15-DAY EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
CALIFORNIA BUILDING STANDARDS COMMISSION (CBSC)

REGARDING ADOPTION OF AMENDMENTS TO 2008 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 2, 3, 4, 5 and 6 IN TITLE 24, CCR, PART 11, 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE

Legend for Express Terms:

1. **New California amendment (CA):** California language will appear underlined.
2. **Amended, adopted, or repealed language**: Amended, adopted, or repealed language will appear in double underline and ~~double strikeout~~.
3. **Rationale:** The justification for the change is shown after each section or series of related changes.
4. **Notation**: Authority and reference citations are provided at the end of each chapter.

PREFACE

. . .

A city, county or city and county may ~~make necessary changes to the provisions contained in this code which are~~ establish more restrictive standards reasonably necessary because of local climatic, geological, or topographical conditions. For the purpose of this code these conditions include ~~specific~~ local environmental conditions as established by a city, county, or city and county. Findings of the local condition(s) and the adopted local building standard(s) must be filed with the California Building Standards Commission to become effective and may not be effective sooner than the effective date of this edition of the California Building Standards Code. ~~B~~Local building standards that were adopted ~~by local ordinance~~ and applicable to previous editions of the California Building Standards Code do not apply to this edition without appropriate adoption and the required filing.

Recommendation:
Based on criterion 1, CBSC proposes to delete the word “specific”.
Rationale:
Consistency with Section 101.7.1, Item 1.

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EFFECTIVE USE OF THIS CODE

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4. The ~~application~~ Matrix Adoption Tables at the beginning of Chapters 4 and 5 ~~will list~~ identify the required green building measures necessary to meet the minimum requirements of this code ~~adopted, provide the effective date and other information regarding each green building measure applicable to~~ for the established occupancy.

Recommendation:
Based on criterion 1, CBSC proposes to delete the word “will”.
Rationale:
Consistency with Section 101.11, Item 4.

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CHAPTER 1

ADMINISTRATION

SECTION 101
GENERAL

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101.4 Appendices. Provisions contained in the appendices of this code ~~shall not apply~~ are not mandatory unless specifically adopted by a State agency or adopted by a ~~local enforcing agency city~~, city, county, or city and county in compliance with Health and Safety Code Section 18938 (b) for Building Standards Law, Health and Safety Code

Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts. See Section 101.7 of this code.

Recommendation:
Based on criterion 1, CBSC proposes to restore the word "city".
Rationale:
Consistency with Sections 101.7and 101.7.1, Item 1.

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CHAPTER 5

NONRESIDENTIAL MANDATORY MEASURES

DIVISION 5.1 PLANNING AND DESIGN

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SECTION ~~402~~ 5.102
DEFINITIONS

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CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per ~~100~~ 1000 lamp lumens does not numerically exceed 25 (2.5%) at an angle of 90^{o} above nadir, and 100 (10%) at a vertical angle of 80^{o} above nadir. This applies to all lateral angles around the luminaire.

Recommendation:
Based on criterion 1, CBSC proposes to change the number of lamp lumens from 100 to 1000.
Rationale:
Consistency with California Energy Code Section 132(b).

LOW-EMITTING AND FUEL EFFICIENT VEHICLES. Eligible vehicles are limited to the following:

1. Zero emission vehicle (ZEV), including neighborhood electric vehicles (NEV), partial zero emission vehicle (PZEV), advanced technology PZEV (AT ZEV), or CNG fueled (Original equipment manufacturer only) regulated under Health and Safety Code section 43800 and CCR, Title 13, sections 1961 and 1962.
2. High efficiency vehicles, regulated by US EPA, bearing ~~Single Occupant Vehicle (SOV)~~ High Occupancy Vehicle (HOV) car pool lane stickers issued by the Department of Motor Vehicles.

Recommendation:
Based on criterion 1, CBSC proposes to change Single Occupancy Vehicle to High Occupancy Vehicle.
Rationale:
Update for consistency with Air Resources Board laws and regulations.

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VANPOOL VEHICLE. Eligible vehicles are limited to any motor vehicle, other than a motortruck or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purposes of ridesharing.

Recommendation:
Based on criterion 6, CBSC proposes to include the word "to" in the first phrase.
Rationale:
Editorial grammatical correction for clarity to the code user.

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SECTION ~~406~~ 5.106
SITE DEVELOPMENT

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5.106.1 Storm water pollution prevention plan. For newly constructed projects of less than one acre, develop a Storm Water Pollution Prevention Plan (SWPPP) that has been designed, specific to its site, conforming to the State Storm water NPDES Construction Permit or local ordinance, whichever is stricter, as is required for projects one acre or more. The plan should cover prevention of soil loss by storm water run-off and/or wind erosion, of sedimentation, and/or of dust/particulate matter air pollution.

Recommendation:
Based on criterion 6, CBSC proposes to include the words "newly constructed" in the first phrase.

Rationale:

In response to a public comment, define the scope of the provision for clarity to the code user.

5.106.4.1 Short-term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 2~~1~~00 feet of the visitors' entrance, readily visible to passers-by, for 5% of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.

Recommendation:

Based on criterion 4, CBSC proposes to change the distance for short-term visitors parking to 200 feet.

Rationale:

Acknowledge a public comment, and provide more flexibility for the builder in locating visitor bike racks.

5.106.4.2 Long-term bicycle parking. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5% of tenant-occupant motorized vehicle parking capacity, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and may include, but not be limited to:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; and
3. Lockable, permanently anchored bicycle lockers.

Recommendation:

Based on criteria 3 and 6, CBSC proposes to describe the motorized vehicles referenced as those of tenant-occupants and to add the phrase "but not limited to".

Rationale:

Increase flexibility of compliance options and clarity for the code user.

~~**5.106.4.3 Changing rooms.** For buildings with over 10 tenant-occupants, Pprovide changing/shower facilities for tenant-occupants only in accordance with Table 5.106.4.3, or document arrangements with nearby changing/shower facilities.~~

~~**Table 5.106.4.3**~~

~~Number of tenant-occupants~~	~~Shower/changing facilities required[2]~~	~~2-tier (12" x 15" x 72") personal effects lockers[1,2] required~~
~~0-10~~	~~0~~	~~0~~
~~11-50~~	~~1 unisex shower~~	~~2~~
~~51-100~~	~~1 unisex shower~~	~~3~~
~~101-200~~	~~1 shower stall per gender~~	~~4~~
~~Over 200~~	~~1 shower stall per gender for each 200 additional tenant-occupants~~	~~1 2-tier locker for each 50 additional tenant-occupants~~

~~[1] One 2-tier locker serves two people. Lockers shall be lockable with either padlock or combination lock.~~

~~[2] Tenant spaces housing more than 10 tenant occupants within buildings sharing common toilet facilities need not comply; however, such common shower facilities shall accommodate the total number of tenant occupants served by the toilets and include a minimum of 1 unisex shower and two 2-tier lockers.~~

Recommendation:

Based on criteria 4 and 6, CBSC proposes to remove this provision from the mandatory section of the code and move it to the Appendix.

Rationale:

Response to public comments concerning the application of this standard to phased projects and potential security and liability issues.

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5.106.5.2 Designated parking. Provide designated parking for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as follows:

Table 5.106.5.2

Total Number of Parking Spaces	**Number of Required Spaces**

0-9	0
~~1 20~~ 10-25	~~0~~ 1
~~21~~ 26-50	~~1~~ 3
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8% of total

Recommendation:
Based on criterion 1, CBSC proposes to change the array of parking spaces.
Rationale:
Consistency with an 8% average rate of requirement and the format of Tables shown in Section A5.106.5.1 for Tier 1 and 2 voluntary increases.

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5.106.8 Light pollution reduction. Comply with lighting power requirements in the California Energy Code, CCR, Part 6, and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the California Administrative Code, CCR, Part 1, using the following strategies:

1. Shield all exterior luminaires or provide cutoff luminaires per Section 132 (b) of the California Energy Code.
2. Contain interior lighting within each source.
3. ~~Contain all exterior lighting within property boundaries~~ Allow no more than .01 horizontal lumen footcandles to escape 15 feet beyond the site boundary.
4. Automatically control exterior lighting dusk to dawn to turn off or lower light levels during inactive periods.

Recommendation:
Based on criterion 4, CBSC proposes to change Item number 3.
Rationale:
Based on public comment, recognize the difficulty of compliance with containment of all exterior light within a property.

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DIVISION 5.3 WATER EFFICIENCY AND CONSERVATION

SECTION ~~601~~ 5.301 GENERAL

. . .

SECTION ~~603~~ 5.303 INDOOR WATER USE

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5.303.1.2 Excess consumption. Any building within a project or a space within a building that is projected to consume more than 1,000 gal/day.

Recommendation:
Based on criterion 6, CBSC proposes to include the word “a” before “space”.
Rationale:
Editorial grammatical correction for clarity to the code user.

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TABLE ~~603.1~~ 5.303.2.2 INDOOR WATER USE BASELINE[~~5~~ 4]

Fixture Type	Flow-rate[2]	Duration	Daily uses	Occupants[~~3~~, 4]
. . .				
~~Showerheads Residential~~	~~2.5 gpm @ 80 psi~~	~~8 min.~~	~~1~~	~~X~~
. . .				

Fixture “Water Use” = Flow rate x Duration x Occupants x Daily uses

[1] ~~Except for low-rise residential occupancies, t~~ The daily use number shall be increased to three if urinals are not installed in the room.

[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict

occurs, the CEC standards shall apply.
[3] ~~For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.~~
[4] [3] ~~For non-residential occupancies, r~~ Refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

Recommendation:
Based on criterion 6, CBSC proposes strike residential showerheads from Table 5.303.2.2 and correct the footnote reference for Occupants to 3.
Rationale:
Consistency with authority and footnote numbering.
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DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION ~~710~~ 5.410
BUILDING MAINTENANCE AND OPERATION

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~~504.4.1~~ 5.410.2.1 Owner's Project Requirements (OPR). The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. At a minimum, this documentation shall include the following: **. . .**

Recommendation:
Based on criteria 4 and 6, CBSC proposes to add a phrase concerning project phase.
Rationale:
In response to a public comment, clarify for the code user scope for phased projects.
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~~504.4.3~~ 5.410.2.3 Commissioning plan. Prior to permit issuance a ~~A~~ commissioning plan shall be completed to document ~~the approach to~~ how the project will be commissioned and shall be started during the design phase of the building project. **. . .**

Recommendation:
Based on criteria 4 and 6, CBSC proposes to delete the sentence fragment "the approach to" and add a phrase concerning timing.
Rationale:
Editorial grammatical correction to provide clarity to the code user.

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~~504.4.6~~ 5.410.2.6 Commissioning report. A complete report of commissioning process activities undertaken through the design, construction and post-construction phases of the building project shall be completed and provided to the owner or representative

Recommendation:
Based on criterion 6, CBSC proposes to add the words "or representative" after "owner".
Rationale:
Response to a public comment to provide clarity to the code user.

~~504.4.5~~ 5.410.2.5 ~~Post-construction~~ D~~d~~ocumentation and training. A Systems Manual and Systems Operations Training are required.

Recommendation:
Based on criteria 4 and 6, CBSC proposes to delete the words "Post-construction".
Rationale:
In response to a public comment, clarify for the code user the importance of training before all construction activities are complete.
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~~504.4.5.1~~ 5.410.2.5.1 Systems manual. Documentation of the operational aspects of the building shall be completed within the Systems Manual and delivered to the building owner or representative **. . .**

Recommendation:
Based on criterion 6, CBSC proposes to add the words "or representative" after "owner".
Rationale:
Response to a public comment to provide clarity to the code user.

~~504.4.5.2~~ 5.410.2.5.2 Systems operations training. The training of the appropriate maintenance staff for each equipment type and/or system shall include, as a minimum, the following:

1. System/Equipment overview (what it is, what it does and what other systems and/or equipment it interfaces with).
2. Review and demonstration of servicing/preventive maintenance.
3. Review of the information in the Systems Manual.
4. Review of the record drawings on the system/equipment.

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Recommendation:

Based on criteria 4 and 6, CBSC add a new Item 2 for training in servicing and preventive maintenance.

Rationale:

In response to a public comment, clarify for the code user training requirements prior to the close of construction to ensure that the benefits of commissioning persist over time.

~~504.4.6~~ 5.410.2.6 Commissioning report. A complete report of commissioning process activities undertaken through the design~~,~~ and construction and reporting recommendations for post-construction phases of the building project shall be completed and provided to the owner.

Recommendation:

Based on criterion 6, CBSC proposes to recommend reporting requirements for post-construction phases in lieu of requiring them.

Rationale:

Provide clarity to the code user that this code does not apply to activities once the Certificate of Occupancy is issue.

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5.410.3 Testing~~,~~ and adjusting ~~and balancing~~. Testing~~,~~ and adjusting ~~and balancing~~ of systems shall be required for buildings less than 10,000 square feet.

5.410.3.2 Systems. Develop a written plan of procedures for testing~~,~~ and adjusting ~~and balancing~~ systems. Systems to be included for testing~~,~~ and adjusting ~~and balancing~~ shall include at a minimum, as applicable to the project. **. . .**

5.410.3.3 Procedures. Perform testing~~,~~ and adjusting ~~and balancing~~ procedures in accordance with industry best practices and applicable national standards on each system.

5.410.3.3.1 HVAC balancing. In addition to testing and adjusting, ~~B~~before a new space-conditioning system serving a building or space is operated for normal use, the system ~~should~~ shall be balanced in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards (2003); the National Environmental Balancing Bureau Procedural Standards (1983); or Associated Air Balance Council National Standards (1989) or as approved by the building official.

5.410.3.4 Operation and maintenance manual. Provide the building owner or representative a with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.

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Recommendation:

Based on criteria 4 and 6, CBSC proposes in Section 5.410.3.3.1 to change the word “should” to “shall” and to reserve the requirement for balancing for HVAC systems, including a phrase concerning the authority of the building official.

Rationale:

Based on public comment, the changes are to indicate that balancing is required only for HVAC systems. Other systems with controls will require testing and adjusting, but not balancing.

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DIVISION 5.5 ENVIRONMENTAL QUALITY

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SECTION ~~804~~ 5.504
POLLUTANT CONTROL

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~~**804.2 5.504.2 IAQ Post-construction.** After construction ends, with all interior finishes have been installed, flush out the building by supplying continuous ventilation with all air handling units at their maximum outdoor air rate and all supply fans at their maximum position and rate for at least 14 days while.~~

~~1. During this time, maintaining an internal temperature of at least 60 °F, and relative humidity no higher than 60%. If extenuating circumstances make these temperature and humidity limits unachievable, the flush out may be conducted under conditions as close as possible to these limits, provided that documentation of the extenuating circumstances is provided in writing.~~

~~2. Occupancy may start after 4 days, provided flush out continues for the full 14 days. During occupied times, the thermal comfort conditions of Title 24 must be met.~~

~~3. For buildings that rely on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal during the 14 day flush out, and windows should remain open.~~

~~4. Do not "bake out" the building by increasing the temperature of the space.~~

~~5. (If continuous ventilation is not possible, flush out must total the equivalent of 14 days of maximum outdoor air.)~~

Recommendation:

Based on criteria 4 and 6, CBSC proposes to remove this provision from the mandatory section of the code and move it to the Appendix.

Rationale:

Response to a public comment citing technical, enforcement, and potential liability issues.

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~~**804.4.2**~~ **5.504.4.3 Paints and coatings.** Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table ~~804.4.2~~ 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3, shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

Recommendation:

Based on criterion 6, CBSC proposes to include the words "more stringent" to qualify local limits.

Rationale:

Response to comment from Air Resources Board, for consistency with their regulations.

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5.504.4.6 Resilient flooring systems. For 50% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.

Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.

Note: Products certified under the FloorScore program may be found at: http://www.rfci.com/int_FS-ProdCert.htm .

Recommendation:

Based on criterion 6, CBSC proposes to include a requirement for documentation and a note for reference to FloorScore's web site .

Rationale:

Provide clarity to the code user with inclusion of non-regulatory information that was requested by Air Resources Board. Also at Air Resources Board's request, verification by documentation is included for finish materials to coordinate with HCD and for clarity to the code user..

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TABLE ~~804.4.2~~ 5.504.4.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2, 3]
(Table not shown for clarity)

~~[3] **Note:** For additional information regarding methods to measure the VOC content specified in this table, see ARB, 2008. Suggested Control Measure for Architectural Coatings. February 1, 2008. http://www.arb.ca.gov/coatings/arch/Approved_2007_SCM.pdf.~~

[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 at http://www.arb.ca.gov/coatings/arch/Approved_2007_SCM.pdf.

Recommendation:
Based on criterion 1, CBSC proposes to change footnote #3 to this new language.
Rationale:
Update for consistency with Air Resources Board laws and regulations and with HCD language.

~~804.7~~ 5.504.7 Environmental tobacco smoke (ETS) control. Where outdoor areas are provided for smoking, p ~~P~~rohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows ~~where outdoor areas are provided for smoking,~~ and in buildings; 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. When ordinances, regulations, or policies are not in place, post signage to inform building occupants of the prohibitions.

Recommendation:
Based on criterion 6, CBSC proposes to relocate a phrase.
Rationale:
Editorial grammatical correction for clarity to the code user.

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APPENDIX A5

NONRESIDENTIAL VOLUNTARY MEASURES

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SECTION A5.106
SITE DEVELOPMENT

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A5.106.4.3 Changing rooms. For buildings with over 10 tenant-occupants, ~~P~~provide changing/shower facilities for tenant-occupants only in accordance with Table A5.106.4.3, or document arrangements with nearby changing/shower facilities.

Table A5.106.4.3

Number of tenant-occupants	Shower/changing facilities required[2]	2-tier (12" x 15" x 72") personal effects lockers[1,2] required
0-10	0	0
11-50	1 unisex shower	2
51-100	1 unisex shower	3
101-200	1 shower stall per gender	4
Over 200	1 shower stall per gender for each 200 additional tenant-occupants	1 2-tier locker for each 50 additional tenant-occupants

[1] One 2-tier locker serves two people. Lockers shall be lockable with either padlock or combination lock.

[2] Tenant spaces housing more than 10 tenant-occupants within buildings sharing common toilet facilities need not comply; however, such common shower facilities shall accommodate the total number of tenant-occupants served by the toilets and include a minimum of 1 unisex shower and two 2-tier lockers.

Recommendation:
Based on criterion 6, CBSC proposes to remove this provision from the mandatory section of the code and move it to the Appendix.
Rationale:
Response to public comments concerning the application of this standard to phased projects and potential security and liability issues.

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A5.106.7 Exterior wall shading. Meet requirements in the current edition of the California Energy Code and select one of the following for wall surfaces:

1. Provide vegetative or man-made shading devices for east-, south-, and west-facing walls with windows, with 30% coverage to a height of 20 feet or top of exterior wall, whichever is less, for east and west walls. Calculate shade coverage on the summer solstice at 10 AM for east-facing walls and at 3 PM for west-facing walls. Plant v ~~V~~egetative shade of species documented to ~~shall~~ reach desired coverage within 5 years of building occupancy.
2. Use wall surfacing with minimum SRI 25 (aged), for 75% of opaque wall areas.

Exception: Use of vegetated shade in Wildland-Urban Interface Areas as defined in Chapter 7A of the California Building Code shall meet the requirements of that chapter.

Recommendation:

Based on criterion 4, CBSC proposes to clarify shading devices, vegetation, and SRI value.

Rationale:

To clarify for the code user that shading devices and vegetation are for walls with windows and that the SRI value for opaque walls is a minimum value.

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A5.106.11.2 Cool roof. Use roofing materials having a minimum 3-year aged solar reflectance and thermal emittance or a minimum aged Solar Reflectance Index (SRI)[3] as shown in Table A5.106.11.2.1 or A5.106.11.2.2.

Table A5.106.11.2.1
Tier 1

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged		
			~~Minimum 3-year Aged~~ Solar Reflectance	Thermal Emittance	~~Minimum Aged~~ SRI
≤ 2 : 12	N.A	2-15	0.55	0.75	64
> 2 : 12	< 5 lbs./ft^2	2-~~15~~ 16	0.20	0.75	16
	≥5 lbs./ft^2	1-16	0.15	0.75	10

Table A5.106.11.2.2
Tier 2

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged		
			~~Minimum 3-year Aged~~ Solar Reflectance	Thermal Emittance	~~Minimum Aged~~ SRI
≤ 2 : 12	N/A	1-16 15	~~TBD~~ 0.65	~~TBD~~ 0.85	78
> 2 : 12	N/A	1-16 15	~~TBD~~ 0.30	TBD 0.85	29

A5.106.11.3 Verification of compliance. If no documentation is available, an inspection shall be conducted to ensure roofing materials meet cool roof aged solar reflectance and thermal emittance or SRI values.

Recommendation:

Based on criterion 6, CBSC proposes to include the word replace the TBD (to be determined) placeholder with Solar Reflectance and Thermal Emittance values and to strengthen language for compliance verification.

Rationale:

Provide clarity to the code user with inclusion of information that was only recently made available to CBSC by Air Resources Board and the California Energy Commission and ensure that the voluntary measures included in the tiers are verified as required in Chapter 7 by inspection and documentation.

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SECTION A5.302
DEFINITIONS

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LANDSCAPE (PLANT) COEFFICIENT [Kl]. The product of the species factor multiplied by the density factor and the microclimate factor. {Kl=Ks x Kd X Kmc} The landscape coefficient is used in the landscape water budget calculation. (UCCE, 2000)

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REFERENCE EVAPOTRANSPIRATION (ETo). The estimated rate of evapotranspiration from a standardized surface of well watered, actively growing cool season turfgrass clipped to 12 cm with sufficient density to fully shade the soil. The water needs of a landscape planting can be calculated by multiplying the Landscape Coefficient [Kl] and Reference Evapotranspiration {ETo}

Recommendation:

Based on criterion 6, CBSC proposes to include definitions in Division A5.3 related to Section A5.304.4.

Rationale:

These words are used in Section A5.304.4 and subsections and their definitions provide clarity to the code user.

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A5.303.2.2 ~~Tier 3 —~~ 40% Savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 40% shall be provided. A calculation demonstrating a 40% reduction in the building "water use baseline" as established in Table 5.303.1 shall be provided.

Recommendation:

Based on criterion 6, CBSC proposes to delete the reference to Tier 3 in the section leader.

Rationale:

Response to an Air Resources Board comment recommending consistency with the format of other sections in the code.

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~~604.2~~ **A5.304.4 Potable water reduction.** Provide water efficient landscape irrigation design that reduces ~~by 50%~~ the use of potable water beyond the initial requirements for plant installation and establishment in accordance with Section A5.304.4.1 or A5.304.4.2. Calculations for the reduction shall be based on the water budget developed pursuant to section ~~6~~ 5.304.1.

~~Methods used to accomplish the requirements of this section must be designed to the requirements of the California Building Standards Code and shall include, but not be limited to, the following:~~

~~1. Plant coefficient.~~
~~2. Irrigation efficiency and distribution uniformity.~~
~~3. Use of captured rainwater.~~
~~4. Use of recycled water.~~
~~5. Water treated for irrigation purposes and conveyed by a water district or public entity.~~
~~6. Use of graywater.~~

A5.304.4.1 Tier 1. Reduce the use of potable water ~~by 50%~~ to a quantity that does not exceed 60% of ETo times the landscape area.

A5.304.4.~~1~~2 Tier 2. Reduce the use of potable water ~~by 60%~~ to a quantity that does not exceed 55% of ETo times the landscape area.

Note: Methods used to accomplish the requirements of this section must be designed to the requirements of the other parts of the California Building Standards Code and may include, but are not limited to, the following:

1. Plant coefficient.
2. Irrigation efficiency and distribution uniformity.
3. Use of captured rainwater.
4. Use of recycled water.
5. Water treated for irrigation purposes and conveyed by a water district or public entity.
6. Use of graywater.

A5.304.4.3 Verification of compliance. A calculation demonstrating the applicable potable water use reduction required by this section shall be provided.

Recommendation:

Based on criteria 1 and 6, CBSC proposes to correct a section number, clarify for the code user the benchmark to be used for reduction, and include verification language recommended by ARB.

Rationale:

Editorial formatting correction for clarity to the code user, clarification based on recommendations from DWR and CLCA, and assurance that the voluntary measures included in the tiers are verified as required in Chapter 7 by inspection and documentation.

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SECTION A5.408

CONSTRUCTION WASTE REDUCTION, DISPOSAL, AND RECYCLING

A5.408.3.1 Enhanced construction waste reduction. Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site in compliance with one of the following:

Tier 1. At least a 65% reduction.

Tier 2. At least an 80% reduction.

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A5.408.3.2 Verification of compliance. A copy of the completed waste management report shall be provided.

Recommendation:

Based on criterion 6, CBSC proposes to include verification language proposed by Air Resources Board.

Rationale:

Provide assurance that the voluntary measures included in the tiers are verified as required in Chapter 7 by inspection and documentation.

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~~804.2~~ A5.504.2 IAQ Post-construction. After ~~construction ends, with~~ all interior finishes have been installed, flush out the building by supplying continuous ventilation with all air handling units at their maximum outdoor air rate and all supply fans at their maximum position and rate for at least 14 days ~~while~~.

1. During this time, maintain~~ing~~ an internal temperature of at least 60 °F, and relative humidity no higher than 60%. If extenuating circumstances make these temperature and humidity limits unachievable, the flush out may be conducted under conditions as close as possible to these limits, provided that documentation of the extenuating circumstances is provided in writing.
2. Occupancy may start after 4 days, provided flush-out continues for the full 14 days. During occupied times, the thermal comfort conditions of Title 24 must be met.
3. For buildings that rely on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal during the 14-day flush out, and windows should remain open.
4. Do not "bake out" the building by increasing the temperature of the space.
5. ~~(~~If continuous ventilation is not possible, flush-out air volume must total the equivalent of 14 days of maximum outdoor air.~~)~~ The equivalent of 14 days of maximum outdoor air shall be calculated by multiplying the maximum feasible air flow rate (in ft^3/min) by the time in 14 days (20,160 min), to yield a target air volume for the flush-out (in ft^3). The air volumes for each period are then calculated and summed, and the flush out continues until the total equals the target air volume.

A5.504.2.1 IAQ Testing. If the engineer determines that building flush-out pursuant to Section A5.504.2 is not feasible, a testing alternative may be employed after all interior finishes have been installed, using testing protocols recognized by the United State Environmental Protection Agency (US EPA).

A5.504.2.1.1 Maximum levels of contaminants. Allowable levels of contaminant concentrations measured by testing shall not exceed the following:

1. Carbon Monoxide (CO): 9 parts per million, not to exceed outdoor levels by 2 parts per million;
2. Formaldehyde: 27 parts per billion;
3. Particulates (PM10): 50 micrograms per cubic meter;
4. 4-Phenylcyclohexene (4-PCH), if fabrics and carpets with styrene butadiene rubber (SBR) latex backing, are installed: 6.5 micrograms per cubic meter; and
5. Total Volatile Organic Compounds (TVOC): 300 micrograms per cubic meter.

A5.504.2.1.2 Test protocols. Testing of indoor air quality should include the following elements:

1. The contaminant sampling and averaging times and the measurement methods should be sufficient to achieve a Limit of Detection that is below the maximum allowable concentrations.
2. Testing should be conducted with the HVAC system operated at the minimum design outdoor air ventilation rate.
3. Air samplers and monitors should be located near likely sources of formaldehyde and other volatile organic compounds, at a height of 3-6 feet from the floor, and well away from walls and air diffusers.
4. The test protocols should be justified with documentation to show that appropriate sampling methods and times were used.

A5.504.2.1.3 Non-complying building areas. For each sampling area of the building exceeding the maximum concentrations specified in Section A5.504.2.1.1, flush out with outside air and retest samples taken from the same area. Repeat the procedures until testing demonstrates compliance.

Note: US EPA-recognized testing protocols may be found on the Air Resources Board website at: http://www.arb.ca.gov/research/indoor/methods.htm .

Recommendation:

In response to a public comment based on criteria 4 and 6, CBSC proposes to remove this provision from the mandatory section of the code and move it to the Appendix and include an IAQ testing alternative using language recommended by Air Resources Board.

Rationale:

The section was moved in response to a public comment citing technical, enforcement, and potential liability issues. Air Resources Board language clarifies for the code user how the flush-out air volume is calculated and how it testing shall be conducted.

. . .

~~804.4.4.1~~ **A5.504.4.5.1 Early compliance with formaldehyde limits.** Where complying composite wood product is readily available for non-residential occupancies, meet ~~Phase 2 II~~ requirements before the compliance dates indicated in Table ~~804.4.4~~ 5.504.5 (Tier 1), or use composite wood products made with either CARB-approved no-added formaldehyde (NAF) resins or CARB-approved ultra-low emitting formaldehyde (ULEF) resins (Tier 2).

Recommendation:

Based on criterion 6, CBSC proposes to delete the reference to Phase 2 (II) and add a note concerning documentation of compliance.

Rationale:

Reference to Phase 2 has been removed from Table 5.504.4.5 in favor of dates of compliance.

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~~804.4.5~~ **A5.504.4.7 Resilient flooring systems, Tier 1.** For 80% of floor area receiving resilient flooring, install resilient flooring c~~C~~omplying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List~~, www.chps.net/manual/lem_table.htm~~ or certified under the FloorScore program of the Resilient Floor Covering Institute.

A5.504.4.7.1 Resilient flooring systems, Tier 2. For 90% of floor area receiving resilient flooring, install resilient flooring c~~C~~omplying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List or certified under the FloorScore program of the Resilient Floor Covering Institute.

Note: Products certified under the FloorScore program may be found at: http://www.rfci.com/int_FS-ProdCert.htm .

Recommendation:

Based on criterion 6, CBSC proposes to include a note for reference to FloorScore's web site.

Rationale:

Provide clarity to the code user with inclusion of non-regulatory information that was requested by Air Resources Board.

~~804.4.6~~ **A5.504.4.8 Thermal insulation, Tier 1.** Comply with Chapter 12-13 in Title 24, Part 12, the California Referenced Standards Code, and with the VOC-emission limits defined in 2009 CHPS criteria and listed on its Low-emitting Materials List~~, www.chps.net/manual/lem_table.htm~~ .

A5.504.4.8.1 Thermal insulation, Tier 2. Install No-Added Formaldehyde thermal insulation in addition to meeting the 2009 CHPS criteria and listed on its Low-Emitting Materials List.

~~804.4.7~~ **A5.504.4.9 Acoustical ceilings and wall panels.** Comply with Chapter 8 in Title 24, Part 2, the California Building Code, and with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List~~, www.chps.net/manual/lem_table.htm~~.

Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.

Recommendation:

Based on criterion 6, CBSC proposes to add a note concerning documentation of compliance for finish materials.

Rationale:

At Air Resources Board's request, the documentation requirement from Chapter 5 for formaldehyde, resilient flooring, and thermal insulation is included in the Appendix for consistency with HCD and for clarity to the code user.

. . .

A5.504.5.3.1 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of ~~12~~ 11.

Recommendation:

Based on criterion 1, CBSC proposes to change the MERV rating of 13 to 11.

Rationale:

Update for consistency with DSA-SS, who is proposing the change, because MERV 13 filters require more frequent replacement, which is a cost and maintenance issue for schools and may have a similar impact on nonresidential new buildings.

A5.601.2.4 Voluntary measures for *CALGREEN* Tier 1. In addition to the provisions of Sections A5.601.2.1 and A5.601.2.3 above, compliance with the following voluntary measures from Appendix A5 is required for Tier 1:

1. From Division A5.1,
   a) Comply with the designated parking requirements for fuel efficient vehicles for a minimum of 10% of parking capacity per Section A5.106.5.1 and Table A5.106.5.1.
   b) Comply with the SRI values for cool roofs in Table A5.106.11.2.1. [1]
   c) Comply with one elective measure selected from this division.
2. From Division A5.3,
   a) Comply with the 30% reduction for indoor potable water use in Section A5.303.2.1.
   b) Comply with the 50% reduction in outdoor potable water use in Section A5.303.4.~~4~~ 1.
   c) Comply with one elective measure selected from this division.

. . .

A5.601.3.4 Voluntary measures for *CALGREEN* Tier 2. In addition to the provisions of Sections A5.601.3.1 and A5.601.3.3 above, compliance with the following voluntary measures from Appendix A5 and additional elective measures shown in Table A5.601.3.4 is required for Tier 2:

1. From Division A5.1,
   a) Comply with the designated parking requirements for fuel efficient vehicles for a minimum of 12% of parking capacity per Section A5.106.5.1 and Table A5.106.5.1.
   b) Comply with the SRI values for cool roofs in Table A5.106.11.2.2. [1]
   c) Comply with three elective measures selected from this division.
2. From Division A5.3,
   a) Comply with the 35% reduction for indoor potable water use in Section A5.303.2.1.
   b) Comply with the 60% reduction in outdoor potable water use in Section A5.303.4.~~4~~ 2.
   c) Comply with three elective measures selected from this division.

. . .

[1] Cool roof is required for compliance with Tiers 1 and 2 and may be used to meet energy standards in Part 6~~,~~ or exceed energy standards by 15 or 30 %, ~~or~~ and to mitigate heat island effect~~, but not for compliance with more than one~~.

Recommendation:

Based on criteria 4 and 6, CBSC proposes to amend this footnote to allow cool roof to be used for both energy and heat island compliance. CBSC is also making an editorial number reference change in Items 2b.

Rationale:

Provide clarity to the code user as to the benefits of cool roofs for both building energy and mitigation of heat island effect.

DIVISION A5.7
NONRESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST [BSC]

Feature or Measure	Mandatory	Voluntary *CALGREEN* Tier 1	Voluntary *CALGREEN* Tier 2	Notes
. . .				
SITE DEVELOPMENT				
A5.106.1 Storm water pollution prevention plan. For newly constructed projects of one acre or less, develop a Storm Water Pollution Prevention Plan (SWPPP) that has been designed, specific to its site, conforming to the State Storm water NPDES Construction Permit or local ordinance, whichever is stricter, as is required for projects over one acre. The plan should cover prevention of soil loss by storm water run-off and/or wind erosion, of sedimentation, and/or of dust/particulate matter air pollution.	☐			
. . .				
5.106.4 Bicycle parking and changing rooms. Comply with Sections 5.106.4.1 through 5.106.4.3; or meet local ordinance, whichever is stricter.	☐			
5.106.4.1 Short-term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 ~~50~~ feet of the visitors' entrance, readily visible to passers-by, for 5% of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.	☐			
5**.106.4.2 Long-term bicycle parking**. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5% of tenant-occupied motorized vehicle parking capacity, with a minimum of one space.	☐			
A5.106.4.3 Changing rooms. . For buildings with over 10 tenant-occupants, ~~P~~provide changing/shower facilities in accordance with Table 5.106.4.3, or document arrangements with nearby changing/shower facilities.	~~☐~~	☐	☐	
5.106.7 Exterior walls. Meet requirements in the current edition of the California Energy Code and select one of the following for wall surfaces:				
1. Provide vegetative or man-made shading devices for east-, south-, and west-facing walls with windows.	☐			
2. Use wall surfacing with minimum SRI 25 (aged), for 75% of opaque wall areas.	☐			
5.106.8 Light pollution reduction. Comply with lighting power requirements in the California Energy Code and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the California Administrative Code, using the following strategies:	☐			
1. Shield all exterior luminaires or use cutoff luminaires.	☐			
2. Contain interior lighting within each source.				
3. ~~Contain all exterior lighting within property boundaries.~~ Allow no more than .01 horizontal lumen footcandles to escape 15 feet beyond the site boundary.	☐			
4. Automatically control exterior lighting dusk to dawn to turn off or lower light levels during inactive periods.	☐			
Exception: See Part 2, Chapter 12, Section 1205.6 for campus lighting requirements for parking facilities and walkways.				
. . .				
WATER EFFICIENCY AND CONSERVATION				
INDOOR WATER USE				
. . .				

DIVISION A5.7
NONRESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST [BSC]

Feature or Measure	Mandatory	Voluntary *CALGREEN* Tier 1	Voluntary *CALGREEN* Tier 2	Notes
5.303.1.3 Excess consumption. Any building within a project or a space within a building that is projected to consume more than 1,000 gal/day.	☐			
. . .				
. . . **A5.303.2.2 ~~Tier 3 –~~ 40% Savings.** A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 40% shall be provided. (Calculate savings by Water Use Worksheets.)		☐	☐	~~**Tier 3**~~ **40%** ☐
. . .				
OUTDOOR WATER USE				
. . .				
A5.304.4 Potable water reduction. Provide water efficient landscape irrigation design that reduces by the use of potable water. **A5.304.1.1 Tier 1** – ~~50% Reduction~~ Reduce the use of potable water to a quantity that does not exceed 60% of ETo times the landscape area. **A5.304.1.2 Tier 2** – ~~60% Reduction~~ Reduce the use of potable water to a quantity that does not exceed 55% of ETo times the landscape area.		☐ ☐	☐	
. . .				
MATERIAL CONSERVATION AND RESOURCE EFFICIENCY				
. . .				
. . . **5.410.2.5 ~~Post construction~~ Ddocumentation and training.** A Systems Manual and Systems Operations Training are required. . . . **5.410.2.6 Commissioning report.** A complete report of commissioning process activities undertaken through the design~~,~~ and construction and reporting recommendations for post-construction phases of the building project shall be completed and provided to the owner.	☐ ☐			
5.410.3 Testing~~,~~ and adjusting ~~and balancing~~. Testing~~,~~ and adjusting ~~and balancing~~ of systems shall be required for buildings less than 10,000 square feet. **5.410.3.2 Systems.** Develop a written plan of procedures for testing~~,~~ and adjusting ~~and balancing~~ systems. Systems to be included for testing~~,~~ and adjusting ~~and balancing~~ shall include at a minimum, as applicable to the project. . . . **5.410.3.3 Procedures.** Perform testing~~,~~ and adjusting ~~and balancing~~ procedures in accordance with industry best practices and applicable national standards on each system. **5.410.3.3.1 HVAC balancing.** In addition to testing and adjusting, ~~B~~before a new space-conditioning system serving a building or space is operated for normal use, the system ~~should~~ shall be balanced in accordance with the procedures defined by national standards listed in 5.410.3.3.1. . . .	☐ ☐ ☐			
ENVIRONMENTAL QUALITY				
. . .				

Feature or Measure	Mandatory	Voluntary *CALGREEN* Tier 1	Voluntary *CALGREEN* Tier 2	Notes
POLLUTANT CONTROL				
. . .				
A5.504.2 IAQ post-construction. Flush out the building per Section A5.504.2 prior to occupancy or if the building is occupied.	☐	☐	☐	
A5.504.2.1 IAQ Testing. A testing alternative may be employed after all interior finishes have been installed, using testing protocols recognized by the United State Environmental Protection Agency (US EPA), and in accordance with A5.504.2.1.2. Retest as required in A5.504.2.1.3.		☐	☐	
A5.504.2.1.1 Maximum levels of contaminants. Allowable levels of contaminant concentrations measured by testing shall not exceed the following:				
1. Carbon Monoxide (CO): 9 parts per million, not to exceed outdoor levels by 2 parts per million;		☐	☐	
2. Formaldehyde: 27 parts per billion;		☐	☐	
3. Particulates (PM10): 50 micrograms per cubic meter;		☐	☐	
4. 4-Phenylcyclohexene (4-PCH): 6.5 micrograms per cubic meter; and		☐	☐	
5. Total Volatile Organic Compounds (TVOC): 300 micrograms per cubic meter.		☐	☐	
. . .				
. . .				
5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with Table 5.504.4.2, unless more stringent local limits apply..	☐			
. . .				
A5.504.4.5.1 Early compliance with formaldehyde limits. Where complying composite wood product is readily available for non-residential occupancies, meet ~~Phase 2~~ requirements before the compliance dates indicated in Table 5.504.4.5 (Tier I), or use composite wood products made with either CARB-approved no-added formaldehyde (NAF) resins or CARB-approved ultra-low emitting formaldehyde (ULEF) resins (Tier II).		☐	☐	
. . .				
5.504.4.6 Resilient flooring systems. For 50% of floor area receiving resilient flooring, install resilient flooring ~~C~~ complying with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List or certified under the FloorScore program of the Resilient Floor Covering Institute.	☐			
Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.	☐			
. . .				
A5.504.4.7.1 Resilient flooring systems, Tier 2. For ~~10~~ 90% of floor area to scheduled to receive resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List or certified under the FloorScore program of the Resilient Floor Covering Institute.		☐	☐	
A5.504.4.8 Thermal Insulation, Tier 1. Comply with Chapter 12-13 in Title 24, Part 12 and with the VOC-emission limits defined in 2009 CHPS criteria and listed on its Low-		☐		

Feature or Measure	Mandatory	Voluntary *CALGREEN* Tier 1	Voluntary *CALGREEN* Tier 2	Notes
emitting Materials List.				
A5.504.4.8.1 Thermal insulation, Tier 2. Install No-Added Formaldehyde thermal insulation in addition to meeting A5.504.4.8.		☐	☐	
A5.504.4.9 Acoustical ceilings and wall panels. Comply with Chapter 8 in Title 24, Part 2 and with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List.		☐	☐	
Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.	☐			
. . .				
A5.504.5.3.1 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a MERV of ~~13~~ 11.		☐	☐	
. . .				
5.504.7 Environmental tobacco smoke (ETS) control. Where outdoor areas are provided for smoking, p ~~P~~rohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows ~~where outdoor areas are provided for smoking,~~; and in buildings, 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.	☐			
. . .				