initial luminaire lumens.   **5.106.8.1** **Facing – Backlight.**  Luminaires within 2MH of a property lines shall be oriented so that the nearest property line is behind the fixture, and shall comply with the backlight rating specified in Table 5.106.8.  Exception: **Corners.**  If two property lines (or two segments of the same property line) have equidistant points to the luminaire, then the luminaire may be oriented so that the intersection of the two lines (corner) is directly behind the luminaire. The luminaire shall still use the distance to the nearest point(s) on the property lines to determine the required backlight rating.  **5.106.8.2** **Facing – Glare.**  For luminaire covered by Section 5.106.8.1, if a property line also exists within or extends into the front hemisphere within 2MH of the luminaire then the luminaire shall comply with the more stringent glare rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point on the nearest property line within the front hemisphere. |  |
| 5.106.10 | Grading and Paving | Construction plans shall indicate how site grading, or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:   1. Swales. 2. Water collection and disposal systems. 3. French drains. 4. Water retention gardens. 5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.   **Exceptions:** Additions and alterations not altering the drainage path. |  |
| **ENERGY EFFICIENCY** | | | |
| 5.201.1 | Scope | Building meets or exceeds the requirements of the 2022 *California Energy Code.* |  |
| **WATER EFFICIENCY AND CONSERVATION (Indoor Water Use)** | | | |
| 5.303.1 | Meters | Separate submeters or metering devices shall be installed for the uses described in Sections 5.303.1.1 and 5.303.1.2.  **5.303.1.1 New buildings or additions in excess of 50,000 square feet.**  Separate submeters shall be installed as follows:   1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop. 2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems: 3. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s) 4. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s) 5. Steam and hot-water boilers with energy input more than 500,000 Btu/h (147 kW)   **5.303.1.2 Excess consumption.**  A separate submeter or metering device shall be provided for any tenant within a new building or an addition that is projected to consume more than 1,000 gal/day (3800 L/day). |  |
| 5.303.3 | Water Conserving Plumbing Fixtures and Fittings | Plumbing fixtures (water closets and urinals) and fittings (showerheads, faucets and pre-rinse spray valves) shall comply with the following:   |  |  | | --- | --- | | **Plumbing fixtures & fittings** | **Maximum flow rate** | | Water closets | 1.28 gallons/flush | | Showerheads | 1.8 gpm @ 80 psi | | Kitchen faucets | 1.8 gpm @ 60 psi | | Nonresidential lavatory faucets | 0.5 gpm @ 60 psi | | Wash fountains | 1.8 gpm/20” rim space @ 60 psi | | Metering faucets | 0.20 gallons/cycle | | Metering faucets for wash fountain | 0.20 gallons/cycle | | Urinals | 0.125 gallons/flush for wall-mounted type and  0.5 gallons/flush for floor-mounted or other type | | Commercial food waste disposer | 1 gpm no load or 10 minutes auto off, 8 gpm max. | | Pre-rinse spray valves (with an integral automatic shut off) | 1.00 gpm for Product Class 1 (≤ 5.0 ozf)  1.20 gpm for product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)  1.28 gpm for Product Class 3 (> 8.0 ozf) | |  |
| 5.303.4 | Commercial Kitchen Equipment | **5.303.4.1 Food Waste Disposers.**  Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/no load) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water. |  |
| 5.303.5 | Areas of Additions or Alteration | For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Section 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alterations to the building. |  |
| 5.303.6 | Standards for Plumbing Fixtures and Fittings | Plumbing fixtures and fittings shall be installed in accordance with the *2022 California* *Plumbing Code* and shall meet the applicable standards referenced in Table 1701.1 of the 2022 *California Plumbing Code* and in Chapter 6 of this code. |  |
| **WATER EFFICIENCY AND CONSERVATION (Outdoor Water Use)** | | | |
| 5.304.1 | Outdoor Potable Water Use in Landscape Areas | Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources’ Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent . |  |
| **MATERIAL CONSERVATION & RESOURCE EFFICIENCY**  **(Weather Resistance and Moisture Management)** | | | |
| 5.407.1 | Weather Protection | Provide a weather-resistant exterior wall and foundation envelope as required by 2022 *California Building Code* Section 1402.2 (Weather Protection), manufacturer’s installation instructions or local ordinance, whichever is more stringent. |  |
| 5.407.2 | Moisture Control | Employ moisture control measures by the following methods:  **5.407.2.1 Sprinklers.**  Design and maintain landscape irrigation systems to prevent irrigation spray on structures.  **5.407.2.2 Entries and openings.**  Design exterior entries and openings to prevent water intrusion into buildings as follows:  **5.407.2.2.1 Exterior door protection.**  Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:   1. An installed awning at least 4 feet in depth. 2. The door is protected by a roof overhang at least 4 feet in depth. 3. The door is recessed at least 4 feet. 4. Other methods which provide equivalent protection.   **5.407.2.2.2 Flashing.**  Install flashings integrated with a drainage plane. |  |
| **MATERIAL CONSERVATION & RESOURCE EFFICIENCY**  **(Construction Waste Reduction, Disposal & Recycling)** | | | |
| 5.408.1 | Construction Waste Management | Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent. |  |
| 5.408.1.1 | Construction Waste Management Plan | Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that   1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale. 2. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream). 3. Identifies diversion facilities where construction and demolition waste material collected will be taken. 4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both. |  |
| 5.408.1.2 | Waste Management Company | Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.  **Exceptions to Sections 5.408.1.1 and 5.408.1.2:**   1. Excavated soil and land-clearing debris 2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist. 3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets. |  |
| 5.408.1.3 | Waste Stream Reduction Alternative | The combined weight of new construction disposal that does not exceed 2 lbs/sqft of building area may be deemed to meet the 65% minimum requirement as approved by the enforcing agency. |  |
| 5.408.1.4 | Documentation | Provide documentation of the waste management plan that meets the requirements listed in Sections 5.408.1.1 through 5.408.1.3. The waste management plan shall be updated as necessary & shall be accessible during construction for examination to the enforcement agency. |  |
| 5.408.2 | Universal Waste | **[A]** Additions and alterations to a building or tenant space shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.  **Note:** Refer to the Universal Waste Rule link at: <https://dtsc.ca.gov/universalwaste/> |  |
| 5.408.3 | Excavated Soil and Land Clearing Debris | 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.  **Exception:** Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation. |  |
| **MATERIAL CONSERVATION & RESOURCE EFFICIENCY**  **(Building Maintenance and Operation)** | | | |
| 5.410.1 | Recycling by Occupants | Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste and metals, or meet a lawfully enacted local recycling ordinance, if more restrictive.  **5.410.1.1 Additions.**  All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30% or more in floor area, shall provide recycling areas on site.  **Exception:** addition within a tenant spaceresulting in less than a 30% increase in the tenant space floor area. |  |
| 5.410.2 | Commissioning | **[N]** **New buildings 10,000 square feet and over**, building commissioning for all building systems covered by Title 24, Part 6, process systems and renewable energy systems shall be included in the design and construction processes of the building project. Commissioning requirements shall include items listed in Section 5.410.2.  **Exceptions:**   1. Unconditioned warehouses of any size. 2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses. 3. Tenant improvements less than 10,000 sqft as described in Section 303.1.1. 4. Open parking garages of any size, or open parking garage areas of any size, within a structure.   **5.410.2.1 Owner’s Project Requirements (OPR).**  **[N]** The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. The OPR shall include items listed in Section 5.410.2.1.  **5.410.2.2 Basis of Design (BOD).**  **[N]** 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 to cover the systems listed in Section 5.410.2.2.  **5.410.2.3 Commissioning Plan.**  **[N]** Prior to permit issuance a commissioning plan describing how the project will be commissioned shall include items listed in Section 5.410.2.3.  **5.410.2.4 Functional Performance Testing.**  **[N]** Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications.  **5.410.2.5 Documentation and Training.**  **[N]** A Systems manual and systems operations training are required.  **5.410.2.5.1 Systems manual.**  **[N]** The systems manual shall be delivered to the building owner or representative and facilities operator and shall include the items listed in Section 5.410.2.5.1.  **5.410.2.5.2 Systems operations training.**  **[N]** A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and shall include items listed in Section 5.410.2.5.2.  **5.410.2.6 Commissioning Report.**  **[N]** A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative. |  |
| 5.410.4 | Testing and Adjusting | Testing and adjusting of systems shall be required **for new buildings less than 10,000 square feet or new systems to serve an addition or alteration** subject to Section 303.1.  **5.410.4.2 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 Section 5.410.4.2.  **5.410.4.3 Procedures.**  Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.  **5.410.4.3.1 HVAC balancing.**  Before a new space-conditioning system serving a building or space is operated for normal use, balance in accordance with the procedures defined by national standards listed in Section 5.410.4.3.1 or as approved by the enforcing agency.  **5.410.4.4 Reporting.**  After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.  **5.410.4.5 Operation and Maintenance (O & M) manual.**  Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system.  **5.410.4.5.1 Inspection and reports.**  Include a copy of all inspection verifications and reports required by the enforcing agency. |  |
| **ENVIRONMENTAL QUALITY (Fireplaces)** | | | |
| 5.503.1 | Fireplaces | Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace or a sealed woodstove or pellet stove and refer to residential requirements in the 2022 *California Energy Code,* Title 24, Part 6, Subchapter 7, Section 150. |  |
| 5.503.1.1 | Woodstoves | Woodstoves and pellet stoves shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable and shall have a permanent label indicating they are certified to meet the emission limits. |  |
| **ENVIRONMENTAL QUALITY (Pollutant Control)** | | | |
| 5.504.1 | Temporary Ventilation | If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992. Replace all filters immediately prior to occupancy, or, if building is occupied during alteration, at the conclusion of construction. Applies to additions or alterations. |  |
| 5.504.3 | Covering of Duct Openings and Protection of Mechanical Equipment During Construction | At the time of rough installation and during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system. |  |
| 5.504.4 | Finish Material Pollutant Control | Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.4. |  |
| 5.504.4.1 | Adhesives, Sealants and Caulks | Adhesives and sealants used on the project shall meet the requirements of the following standards.   1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. 2. Aerosol adhesives and smaller unit sizes of adhesives and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507. |  |
| 5.504.4.3 | Paints and Coatings | Architectural paints and coatings shall comply with Table 5.504.4.3 unless more stringent local limits apply.  **5.504.4.3.1 Aerosol paints and coatings.**  Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances , in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520.  **5.504.4.3.2 Verification.**  Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:   1. Manufacturer's product specification 2. Field verification of on-site product containers |  |
| 5.504.4.4 | Carpet Systems | **5.504.4.4 Carpet and** **5.504.4.4 .1 Carpet cushion** installed in the building interior shall meet the requirements of the California Department of Public Health, “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.2, January 2017 (also known as Specification 01350).  **5.504.4.4.2 Carpet adhesive.**  All carpet adhesive shall meet the requirements of Table 5.504.4.1. |  |
| 5.504.4.5.3 | Composite Wood Products | Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Table 5.504.4.5.  **5.504.4.5.3 Documentation.**  Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following.   1. Product certifications and specifications 2. Chain of custody certifications 3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, *et seq*.) 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards. 5. Other methods acceptable to the enforcing agency. |  |
| 5.504.4.6 | Resilient Flooring Systems | Where resilient flooring is installed, at least 80% of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.2, January 2017 (also known as Specification 01350).  **5.504.4.6.1 Verification of compliance**  Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits. |  |
| 5.504.4.7 | Thermal Insulation | Comply with the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350).  **5.504.4.7.1 Verification of Compliance**  Documentation shall be provided verifying that thermal insulation materials meet the pollutant emission limits. |  |
| 5.504.4.8 | Acoustical Ceilings and Wall Panels | Comply with the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350).  **5.504.4.8.1 Verification of Compliance**  Documentation shall be provided verifying that acoustical finish materials meet the pollutant emission limits. |  |
| 5.504.5.3 | Filters | In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a MERV of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.  **Exceptions:** Existing mechanical equipment.  **5.504.5.3.1 Labeling.**  Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. |  |
| 5.504.7 | Environmental Tobacco Smoke (ETS) Control | Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows where outdoor areas are provided for smoking and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University or campus of the University of California, whichever are more stringent. |  |
| **ENVIRONMENTAL QUALITY (Indoor Moisture Control)** | | | |
| 5.505.1 | Indoor Moisture Control | Buildings shall meet or exceed the provisions of 2022 *California Building Code*, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). |  |
| **ENVIRONMENTAL QUALITY (Indoor Air Quality)** | | | |
| 5.506.1 | Outside Air Delivery | For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 of the 2022 *California Energy Code* and Division 1 Chapter 4 of CCR, Title 8 or the applicable local code, whichever is more stringent. |  |
| 5.506.2 | Carbon Dioxide (CO2) Monitoring | For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the 2022 *California Energy Code*, Section 120.1(c)(4). |  |
| **ENVIRONMENTAL QUALITY (Environmental Comfort)** | | | |
| 5.507.4 | Acoustical Control | Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.  **Exception:** Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings. |  |
| 5.507.4.1 | Prescriptive Method | Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:   1. Within the 65 CNEL noise contour of an airport. 2. Within the 65 CNEL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.   **5.507.4.1.1 Noise exposure where noise contours are not readily available.**  Buildings exposed to a noise level of 65 dB Leq-1Hr during any hour of operation shall have building, addition, or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30). Also applies to addition or alteration exterior wall. |  |
| 5.507.4.2 | Performance Method | For buildings located as defined in Sections A5.507.4.1 or A5.507.4.1.1, wall and roof-ceiling assemblies making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation. Also applies to addition envelope or altered envelope.  **5.507.4.2.1 Site features.**  Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.  **5.507.4.2.2 Documentation of complianc**e.  An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.  **5.507.4.3 Interior sound transmission.**  Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40. |  |
| **ENVIRONMENTAL QUALITY (Outdoor Air Quality)** | | | |
| 5.508.1 | Ozone Depletion and Greenhouse Gas Reductions | Installations of HVAC, refrigeration, and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.  **5.508.1.1 Chlorofluorocarbons (CFCs).**  Install HVAC, refrigeration & fire suppression equipment that do not contain CFCs.  **5.508.1.2 Halons.**  Install HVAC, refrigeration & fire suppression equipment that do not contain Halons. |  |
| 5.508.2 | Supermarket Refrigerant Leak Reduction | New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 sqft or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facility and the replacement of existing refrigeration systems in existing facilities.  **Exception:** refrigeration systems containing low-global-warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO2), and potentially other refrigerants. |  |
| 5.508.2.1 | Refrigerant Piping | Piping compliant with the 2022 *California Mechanical code* shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than ¼”, flared tubing connection and short radius elbows shall not be used in refrigerant systems except as noted below.  **5.508.2.1.1 Treaded pipe.**  Threaded connections are permitted at the compressor rack.  **5.508.2.1.2 Copper pipe.**  Copper tubing with an OD less than ¼” may be used in systems with a refrigerant charge of 5 pounds or less.  **5.508.2.1.2.1 Anchorage.**  ¼” OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.    **5.508.2.1.3 Flared tubing connections.**  Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.  **Exception:** Single-flaredtubing connectionsmay be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer’s recommendations.  **5.508.2.1.4 Elbows.**  Short radius elbows are only permitted where space limitations prohibit use of long radius elbows. |  |
| 5.508.2.2 | Valves | Valves and fittings shall comply with the 2022 *California Mechanical Code* and as follows:  **5.508.2.2.1 Pressure relief valves.**  For vessel containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet the pressure relief valve.  **5.508.2.2.1.1 Pressure** **detection.**  A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.  **5.508.2.2.2 Access valves.**  Only Schrader access valves with a brass or steel body are permitted for use.  **5.508.2.2.2.1 Valves caps.**  For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.  **5.508.2.2.2.2 Seal caps.**  If designed for it, the cap shall have a neoprene O-ring in place.  **5.508.2.2.2.2.1 Chain tethers.**  Chain tethers to fit over the stem are required for valves designed to have seal caps.  **Exceptions:** Valves with seal caps that are not removed from the valve during stem operation. |  |
| 5.508.2.3 | Refrigerated Service Cases | Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.  **5.508.2.3.1 Coil coating.**  Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency. |  |
| 5.508.2.4 | Refrigerant Receivers | Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver. |  |
| 5.508.2.5 | Pressure Testing | The systems shall be pressure tested during installation prior to evacuation & charging.  **5.508.2.5.1 Minimum pressure.**  The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.    **5.508.2.5.2 Leaks.**  Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.  **5.508.2.5.3 Allowable pressure change.**  The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge. |  |
| 5.508.2.6 | Evacuation | The system shall be evacuated after pressure testing prior to charging.  **5.508.2.6.1 First vacuum.**  Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold down for 30 minutes.  **5.508.2.6.2 Second vacuum.**  Pull a system vacuum to a minimum of 500 microns and hold for 30 minutes.  **5.508.2.6.3 Third vacuum.**  Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. |  |

**Notes:**

* **[N]:** Indicates code section applies only to newly constructed buildings.
* **[A]:** Indicates code section applies only to additions and/or alterations.
* This check list is intended only as an aid to the user and may not contain complete code language. Refer to 2022 CALGreen Chapter 5 for complete code language.

**Footnotes:**

1. Indicate N/A if not applicable.