

**15-DAY EXPRESS TERMS  
FOR  
PROPOSED BUILDING STANDARDS  
OF THE  
DIVISION OF THE STATE ARCHITECT- STRUCTURAL SAFETY (DSA-SS)**

**REGARDING ADOPTION OF AMENDMENTS TO 2010 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. **45-day California amendment:** Amended California language will appear with new words underlined, and omitted language will appear in ~~strikeout~~.
2. **15-day Amended, adopted, or repealed language:** Amended, adopted, or repealed language will appear in double underline and ~~double-strikeout~~.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 in the 45-day express terms.

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**CHAPTER 5  
DIVISION 5.1 PLANNING AND DESIGN**

**SECTION 5.106  
SITE DEVELOPMENT**

**A5.106.8 Light pollution reduction.** Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and
2. Backlight, Uplight and Glare (BUG) ratings as defined in IESNA TM-15-~~07~~ 11; and
3. Allowable BUG ratings not exceeding those shown in Table ~~A5.106.8~~, or

Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

**Exceptions:**

1. Luminaires that qualify as exceptions to Section 147 of the California Energy Code
2. Emergency lighting

**Note:** See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.

**5.106.8.1 Effective date.** Newly constructed nonresidential projects with outdoor lighting for which an application for a building permits is submitted on or after July 1, 2012 shall comply with this section.

**TABLE A5.106.8**  
Maximum Allowable Backlight, Uplight and Glare (BUG) Ratings<sup>1,2</sup>

Allowable Rating	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
<u>Maximum Allowable Backlight Rating<sup>3</sup></u>				
<u>Luminaire greater than 2 mounting heights (MH) from property line</u>	<del>B3</del> <u>No Limit</u>	<del>B4</del> <u>No Limit</u>	<del>B5</del> <u>No Limit</u>	<del>B5</del> <u>No Limit</u>
<u>Luminaire back hemisphere is 1 – 2 mounting heights MH from property line and oriented with B towards the property line</u>	B2	B3	B4	B4
<u>Luminaire back hemisphere is 0.5 – 1 MH mounting height from property line and oriented</u>	B1	B2	B3	B3

with B towards the property line				
Luminaire back hemisphere is Less than 0.5 MH mounting height from property line and oriented with B towards the property line	B0	B0	B1	B2
Less than 0.5 mounting height from property line adjacent to a street and oriented with B towards the property line <sup>2</sup>	<del>B0</del>	<del>B4</del>	<del>B2</del>	<del>B3</del>
Maximum Allowable Uplight Rating	<del>U0</del>	<del>U4</del>	<del>U2</del>	<del>U3</del>
For area lighting <sup>4</sup>	U0	U0	U0	U0
For all other outdoor lighting, including decorative luminaires	U1	U2	U3	U4
Maximum Allowable Glare Rating <sup>2, 5</sup>	<del>G4</del>	<del>G2</del>	<del>G3</del>	<del>G4</del>
Allowed Glare Rating, Building Mounted Luminaires <sup>3</sup>				
Luminaire Greater than 2 MH mounting height to any from property line	G1	G2	G3	G4
Luminaire front hemisphere is 1 – 2 MH mounting height to any from property line	G0	G1	G1	G2
Luminaire front hemisphere is 0.5 – 1 mounting height to any from property line	G0	G0	G1	G1
Luminaire back hemisphere is Less than 0.5 mounting height to any from property line	G0	G0	G0	G1

<sup>1</sup> 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.

<sup>2</sup> ~~For purposes of compliance with this section, the property line may be considered to be the centerline of a public roadway or transit line. For properties adjacent to public walkways, bikeways, plazas and parking lots, the property line may be considered to be five feet beyond the site boundary. 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.~~

<sup>3</sup> ~~Building-mounted luminaires that cannot be mounted with their backlight to the property line shall meet the Allowed Glare rating for all luminaires. Light from a building-mounted luminaire shall not exceed the Backlight rating in the direction of the property line. 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.~~

<sup>4</sup> ~~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".~~

<sup>5</sup> ~~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.~~

**Recommendation:**

Based on criterion 7, DSA proposes to reference the latest 2011 edition of the Illuminating Engineers Society of North America (IESNA) allowable backlight, uplight and glare (BUG) ratings for outdoor lighting and add a paragraph concerning the effective date of mandatory compliance.

**Rationale:**

The modifications are based on CBSC emergency approval of these provisions based on the 2007 IESNA ratings. The 2010 code provisions were the subject of a petition, which cited public safety concerns and requested alignment with IESNA standards and the provisions moved from mandatory to the voluntary appendix on an emergency basis. The modifications represent agreement with the petitioner to update the standards when adopted by IESNA and to delay mandatory compliance until the effective date of the July 1, 2012 code supplement.

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**CHAPTER 5  
DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**

**SECTION 5.408  
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING**

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**5.408.2.1 Construction waste management plan.** Recycle and/or salvage for reuse a minimum of 50% of the non-

hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

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**5.408.1.2 Waste management company.** ~~Utilize a waste management company, approved by the enforcing agency,~~ that can provide verifiable documentation that the percentage of construction waste material diverted from the landfill complies with this section.

**Recommendation:**

Based on criterion 4, DSA proposes to delete the requirement that a waste management company selected by the contractor to haul and recycle construction waste be approved by the enforcing agency.

**Rationale:**

Based on comment from the commercial building industry, this change is made to reflect the variety of local communities and their relationships with waste haulers. Deleting the requirement for upfront approval by the enforcing agency increases flexibility of choice by the contractor, maintains the requirement for documentation of compliance with the 50% minimum diversion rate, and mitigates the burden on enforcing agencies for enforcement of CALGreen.

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**CHAPTER 5  
DIVISION 5.5 ENVIRONMENTAL QUALITY**

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**SECTION 5.502  
DEFINITIONS**

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**ARTERIAL HIGHWAY.** A general term denoting a highway primarily for through traffic usually on a continuous route.

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**EXPRESSWAY.** An arterial highway for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

**FREEWAY.** A divided arterial highway with full control of access and with grade separations at intersections.

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**Recommendation:**

Based on criterion 6, DSA proposes to add a definition for “arterial highway”.

**Rationale:**

The term is used in the definitions of “expressway” and “freeway” and should be clarified for the code user.

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**SECTION 504  
POLLUTANT CONTROL**

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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 Product Registry)~~ High Performance Products Database; products compliant with CHPS criteria certified under the Greenguard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.) ~~---~~

~~**Note:** Products compliant with CHPS criteria certified under the Greenguard Children & Schools program may also be used.~~

**Recommendation:**

Based on criterion 1, DSA proposes to delete note regarding Greenguard products.

**Rationale:**

The note is redundant, since Greenguard is added specifically as an approved product in the regulation.

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**CHAPTER 8  
COMPLIANCE FORMS AND WORKSHEETS**

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**WORKSHEET (WS-2)  
20 PERCENT REDUCTION WATER USE CALCULATION TABLE**

FIXTURE TYPE	FLOW-RATE (gpm) <sup>2,1</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3, 4, 2, 3</sup>		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X	<u>3</u>	=	
...									
Kitchen faucets	<del>2.2</del>	X	4 min.		1		<u>3</u>		
...									
Gravity tank type Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X		=	
HET <sup>5,4</sup> High Efficiency Toilet	1.28	X	1 flush	X	1 male <sup>4,5</sup> 3 female	X		=	
Flushometer Tank Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X		=	
Flushometer Valve Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X		=	
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X		=	
...									
Proposed water use								=	
_____ (BWU from WS-1) X .80 = _____ Allowable water use									

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**WORKSHEET (WS-3)  
30-35 OR 40 PERCENT REDUCTION WATER USE CALCULATION TABLE**

FIXTURE TYPE	FLOW-RATE (gpm) <sup>2,1</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3, 4, 2, 3</sup>		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X	<u>3</u>	=	
...									
Kitchen faucets	<del>2.2</del>	X	4 min.		1		<u>3</u>		
...									
Gravity tank type Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X			
HET <sup>5,4</sup> High Efficiency Toilet	1.28	X	1 flush	X	1 male <sup>4,5</sup> 3 female	X			
Flushometer Tank Water Closets		X	1 flush	X	1 male <sup>4,5</sup> 3 female	X			

Flushometer Valve Water Closets		X	1 flush	X	1 male <sup>1/2</sup> 3 female	X			
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male <sup>1/2</sup> 3 female	X			
...									
Proposed water use								=	
30% Reduction _____		(BWU from WS-1) X .70 = _____		Allowable water use					
35% Reduction _____		(BWU from WS-1) X .65 = _____		Allowable water use					
40% Reduction _____		(BWU from WS-1) X .60 = _____		Allowable water use					

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**Recommendation:**

Based on criterion 8, DSA proposes to remove the flow rate for kitchen faucets from water use worksheets WS-2 and WS-3.

**Rationale:**

Flow rate column is to be filled in by user from product specifications from plumbing fixtures.

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**APPENDIX A5  
NONRESIDENTIAL VOLUNTARY MEASURES**

**DIVISION A5.1 PLANNING AND DESIGN**

**SECTION A5.106  
SITE DEVELOPMENT**

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**A5.106.9 Building orientation.** Locate and orient the building as follows:

1. When site and location permit, orient the long axis of the building with the long sides facing within 30° of north and south east and west, with a maximum allowable deviation of 30°.

**Recommendation:**

Based on criterion 6, DSA proposes to clarify language concerning direction and allowable deviation for optimum building orientation.

**Rationale:**

According to comment from the commercial building industry, the original change to “within 30° of north and south”, intended to coordinate with HCD language, was misleading. It could have meant that the building could be oriented on an angle from east/west as much as 60°.

**A5.106.11 Heat island effect.** Reduce non-roof heat islands by Section A5.106.11.1 and roof heat islands by A5.106.11.2.

**A5.106.11.1 Hardscape alternatives.** Use one or a combination of strategies 1 through 3 for 50% of site hardscape or put 50% of parking underground.

1. Provide shade (mature within 5 years of occupancy).
2. Use light colored/~~high albedo reflective~~ materials with an initial solar reflectance value of at least .30 as determined in accordance with American Society for Testing and Materials (ASTM) Standards E1918 or C1549.
3. Use open-grid pavement system or pervious or permeable pavement system.

**Recommendation:**

Based on criterion 6, DSA proposes to delete the alternate descriptor “reflective” of the materials in Item 2.

**Rationale:**

Based on comment from the commercial building industry, this descriptor should be removed because it is not defined and because compliant materials must meet the ASTM standards listed in the item.

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APPENDIX A5  
DIVISION A5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

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SECTION A5.405  
MATERIAL SOURCES

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SECTION A5.405  
MATERIAL SOURCES

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~~A5.405.4 Recycled content, [BSC, DSA-SS] Comply with the requirements for recycled content in Section A5.405.4.1. Tier 1 [BSC] Recycled content [DSA-SS] Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) for a minimum of 10% of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.~~

~~A5.405.4.1 Recycled content, Tier 2 [BSC] Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) for a minimum of 15% of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.~~

~~A5.405.4.2 Determination of recycled content value (RCV<sub>M</sub>). [BSC, DSA-SS] The recycled content of a material assembly shall be determined by weight the fractional value of the weight is then multiplied by the total estimated cost of the material assembly~~

~~Note: Sources and recycled content of some recycled materials can be found at CalRecycle.~~

~~A5.405.4.1 Recycled content. Use materials, equivalent in performance to virgin materials with a total (combined) recycled content value (RCV) of:~~

~~**Tier 1.** The RCV shall not be less than 10 percent of the total material cost of the project.  
Required Total RCV (dollars) = Total Material Cost (dollars) x 10 percent (Equation A5.4-1)~~

~~**Tier 2.** The RCV shall not be less than 15 percent of the total material cost of the project.  
Required Total RCV (dollars) = Total Material Cost (dollars) x 15 percent (Equation A5.4-2)~~

~~For the purposes of this section materials used as components of the structural frame shall not be used to calculate recycled content. The structural frame includes the load bearing structural elements such as wall studs, plates, sills, columns, beams, girders, joists, rafters, and trusses.~~

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~~**A5.405.4.1-4 Total material cost.** Total material cost is the total estimated or actual cost of materials and assembly products used in the project. The required total recycled content value for the project (in dollars) shall be determined by Equation A5.4-1 or Equation A5.4-2.~~

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~~**2. Detailed method.** To obtain the total cost of the project Add the estimated and/or actual costs of materials used for the project including the structure (steel, concrete, wood or masonry); the enclosure (roof, windows, doors and exterior walls); the interior walls, ceilings and finishes (gypsum board, ceiling tiles, etc.). The total estimated and/or actual costs shall not include fees, labor and installation costs, overhead, appliances, equipment, furniture or furnishings.~~

~~**A4.405.4.4.2 Determination of total recycled content value (RCV).** Total RCV may be determined either by dollars or percentage as noted below.~~

...

~~**A5.405.4.4.3 Determination of recycled content value of materials (RCV<sub>M</sub>).** The recycled content value of each material (RCV<sub>M</sub>) is calculated by multiplying the cost of material, as defined by the recycled content. See Equations A5.4-6 and A5.4-7.~~

$$RCV_M(\text{dollars}) = \text{Material cost (dollars)} \times RC_M(\text{percent}) \quad \text{(Equation A5. 4-6)}$$

$$RC_M(\text{percent}) = \text{Post-consumer content percentage} + (\frac{1}{2}) \text{ Pre-consumer content percentage}$$

(Equation A5. 4-7)

**Notes:**

- 1. If the post-consumer and pre-consumer recycled content is provided in pounds, Equation A5.4-7 may be used, but the final result (in pounds) must be multiplied by 100 to show  $RC_M$  as a percentage.
- ~~2. If the manufacturer reports total recycled content of a material, in lieu of separately reporting pre-consumer and post-consumer values, the reported value shall be inserted directly into Equation A5.4-6.~~
- 2. If the manufacturer does not separately identify the pre-consumer and post-consumer recycled content of a material but reports it as a total single percentage, one half of the total shall be considered pre-consumer and one half shall be considered post-consumer recycled material.

**A5.405.4.4. Determination of recycled content value of assemblies – ( $RC_A$ ).**

Recycled content value of assemblies is calculated by multiplying the total cost of assembly by the total recycled content of the assembly ( $RC_A$ ), and shall be determined by Equation A5.4-8.

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~~**NOTE:** If the manufacturer reports total recycled content of a material, in lieu of separately reporting pre-consumer and post-consumer values, the reported value shall be inserted directly into Equation A5.4-10 and Equation A5.4-12, respectively. If the manufacturer does not separately identify the pre-consumer and post-consumer recycled content of a material but reports it as a total single percentage, one half of the total shall be considered pre-consumer and one half shall be considered post-consumer recycled material.~~

**Recommendation:**

Based comments from the wood industry and on criterion 6, in coordination with CBSC and the Department of Housing and Community Development, DSA proposes

- a. To add language concerning limiting recycled materials to non-load-bearing building products and
- b. To revise language concerning recycled materials with a reported single percentage of recycled content and no breakdown of post- or pre-consumer content.
- c. Editorially to renumber and remove duplicative or extraneous language.

**Rationale:**

Based on commentary from representatives of the wood industry, including structural load-bearing building materials could create a preference for structural materials other than wood that may have recycled content. Wood is a renewable material but typically does not have recycled content.

The other changes proposed in this section are to provide clarity for code user that, if a manufacturer reports recycled content in a single percentage, say 20%, the default is to divide that percentage equally into post-consumer and pre-consumer recycled content, and calculate the total recycled content based on their weighted values. These changes are non-regulatory notes that provide guidance.

~~**A5.405.4.1.5. Alternate method for concrete.** When Supplementary Cementitious Materials (SCMs), such as fly ash or ground blast furnace slag cement, are used in concrete, an alternate method of calculating and reporting recycled content in concrete products shall be permitted. When determining the recycled content value, the percent recycled content shall be multiplied by the cost of the cementitious materials only, not the total cost of the concrete.~~

**Recommendation:**

DSA recommends deleting this alternate method for concrete in the calculations for recycled content as shown in the 45 day language.

**Rationale:**

DSA did not intend to include this provision in its 45-day changes to the code, but inadvertently included it by mistake.

**SECTION A5.410  
BUILDING MAINTENANCE AND OPERATION**

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**A5.410.3 Commissioning. [DSA-SS]** For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel trained with experience on projects of comparable size and complexity. ~~certified in commissioning by a nationally recognized organization.~~ Commissioning requirements shall include as a minimum:

1. Owner's or Owner representative's project requirements.
2. Basis of design
3. Commissioning measures shown in the construction documents
4. Commissioning plan
5. Functional performance testing
6. ~~Post-Construction~~ Documentation & training
7. Commissioning report

**Exceptions:**

1. Dry storage warehouses of any size
2. Areas under 10,000 square feet used for offices or other conditioned accessory spaces within dry storage warehouses
3. Tenant improvements under 10,000 square feet as described in Section 303.1.1.

All building operating systems ~~and components~~ covered by Title 24, Part 6, as well as process equipment and controls, and renewable energy systems shall be included in the scope of the Commissioning Requirements.

**Recommendation:**

Based on criterion 6, CBSC proposes to delete "and components" from the last sentence.

**Rationale:**

Based on public comment, the deletion of components in this scoping language provides clarity to the code user by removing certain building components, like those making up the building envelope and fenestration, from requirements of commissioning. Those components are subject to the provisions of the California Energy Code, but, unless they have moving parts, controls, connections or other features of a working system, they do not need to be included for the purposes of commissioning.

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**A5.410.5 Testing and adjusting. [DSA-SS]** Testing and adjusting of systems shall be required for buildings less than 10,000 square feet. ...

**A5.410.5.3 Procedures.** Perform testing and adjusting procedures in accordance ~~with industry best practices with manufacturer's specifications and applicable national standards on each system as determined by the building official enforcing agency.~~

**Recommendation:**

Based on criteria 4 and 7, DSA is including references to manufacturer's specifications and applicable national standards, and to delete the determination of them by the enforcing agency.

**Rationale:**

The modifications provide clarity to the code user by referring to reasonable testing standards for the testing and adjusting procedures by the builder, and eliminate the duty of enforcement personnel to determine what those are, which is beyond the scope of their responsibilities.

## SECTION A5.504 ENVIRONMENTAL QUALITY

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**A5.504.4.7 Resilient flooring systems, Tier 1 [BSC] Resilient flooring systems. [DSA-SS]** For 80% 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 Product Registry) High Performance Products Database; products compliant with CHPS criteria certified under the GreenGuard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.)~~

**A5.504.4.7.1 Resilient flooring systems, Tier 2.** For 90% 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 Product Registry) High Performance Products Database; products compliant with CHPS criteria certified under the GreenGuard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.)~~

~~**Note:** Products compliant with CHPS criteria certified under the Greenguard Children & Schools program may also be used.~~

**Recommendation:**

Based on criterion 1, DSA proposes to delete note regarding Greenguard products.

**Rationale:**

The note is redundant, since Greenguard is added specifically as an approved product in the regulation. . . .