

**DEVELOPMENT SERVICES – BUILDING INSPECTION****INSPECTION GUIDELINES:
"GB-1" SHEET SUBMITTALS****INSPECTION CODE:** 151, 152, 153**SCOPE:** RESIDENTIAL**APPLICABLE CODES:** 2019 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

RESIDENTIAL AND MULTI-FAMILY PROJECTS

- During the Green Building Pre-Construction Meeting (Inspection 151), Green Building Incremental Verification Inspection (Inspection 152) and the Green Building Final (Inspection 153), the general contractor, the Green Building Special Inspector, and the City of Palo Alto Building Inspector should be ready to review the compliance provisions that follow based on the items that were selected as "Y" on the approved "GB-1" sheet.
- All references to the "Inspector" shall be interpreted as follows:
 - For CALGreen Tier 1 or Tier 2 projects, the "Inspector" shall refer to the third-party Green Building Special Inspector (GBSI).
 - For CALGreen Mandatory projects, the "Inspector" shall refer to the City of Palo Alto (CPA) Building Inspector.

4.1 PLANNING AND DESIGN**Storm Water Drainage and Retention During Construction (Less than One Acre)**

(CGBSC 4.106.2)

- Storm water drainage and retention enforcement in the public right of way is managed through the Public Works department.
- See Chapter 16.11 Storm Water Pollution Prevention of the Palo Alto Municipal Code, and CPA's "Pollution Prevention – It's Part of the Plan" sheet.
- Refer to the State Water Resources Control Board website for projects that disturb more than one acre: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Topsoil Protection

(CGBSC A4.106.2.3)

- Tier 1 and 2: The Contractor shall prepare and deliver photographs of the protected topsoil demonstrating compliance with the requirements. These photos shall be submitted during the monthly inspection report.

- Tier 1 and 2: The Inspector shall review the photographs submitted in the monthly report to verify compliance is maintained. The Inspector shall field verify that non-hazardous topsoil has been stockpiled for reuse in a designated area and covered or protected from erosion. Protection from erosion includes covering with tarps, straw, mulch, chipped wood or vegetative cover to protect the topsoil for later use. The Inspector shall take photos as verification of compliance.
- Tier 2 only: The Contractor shall prepare and deliver photographs of the delineated fencing and flagging of the protected topsoil thereby limiting construction activity to the construction area. These photos shall be submitted during the monthly inspection report. These photos are in addition to the photos taken for A4.106.2.1.
- Tier 2 only: The Inspector shall review the photographs submitted in the monthly report to verify compliance is maintained at the Incremental Verification. The Inspector shall field verify that topsoil protection fencing, and flagging has been utilized and shall take photos as verification of compliance.

Grading and Paving

(CGBSC 4.106.3)

- The Inspector shall verify how the site grading or drainage system will manage all surface water flows to keep water from entering buildings at the Final Inspection. Examples include the following: swales, water collection and disposal systems, French drains, water retention gardens, other water measures which keep surface water away from buildings and aid in groundwater recharge.
- The Inspector shall take photos of hardscape installed indicating the drainage direction.
- Exception: Additions and alterations not altering the drainage path.

Water Permeable Surfaces

(CGBSC A4.106.4)

- The Inspector shall verify that permeable paving is utilized for the parking, walking, or patio surfaces at the Final Inspection in compliance with the following:
 - Tier 1 Projects:
 - Not less than 20% of the total parking, walking or patio surfaces shall be permeable.
 - Tier 2 Projects:
 - Not less than 30% of the total parking, walking or patio surfaces shall be permeable.
 - Exceptions:
 - The primary driveway, primary entry walkway and entry porch or landing shall not be included when calculating the area required to be a permeable surface.
 - Required accessible routes for persons with disabilities as required by California Code of Regulations Chapter 11A and/or 11B as applicable.
- The Contractor shall prepare and deliver photographs of the protected topsoil demonstrating compliance with the requirements. These photos shall be submitted during the monthly inspection report.
- The Inspector shall provide a highlighted plan showing which surfaces make up required percentages of the permeable areas and the City of Palo Alto Building Inspector shall verify at Final Inspection (Inspection 153).

Cool Roof for Reduction of Heat Island Effect

(CGBSC A4.106.5, CGBSC A4.106.5.4)

- The Inspector shall verify by requesting a copy of the Roofing Submittal prior to the roof-in-progress inspection and shall verify that the Solar Reflective Index (SRI) values meet the minimum requirements listed in the table below. A higher SRI is most desirable. If the project is complying with the minimum aged solar reflectance and thermal emittance requirements, the Inspector shall request a copy of the Roofing Submittal and verify the values meet the minimum requirement listed in the table below.
Exceptions:
 - Roof constructions that have a thermal mass over the roof membrane including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot.
 - Roofs with integrated photovoltaic modules and solar thermal panels.
- Solar Reflectance
 - Roofing materials shall have a minimum 3-year aged solar reflectance equal to or greater than the values specified in the tables below.
- Thermal Emittance
 - Roofing materials shall have a CRRC initial or aged thermal emittance equal to or greater than those specified in the tables below.
- Solar Reflectance Index (SRI)
 - SRI equal to or greater than the values specified in the tables below.

TABLE A4.106.5.1(2)
TIER 2 – LOW-RISE RESIDENTIAL

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	2, 4, 6 – 15	0.65	0.85	78
> 2:12	2, 4, 6 – 15	0.23	0.85	20

TABLE A4.106.5.1(4)
TIER 2 – HIGH-RISE RESIDENTIAL BUILDINGS, HOTELS AND MOTELS

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	2 – 15	0.65	0.75	78
> 2:12	2 – 15	0.23	0.75	20

Electric Vehicle (EV) Charging for Residential Structures

(PAMC 16.14.420, CGBSC 4.106.4, CGBSC 4.106.4.1, CGBSC 4.106.4.2, CGBSC 4.106.4.3)

- The Inspector shall review the permit set of plans and location of the EV infrastructure. The Inspector shall verify that the electric vehicle pre-wiring infrastructure for single-family, and EVSE-ready and EVSE installed infrastructure for multi-family, has been installed at the Final Inspection. All electrical inspections are outside the scope of the Green Building Special Inspector.
- Tier 2 Projects (for Residential projects only):
 - The project shall have a conduit only, EVSE-ready outlet, or an EVSE installed.
 - The proposed location of the charging station may be internal or external to the dwelling and shall be in close proximity to an on-site parking space consistent with CPA guidelines, rules, and regulations.

- Install a 1-inch conduit to accommodate a dedicated 208/240-volt branch circuit. The service panel and/or subpanel shall provide capacity to install a 40 amps minimum circuit breaker or reserved space(s) to permit installation of a circuit breaker.
 - The service panel or subpanel shall identify the circuit breaker or reserved space(s) for future EV charging as "EV READY". The raceway termination location shall be permanently and visibly marked as "EV READY".
- Tier 2 Projects (for Multi-Family and Hotel projects only)
- Refer to the construction documents and the requirements in PAMC 16.14.420.
 - The following standards apply newly constructed hotels.
 - The property owner shall provide Conduit Only, EVSE-Ready Outlet, or EVSE Installed for at least 30 percent of parking spaces, among which at least 10 percent (and no fewer than one) shall be EVSE Installed.
 - Projects shall comply with the 2019 California Building Code requirements for accessible electric vehicle parking.
 - The property owner shall ensure sufficient circuit capacity, as determined by the Chief Building Official, to support a Level 2 EVSE in every location where Circuit Only, EVSE-Ready Outlet or EVSE Installed is required.
 - The EVSE, receptacles, and/or raceway required by this section shall be placed in locations allowing convenient installation of and access to EVSE. Location of EVSE or receptacles shall be consistent with all City guidelines, rules, and regulations.
 - Refer to PAMC 16.14.430 Section A5.106.5.3 Definitions for more information.

Bicycle Parking

(PAMC 18.54.060, CGBSC A4.106.9)

- The Inspector shall verify that the amount of bike parking spaces shown on the plans has been provided and installed.
- Project shows compliance with Palo Alto Zoning requirements or CALGreen requirements (whichever is most stringent).
- Short-Term (Multi-Family):
- Provide permanently anchored bicycle racks within 100 feet of the visitor's entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity with a minimum of one two-bike capacity rack.
- Long-Term (Multi-Family):
- Provide on-site bicycle parking for at least 1 bicycle per every 2 dwelling units. Acceptable parking facilities shall be conveniently reached from the street and may include, but not be limited to:
 - Covered, lockable enclosures with permanently anchored racks for bicycles.
 - Lockable bicycle rooms with permanently anchored racks.
 - Lockable, permanently anchored bicycle lockers.
- Long-Term (Hotel and Motel Buildings)

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- Provide one on-site bicycle parking space for every 25,000 square feet, but not less than two. Acceptable parking facilities shall be conveniently reached from the street and may include, but not be limited to:
 - Covered, lockable enclosures with permanently anchored racks for bicycles.
 - Lockable bicycle rooms with permanently anchored racks.
 - Lockable, permanently anchored bicycle lockers.

 - See Chapter 18 of the Palo Alto municipal code for local amendments.

Site Selection

(CGBSC A4.103.1)

- The Inspector shall verify that the site in which the new house is being built complies with at least one of the following characteristics:
 - An infill site is selected
 - A greyfield site is selected
 - An EPA-recognized and remediated Brownfield site is selected.

Community Connectivity

(CGBSC A4.103.2)

- The Inspector shall verify that compliance documentation shows the radius with the services identified.
 - Project shall be within a 1/4-mile true walking distance of at least four basic services, readily accessible by pedestrians.
 - Project shall be within a 1/2-mile true walking distance of at least seven basic services, readily accessible by pedestrians.
 - Other methods increasing access to additional resources.

Supervision and Education by a Special Inspector

(PAMC 16.14.120, CGBSC A4.104.1)

- The Inspector shall teach green concepts to other members of the development staff (e.g., general contractor, homeowners, etc.) and ensure that training is provided to all parties associated with the development of the project.
 - Prior to beginning the construction activities, all parties involved with the development process shall receive a written guideline and instruction specifying the green goals of the project.

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Deconstruction and Reuse of Existing Materials

(PAMC 16.14.130, CGBSC A4.105.1, CGBSC A4.105.2)

- The Contractor shall prepare a spreadsheet of the Deconstructed and Reused Materials in accordance with the code requirements and take photographs of all deconstructed and reused components for the Final Inspection.
- The Inspector shall review the spreadsheet of the Deconstructed and Reused Materials in accordance with the code to confirm that the project requirement is met and verify that the images associated with the submittal have actually been reused at the Final Inspection.
- Existing buildings on the site are deconstructed and the salvaged materials are reused.
- Section A4.105.1 is adopted as an elective measure effective through June 31, 2020. Starting July 1, Section A4.105.1 will not be adopted as an elective and projects will be required to comply with deconstruction requirements per Chapter 5.24 of Title 5 of the Municipal Code.

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Soil Analysis

(CGBSC A4.106.2.1)

- The Contractor shall collect a soil analysis report performed by a licensed design professional on the physical and chemical properties of the soil type and report shall identify any associated strengths and weaknesses. The report must have an addendum or supplemental summary describing how the soil analysis was utilized in the structural design.
- The Inspector shall collect the Certificate of Compliance declaring compliance with the requirement from the Structural Engineer.
- The Building Inspector shall verify that a soils report/analysis was submitted by a licensed design professional and used in the structural design of the building.

Soil Protection

(CGBSC A4.106.2.2)

- The Contractor shall provide a monthly report and supporting photographs to the Inspector on the progress of this requirement.
- The Contractor shall prepare and deliver at the Final Inspection one or more of the following 1) photographs and supporting documentation demonstrating erosion control measures implemented as indicated on the permit plans 2) a summary and supporting photographs demonstrating that that site access has been accomplished by deliberately reducing the amount of cut and fill need to install access roads and driveways 3) a summary and supporting photographs demonstrating that all construction activities are coordinated to use the same trench (throughout the duration of construction) to minimize the amount of time disturbed soil is exposed and replaced. These photos shall be submitted during the monthly inspection report.
- The Inspector shall verify the recommendations in the soils report, submitted by a licensed design profession, to ensure that the soil is protected by one or more of the following:
 - Natural drainage patterns and erosion controls are implemented to minimize erosion during construction and after occupancy.
 - Site access is accomplished by minimizing the amount of cut and fill needed to install access roads and driveways.
 - Construction activities are coordinated to utilize the same trench, minimize the amount of time the disturbed soil is exposed, and the soil is replaced using accepted compaction methods.

Landscape Design

(CGBSC A4.106.3)

- The Inspector shall coordinate this with the general contractor and the Department of Urban Forestry to ensure that postconstruction landscape designs accomplish one or more of the following:
 - Areas disrupted during construction are restored to be consistent with native vegetation species and patterns.
 - Utilize at least 75 percent native California or drought tolerant plant and tree species appropriate for the climate zone region.

- The Inspector shall collect the Certificate of Compliance from the Landscape Contractor verifying that the requirements have been achieved.

Vegetated Roof

(CGBSC A4.106.6)

- The Contractor shall prepare and deliver vegetated roof product cut sheets meeting the requirements of at least 50 percent of the roof area at the Final Inspection.
 - Vegetated roofs shall comply with requirements for roof gardens and landscaped roofs in the California Building Code, Chapter 15 and Chapter 16.
- The Inspector shall review the vegetated roof submittals to verify compliance. The Inspector shall collect a Certificate of Compliance from the roofing installer declaring that the installation complies with this section and the California Building Code for roofing. The Inspector shall field verify that the vegetated roof has been installed and shall take photos as verification of the installation.

Reduction of Heat Island Effect for Nonroof Areas

(CGBSC A4.106.7)

- The Contractor shall prepare and deliver product cut sheets meeting requirements for high-albedo materials as shown on the permit plans. If applicable, the Contractor shall prepare submittals demonstrating an open grid paving system or water permeable paving material.
- The Inspector shall review the paving material submittals to verify that the requirements have been met. The Inspector shall field verify that paving material has been installed and shall take photos as verification of the installation.
- Reduce nonroof heat islands for 50 percent of sidewalks, patios, driveways or other paved areas by using one or more of the methods listed.
 - Trees or other plantings to provide shade and that mature within 15 years of planting.
 - Use high albedo materials with an initial solar reflectance value of at least 0.30.
 - Use open grid pavement system or pervious or permeable pavement system.
 - Locate 50% of parking underground or use multilevel parking.
 - Other methods of reducing heat island effects acceptable to CPA.

Light Pollution Reduction

(PAMC 16.14.170, A4.106.10)

- The Contractor shall prepare exterior light fixture product cut sheets meeting the requirements.
- The Inspector shall review the permit set of plans to count the exterior light fixtures. Verify that all light fixtures meet the required Backlight, Uplight, and Glare (BUG) Ratings by reviewing the light fixture cut sheets. The requirement for a specific fixture is based on the 1) Mounting height (MH) of the fixture, and 2) The linear distance between the fixture's location compared to the location of the property line. Palo Alto is in lighting zone LZ3. The Inspector shall visually verify that the fixture installed matches the fixture on the cutsheet.

- Outdoor lighting systems shall be designed and installed to comply with the following:
- The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code
 - Backlight, Uplight and Glare (BUG) ratings as defined in IES TM-15-11
 - Allowable BUG ratings not exceeding those shown in Table A4.106.10 below
- Exceptions:
- Luminaires that qualify as exceptions in the California Energy Code.
 - Emergency lighting.
 - One- and two-family dwellings.

**TABLE A4.106.10
MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS^{1,2}**

ALLOWABLE RATING	LIGHTING ZONE 1	LIGHTING ZONE 2	LIGHTING ZONE 3	LIGHTING ZONE 4
Maximum Allowable Backlight Rating³				
Luminaire greater than 2 mounting heights (MH) from property line	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1 – 2 MH from property line	B2	B3	B4	B4
Luminaire back hemisphere is 0.5 – 1 MH from property line	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	B0	B0	B1	B2
Maximum Allowable Uplight Rating				
For area lighting ⁴	U0	U0	U0	U0
For all other outdoor lighting, including decorative luminaires	U1	U2	U3	U4
Maximum Allowable Glare Rating⁵				
Luminaire greater than 2 MH from property line	G1	G2	G3	G4
Luminaire front hemisphere is 1 – 2 MH from property line	G0	G1	G1	G2
Luminaire front hemisphere is 0.5 – 1 MH from property line	G0	G0	G1	G1
Luminaire back hemisphere is less than 0.5 MH from property line	G0	G0	G0	G1

1. IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code*.
2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.
3. If the nearest property line is less than or equal to two mounting heights from the back hemisphere of the luminaire distribution, the applicable reduced Backlight rating shall be met.
4. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet U-value limits for "all other outdoor lighting."
5. If the nearest property line is less than or equal to two mounting heights from the front hemisphere of the luminaire distribution, the applicable reduced Glare rating shall be met.

Innovative Concepts and Local Environment Conditions

(CGBSC A4.108.1)

- The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by CGBSC. If this is selected, it must be accepted as alternate method or materials by the Chief Building Official.

4.2 PAMC 16.17 ENERGY REACH CODE

Energy Reach Code

(PAMC 16.17)

- The Contractor, the Green Building Special Inspector, and the Building Inspector shall review the energy sheets on the approved plans for energy requirements and confirm what additional special inspections (e.g., QII) and reports (e.g., HERS reports, etc.) will be expected to be submitted later on the project during Green Building inspections and others (e.g., insulation inspection, etc.).
- All final reports related to the energy requirements shall be part of the digital binder and USB submitted at Inspection 153.
- The Palo Alto Energy Reach Code will be effective **April 1, 2020**.
 - **Low-rise, single-family residential new construction** projects submitted for building permit on or after **April 1, 2020**, are required to be all-electric.

4.3 WATER EFFICIENCY AND CONSERVATION

Indoor Water Use

(CGBSC 4.303.1, CGBSC 4.303.1.1, CGBSC 4.303.1.2, CGBSC 4.303.1.3.1, CGBSC 4.303.1.3.2, CGBSC 4.303.1.4.1, CGBSC 4.303.1.4.2, CGBSC 4.303.1.4.3, CGBSC 4.303.1.4.4)

- The Contractor shall prepare and deliver all covered water fixture submittals showing that the performance values below are met.
- The Inspector shall field verify that the fixture cut sheet matches the fixture that was installed. Make sure to have the cut sheets on-site to verify installation.
- Plumbing fixtures and fittings shall comply with the following:
 - Water closets
 - Water closets shall not exceed 1.28 gallons per flush.
 - Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushed and one full flush.
 - Urinals
 - Wall-mounted urinals shall not exceed 0.125 gallons per flush.
 - All other urinals shall not exceed 0.5 gallons per flush.
 - Showerheads
 - Single showerheads shall not exceed 1.8 gallons per minute.
 - When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.
 - Note: A hand-held shower shall be considered a showerhead.
 - Faucets
 - The maximum flow rate shall not exceed 1.2 gallons per minute at 60 psi.
 - The minimum flow rate shall not be less than 0.8 gallons per minute at 20 psi.

- The maximum flow rate of lavatory faucets installed in common and public use areas (outside of dwellings or sleeping units) in residential buildings shall not exceed 0.5 gallons per minute at 60 psi.
- Metering Faucets
 - Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.
- Kitchen Faucets
 - The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi.
 - Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.
 - Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

Standards for Plumbing Fixtures and Fittings

(CGBSC 4.303.2)

- Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code and shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code.

Outdoor Potable Water Use in Outdoor Areas (MWEL0)

(CGBSC 4.304.1)

- The Inspector shall coordinate this with the general contractor and the Department of Urban Forestry.

Recycled Water Supply Systems

(CGBSC 4.305.1)

- Newly constructed residential developments, where disinfected tertiary recycled water is available from a municipal source to a construction site, may be required to have recycled water supply systems installed, allowing the use of recycled water for residential landscape irrigation systems. See Chapter 15 of the California Plumbing Code.

Recycled Water for Landscape Irrigation (for Multi-Family projects only)

(PAMC 16.14.230, CGBSC A4.305.4)

- All multi-family residential additions and alterations must install recycled water infrastructure for irrigation when the landscape area exceeds 1,000 square feet.

Kitchen Faucets

(CGBSC A4.303.1)

- The Contractor shall prepare and deliver all covered water fixture submittals showing that the performance values of 1.5 GPM @ 60 psi has been met.
 - Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi and must default to a maximum flow rate of 1.5 gallons per minute at 60 psi.
 - Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

- The Inspector shall verify that the flow rate specified for the kitchen faucet has been provided. First, review the Plumbing Fixture Schedule and associated water use rates for the kitchen faucet. Second, review each fixture specification cut sheet and verify that rates shown on the Plumbing Fixture Schedule matches the fixture cut sheet. The Inspector shall field verify that the fixture cut sheet matches the fixture that was installed. Make sure to have the cut sheets on-site to verify installation.

Alternate Water Sources for Nonpotable Applications

(CGBSC A4.303.2)

- The Contractor shall prepare and deliver a Certificate of Compliance demonstrating that alternate nonpotable water sources have been installed in accordance with the California Plumbing Code. The system must also be field verified by the Plumbing Engineer. The Plumbing Engineer shall provide a second Certificate of Compliance to the Special Inspector.
- The Inspector shall collect the Certificates of Compliance and review to confirm the requirement has been met. The Inspector shall field verify that the nonpotable indoor application has been installed and shall take photos as verification of the installation. The Inspector shall review the permit set of plans to verify that the specified water-using appliances are installed. First, check that the appliance has an ENERGY STAR label, or the product cut sheet lists the product as ENERGY STAR qualified.
- Alternate nonpotable water sources are used for indoor potable water reduction. Alternate nonpotable water sources shall be installed in accordance with the California Plumbing Code.

Appliances

(CGBSC A4.303.3)

- The Contractor shall prepare and deliver the appliance product cut sheets meeting the requirements.
- The Inspector shall review the permit set of plans to verify that the specified water-using appliances are installed. First, check that the appliance has an ENERGY STAR label, or the product cut sheet lists the product as ENERGY STAR qualified. Field verify that the fixture cut sheet matches the fixture that was installed. Make sure to have the cut sheets on-site to verify installation.
- Install at least one qualified ENERGY STAR dishwasher or clothes washer.

Nonwater Supplied Urinals and Waterless Toilets

(CGBSC A4.303.4)

- The Contractor shall prepare and deliver the fixture product cut sheets meeting the requirements.
- The Inspector shall review the submittals to verify that the requirements are met in accordance with the City of Palo Alto Rainwater Catchment System Submittals and Guidelines. The Inspector shall collect the Certificate of Compliance from the system installer declaring that the requirements are met in accordance with the California Building Code. The Inspector shall field verify that rainwater catchment system has been installed and shall take photos as verification of the installation.

- Nonwater urinals or composting toilets are installed. Where approved, hybrid urinals shall be considered nonwater urinals.

Hot Water Recirculation Systems

(CGBSC A4.303.5)

- One- and two-family dwellings shall be equipped with a demand hot water recirculation system. The demand hot water recirculation system shall be installed in accordance with the California Plumbing Code, California Energy Code, and the manufacturer's installation instructions.

Rainwater Catchment Systems

(CGBSC A4.304.1)

- The Contractor shall prepare and deliver submittals in accordance with City of Palo Alto Rainwater Catchment System Submittals and Guidelines.
<http://www.cityofpaloalto.org/civicax/filebank/documents/45607>
- The Inspector shall review the submittals to verify that the requirements are met in accordance with the City of Palo Alto Rainwater Catchment System Submittals and Guidelines. The Inspector shall collect the Certificate of Compliance from the system installer declaring that the requirements are met in accordance with the California Building Code. The Inspector shall field verify that rainwater catchment system has been installed and designed to use at least generated by at least 65 percent of the available roof area and shall take photos as verification of the installation.

Potable Water Elimination

(CGBSC A4.304.2)

- The Landscape Contractor shall prepare and deliver a Certificate of Compliance declaring that 100% of the landscape shall be irrigated using non-potable water.
- The Inspector shall review the Certificate of Compliance to verify the requirement has been achieved. The Inspector shall field verify that systems utilized to achieve the non-potable application has been installed and shall take photos as verification of the installation.
- When landscaping is provided and as allowed by local ordinance, a water efficient landscape irrigation design that eliminates the use of potable water beyond the initial requirements for plant installation and establishment should be provided. Methods used to accomplish the requirements of this section shall comply the requirements of the California Building Standards Code and shall include, but not be limited to, the following:
 - Use of captured rainwater
 - Use of recycled water
 - Water treated for irrigation purposes and conveyed by a water district or public entity
 - Use of graywater
 - Use of drought tolerant plants

Irrigation Metering Device

(PAMC 16.14.220, CGBSC A4.304.3)

- For landscape projects over 1,000 sq. ft., The Inspector shall verify that a separate irrigation meter has been installed and/or verified by the Utilities department. Applicant should contact Utilities for any questions related to installation.

Graywater

(PAMC 16.14.230, CGBSC A4.305.1)

- The Contractor shall prepare and deliver product cut sheets meeting the requirements listed in the City of Palo Alto Graywater Submittals and Guidelines.
<http://www.cityofpaloalto.org/civicax/filebank/documents/17788>
- The Inspector shall collect the Certificate of Compliance from the Contractor declaring that the requirements have been met in accordance with this section and the City of Palo Alto Graywater Submittals and Guidelines. The Inspector shall field verify that the graywater system has been installed and shall take photos as verification of the installation.
- Alternative plumbing piping is installed to permit the discharge from the clothes washer or other fixtures to be used for an irrigation system in compliance with the California Plumbing Code. In the event that the whole house graywater system is installed in compliance with the CPC, then this measure shall count as 3 electives.

Recycled Water Piping

(PAMC 16.14.230, CGBSC A4.305.2)

- The Contractor shall prepare and deliver the Certificate of Compliance declaring that the requirements have been achieved.
- The Inspector shall collect the Certificate of Compliance from the installer declaring that the requirements have been met in accordance with this section. The Inspector shall review the permit set of plans to verify that the dual piping is installed and labeled as specified in accordance with the plumbing code. If recycled water is immediately intended for use in the project, and not just pre-plumbed, the City building inspector should witness any testing of the system as required by the California Plumbing Code and collect the results of any tests. The Inspector shall take photographs verifying the installation of the system.

Recycled Water for Landscape Irrigation

(PAMC 16.14.230, CGBSC A4.305.3)

- The Inspector shall field verify that recycled water is used for landscape irrigation.

Innovative Concepts and Local Environmental Conditions

(CGBSC A4.306.1)

- The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by the CGBSC. If this is selected, it must be accepted as alternate method or materials by the Chief Building Official.

4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**Recycled Content Values**

(CGBSC A4.405.3.1.2)

- The Contractor shall prepare and deliver product cut sheets showing the recycled content of each claimed material and shall complete the HCD Recycled Content worksheet. The link to this worksheet can be found at the end of this document.
- The Inspector shall verify through receipts and other product purchase documentation that the percentage of building materials containing recycled content meet the minimum thresholds.
- Tier 1 Projects (Elective): Recycled content values shall have a minimum of 10 percent of the total material cost of the project with supporting evidence.
- Tier 2 Projects (Mandatory): Recycled content values shall have a minimum of 15 percent of the total material cost of the project with supporting evidence.

Rodent Proofing

(CGBSC 4.406.1)

- The Inspector shall field verify at rough inspection that annular spaces have been protected by closing the openings with approved materials cement mortar, concrete masonry or a similar method. The Inspector shall take photographs of all compliant annular spaces.
 - Note: This requirement applies to the openings under a bathtub per the CBC.

Enhanced Construction Waste Reduction / Construction Waste Management Plan in Green Halo

(PAMC 16.14.260, CGBSC 4.408.1, CGBSC 4.408.2, CGBSC 4.408.3, CGBSC A4.408.1)

- The Inspector shall verify the email sent by Planning Department for approval of at least 80 percent construction waste reduction in Green Halo.

Operation and Maintenance Manual

(CGBSC 4.410.1)

- The Contractor shall prepare and deliver the Operations and Maintenance (O&M) Manual to the owner and Special Inspector in accordance with the approved format from HCD residential guide for the manual format.
- The Inspector shall verify that the Operations and Maintenance (O&M) Manual is completed in accordance with the HCD residential guide for the manual format.
 - At the time of final inspection, a manual, a USB drive, web-based reference, or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:
 - Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
 - Operation and maintenance instructions for the following:
 - Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major

- appliances and equipment.
 - Roof and yard drainage, including gutters and downspouts.
 - Space conditioning systems, including condensers and air filters.
 - Landscape irrigation systems.
 - Water reuse systems.
- Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
- Public transportation and/or carpool options available in the area.
- Educational material on the positive impacts of an interior relative humidity between 30–60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
- Information about water-conserving landscape and irrigation design and controllers which conserve water.
- Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
- Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
- Information about state solar energy and incentive programs available.
- A copy of all special inspection verifications required by CPA.

Recycling by Occupants

(CGBSC 4.410.2)

- Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and is 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.

Reduction in Cement Use (20 percent – 25 percent)

(PAMC 16.14.250, CGBSC A4.403.2)

- The Contractor shall prepare and deliver concrete mix submittal showing the percent of fly ash, slay, silica fume, or rice hull ash. Tier 1 projects require a minimum of 20% and Tier 2 projects require a 25% content of the listed materials. The Contractor shall submit the Certificate of Compliance declaring that the requirements of this provision have been met.
- The Inspector shall review the submittals to verify that the cement mix requirement has been specified. The Inspector shall collect the Certificate of Compliance declaring that the requirements of this provision have been met.

Efficient Framing Techniques

(CGBSC A4.404.1, CGBSC A4.404.2, CGBSC A4.404.3, CGBSC A4.404.4)

- Lumber Size
 - The Contractor shall prepare and deliver beams, headers, and trimmers product cut sheets meeting the requirements. The contractor shall sign the Certificate of Compliance declaring that the requirement has been met in accordance with CRC Tables R502.5 (1) and R502.5(2).

- The Inspector shall review the beams, headers, and trimmers submittals to verify that the requirements are met.
- Beams, headers and trimmers are sized and installed as specified in Chapter 23 of the California Building Code, or Chapter 6 of the California Residential Code, as applicable.
- Other calculations acceptable to the enforcing agency which use the minimum size member for the tributary load shall be acceptable.

Dimensions and Layouts

- Prior to the installation of drywall, The Inspector shall field verify that building design dimensions of 2-foot increments have been installed and/or windows and doors are located at regular 16" or 24" stud positions as shown on the permit plans. The Inspector shall take photos as verification of the installation.
- Building dimensions and layouts are designed to minimize waste by one or more of the following measures in at least 80 percent of the structure:
 - Building design dimensions in 2 foot increments are used
 - Windows and doors are located at regular 16 inch or 24 inch stud positions
 - Other methods acceptable to CPA

Building Systems

- The Contractor shall prepare and deliver product cut sheets meeting the pre-manufactured building system requirements have been met as shown on the permit plans. Options include 1) composite floor joist or pre-manufactured floor framing system, 2) composite roof rafters or premanufactured roof framing system 3) panelized (SIPS, ICF or similar) framing system.
- The Inspector shall review the pre-manufactured submittals to verify that the requirements have been met in accordance with the permit plans. The Inspector shall field verify that specified pre-manufactured products have installed and shall take photos as verification of the installation.
- Use premanufactured building systems to eliminate solid sawn lumber whenever possible. One or more of the following premanufactured building systems is used:
 - Composite floor joist or premanufactured floor framing system
 - Composite roof rafters or premanufactured roof framing system
 - Panelized (SIPS, ICF or similar) framing systems
 - Other methods approved by CPA

Pre-Cut Materials and Details

- The Contractor shall prepare and deliver a Certificate of Compliance declaring that the Materials Lists prepared on the permit plans have been fully utilized in the field for construction.
- The Inspector shall review the Certificate of Compliance verify the requirement has been achieved.
- Material lists are included in the plans which specify the material quantity and provide direction for on-site cuts to be made from the material provided. Material lists and direction shall be provided for the following systems:
 - Floor framing
 - Wall framing

- Ceiling and roof framing
- Structural panels and roof sheathing

Prefinished Building Materials

(CGBSC A4.405.1)

- The Contractor shall prepare and deliver the pre-finished product cut sheets meeting the requirements as shown on the permit plans. Options include 1) exterior trim not requiring paint or stain; 2) windows not requiring paint or stain; 3) siding or exterior wall coverings which do not require paint or stain. The entirety of the installation shall be comprised of the pre-finished material.

- The Inspector shall review the product cut sheet to verify that the requirement has been met.

Concrete Floors

(CGBSC A4.405.2)

- The inspector shall field verify that only concrete floors have been installed and no additional flooring material has been installed throughout the project. The Inspector shall take photos as verification of the installation.

- Floors that do not require additional coverings are used including but not limited to stained, natural or stamped concrete floors.

Use of Building Materials from Rapidly Renewable Sources

(CGBSC A4.405.4)

- The Contractor shall prepare and deliver product cut sheets showing the rapidly renewable content of each claimed material.

- The Inspector shall verify through receipts and other product purchase documentation that the rapidly renewable sources have been installed.

Roof Drainage

(CGBSC A4.407.2)

- The Contractor shall prepare and deliver the Certificate of Compliance declaring that the gutter and downspout system have been installed to route water at least 5 feet away from the foundation or connect to landscape drains which discharge to a dry well, sump, bioswale, or rainwater capture system.

- The Inspector shall collect the Certificate of Compliance from the Contractor declaring that the requirements have been met in accordance with this section. The Inspector shall review the permit set of plans to verify that the gutter and downspout systems are installed. The Inspector shall take photographs verifying the installation of the system.

Flashing Details

(CGBSC A4.407.3)

- The Contractor shall prepare and deliver the Certificate of Compliance declaring that the flashing details as shown on the permit plans have been installed in accordance with this section and the California Building Code.

- The Inspector shall collect the Certificate of Compliance from the Contractor declaring that the requirements have been met in accordance with this section. The Inspector shall review the permit set of plans to verify that the flashing details on the building plans systems are installed. The Inspector shall verify flashing while it is exposed in cases when the design indicated concealed flashing. The Inspector shall take photographs verifying the installation of the system.

- Provide flashing details on the building plans which comply with accepted industry standards or manufacturer's instructions. Details are shown on house plans at all of the following locations:
 - Around windows and doors
 - Roof valleys
 - Deck connections to the structure
 - Roof-to-wall intersections
 - Chimneys to roof intersections
 - Drip caps above windows and doors with architectural projections
 - Note: Reference details may be found in the Residential Sheet Metal Guidelines published by the Sheet Metal and Air Conditioning Contractors' National Association Inc.

Material Protection

(CGBSC A4.407.4)

- The Contractor shall prepare and deliver monthly photographs demonstrating that all building materials delivered to the construction site are protected from rain and other sources of moisture. This requirement must be fulfilled at all times throughout construction.

- The Inspector shall review the monthly report to verify that the requirement is met throughout construction. Green Building Incremental Verification: The Inspector shall field verify that material protection is maintained. The Inspector shall take photographs verifying the installation of the system.

Door Protection

(CGBSC A4.407.6)

- The Inspector shall field verify door protection measures have been installed at every exterior door and shall take photos as verification of the installation.

- Exterior doors to the dwelling are covered to prevent water intrusion by one or more of the following:
 - An awning at least 4 feet in depth is installed
 - The door is protected by a roof overhang at least 4 feet in depth
 - The door is recessed at least 4 feet
 - Other methods which provide equivalent protection

Roof Overhangs

(CGBSC A4.407.7)

- The Inspector shall field verify that roof overhang measures have been installed at every exterior door and shall take photos as verification of the installation.

- A permanent overhang or awning at least 2 feet in depth is provided at all exterior walls.

Innovative Concepts and Local Environmental Conditions

(CGBSC A4.411.1)

- The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by the CGBSC. If this is selected, it must be accepted as alternate method or materials by the Chief Building Official.

4.5 & A4.5 ENVIRONMENTAL QUALITY**Fireplaces**

(PAMC 16.17.100, CGBSC 4.503.1)

- The Contractor shall prepare and deliver product cut sheets showing the requirements listed to the Inspector.

- The Inspector shall review cut sheet for any gas fireplace installed to confirm it meets the direct-vent sealed combustion type or all-electric requirements. The Inspector shall review cut sheet for woodstove or pellet stove installed to confirm it complies U.S. EPA Phase II emission limits. The Inspector shall field verify that fireplaces and/or woodstoves and/or pellet stoves matches the cut sheet provided.

- Effective April 1, 2020, all residential projects will be required to be all-electric. Fireplaces will be all-electric, not fueled by natural gas.

Covering of Duct Openings, Protection of Mechanical Equipment During Construction

(CGBSC 4.504.1)

- The Contractor shall prepare and deliver a monthly update with updated photographs of the protected ducts to the Green Building Inspector regarding the progress of this item.

- The Inspector shall field verify that all duct and other related air distribution component openings are covered to reduce the amount of dust, water, and debris which may enter the building. The Inspector shall take photographs demonstrating compliance at one point during construction.

- At the time of roughs, during storage, and until final startup of the HVAC equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods to reduce the amount of water, dust and debris, which may enter the system.

Finish Material Pollutant Control

(CGBSC 4.504.2)

- The Contractor shall prepare and deliver product cut sheets and/or pictures of containers showing compliance for all product types listed for **4.504.2.1 through 4.504.5 listed below** to the prior to

installation. Contractor must obtain pre-verification of product compliance from the Inspector. It is recommended to batch multiple products for review to reduce the administrative review time.

- IMPORTANT:** It is the responsibility of the Contractor to initiate this pre-verification and deliver the product cut sheets of predicted products to be installed. The Contractor shall deliver the products cut sheets in writing, with no fewer than 10 business days for pre-verification review, to the Inspector, prior to performing the installation.
- The Inspector shall verify compliance with required VOC levels, and associated product labels, by reviewing all product cutsheets provided by the general contractor and pre-verify products within 10 business days of receipt. The Inspector shall verify compliance with required VOC levels, and associated product labels, by reviewing all the VOC Compliance Spreadsheet and associated product cut sheets.

Adhesives, Sealants, and Caulks

(CGBSC 4.504.2.1)

- Adhesives, sealants and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:
 - Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with Table 4.504.1 or 4.504.2, as applicable.
 - Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds.

Paints and Coatings

(CGBSC 4.504.2.2)

- Architectural paints and coatings shall comply with VOC limits in Table 4.504.3, unless more stringent local limits apply.

Aerosol Paints and Coatings

(CGBSC 4.504.2.3)

- Aerosol paints and coatings shall meet the Product-weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(e)(1) and (f)(1) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

RESIDENTIAL MANDATORY MEASURES

TABLE 4.504.1
ADHESIVE VOC LIMIT^{1,2}

Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50
SPECIALTY APPLICATIONS	
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250
SUBSTRATE SPECIFIC APPLICATIONS	
Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.
2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168.

TABLE 4.504.2
SEALANT VOC LIMIT

Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural	
Nonporous	250
Porous	775
Modified bituminous	500
Marine deck	760
Other	750

TABLE 4.504.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}
Grams of VOC per Liter of Coating,
Less Water and Less Exempt Compounds

COATING CATEGORY	VOC LIMIT
Flat coatings	50
Nonflat coatings	100
Nonflat-high gloss coatings	150
SPECIALTY COATINGS	
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings ¹	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs	
Clear	730
Opaque	550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

1. Grams of VOC per liter of coating, including water and including exempt compounds.
2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
3. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

Carpet Systems, Carpet Cushion, Carpet Adhesives

(CGBSC 4.504.3, CGBSC 4.504.3.1, CGBSC 4.504.3.2)

All carpet installed in the building interior shall meet the testing and product requirements of one of the following:

- Carpet and Rug Institute's Green Label Plus Program.
- California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350.)

- NSF/ANSI 140 at the Gold level.
- Scientific Certifications Systems Indoor Advantage™ Gold.

Resilient Flooring Systems

(CGBSC A4.504.2)

- Resilient flooring systems installed in the building shall meet the percentages specified in this section and comply with the VOC-emission limits defined in at least one of the following:
 - Products compliant with the California Department of Public Health (CDHP), "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
 - Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools program).
 - Certification under the Resilient Floor Covering Institute (RFCI) Floor Score program. Meet the CDHP Specification 01350 (see first bullet).

- Tier 1 Projects: At least 90 percent of the total area of resilient flooring installed shall comply.

- Tier 2 Projects: At least 100 percent of the total area of resilient flooring installed shall comply.
 - Exception: An allowance for up to 5 percent specialty purpose flooring may be permitted.

- Note: Documentation must be provided that verifies that finish materials are certified to meet the pollutant emission limits in this section.

Composite Wood Products

(CGBSC 4.504.5)

- 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 ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 4.504.5.

- Verification of compliance with this section shall be provided as requested by the Building Inspector. Documentation shall include at least one of the following:
 - Product certifications and specifications.
 - Chain of custody certifications.
 - Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
 - Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European 636 3S, and Canadian CSA O121, CSA O151, CSA O153 and CSA O325 standards.
 - Other methods acceptable to CPA.

**TABLE 4.504.5
FORMALDEHYDE LIMITS¹
Maximum Formaldehyde Emissions in Parts per Million**

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard ²	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333. For additional information, see *California Code of Regulations*, Title 17, Sections 93120 through 93120.12.
2. Thin medium density fiberboard has a maximum thickness of $\frac{5}{16}$ inch (8 mm).

Concrete Slab Foundations and Capillary Break

(CGBSC 4.505.2, CGBSC 4.505.2.1)

- The Inspector shall collect the Individual Provision Certificate of Compliance from the general contractor for this measure.
- For projects with slab-on-grade, verify that Inspection 206 was approved. Concrete slab-on-grade foundations are required to have a vapor retarder and a capillary break installed in compliance with at least one of the following:
 - A 4-inch-thick (101.6 mm) base of 1/2-inch (12.7 mm) or larger clean aggregate with a vapor retarder in direct contact with concrete and a concrete mix design.
 - Other equivalent methods approved by CPA.
 - A slab design specified by a licensed design professional.

Moisture Content of Building Materials

(CGBSC 4.505.3)

- The Inspector shall collect the Individual Provision Certificate of Compliance from the Contractor for this measure. The Inspector shall verify that wall and floor framing are not enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:
 - With either a probe-type or contact-type moisture meter.
 - Readings shall be taken at 2 feet to 4 feet from the end of each piece to be verified.
 - At least three random moisture readings shall be performed.
 - The Inspector shall note the results of the moisture readings on the Field Notes.

Bathroom Exhaust Fans

(CGBSC 4.506.1)

- The Inspector shall verify that each bathroom is mechanically ventilated and complies with the following:
 - Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
 - Fans must be controlled by a humidity control.
 - Humidity controls shall be capable of adjustment less than or equal to 50 percent to a maximum of 80 percent.

- A humidity control may be a separate component to the exhaust fan and is not required to be integral.

Heating and Air Conditioning System Design

(CGBSC 4.507.2)

- The Inspector shall collect the Individual Provision Certificate of Compliance from the Contractor for this measure declaring that the heating and air-conditioning systems shall be sized, designed and have their equipment selected using the following methods:
 - The heat loss and heat gain are established according to ANSI/ACCA 2 Manual J—2016 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
 - Duct systems are sized according to ANSI/ACCA 1 Manual D—2016 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods..
 - Select heating and cooling equipment according to ANSI/ACCA 3 Manual S—2014 (Residential Equipment Selection) or other equivalent design software or methods.

Indoor Air Quality Management Plan (for Multi-Family projects only)

(PAMC 16.14.410)

- All commercial and multifamily projects must submit an Indoor Air Quality Management Plan (IAQ) with building permit application in accordance with the Sheet Metal and Air Conditioning Contractors National Association (SMACNA IAQ) Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008-2008.

Compliance with Formaldehyde Limits

(PAMC 16.14.265, CGBSC A4.504.1)

- The Contractor shall prepare and deliver review the Material Safety Data Sheets (MSDS) for all composite wood products and obtain pre-approval from the Inspector prior to installation. The Contractor shall allow 10 business days to review and approve the products. Composite wood is a material that is a mixture of wood fiber, plastic, and some type of binding agent (i.e., MDF, particle board). Verify that all data sheets are labeled as either "Approved by CARB" or "CARB Compliant" for either "No-added formaldehyde (NAF) or "Ultra-low emitting formaldehyde".
- The Inspector shall verify compliance with required formaldehyde levels, and associated product labels, by reviewing all product cutsheets provided by the general contractor and pre-verify products within 10 business days of receipt.
- Use composite wood products made with either California Air Resources Board approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins.
 - Note: Documentation must be provided that verifies that finish materials are certified to meet the pollutant emission limits.

Thermal Insulation

(PAMC 16.14.270, CGBSC A4.504.3)

- The Contractor shall prepare and deliver thermal insulation product cut sheets verifying that all thermal insulation has met one or more than the following for Tier 1. Tier 2 requires all thermal insulation meet one of the following and does not contain any added formaldehyde.
 - The California Department of Public Health (CDPH), "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database
 - Products certified under the UL GREENGUARD Gold (formerly Greenguard Children & Schools program)
 - Meet CDPH Specification 01350 (see first bullet above)
- Note: Documentation must be provided that verifies the materials are certified to meet the pollutant emission limits in this section.
- The Inspector shall review the product submittals to verify that the product requirement has been met and deliver the pre-approval in writing to the General Contractor within 10 business days. The Inspector shall field verify that the materials specified has been installed and shall take photos as verification of the installation.

Construction Filters

(CGBSC A4.506.2)

- Provide filters on return air openings rated at MERV 8 or higher during construction.

Direct-Vent Appliances

(CGBSC A4.506.3)

- The Contractor shall prepare and deliver product cut sheets to the Inspector meeting the direct vent heating and cooling system requirements.
- The Inspector shall review the product cut sheets to verify that the equipment meets the direct vent requirements. The Inspector shall field verify that the direct vent heating and cooling equipment has been installed and shall take photos as verification of the installation.
- Direct-vent heating and cooling equipment shall be utilized if the equipment will be located in the conditioned space or install the space heating and water heating equipment in an isolated mechanical room.

Innovative Concepts and Local Environmental Conditions

(CGBSC A4.509.1)

- The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by the CGBSC. If this is selected, it must be accepted as alternate method or materials by the Chief Building Official.