

Proposed Changes to the National Green Building Standard for Remodeling

[NOTE: Language is not underlined for clarity]

Definitions

The following new definitions are added:

Major Remodel. A renovation and/or addition project whose scope is such that it is broader than a single room or area of the building.

Minor Remodel. A limited renovation or addition involving only a kitchen renovation, a bathroom renovation, a basement renovation, or a one room addition or a one room addition plus one bathroom or kitchen.

We seek to remove the definition for Alteration

We seek to change :Building, Existing” to “Existing Building”

We seek to change “Renovation” to “Remodeling”

The current section 305 is deleted and replaced with new section 305

305 Green Remodeling

305.1 Applicability. This section shall apply to any existing building where improvements are made via renovation and/or addition to the structure or landscape/hardscape. At least one major structural element of the existing building must remain (e.g. foundation). Complete tear downs must follow the new construction path of section 303 or 304 including all appropriate mandatory requirements. Buildings with additions of greater than 75% of the existing conditioned floor area must comply with section 303 or 304.

305.1.1 Practices

305.1.1 Major Remodels. Remodel projects must initially be evaluated according to section 305.2. Projects that do not qualify for meeting the requirements of 305.2 shall be considered per section 305.3.

305.2.1 Mandatory Practices. The building shall comply with all applicable mandatory practices in Chapter 11[new] regardless of whether the project scope of work addresses the mandatory practice

305.2.2 Consumption for both energy and water consumption shall be estimated for both before and after the remodeling. The occupancy and life style assumed and the method of making the consumption comparison should be the same for both estimates.

- (1) **Energy consumption comparison:** Energy consumption shall be based on the estimated annual energy use due to heating, cooling, and water heating as determined by a third-party energy audit or analysis. The comparison is based on the percentage difference between the HERS index before and the HERS index after the remodeling calculated as follows:

$$(\text{HERS}_{\text{before}} - \text{HERS}_{\text{after}}) / \text{HERS}_{\text{before}} * 100.$$

- (2) **Water consumption:** Water consumption shall be based on the estimated annual use as determined by audit or analysis. The comparison is based on the percentage difference between the consumption before and the after the remodeling calculated as follows:

$$\frac{\text{Usage before} - \text{Usage after}}{\text{Usage before}} * 100$$

305.2.3 Consumption in both categories of Section 305.3(1) and (2) shall be reduced to achieve the desired performance level of Table 305.4.

Table 305.2.3 Threshold Ratings for Green Remodels				
Green Remodel Practice	Performance Level			
	BRONZE	SILVER	GOLD	EMERALD
Reduction in energy and water consumption in accordance with Section 305.2.2	20%	34%	43%	50%
Reduction water consumption in accordance with Section 305.2.2	20%	34%	43%	50%

305.2.4 Green Practices

Additional green practices shall be selected from sections 11.5, 11.6, and 11.9 to achieve the thresholds of Minimum Point Percentage listed in table 305.2.4 based on practices applicable to the scope of the project. The point percentage is calculated as follows:

$$\frac{\text{(Points from practices implemented)}}{\text{(Total Potential Applicable Points from the section)}} * 100.$$

Applicable points are points available by implementing practices that are within the scope of the project. Practices that would require effort outside of the scope of the project are not included as Applicable Points. For example, if carpet is not being replaced as part of the project, the points for 11.901.5 are not Applicable Points. When a practice has multiple sub-practices the points for all the sub-practices are considered Applicable Points even if the scope of the project calls for only doing one of the sub-practices. For example, practice 11.503.1 concerning conservation of natural resources has 6 sub-practices; if any of the 6 sub-practices are included in the scope of the project work, then the applicable points for that practice would be 24 points in most situations. If the lot did not have any trees then the points related to sub-practices (4) & (5) would not be appropriate and then the Applicable Points would be 18 points. Points are not considered as Applicable Points simply because the existing building (prior to remodeling) exhibited the feature(s) required by the practice. Points are only available and Applicable if the points are due to a practice that falls within the scope of the project. Features of the existing building that address mandatory practices contribute to the building meet the mandatory practice.

Table 305.2.4 Threshold Ratings for Green Remodels				
Green Remodel Practice	Minimum Point Percentage			
	BRONZE	SILVER	GOLD	EMERALD
Section 11.5	TBD	TBD	TBD	TBD
Section 11.6	TBD	TBD	TBD	TBD

Section 11.9	TBD	TBD	TBD	TBD
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When no practices from either section 11.5, 11.6, or 11.9 are applicable, those thresholds are not applicable to achieving a rating level.

305.2.5 The rating level for major renovations is determined by the lowest rating achieved by the project achieved in table 305.2.3 or table 305.2.4.

305.3 Minor Remodels

Minor remodeling projects are projects that are too small to achieve at least the Bronze level in section 305.2. Minor remodeling projects include kitchens, bathrooms, single story single room additions (less than 400 square feet), and basements. Green minor remodeling projects are not recognized as bronze, silver, gold, or emerald. Green minor remodeling projects are recognized as compliant when the project meets the applicable criteria in Chapter 12 for that specific type of project. Compliant projects must meet all the mandatory practices and at least 50% of the optional practices for that project type as specified in Chapter 12. If the small addition includes a kitchen and/or bathroom, then that project must meet all the applicable project type criteria.

Chapter 11

<p>11.1 Intent This chapter sets the mandatory green practices for any remodeling project done pursuant to this standard. A remodeling project can consist of renovating an existing building, constructing an addition to an existing building, or both.</p>	
<p>11.2 Some of the practices in sections 11.5, 11.6, 11.7, 11.8, 11.9, 11.10 are classified as applying to New Work or Re-Work. These practices have slightly different requirements depending on if the construction is new or if it is part of renovating existing structure. The practice applies to New Work when the practice is in relation to creating and finishing new structure. The practice applies to Re-Work when the practice is in relation to renovating existing structure and finishes. For example an addition would be all New Work. Installing new partition walls to divide an existing room into two rooms would be New Work. Repairing and painting existing drywall would be Re-Work as would replacing carpet and finish flooring. Practices that are not identified as New Work or Re-work apply equally to any work done on the project or to the entire building when applicable.</p>	
<p>11.3 Intentionally left blank</p>	
<p>11.4 Intentionally left blank</p>	
<p>11.502.1 A knowledgeable team is established and team member roles are identified with respect to green lot design, preparation, and <u>re</u>-development. The project's green goals and objectives are written into a mission statement</p>	4
<p>1.503.0 Intent. The lot <u>changes</u> are designed to avoid detrimental environmental impacts first, minimize any unavoidable impacts, and mitigate for those impacts that do occur. The project is designed to minimize environmental impacts and to protect, restore, and enhance the natural features that may be disturbed during remodeling</p> <p style="text-align: center;">(To be awarded points allocated for design the intent of the design is implemented.)</p>	
<p>11.503.1 Natural resources. Natural resources are conserved by one or more of the following:</p>	
<p>(1) A natural resources inventory is completed under the direction of a qualified professional.</p>	5
<p>(2) A plan is implemented to conserve the elements identified by the resource inventory as high priority resources.</p>	6
<p>(3) Items listed for protection in the resource inventory plan are protected under the direction of a qualified professional.</p>	4
<p>(4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.</p>	4
<p>(5) All tree pruning on-site is conducted by a Certified Arborist.</p>	2
<p>(6) Ongoing maintenance of vegetation during construction is in accordance with TCIA A300.</p>	3
<p>11.503.2 Slope disturbance. Slope disturbance is minimized by one or more of the following. (Points awarded only if there are developable steep slopes on the lot.)</p>	
<p>(1) All or a percentage of <u>buildingdevelopment</u> on steep slopes is avoided.</p>	(1)
<p>(a) less than 25 percent</p>	2

(b) 25 percent to 75 percent	3
(c) greater than 75 percent	4
(2) Hydrological/soil stability study for steep slopes is completed and used to guide the design of all buildings on the site.	(2)
(3) All or a percentage of <u>paved areas</u> roads and parking are aligned with natural topography to reduce cut and fill.	(3)
(a) less than 25 percent	1
(b) 25 percent to 75 percent	3
(c) greater than 75 percent	5
(4) Long-term erosion effects are reduced through the design and implementation of terracing, retaining walls, landscaping, and restabilization techniques.	(4)
(5) Underground parking on the lot uses the natural slope for parking entrances.	4
11.503.3 Soil disturbance and erosion. Soil disturbance and erosion are minimized by one or more of the following: (also see Section 504.3)	
(1) Construction activities are scheduled to minimize length of time that soils are exposed.	5
(2) <u>Newly installed</u> Utilities are installed using one or more alternative means:	5
(a) tunneling instead of trenching	
(b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment..	
(c) shared utility trenches or easements	
(d) placement of utilities under driveways, and hardscape surfaces instead of yards.	
(3) Limits of clearing and grading are demarcated on the lot plan.	5
11.503.4 Storm water management. Storm water is managed using one or more of the following low impact development techniques:	
(1) Natural water and drainage features are preserved and used.	6
(2) A storm water management plan is developed and implemented that minimizes concentrated flows and simulates flows found in natural hydrology (e.g., vegetative swales, french drains, wetlands, drywells, and rain gardens).	6
(3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios.	
(a) less than 25 percent	1
(b) 25 percent to 75 percent	3
(c) greater than 75 percent	5
11.503.5 Landscape plan. <u>If the project includes landscaping to more than 50% of the available area then a</u> landscape plan for the lot is developed to limit water and energy use while preserving or enhancing the natural environment. <u>Otherwise this section is not applicable.</u>	
(1) A plan is formulated to restore or enhance natural vegetation that is cleared during construction. Landscaping is phased to coincide with achievement of final grades to ensure denuded areas are quickly vegetated.	5
(2) Turf grass species, other vegetation, and trees are selected that are native or regionally appropriate for local growing conditions.	4
(3) A percentage or all turf areas are limited.	

(a) 0 percent	4
(b) greater than 0 percent to less than 25 percent	3
(c) 25 percent to less than 50 percent	2
(d) 50 percent to 75 percent	1
(4) Plants with similar watering needs are grouped (hydrozoning).	5
(5) Species and locations for tree planting are identified that will provide summer shading of streets, parking areas, and buildings to moderate temperatures.	5
Deleted wind break	
(7) On-site tree trimmings or stump grinding of regionally appropriate trees are used to provide protective mulch during construction, and cleared trees are recycled as sawn lumber or pulp wood.	3
(8) An integrated pest management plan is developed to minimize chemical use in pesticides and fertilizers.	4
Delete wildlife habitat	4
11.503.8 Environmentally sensitive areas. Environmentally sensitive areas.	
(1) Environmentally sensitive areas are avoided or restored if disturbed <u>or restored if disturbed</u>	3
Compromised environmentally sensitive areas are mitigated or restored.	3
11.504.0 Intent. Environmental impact during remodeling construction is avoided to the extent possible; impacts that do occur are minimized, and any significant impacts are mitigated. <u>If no lot or landscape work is in the scope of the project then this section is not applicable.</u>	
11.504.1 On-site supervision and coordination. On-site supervision and coordination is provided during clearing, grading, trenching, paving, and installation of utilities on the lot to ensure that specified green development practices are implemented. (also see Section 503.3)	4
11.504.2 Trees and vegetation. Designated trees and vegetation are preserved by one or more of the following:	
(1) Fencing or equivalent is installed to protect trees and other vegetation.	3
(2) Trenching, significant changes in grade, and compaction of soil and critical root zones in “tree save” areas are avoided.	4
(3) Damage to designated existing trees and vegetation is mitigated during construction through pruning, root pruning, fertilizing, and watering.	4
11.504.3 Soil disturbance and erosion. On-site soil disturbance and erosion are minimized by one or more of the following: (also see Section 503.3)	
(1) Limits of clearing and grading are staked out.	5
(2) “No disturbance” zones are created using fencing or flagging to protect vegetation and sensitive areas from construction activity.	5
(3) Sediment and erosion controls are installed and maintained in accordance with the storm	5

water pollution prevention plan, where required.	
(4) Topsoil is stockpiled and stabilized for later use to establish landscape plantings.	5
(5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).	3
(6) Disturbed areas that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in the approved storm water pollution prevention plan, where required.	3
(7) Soil is improved with organic amendments and mulch.	3
(8) <u>Newly installed</u> Utilities are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).	5

11.505.0 Intent. Innovative lot design, preparation and development practices are used to enhance environmental performance. Waivers or variances from local development zoning regulations are obtained, and innovative zoning practices are used to implement such practices achieve such performance. <u>If the scope of the project does not affect 50% or more of the available lot then this practice does not apply.</u>	
11.505.1 Driveways and parking areas. Driveways or parking areas are shared. Waivers or variances from local development regulations are obtained to implement such practices, if required. In a multi-unit project, parking capacity is not to exceed the local minimum requirements.	4
11.505.2 Heat island mitigation. Heat island mitigation. Any combination of the following strategies are provided on the lot for a minimum of 50 percent of the horizontal surface area of the hardscape: (1) Shading of hardscaping: Shade is provided from existing or new vegetation (within five years) or from trellises. Shade of hardscaping is to be measured on the summer solstice at noon. (2) Light-colored hardscaping: Horizontal hardscaping materials are installed with a solar reflectance index of 29 or greater.	4

11.601.0 Intent. Design and construction practices that minimize the environmental impact of the building materials are incorporated, environmentally efficient building systems and materials are incorporated, and waste generated during construction is reduced.	
11.601.1 Conditioned floor area. Conditioned floor area <u>after the remodeling</u> , as defined by ICC IRC and calculated in accordance with NAHBRC Z765, is limited. Dwelling unit size is to be calculated in accordance with NAHBRC Z765. Only the conditioned floor area for stories above grade plane is to be included in the calculation.	
(1) less than or equal to 1,000 square feet (93 m ²)	15
(2) less than or equal to 1,500 square feet (139 m ²)	12
(3) less than or equal to 2,000 square feet (186 m ²)	9
(4) less than or equal to 2,500 square feet (232 m ²)	6
(5) greater than 4,000 square feet (372 m²) (For every 100 square feet (9.29 m²) over 4,000 square feet (372 m²), one point is to be added in Table 303, Category 7 for each performance level.)	Mandatory

Multi-Unit Building Note: For a multi-unit building, use a weighted average of the individual unit sizes in qualifying for available points.		
11.601.2 New Work - Material usage. Building-code-compliant structural systems or advanced framing techniques are implemented that optimize material usage. (Points awarded for each system or framing technique implemented.)		3 9 Points Max
11.601.3 New Work - Building dimensions and layouts. Building dimensions and layouts layouts of additions are designed to reduce material cuts and waste. This practice is used for a minimum of 80 percent of the following areas:		
(1) floor area		3
(2) wall area		3
(3) roof area		3
(4) cladding or siding area		3
(5) Window/door and trim areas		1
11.601.4 New Work - Framing and structural plans. Detailed framing or structural plans, material quantity lists, and on-site cut lists for framing, structural materials, and sheathing materials are provided.		4
11.601.5 New Work - Prefabricated components. Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent for the following system or building:		
(1) floor system		4
(2) wall system		4
(3) roof system		4
(4) modular construction for the entire building located above grade		13
11.601.6 New Work - Stacked stories. New Stories above grade are stacked, such as in 1½-story, 2-story, or greater structures. The area of the upper story is a minimum of 50 percent of the area of the story below, based on areas with a minimum ceiling height of 7 feet (2134 mm).		8 Points Max
(1) first new stacked story		4
(2) for each additional new stacked story		2
11.601.7 Site applied finishing materials. Building materials or assemblies listed below and that do not require additional site applied material for finishing are incorporated in the building.		12 Points Max
(1) 90 percent or more of the newly installed building materials or assemblies listed below: (Points awarded for each type (a-e) of material or assembly.)		5
(2) 50 percent to less than 90 percent of the newly installed building material or assembly listed below: (Points awarded for each type (a-e) of material or assembly.)		2
(a) pigmented, stamped, decorative, or final finish concrete or masonry (b) trim not requiring paint or stain (c) window, skylight, and door assemblies not requiring paint or stain on exterior or interior surfaces (d) Wall coverings or systems not requiring paint or stain or other type of finishing application		

11.601.8 New Work - Foundations. Foundations, such as frost-protected shallow foundations, pier and pad foundations, post foundations and other similar foundation types, are designed and constructed.	3

602

ENHANCED DURABILITY AND REDUCED MAINTENANCE

11.602.0 Intent. Design and construction practices are implemented that enhance the durability of materials and reduce in-service maintenance.																
11.602.1 New Work - Exterior doors. Newly constructed e Entries into the conditioned space from the outdoors, inclusive of side lights, are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. A projection factor of 0.375 minimum is provided. Eastern and western facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1), have a projection factor of 1.0 minimum, unless otherwise protected from direct solar radiation by other means (e.g., screen wall, vegetation).	5 Points Max															
<ul style="list-style-type: none"> (a) installing a porch roof or awning (b) extending the roof overhang (c) recessing the exterior door 																
(1) main entrance door	3															
(2) additional covered door assembly	1															
11.602.2 New Work - Roof overhangs. Roof overhangs, based on inches rainfall in Table 602.2, are provided over a minimum of 90 percent of exterior walls to protect the building envelope.	4															
<p>Table 602.2 Minimum Roof Overhang for One- & Two-Story Buildings</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Inches Rainfall ⁽¹⁾</th> <th>Eave Overhang (Inches)</th> <th>Rake Overhang (Inches)</th> </tr> </thead> <tbody> <tr> <td>Less than 20</td> <td style="text-align: center;">12</td> <td style="text-align: center;">12</td> </tr> <tr> <td>21 to 40</td> <td style="text-align: center;">12</td> <td style="text-align: center;">12</td> </tr> <tr> <td>41 to 70</td> <td style="text-align: center;">18</td> <td style="text-align: center;">12</td> </tr> <tr> <td>More than 70</td> <td style="text-align: center;">24</td> <td style="text-align: center;">12</td> </tr> </tbody> </table> <p>(1) Average annual inches of rainfall are in accordance with Figure 6(2) For SI: 1 foot = 304.8 mm</p>		Inches Rainfall ⁽¹⁾	Eave Overhang (Inches)	Rake Overhang (Inches)	Less than 20	12	12	21 to 40	12	12	41 to 70	18	12	More than 70	24	12
Inches Rainfall ⁽¹⁾	Eave Overhang (Inches)	Rake Overhang (Inches)														
Less than 20	12	12														
21 to 40	12	12														
41 to 70	18	12														
More than 70	24	12														
11.602.3 Foundation drainage.																
11.602.3.1a New Work - Where required by the ICC IRC or IBC for habitable and usable spaces below grade, exterior drainage system compliant with the IRC or IBC is installed.	Mandatory															
11.602.3.1b Re-Work - Habitable or usable existing space below grade has exterior drain tile installed where required by the ICC IRC or IBC if there is evidence of moisture issues in the space.	Mandatory															
11.602.3.2 New Work and Re-Work - Interior and exterior foundation perimeter drains are installed and sloped to discharge to daylight, dry well, or sump pit with sump pump.	4															
11.602.4 Drip edge. Drip edge is installed at eaves and gable roof edges.	3															

<p>11.602.5 New Work - Roof water discharge. A gutter and downspout system or splash blocks and effective grading are provided to carry water a minimum of 5 feet (1524 mm) away from perimeter foundation walls.</p>	<p>4</p>
<p>11.602.6 Finished grade. Finish grade at all sides of building is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the building at a minimum slope of 5 percent and the water is directed to drains or swales to ensure drainage away from the structure.</p>	<p>Mandatory</p>
<p>11.602.7 New Work -Termite barrier. Continuous physical foundation termite barrier is installed in geographical areas that have subterranean termite infestation potential determined in accordance with Figure 6(3).</p>	<p>4</p>
<p>11.602.8 New Work - Termite-resistant materials. Termite-resistant materials are used as follows:</p>	
<p>(1) In areas of slight to moderate termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, windows, exterior decks, and exterior claddings within the first 2 feet (610 mm) above the top of the foundation.</p>	<p>2</p>
<p>(2) In areas of moderate to heavy termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, windows, exterior decks, and exterior claddings within the first 3 feet (914 mm) above the top of the foundation.</p>	<p>4</p>
<p>(3) In areas of very heavy termite infestation probability (as defined by Figure 6(3)) for the foundation, all structural walls, floors, concealed roof spaces not accessible for inspection, windows, exterior decks, and exterior claddings.</p>	<p>6</p>
<p>11.602.9 Water-resistive barrier. Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind <u>all newly installed</u> exterior veneer and/or siding.</p>	<p>Mandatory</p>
<p>11.602.10a New Work - Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves of pitched roofs and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.</p>	<p>Mandatory</p>
<p>11.602.10b Re- Work – Ice Barrier. <i>When the existing building</i> has a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the building.</p>	<p>Mandatory</p>
<p>11.602.11 New Work - Foundation waterproofing. Enhanced foundation waterproofing is installed:</p> <p>(1) rubberized coating, or (2) drainage mat</p>	<p>4</p>
<p>11.602.12 New Work - Flashing. Flashing details are shown on the plans and flashing is installed at all of the following locations, as applicable:</p> <p>(1) around exterior fenestrations, skylights and doors (2) roof valleys</p>	<p>6</p>

(3) deck/balcony to building intersections (4) at roof-to-wall intersection and at roof-to-chimney intersections (5) a drip cap is provided above windows and doors that are not flashed or protected by covering in accordance with Section 602.1	
11.602.13 Roof surfaces. A minimum of 90 percent of roof surfaces are constructed of one or both of the following:	3
(1) products that are in accordance with the ENERGY STAR® cool roof certification or equivalent (2) a green (landscaped) roof system	
11.602.14 Recycling. Recycling <u>by the occupants</u> is facilitated by one or more of the following methods:	6 Points Max
(1) A built-in collection space in each kitchen and an aggregation/pick-up space in a garage, covered outdoor space, or other area for recycling containers	3
(2) Compost facility provided on-site	3

**11.603
REUSED OR SALVAGED MATERIALS**

11.603.0 Intent. Practices that reuse or modify existing structures, salvage materials for other uses, or use salvaged materials in the building's construction are implemented.	
11.603.1 New Work - Reuse of existing building. Major elements of existing buildings and structures are reused, modified, or deconstructed for later use in lieu of demolition. <u>Possibly calculate by percentage of materials re-used</u> (Points awarded for every 200 square feet (18.5 m²) of floor area.)	1 12 Points Max
11.603.2 Salvaged materials. Reclaimed and/or salvaged materials and components are used. The total material value and labor cost of salvaged materials is equal to or exceeds 1 percent of the total construction cost.	3
11.603.3 Scrap materials. Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins) are provided on site and used during construction.	4

**11.604
RECYCLED-CONTENT BUILDING MATERIALS**

11.604.1 Recycled content. <u>Newly installed b</u> Building materials with recycled content are used for two minor and/or two major components of the building.	Points per Table 604.1											
<p>Table 604.1 Recycled Content</p> <table border="1"> <thead> <tr> <th>Material Percentage Recycled Content</th> <th>Points Per 2 Minor</th> <th>Points Per 2 Major</th> </tr> </thead> <tbody> <tr> <td>25% to less than 50%</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>50% to less than 75%</td> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> </tr> <tr> <td>more than 75%</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>		Material Percentage Recycled Content	Points Per 2 Minor	Points Per 2 Major	25% to less than 50%	1	2	50% to less than 75%	2	4	more than 75%	3
Material Percentage Recycled Content	Points Per 2 Minor	Points Per 2 Major										
25% to less than 50%	1	2										
50% to less than 75%	2	4										
more than 75%	3	6										

**11.605
RECYCLED CONSTRUCTION WASTE**

<p>11.605.0</p> <p>All waste classified as hazardous shall be properly handled and disposed.</p>	<p>Mandatory</p>
<p>11.605.1 Construction waste management plan. A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction and land-clearing waste.</p>	<p>6</p>
<p>11.605.2 On-site recycling. On-site recycling measures following applicable regulations and codes are implemented, such as the following:</p> <p>(a) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50 percent (by weight) of construction and land-clearing waste is diverted from landfill through on-site recycling.</p> <p>(b) Alternative compliance methods approved by the Adopting Entity.</p>	<p>7</p>
<p>11.605.3 Recycled construction materials. Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.</p>	<p>6 Points Max</p>
<p>(1) a minimum of two types of materials are recycled</p>	<p>3</p>
<p>(2) for each additional recycled material</p>	<p>1</p>
<p>11.605.4 Hazardous materials outside of the basic scope of the project are removed.</p>	<p>Points TBD</p>

**11.606
RENEWABLE MATERIALS**

<p>11.606.0 Intent. <u>Newly installed</u> Building materials derived from renewable resources are used.</p>	
<p>11.606.1 Biobased products. The following biobased products are used:</p> <p>(a) certified solid wood in accordance with Section 606.2</p> <p>(b) engineered wood</p> <p>(c) bamboo</p> <p>(d) cotton</p> <p>(e) cork</p> <p>(f) straw</p> <p>(g) natural fiber products made from crops (soy-based, corn-based)</p> <p>(h) products with the minimum biobased contents of the USDA 7 CFR Part 2902</p> <p>(i) other biobased materials with a minimum of 50 percent biobased content (by weight or volume)</p>	<p>8 Points Max</p>
<p>11.606.1(1) Two types of biobased materials are used, each for more than 0.5 percent of the project's projected building material cost.</p>	<p>3</p>
<p>11.606.1(2) Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost.</p>	<p>6</p>
<p>11.606.1(3) For each additional biobased material used for more than 0.5 percent of the project's projected building material cost.</p>	<p>1 2 Points Max</p>
<p>11.606.2 Wood-based products. <u>Newly installed</u> wood or wood-based products are certified</p>	

to the requirements of one of the following recognized product programs: (a) <i>AFF American Tree Farm System®</i> (b) Canadian Standards Association's <i>Sustainable Forest Management System Standards</i> (CSA Z809) (c) <i>Forest Stewardship Council (FSC)</i> (d) <i>Program for Endorsement of Forest Certification Systems (PEFC)</i> (e) <i>Sustainable Forestry Initiative® Program (SFI)</i> (f) other product programs mutually recognized by PEFC	
11.606.2(1) Where a minimum of two certified wood-based products are used for minor elements of the building, such as all trim, cabinetry, or millwork.	3
11.606.2(2) Where a minimum of two certified wood-based products are used in major elements of the building, such as walls, floors, or roof.	4
11.606.3 Manufacturing energy. Newly installed m Materials are used for major components of the building that are manufactured using a minimum of 33 percent of the primary manufacturing process energy derived from renewable sources, combustible waste sources, or renewable energy credits (RECs). (2 points awarded per material.)	6 Points Max

**11.607
RESOURCE-EFFICIENT MATERIALS**

11.607.1 Newly installed Optimized Products containing fewer raw materials but still meeting the same end-use requirements as conventional products are used for a major element of the building, including but not limited to: (3 points awarded for each material.)	9 Points Max
(1) lighter, thinner brick with bed depth less than 3 inches and/or brick with coring of more that 25 percent (2) engineered wood or engineered steel products (3) roof or floor trusses	

**608
INDIGENOUS MATERIALS**

11.608.1 Indigenous materials are used for major elements of the building.	10 Points Max
(1) one type of material	2
(2) for each additional material	2

11.609.1 A more environmentally preferable product or assembly is selected for an application based upon the use of a Life Cycle Assessment (LCA) tool compliant with ISO 14044 or other recognized standards that compare the environmental impact of at least two approaches for building materials, assemblies, or the whole building.	15 Points Max
(1) per product/system analysis	3
(2) whole building LCA analysis	15

**610
INNOVATIVE PRACTICES**

11.610.1 Manufacturer's environmental management system concepts. Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is certified to ISO 14001 or equivalent. The aggregate	10 points Max
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value of building products from certified ISO 14001 or equivalent production facilities is 1 percent or more of the estimated total building materials cost. (1 point awarded per percent.)	
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11.701.4 .1 HVAC systems.	Mandatory
11.701.4.1.1a New Work. Space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.	
11.701.4.1.1b Re-Work. When the HVAC system is modified, space heating and cooling system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent.	

11.701.4.1.2 HVAC Systems TG 7 will need to see what the task group on this section changes in order to complete this.	Mandatory
New Work. Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed using industry-approved guidelines (e.g., ACCA Manual J, GAMA H-22, or an accredited design professional's and manufacturer's recommendations).	
Re-Work. Where an existing radiant or hydronic space heating system serves as the primary heat source in the existing portion of the building and it is modified, the modified system is designed using industry-approved guidelines (e.g., ACCA Manual J, GAMA H-22, or an accredited design professional's and manufacturer's recommendations).	

11.701.4.2.1 Duct systems.	Mandatory
New Work. Ducts are sealed with tape complying with UL 181, mastic, gaskets, or an approved system as required by the ICC IRC, Section M1601.3.1, or ICC IMC, Section 603.9, to reduce leakage.	
Re-Work. Ducts that are modified as part of the remodel are sealed with tape complying with UL 181, mastic, gaskets, or an approved system as required by the ICC IRC, Section M1601.3.1, or ICC IMC, Section 603.9, to reduce leakage.	

11.701.4.2.2 Supply Duct Systems.	Mandatory
New Work. Building cavities are not used as supply ducts.	
Re-Work. No additional building cavities are used as supply ducts.	

11. 701.4.3.1(1) Insulation and air sealing.	Mandatory
New Work. General. Insulation and air sealing is in accordance with the following: Insulation. Insulation is installed in accordance with the manufacturer's instructions or local code, as applicable.	
Re-Work. General. Insulation and air sealing is in accordance with the following: Insulation. Newly installed Insulation is installed in accordance with the manufacturer's instructions or local code, as applicable.	

11. 701.4.3.1(2) Shafts (duct shaft, piping shaft/penetrations, flue shaft).	Mandatory
New Work. Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated collars and caulking are installed where required.	
Re-Work. Openings to unconditioned space that become accessible during the remodeling are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated collars and caulking are installed where required.	

11.701.4.3.2 (1) Floors, foundations, and crawlspaces	
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<p>New Work. (including insulated floors above garages and cantilevered floors)</p> <p>(a) Insulation is installed to maintain permanent contact with the underside of the subfloor decking, enveloping any attached ductwork within the thermal envelope without compression or air gaps in the insulation. This practice does not apply to ducts or other mechanical equipment that is adjacent to the underside of the subfloor.</p> <p>(b) Batt and loose-fill insulation is held in place by permanent attachments or systems in accordance with the manufacturer's instructions.</p>	
<p>Re-Work. (including insulated floors above garages and cantilevered floors)</p> <p>(a) Newly installed Insulation is installed to maintain permanent contact with the underside of the subfloor decking, enveloping any attached ductwork within the thermal envelope without compression or air gaps in the insulation. This practice does not apply to ducts or other mechanical equipment that is adjacent to the underside of the subfloor.</p> <p>(b) Newly installed Batt and loose-fill insulation is held in place by permanent attachments or systems in accordance with the manufacturer's instructions.</p>	
<p>11.701.4.3.2 (2) Crawlspace.</p> <p>New and Re-Work. Where insulated, crawlspace wall insulation is permanently attached to the walls. Exposed earth in unvented crawlspaces is covered with continuous vapor retarder with overlapping joints that are taped or masticed.</p>	Mandatory
<p>11.701.4.3.3(1) Windows and doors.</p> <p>New Work. Caulking, gasketing, adhesive flashing tape, foam sealant, or weatherstripping is installed forming a complete air barrier.</p> <p>Re-Work. Newly installed doors and windows have caulking, gasketing, adhesive flashing tape, foam sealant, or weather stripping installed forming a complete air barrier. Existing windows and doors are inspected and any air barrier weaknesses are corrected.</p>	Mandatory
<p>11.701.4.3.3(2) Band joist and rim joists.</p> <p>New Work. Band and rim joists are insulated and air sealed.</p> <p>Re-Work. Band and rim joists which become accessible during the remodeling are insulated and air sealed.</p>	Mandatory
<p>11.701.4.3.3(3) Between foundation and sill plate bottom plate.</p> <p>New Work.</p> <p>(a) Sill sealer or other material that will expand and contract is installed between foundation and sill plate and</p> <p>(b) Caulk or the equivalent is installed to seal the bottom plate of exterior walls.</p> <p>Re-Work.</p> <p>(a) When the bottom plate of exterior walls is exposed during the remodeling caulk or the equivalent is installed to seal the bottom plate of exterior walls.</p>	Mandatory
<p>11.701.4.3.3(4) Skylights and knee walls.</p> <p>New Work. Skylight shafts and knee walls are insulated to the same level as the exterior walls.</p> <p>Re-Work. Newly installed skylight shafts and knee walls are insulated to the same level as the exterior walls.</p>	Mandatory
<p>11.701.4.3.3(5) Exterior architectural features.</p> <p>New Work. Code required building envelope insulation and air sealing are not</p>	Mandatory

disrupted at exterior architectural features such as stairs and decks.

11.701.4.3.4(1) Ceilings and attics. Attic access (except unvented attics). New and Re-Work. Attic access, knee wall door, or drop-down stair is covered with insulation and gasketed. Knee wall door is an insulated unit or is covered with insulation.	Mandatory
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11.701.4.3.4(2) Ceilings and attics. Recessed lighting. New Work. Recessed light fixtures that penetrate the thermal envelope are airtight, IC-rated, and sealed with gasket, caulk, or foam.	Mandatory
Re-Work. Recessed light fixtures that penetrate the thermal envelope that can be accessed during the remodeling are airtight, IC-rated, and sealed with gasket, caulk, or foam.	

11.701.4.3.4(3) Ceilings and attics. Eave vents. New Work. Where ceiling/attic assemblies or designs have eave vents, baffles or other means are implemented to minimize air movement into or under the insulation.	Mandatory
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11.701.4.4.1 Fenestration		Mandatory																																							
<p>New Work. NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p style="text-align: center;">Table 701.4.4.1 Fenestration Specifications</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1 and 2</td> <td>0.65</td> <td>0.40</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.40</td> </tr> <tr> <td>4 to 8</td> <td>0.35</td> <td>Any</td> </tr> <tr> <td></td> <th colspan="2">Skylights and TDDs (maximum certified ratings)</th> </tr> <tr> <td>1 to 3</td> <td>0.75</td> <td>0.40</td> </tr> <tr> <td>4 to 8</td> <td>0.60</td> <td>Any</td> </tr> </tbody> </table> <p>Re-Work. Newly installed windows, doors and TDDs are NFRC-certified U-factor and SHGC are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.</p> <p style="text-align: center;">Table 701.4.4.1 Fenestration Specifications</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Climate Zones</th> <th>U-Factor</th> <th>SHGC</th> </tr> <tr> <th colspan="2">Windows and Exterior Doors (maximum certified ratings)</th> </tr> </thead> <tbody> <tr> <td>1 and 2</td> <td>0.65</td> <td>0.40</td> </tr> <tr> <td>3</td> <td>0.40</td> <td>0.40</td> </tr> <tr> <td>4 to 8</td> <td>0.35</td> <td>Any</td> </tr> <tr> <td></td> <th colspan="2">Skylights and TDDs (maximum certified ratings)</th> </tr> </tbody> </table>			Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)		1 and 2	0.65	0.40	3	0.40	0.40	4 to 8	0.35	Any		Skylights and TDDs (maximum certified ratings)		1 to 3	0.75	0.40	4 to 8	0.60	Any	Climate Zones	U-Factor	SHGC	Windows and Exterior Doors (maximum certified ratings)		1 and 2	0.65	0.40	3	0.40	0.40	4 to 8	0.35	Any		Skylights and TDDs (maximum certified ratings)
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1 to 3	0.75	0.40
4 to 8	0.60	Any

11.704.2.2 Lighting and Appliances.	
New Work. The number of recessed light fixtures that penetrate the thermal envelope are less than 1 per 400 square feet (37.16 m²) of total conditioned floor area and are in accordance with Section 701.4.3.4(2).	Mandatory

11.704.4.1 Ducts	
New Work. Duct system is sized, designed, and installed in accordance with ACCA Manual D or equivalent.	Mandatory
Re-Work. Modifications to the existing duct system are sized, designed, and installed in accordance with ACCA Manual D or equivalent.	

11.901.1.1 Space and water heating options	
11.26.1 New Work. Natural draft space heating or water heating equipment is not located in conditioned spaces, including conditioned crawlspaces. Natural draft equipment is permitted to be installed within the conditioned spaces if located in a mechanical room that has an outdoor air source, and is otherwise sealed and insulated to separate it from the conditioned space(s).	Mandatory

11.901.1.2 Air handling equipment or return ducts are not located in the garage, unless placed in isolated, air-sealed mechanical rooms with an outside air source.	5
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11.901.1.3 The following combustion space heating and water heating equipment is installed within conditioned space:	
(1) direct vent furnace or boiler	5
(2) water heater	
(a) power vent water heater	3
(b) direct vent water heater	5

11.901.1.4 The following electric equipment is installed:	
(1) heat pump air handler in unconditioned space	2
(2) heat pump air handler in conditioned space	5

<p>11.901.2 Fireplaces and fuel-burning appliances. Fireplaces and fuel-burning appliances (except cooking appliances, clothes dryers, water heaters, and furnaces) located in conditioned space are in accordance with the following: [Section 901.2.1(2)(a) is not mandatory.]</p>	<p>Mandatory</p>
<p>11.901.2.1 <u>New Work.</u> Fireplaces and natural draft fuel-burning appliances are code compliant, vented to the outdoors, and have adequate combustion and ventilation air provided to minimize spillage or back-drafting, in accordance with the following, as applicable.</p>	
<p>(1) Natural gas and propane fireplaces that are power vented or direct vented, are equipped with permanently fixed glass fronts or gasketed doors, and comply with CSA Z21.88a/CSA 2.33a or CSA Z21.50/CSA 2.22.</p>	<p>Mandatory</p>
<p>(2) Solid fuel-burning appliances are in accordance with the following requirements:</p>	
<p>(a) Wood-burning fireplaces are equipped with gasketed doors designed to operate with the doors closed, outside combustion air, and a means is provided for sealing the flue to minimize interior air (heat) loss when not in operation.</p>	<p>4</p>
<p>(b) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.</p>	<p>Mandatory</p>
<p>(c) Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).</p>	<p>Mandatory</p>
<p>(d) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.</p>	<p>Mandatory</p>
<p>(e) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.</p>	<p>Mandatory</p>
<p><u>Re-Work</u> <i>Removal of or rendering permanently unusable an existing fireplace and/or other fuel-burning appliances that are not in accordance with Section 901.2.1.</i></p>	<p>2</p>
<p><u>Re-Work</u> <i>Replacement of each existing fireplace that is not in accordance with Section 901.2.1 with a fireplace that is in accordance with Section 901.2.1.</i></p>	<p>2</p>
<p>11.901.2.2 Fireplaces, woodstoves, pellet stoves, or masonry heaters are not in the dwelling unit.</p>	<p>7</p>
<p>11.901.3 Garages.</p>	
<p>11.28 .1 <u>New Work.</u> Garages are in accordance with the following:</p>	
<p>(1) Attached garage</p>	
<p>(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.</p>	<p>Mandatory</p>
<p>(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.</p>	<p>Mandatory</p>
<p>(c) For one and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g.,</p>	<p>4</p>

<p>motion detectors, pressure switches) that activate operation for a minimum of 1-hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with Appendix A.</p>	
<p>11.28.2 Re-Work. Garages are in accordance with the following:</p>	
<p>(1) Attached-garage</p>	
<p>(a) Where installed in the common wall between the attached garage and conditioned space, the door is tightly sealed and gasketed.</p>	Mandatory
<p>(b) A continuous air barrier is provided between walls and ceilings separating the garage space from the conditioned living spaces.</p>	Mandatory
<p>(c) For one and two-family dwelling units, a 100 cfm (47 L/s) or greater ducted, or 70 cfm (33 L/s) cfm or greater unducted wall exhaust fan is installed and vented to the outdoors, designed and installed for continuous operation, or has controls (e.g., motion detectors, pressure switches) that activate operation for a minimum of 1-hour when either human passage door or roll-up automatic doors are operated. For ducted exhaust fans, the fan airflow rating and duct sizing are in accordance with Appendix A.</p>	4
<p>(2) A carport is installed, the garage is detached from the building, or no garage is installed.</p>	10
<p>11.901.4 Wood materials. A minimum of 85 percent of <u>newly installed</u> material within a product group (i.e., wood structural panels, countertops, composite trim/doors, custom woodwork, and/or component closet shelving) is manufactured in accordance with the following.</p>	
<p>(1) Structural plywood used for floor, wall, and/or roof sheathing is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.</p>	Mandatory 10 Points Max
<p>(2) Particleboard and MDF (medium density fiberboard) is manufactured and labeled in accordance with CPA A208.1 and CPA A208.2, respectively. (Points awarded per product group.)</p>	2
<p>(3) Hardwood plywood in accordance with HPVA HP-1 and HUD Title 24, Part 3280. (Points awarded per product group.)</p>	2
<p>(4) Particleboard, MDF, or hardwood plywood is in accordance with CPA 2. (Points awarded per product group.)</p>	3
<p>(5) Composite wood or agrifiber panel products contain no added urea-formaldehyde or are in accordance with the CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i>. (Points awarded per product group.)</p>	4
<p>(6) Non-emitting products. (Points awarded per product group.)</p>	4
<p>11.901.5 Carpets. Carpets are in accordance with the following:</p>	
<p>(1) Wall-to-wall carpeting is not adjacent to water closets and bathing fixtures.</p>	Mandatory
<p>(2) A minimum of 85 percent of <u>newly</u> installed carpet area, carpet cushion (padding), and carpet adhesives are in accordance with the emission levels of CDPH 01350, as certified</p>	

by a third-party program, such as the Carpet and Rug Institute's (CRI) <i>Green Label Plus Indoor Air Quality Program</i> .	
(a) Carpet	6
(b) carpet cushion	2
(c) carpet adhesives	2
11.901.6 Hard-surface flooring. <u>At least 25% of the newly installed flooring is hardsurface flooring and a</u> minimum of 85 percent of <u>newly</u> installed hard-surface flooring is in accordance with the emission concentration limits of CDPH 01350 (using the office scenario), as certified by a third-party program, such as the Resilient Floor Covering Institute's <i>FloorScore Indoor Air Certification Program</i> or the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> .	6
11.901.7 Wall coverings. <u>At least one typical room has newly installed wall coverings and</u> minimum of 85 percent of <u>newly installed</u> wall coverings are in accordance with the emission concentration limits of CDPH 01350, as certified by a third-party program, such as the Scientific Certification Systems (SCS) <i>Indoor Advantage Gold Program</i> or the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> .	4
11.901.8 Architectural coatings. A minimum of 85 percent of the <u>newly applied</u> architectural coatings are in accordance with either Section 901.8.1 or Section 901.8.2, not both:	
11.901.8.1 Site-applied interior products are in accordance with one or more of the following standards:	5
(1) Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)	
(2) CARB <i>Suggested Control Measure for Architectural Coatings</i>	
(3) GS-11	
(4) VOC limits in accordance with:	
(a) 50 grams/liter flat	
(b) 100 grams/liter non flat	
(c) 350 grams/liter clear wood varnish	
(d) 550 grams/liter clear wood lacquer	
11.901.8.2 Site-applied interior products are in accordance with the emissions levels of CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> or the Scientific Certification Systems <i>Indoor Advantage Gold Program</i> .	8
<u>When the building is occupied during the renovation a</u> minimum of 85 percent of the newly applied architectural coatings are in accordance with either Section 901.8.1 or Section 901.8.2	Mandatory 1
11.901.9 Adhesives and sealants. A minimum of 85 percent of <u>newly applied</u> site-applied adhesives and sealants are in accordance with Section 901.9.1 and/or Section 901.9.2.	
11.901.9.1 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of site-applied products used for the installation of subfloors and on the exterior of the project are in accordance with one of the following:	5
(1) The California Air Resources Board consumer products regulation as follows:	
(a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater.	
(b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4	

<p>percent by weight or 50 grams/liter, whichever is greater.</p> <p>(c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater.</p> <p>(d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.</p> <p>(2) GS-36</p>	
<p>11.901.9.2 Interior low-VOC adhesives and sealants. A minimum of 85 percent of site-applied products used within the interior of the building are in accordance with one of the following, as applicable.</p> <p>(1) CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> or the Scientific Certifications Systems <i>Indoor Advantage Gold Program</i>.</p> <p>(2) GS-36</p>	5
<p>11.901.10 Cabinets. All new kitchen and bath vanity cabinets are in accordance with one of the following.</p> <p style="text-align: center;">(Where more than one of the following practices is used, the practice with the fewer number of points is awarded.)</p> <p>(1) Kitchen and bath vanity cabinets in accordance with KCMA ESP 01, or equivalent, are installed.</p> <p>(2) Kitchen and bath vanity cabinets in accordance with CARB <i>Composite Wood Air Toxic Contaminant Measure Standard</i> are installed.</p> <p>(3) Kitchen and bath vanity cabinets are installed that contain no added urea formaldehyde or are in accordance with GGPS.EC.010.R0, ASTM D 6670, or equivalent.</p>	2
	3
	5
<p>11.901.11 Insulation. <u>Newly installed</u> Insulation is in accordance with the following.</p> <p>(1) Formaldehyde emissions of wall, ceiling, and floor insulation materials are in accordance with the emissions levels of CDPH 01350, as certified by a third-party program, such as the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> or the Scientific Certifications Systems <i>Indoor Advantage Gold Program</i>.</p> <p>(2) Formaldehyde emissions of duct insulation materials are in accordance with the emissions levels of CDPH 01350, as certified by a third-party program, such as the GREENGUARD Environmental Institute's <i>Children and Schools Certification Program</i> or the Scientific Certifications Systems <i>Indoor Advantage Gold Program</i>.</p>	4
	1
<p>11.901.12 Carbon monoxide (CO) alarms. A carbon monoxide (CO) alarm is installed in a central location outside of each separate sleeping area in the immediate vicinity of the bedrooms. The CO alarm(s) is located in accordance with NFPA 720 and is hard-wired with a battery back-up. The alarm device(s) is certified by a third-party for conformance with either CSA 6.19 or UL 2034.</p>	3
<p>11.901.13 Building entrance pollutants control. Pollutants are controlled at all main building entrances by one of the following methods.</p> <p>(1) Exterior grilles or mats are installed in a fixed manner and may be removable for cleaning.</p>	4

(2) Interior grilles or mats are installed in a fixed manner and may be removable for cleaning.	1
11.901.14 Non-smoking areas. All interior common areas of a multi-unit building are designated as non-smoking areas with posted signage.	1
11.901. For building constructed prior to 1978, lead-safe work practices are used during renovation, remodeling, painting, and demolition.	Mandatory

11.902.1 New Work. Spot ventilation is in accordance with the following:	
(1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.	Mandatory
(2) Clothes dryers are vented to the outdoors.	Mandatory
Re-Work. Spot ventilation is in accordance with the following:	
(2) Clothes dryers are vented to the outdoors.	Mandatory
(3) Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.	8

11.902.1.2 Bathroom and/or laundry exhaust fan is provided with an automatic timer and/or humidistat:	9 Points Max
for first device	5
for each additional device	2
11.902.1.3 Kitchen range, bathroom, and laundry exhaust are verified to specification. Ventilation airflow at the point of exhaust is tested to a minimum of 100 cfm (47.2 L/s) intermittent or 25 cfm (11.8 L/s) continuous for kitchens, and 50 cfm (23.6 L/s) intermittent or 20 cfm (9.4 L/s) continuous for bathrooms and/or laundry.	8
11.902.1.4 Exhaust fans are ENERGY STAR, as applicable.	6 Points Max
ENERGY STAR, or equivalent, fans (Points awarded per fan.)	2
ENERGY STAR, or equivalent, fans operating at or below 1 sone (Points awarded per fan.)	3

11.902.4 HVAC system protection. One of the following HVAC system protection measures is performed.	3
(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.	
(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.	

(2) <i>The addition or renovation area are sealed off from the occupied portion of the building or dwelling unit. The same HVAC system for conditioning the air in renovated and occupied space is not used.</i>	4 Additional Point
(3) <i>The building or dwelling unit is not occupied during the entire construction period and Sections 902.4(1) and 902.4(2) are implemented.</i>	4 Additional Point

11.902.5 Central vacuum systems. Central vacuum system is installed and vented to the outside.	5
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11.902.6 Living space contaminants. The living space is sealed to prevent unwanted contaminants.	
(1) Attic access, knee wall door, or drop down stair is caulked, gasketed, or otherwise sealed.	2
(2) All penetrations, (e.g., top plates, HVAC register boots, recessed can lights), are sealed in the following areas:	
(a) attic/ceiling	2
(b) wall	2
(c) floors	2

11.903.1 Tile backing materials.	
11.36.1 New Work. Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.	Mandatory
11.36.2 Re-Work. Existing tiled surfaces in wet areas are inspected and any areas with evidence of moisture damaged are repaired with tile backing materials installed under tiled surfaces are in accordance with ASTM C1178, C1278, C1288, or C1325.	

11.903.2.1 Capillary breaks	
11.37.1 New Work. A capillary break and vapor retarder are installed at all concrete slabs in accordance with Sections 903.2.1(1) or 903.2.1(2), as modified by Section 903.2.1(3):	Mandatory
(1) A minimum 4-inch-thick (102 mm) bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 903.3.	
(2) A minimum 4-inch-thick (102 mm) uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 903.3.	
(3) Modification: <ul style="list-style-type: none"> (a) In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required. (b) In Dry climate locations, as defined by Figure 6(1), polyethylene sheeting is not required unless required for radon resistance (Section 902.3). 	
11.37.2 Re-Work. A capillary break and vapor retarder are installed at newly installed concrete slabs in accordance with Sections 903.2.1(1) or 903.2.1(2), as modified by Section 903.2.1(3):	
(1) A minimum 4-inch-thick (102 mm) bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the	

concrete slab, with the sheeting joints lapped in accordance with Section 903.3.	
(2) A minimum 4-inch-thick (102 mm) uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 903.3.	
(3) Modification: (a) In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required. (b) In Dry climate locations, as defined by Figure 6(1), polyethylene sheeting is not required unless required for radon resistance (Section 902.3).	

11.903.2.2 a capillary break is installed on <u>new</u> footings to prevent moisture migration into foundation wall.	3
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11.903.3.1 Crawlspace	
New Work. Crawlspace vapor retarder is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped. Walls. Damp-proof walls are provided below finished grade.	
Re-Work. Existing crawlspace is inspected and when there is evidence of a moisture problem a crawlspace vapor retarder is installed in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped. Damp-proof walls are provided below finished grade.	Mandatory
11.903.3.2 Crawl space that is built as a conditioned area is sealed to prevent outside air infiltration and provided with conditioned air at a rate not less than 0.02 cfm (.009 L/s) per square foot of horizontal area and one of the following is implemented.	
(1) a concrete slab over lapped 6 mil polyethylene or polystyrene	10
(2) 6 mil polyethylene sheeting, lapped a minimum of 6 inches (152 mm), and taped at the seams	8

11.903.4.1 Moisture control measures	
New and Re-Work. Walls are not enclosed (e.g., with drywall) if the insulation has a high moisture content. Wet insulation products are dry before enclosing.	Mandatory

11.903.4.2 Moisture control measures.	
Moisture content of subfloor, substrate, or concrete slabs is in accordance with the appropriate industry standard for the <u>new</u> finish flooring to be applied.	Mandatory
(1) Building materials with visible mold are not installed or are cleaned or encapsulated prior to concealment and closing.	2
(3) The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or wall cavity enclosure.	4

11.903.6 Duct insulation.	Mandatory
New Work. All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl	

spaces are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.	
Re-Work. All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces that become accessible during the remodeling are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.	
11.903.5 Plumbing	
11.903.5.1 Plumbing distribution lines are not installed in <u>newly constructed</u> exterior wall cavities.	2
(1) A minimum of 50 percent of exterior wall piping is removed.	3
(2) A minimum of 50 percent of exterior wall piping is insulated.	2
11.903.5.2 Cold water pipes in unconditioned spaces are insulated to a minimum of R-4 with pipe insulation or other covering that adequately prevents condensation.	2
11.903.5.3 Plumbing is not installed in unconditioned spaces.	5
11.903.7 <i>Relative humidity. In climate zones 1A, 2A, 3A, 4A, and 5A as defined by Figure 6(1), equipment is installed to maintain relative humidity (RH) at or below 60 percent using one of the following: (Points not awarded in remaining climate zones.)</i>	8
(1) additional dehumidification system(s)	
(2) central HVAC system equipped with additional controls to operate in dehumidification mode	
11.904.1 Humidity monitoring system. A humidity monitoring system is installed with a mobile base unit that displays a reading of temperature and relative humidity at the base unit with a minimum of two remote units. One remote unit that is placed permanently inside the conditioned space in a central location, excluding attachment to exterior walls, and another remote unit is placed permanently outside of the conditioned space.	2
11.904.2 Kitchen exhaust. Kitchen exhaust unit(s) that equal or exceeds 400 cfm (189 L/s), and make-up air is provided.	2
11.904.3	
11.43.1 New and Re-Work. All gas dryer vents are sealed and vented outdoors.	Mandatory
11.1001.1 For Single Family homes An building owner's manual is provided that includes a minimum of at least 9 of the following, as available and applicable. (Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	1
(1) A green building program certificate or completion document.	Mandatory
(2) List of green building features included in the scope of the remodeling project.	Mandatory

<p>(3) Product manufacturer’s manuals or product data sheet for <u>newly</u> installed major equipment, fixtures, and appliances. If product data sheet is in the building owners’ manual, manufacturer’s manual may be attached to the appliance in lieu of inclusion in the building owners’ manual.</p>	<p>Mandatory</p>
<p>(4) Information on local recycling programs.</p> <p>(5) Information on available local utility programs that purchase a portion of energy from renewable energy providers.</p> <p>(6) Explanation of the benefits of using energy efficient lighting systems (e.g., compact fluorescent light bulbs, light emitting diode (LED)) in high usage areas</p> <p>(7) A list of practices to conserve water and energy.</p> <p>(8) Local public transportation options.</p> <p>(9) A diagram showing the location of safety valves and controls for major building systems.</p> <p>(10) Where frost-protected shallow foundations are used, owner is informed of precautions including:</p> <ul style="list-style-type: none"> • instructions to not remove or damage insulation when modifying landscaping • providing heat to the building as required by the ICC IRC or IBC • keeping base materials beneath and around the building free from moisture due to broken water pipes or other water sources <p>(11) A list of local service providers that offer regularly scheduled service and maintenance contracts to assure proper performance of equipment and the structure (e.g., HVAC, water heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system).</p>	
<p>(12) A photo record of framing with utilities installed. Photos are taken prior to installing insulation, clearly labeled, and included as part of the building owners’ manual.</p> <p>(13) Maintenance checklist.</p> <p>(14) List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials.</p> <p>(15) Information on organic pest control, fertilizers, deicers, and cleaning products.</p> <p>(16) Information on native landscape materials and/or those that have low-water requirements.</p> <p>(17) Information on methods of maintaining the building’s relative humidity in the range of 30 percent to 60 percent.</p> <p>(18) Instructions for inspecting the building for termite infestation.</p> <p>(19) Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of five feet away from foundation.</p> <p>(20) A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.</p>	
<p><i>(21) For buildings originally built before 1978, the EPA publications “Reducing Lead Hazards When Remodeling Your Home” and “Asbestos in Your Home: A Homeowner’s Guide”</i></p>	

11.1002.1 Training of Building Owners	
11.46.1 Building owners/occupants are familiarized with the green building goals and strategies implemented and the impacts of the occupants’ practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all newly installed equipment operation and control systems. Systems include, but are not limited to, the following: HVAC filters, thermostat, appliances, water heater, and fan controls.	Mandatory

11.1003 Multi-unit Building Operations	
Maintenance and operations Manuals: The operations and maintenance manuals for multi-family buildings are updated to reflect the remodeling changes and are provided to the responsible parties.	Mandatory

11.1003.1 A building construction manual, including five or more of the following, is compiled and distributed in accordance with Section 1003.0. (Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	1
(1) A narrative detailing the importance of constructing a green building, including a list of green building attributes included in the building. This narrative is included in all responsible parties’ manuals.	Mandatory
(2) A local green building program certificate, and the individual measures achieved by the building.	Mandatory
(3) Warranty, operation, and maintenance instructions for all <u>newly installed</u> equipment, fixtures, appliances, and finishes.	Mandatory
(4) Record drawings of the building <u>used in the remodeling</u> .	
(5) A record drawing of the site including stormwater management plans, utility lines, landscaping with common name and genus/species of plantings.	
(6) A diagram showing the location of safety valves and controls for major building systems.	
(7) A list of the type and wattage of light bulbs installed in light fixtures.	
(8) A photo record of framing with utilities installed. Photos are taken prior to installing insulation and clearly labeled.	

11.1003.2 Operations manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the operation manuals, <u>five-six</u> or more of the following options are included. (Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)	1
(1) A narrative detailing the importance of operating and living in a green building. This narrative is included in all responsible parties’ manuals.	Mandatory
(2) A list of practices to conserve water and energy (e.g., turning off lights when not in use, switching the rotation of ceiling fans in changing seasons, purchasing ENERGY STAR appliances and electronics).	Mandatory
(3) Information on methods of maintaining the building’s relative humidity in the range of 30 percent to 60 percent.	Mandatory

<ul style="list-style-type: none"> (4) Information on opportunities to purchase renewable energy from local utilities or national green power providers and information on utility and tax incentives for the installation of on-site renewable energy systems. (5) Information on local and on-site recycling and hazardous waste disposal programs and, if applicable, building recycling and hazardous waste handling and disposal procedures. (6) Local public transportation options. (7) Explanation of the benefits of using compact fluorescent light bulbs, LEDs, or other high-efficiency lighting. (8) Information on native landscape materials and/or those that have low water requirements. (9) Information on the radon mitigation system, where applicable. (10) A procedure for educating tenants in rental properties on the proper use, benefits, and maintenance of green building systems including a maintenance staff notification process for improperly functioning equipment. 	
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<p>11.1003.3 Maintenance manuals are created and distributed to the responsible parties in accordance with Section 1003.0. Between all of the maintenance manuals, <u>six</u> or more of the following options are included.</p> <p style="text-align: center;"><i>(Points awarded per two items. Points awarded for both mandatory and non-mandatory items.)</i></p>	<p>1</p>
<p>(1) A narrative detailing the importance of maintaining a green building. This narrative is included in all responsible parties' manuals.</p>	<p>Mandatory</p>
<ul style="list-style-type: none"> (2) A list of local service providers that offer regularly scheduled service and maintenance contracts to assure proper performance of equipment and the structure (e.g., HVAC, water heating equipment, sealants, caulks, gutter and downspout system, shower and/or tub surrounds, irrigation system). (3) User-friendly maintenance checklist that includes: <ul style="list-style-type: none"> (a) HVAC filters (b) thermostat operation and programming (c) lighting controls (d) appliances and settings (e) water heater settings (f) fan controls (4) List of common hazardous materials often used around the building and instructions for proper handling and disposal of these materials. (5) Information on organic pest control, fertilizers, deicers, and cleaning products. (6) Instructions for maintaining gutters and downspouts and importance of diverting water a minimum of five feet away from foundation. (7) Instructions for inspecting the building for termite infestation. (8) A procedure for rental tenant occupancy turnover that preserves the green features. 	

| (9) An outline of a formal green building training program for maintenance staff. |

Chapter 12 – Small Renovations

Intent – This chapter defines the green practices that are appropriate for small renovations.

12.1 Bathroom Renovations

12.1.1 Mandatory Practices for Bathroom Renovations

12.1.1.1 Resource Efficiency

12.1.1.1 (a) Recycled content. Building materials with recycled content are used for two minor or major components of the renovation.

12.1.1.1(b) Demolition Waste. All waste classified as hazardous generated during demolition shall be properly handled and disposed.

12.1.1.1(c) Demolition Waste. At least 50% of demolition waste not classified as hazardous is diverted from landfill.

12.1.1.1(d) Wood-based products. All newly installed rough framing materials are certified to the requirements of one of the following recognized product programs:

- AFF *American Tree Farm System*®
- Canadian Standards Association’s *Sustainable Forest Management System Standards* (CSA Z809)
- Forest Stewardship Council* (FSC)
- Program for Endorsement of Forest Certification Systems* (PEFC)
- Sustainable Forestry Initiative*® *Program* (SFI)
- other product programs mutually recognized by PEFC

12.1.1.1(e) Recycled content. Building materials with at least 25% recycled content are used in the renovation. The cost of these materials exceeds 3% of the project contract price.

12.1.1.1(d) Newly installed finish flooring materials have manufacturer’s recommendation for use in bathrooms.

12.1.1.2 Energy Efficiency

12.1.1.2(a) Fenestration. NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

Table 701.4.4.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1 and 2	0.65	0.40
3	0.40	0.40
4 to 8	0.35	Any
	Skylights and TDDs (maximum certified ratings)	
1 to 3	0.75	0.40
4 to 8	0.60	Any

12.1.1.2(b) Building Envelope. When the renovation involves exposing the wall cavity such that insulation can be upgraded and the UA is less than required by ICC IECC, Section 402.1.4, the UA of the exposed envelope is increase by at least 50%.

12.1.1.2(c) Lighting. A minimum of 50 percent of the newly installed hard-wired lighting fixtures qualify as ENERGY STAR or equivalent and a minimum of 50 percent of the bulbs in existing hard-wired lighting fixtures qualify as ENERGY STAR or equivalent.

12.1.1.2(d) All washing machines, if installed, are ENERGY STAR or equivalent.

12.1.1.3 Water Efficiency

12.1.1.3(a) The water consumption of bathroom fixtures complies with:

Showerheads. The total showerhead flow rate at any point in time in each shower compartment is in accordance is less than 2.5 gpm. The total flow rate is tested at 80 psi (552 kPa) in accordance with ASME A112.18.1. Showers are equipped with an automatic compensating valve that complies with ASSE 1016 or ASME A112.18.1 and specifically designed to provide thermal shock and scald protection at the flow rate of the showerhead.

Faucets. Water-efficient lavatory faucets with 1.5 gpm (5.68 L/m) or less maximum flow rate when tested at 60 psi (414 kPa) in accordance with ASME A112.18.1 are installed.

Water Closets. A water closet is installed with an effective flush volume of 1.28 gallons (4.85 L) or less when tested in accordance with ASME A112.19.2 (all water closets) and ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense *Tank-Type High-Efficiency Toilet*.

12.1.1.4 Indoor Environmental Quality

12.1.1.4(a) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.

12.1.1.4(b) Newly applied interior products are in accordance with one or more of the following standards:

Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)

CARB *Suggested Control Measure for Architectural Coatings*

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VOC limits in accordance with:

- (a) 50 grams/liter flat
- (b) 100 grams/liter non flat
- (c) 350 grams/liter clear wood varnish
- (d) 550 grams/liter clear wood lacquer

CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certification Systems *Indoor Advantage Gold Program*

12.1.1.4(c) Interior low-VOC adhesives and sealants. A minimum of 85 percent of newly applied products used within the interior of the building are in accordance with one of the following, as applicable.

CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certifications Systems *Indoor Advantage Gold Program*.

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12.1.1.4(d) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.

12.1.1.4(e) HVAC System Protection. *The renovation area is sealed off from the occupied portion of the building or dwelling unit. The same HVAC system for conditioning the air in renovated and occupied space is not used.* HVAC supply registers (boots), return grilles, and rough-ins in the renovation area are covered during construction activities to prevent dust and other pollutants from entering the system.

12.1.1.5(f) Tile backing materials. Newly installed tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325.

12.1.1.5(g) Moisture Control. Building materials with visible mold are not installed or utilized or are cleaned or encapsulated prior to concealment and closing. Any water damaged materials replaced or repaired prior to enclosing.

12.1.1.6 Home Owner Education

12.1.1.6 (a) Building owners/occupants are familiarized with the green building goals and strategies implemented during the renovation and the impacts of the occupants' practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all equipment operation and control systems in the bathroom.

12.1.2 Optional Practices for Bathroom Renovations

12.1.2.1 Resource Efficiency

12.1.2.1(a) Wood-based products. Wood based materials that are certified to the requirements of one of the following recognized product programs are used for:

12.1.2.1(a)(i) Newly installed cabinets

(a) (ii) Newly installed trim

AFF American Tree Farm System®

Canadian Standards Association's *Sustainable Forest Management System Standards (CSA Z809)*

Forest Stewardship Council (FSC)

Program for Endorsement of Forest Certification Systems (PEFC)

Sustainable Forestry Initiative® Program (SFI)

other product programs mutually recognized by PEFC

12.1.2.1(b) Recycled content. Building materials with recycled content are used in the renovation meeting one of the criteria in Table 12.1.2.1(a). These materials are in excess of those required to meet 12.1.1.1(e).

Table 12.1.2.1(a)

Recycled Content	Cost of Materials
25% or more	5% of project contract price
50% or more	4% of project contract price
75% or more	3% of project contract price

12.1.2.1(c) Salvaged materials. Reclaimed and/or salvaged materials and components are used. The value of the material and labor cost of salvaged materials is equal to or exceeds 1 percent of the project contract price.

12.1.2.2 Indoor Environmental Quality

12.1.2.2(a) Cabinets. Bath vanity cabinets in accordance with one of the following are installed:

KCMA ESP 01, or equivalent

CARB *Composite Wood Air Toxic Contaminant Measure Standard*

Containing no added urea formaldehyde or are in accordance with [GGPS.EC.010.R0](#), ASTM D 6670, or equivalent

12.1.2.2(b) Drywall materials. All newly installed drywall materials are moisture and mildew resistant.

12.2 Green Kitchen Remodel

All applicable requirements must be met.

12.2.1 At least 75% of all major kitchen appliances must be energy star.

12.2.2 Newly applied interior paint products are in accordance with one or more of the following standards:

Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)

CARB *Suggested Control Measure for Architectural Coatings*

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VOC limits in accordance with:

- (a) 50 grams/liter flat
- (b) 100 grams/liter non flat
- (c) 350 grams/liter clear wood varnish
- (d) 550 grams/liter clear wood lacquer

CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certification Systems *Indoor Advantage Gold Program*

12.2.3 Fenestration. Newly installed windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

Table 701.4.4.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1 and 2	0.65	0.40
3	0.40	0.40
4 to 8	0.35	Any
	Skylights and TDDs (maximum certified ratings)	
1 to 3	0.75	0.40
4 to 8	0.60	Any

12.2.3 **Newly installed** doors and windows have caulking, gasketing, adhesive flashing tape, foam sealant, or weather stripping installed forming a complete air barrier. **Existing windows and doors are inspected and any air barrier weaknesses are corrected.**

12.2.4 All gutted or newly constructed exterior walls and exterior ceilings must be insulated to a minimum R-value for the climate zone per table: **“Can we insert values based on current code?”**

Minimum R-value

Climate Zone	1	2	3	4	5	6	7+
Walls							
Ceiling/attic							

12.2.5 Insulation and wall framing must be dry with no evidence of mold prior to enclosing the wall with new drywall.

12.2.6 At least 50% finished materials installed must be pre-finished.

12.2.7 Cabinets must be KCMA ESP01 or equivalent.

12.2.8 A place for recycling of household items (glass, paper, plastic, etc) must be provided or 50% of newly installed building materials must contain at least 35% recycled content.

12.2.9 Interior low-VOC adhesives and sealants. **All newly applied** products used within the interior of the building are in accordance with one of the following, as applicable.

CDPH 01350, as certified by a third party program, such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certifications Systems *Indoor Advantage Gold Program*.

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- 12.2.10 Kitchen exhaust fan must be vented outside.
- 12.2.11 A garbage disposal must be installed in the kitchen sink unless local regulations prohibit installation.
- 12.2.12 All hazardous material that is removed or disturbed must be properly handled and disposed.
- 12.2.13 Lighting – practice details TBD
- 12.2.13 Disposal of Existing Kitchen – practice details TBD
- 12.2.14 Water Usage – practice details TBD

12.3 Basement Remodeling**12.3.1 Design and Planning**

- 12.3.1.1 Concrete moisture test – practice details TBD
- 12.3.1.2 Moisture intrusion assessment

Space below grade has exterior drain tile installed or other moisture mitigation system installed where required by the ICC IRC or IBC if there is evidence of moisture issues in the space.

- 12.3.1.3 Radon test – if above 4.0ppl add mitigation and verify it is functioning.

12.3.2 Framing

- 12.3.2.1 Maintain 1” gap between exterior block or poured concrete wall and new interior framing.
- 12.3.2.2 Framing lumber is from one of the following certified programs or framing lumber is reused or reclaimed materials:

AFF American Tree Farm System®
 Canadian Standards Association's *Sustainable Forest Management System Standards (CSA Z809)*
Forest Stewardship Council (FSC)
Program for Endorsement of Forest Certification Systems (PEFC)
Sustainable Forestry Initiative® Program (SFI)
 other product programs mutually recognized by PEFC

12.3.2 HVAC

- 12.3.2.1 No transite heat.
- 12.3.2.2 **Exposed or newly installed** Ducts are sealed with tape complying with UL 181, mastic, gaskets, or an approved system as required by the ICC IRC, Section M1601.3.1, or ICC IMC, Section 603.9, to reduce leakage.

12.3.4 Plumbing

- 12.3.4.1 Bathroom – Bathroom installation or remodeling that is part of a basement remodel must comply with the section 12.1
- 12.3.4.2 Accessible hot water lines are insulated to a minimum of R-4.

12.3.5 Electrical

- 12.3.5.1 CFL, LED, or dimmers. – practice details TBD

12.3.6 Insulation

- 12.3.6.1 Exterior walls are insulated to a minimum of R-13.
- 12.3.6.2 Rim joists are insulated to a minimum of R – TBD.
- 12.3.6.2 Air Sealing – practice details TBD

12.3.6.3 Vapor barrier – practice details TBD

12.3.7 Sheetrock

12.3.7.1 Walls are enclosed with mold resistant sheetrock or other mold resistant material.

12.3.8 Trim and Cabinets

Cabinet and trim materials are from one of the following certified sources or are reclaimed or reused materials:

- AFF *American Tree Farm System*®
- Canadian Standards Association's *Sustainable Forest Management System Standards* (CSA Z809)
- Forest Stewardship Council* (FSC)
- Program for Endorsement of Forest Certification Systems* (PEFC)
- Sustainable Forestry Initiative*® *Program* (SFI)
- other product programs mutually recognized by PEFC

12.3.8 Cabinet and trim materials contain no added urea formaldehyde.

12.3.9 Countertops

Recycled content, reused, reclaimed, or locally sourced. – practice details TBD.

12.3.10 Tile

Recycled content, reused, reclaimed, or locally sourced. – practice details TBD.

12.3.11 Appliances

When there is an Energy Star appliance available, Energy Star appliances are installed.

12.3.12 Floorcovering

Floors are not covered with carpet.

12.3.13 Paint and Stain

Newly applied interior paint or stain products are in accordance with one or more of the following standards:

Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)

CARB *Suggested Control Measure for Architectural Coatings*

GS-11

VOC limits in accordance with:

- (a) 50 grams/liter flat
- (b) 100 grams/liter non flat
- (c) 350 grams/liter clear wood varnish
- (d) 550 grams/liter clear wood lacquer

CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certification Systems *Indoor Advantage Gold Program*

12.4 Small Addition

12.4.0.1 A small addition that includes a kitchen shall also comply with section 12.2

12.4.0.2 A small addition that also includes a bathroom shall also comply with section 12.1

12.4.1 LOT DESIGN, PREPARATION, AND DEVELOPMENT

12.4.1.1 A tree preservation plan is provided and implemented for any tree larger than 8" diameter breast high, whose dripline extends over the area of disturbance.

12.4.1.2 Sediment control measures which prevent the flow of silt from the work area and stockpiles are established prior to land disturbing activities.

12.4.1.3 Low impact development measures are provided, to prevent an increased flow of stormwater runoff¹ into public rights-of-way, or adjacent properties or natural watersheds.

12.4.2 RESOURCE EFFICIENCY

12.4.2.1 Finished grade: Finish grade at all sides of the addition is sloped to provide a minimum of 6 inches (150 mm) of fall within 10 feet (3048 mm) of the edge of the addition. Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), the final grade is sloped away from the edge of the addition at a minimum slope of 5 percent and the water is directed to drains or swales to ensure drainage away from the structure.

12.4.2.2 Water-resistive barrier: Where required by the ICC IRC or IBC, a water-resistive barrier and/or drainage plane system is installed behind exterior veneer and/or siding of the addition.

12.4.2.3 Ice barrier: In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier is installed in accordance with the ICC IRC or IBC at roof eaves and extends at a minimum of 24 inches (610 mm) inside the exterior wall line of the addition.

12.4.2.5 Construction waste management plan: A construction waste management plan is developed, posted at the jobsite, and implemented with a goal of recycling or salvaging a minimum of 50 percent (by weight) of construction and land-clearing waste. The construction waste management plan includes information on the proper handling and disposal of hazardous wastes

12.4.2.6 Hazardous waste: All waste classified as hazardous waste is properly handled and disposed of.

12.4.3 ENERGY EFFICIENCY

12.4.3.1 Space heating and cooling:

(1) *Where new space heating and cooling system/equipment is installed to serve existing space and the addition, or to serve the addition independently*, the system/equipment is sized according to heating and cooling loads calculated using ACCA Manual J, or equivalent. Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed using industry-approved guidelines (e.g., ACCA Manual J, GAMA H-22, or an accredited design professional's and manufacturer's recommendations).

(2) *Where existing space heating and cooling system/equipment is extended to serve the addition, the capacity of the existing system is adequate for the additional loads, as determined by using ACCA Manual J, or equivalent.*

12.4.3.2 Duct system in new space: Newly installed ducts are sealed with tape complying with UL 181, mastic, gaskets, or an approved system as required by the ICC IRC, Section M1601.3.1, or ICC IMC, Section 603.9 to reduce leakage. Building cavities in the addition are not used as supply ducts.

12.4.3.3 Insulation and air sealing :

(1) Insulation for the addition is installed in accordance with the manufacturer's instructions or local code, as applicable.

(2) Openings from the addition into unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam. Fire-rated collars and caulking are installed where required.

(3) Where insulated, wall insulation in the new crawlspace is permanently attached to the walls. Exposed earth in new unvented crawlspaces is covered with continuous vapor retarder with overlapping joints that are taped or masticed.

(4) Caulking, gasketing, adhesive flashing tape, foam sealant, or weatherstripping is installed forming a complete air barrier for newly installed windows and doors.

(5) Newly installed band and rim joists are insulated and air sealed.

1 Relative to flow rates prior to construction

- (6) Sill sealer or other material that will expand and contract is installed between new foundation and sill plate. Caulk or the equivalent is installed to seal the bottom plate of new exterior walls.
- (7) New skylight shafts and knee walls are insulated to the same level as the exterior walls.
- (8) Code required building envelope insulation and air sealing for the addition are not disrupted at exterior architectural features such as stairs and decks.
- (9) Attic access, knee wall door, or drop-down stair in the addition is covered with insulation and gasketed. Knee wall door is insulated unit or is covered with insulation.
- (10) Recessed light fixtures that penetrate the thermal envelope of the addition are airtight, IC-rated, and sealed with gasket, caulk, or foam
- (11) Where ceiling/attic assemblies or designs for the addition have eave vents, baffles or other means are implemented to minimize air movement into or under the insulation.

12.4.3.4 Fenestration (per 701.4.4.1)

NFRC-certified U-factor and SHGC windows, exterior doors, skylights, and tubular daylighting devices (TDDs) are in accordance with ENERGY STAR, or equivalent, or Table 701.4.4.1. Decorative fenestration elements with a maximum area of 15 square feet (1.39 m²) or 10 percent of the total glazing area, whichever is less, are not required to comply with this practice.

**Table 701.4.4.1
Fenestration Specifications**

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1 and 2	0.65	0.40
3	0.40	0.40
4 to 8	0.35	Any
	Skylights and TDDs (maximum certified ratings)	
1 to 3	0.75	0.40
4 to 8	0.60	Any

12.4.3.5 U/A is 15% less than the minimum required by the current IECC or prevailing code for the jurisdiction, whichever is less restrictive.

12.4.3.6 Duct system sizing (per 704.4.1) Duct system in the addition is sized, designed, and installed in accordance with ACCA Manual D or equivalent.

12.4.4 INDOOR ENVIRONMENTAL QUALITY

12.4.4.1 Natural draft equipment (per 901.1.1) Natural draft space heating or water heating equipment is not located in conditioned spaces of the addition, including conditioned crawlspaces. Natural draft equipment is permitted to be installed within the conditioned spaces if located in a mechanical room that has an outdoor air source, and is otherwise sealed and insulated to separate it from the conditioned space(s).

12.4.4.2 Fireplaces, etc (per 901.2.1)

Fireplaces and natural draft fuel-burning appliances are code compliant, vented to the outdoors, and have adequate combustion and ventilation air provided to minimize spillage or back-drafting, in accordance with the following, as applicable.

- (1) Natural gas and propane fireplaces that are power vented or direct vented, are equipped with

permanently fixed glass fronts or gasketed doors, and comply with CSA Z21.88a/CSA 2.33a or CSA Z21.50/CSA 2.22.
(2) Solid fuel burning appliances are in accordance with the following requirements:
(a) Wood-burning fireplaces are equipped with gasketed doors designed to operate with the doors closed, outside combustion air, and a means is provided for sealing the flue to minimize interior air (heat) loss when not in operation.
(b) Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified.
(c) Wood stove and fireplace inserts, as defined in UL 1482, Section 3.8 are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100 (3).
(d) Pellet (biomass) stoves and furnaces are in accordance with the requirements of ASTM E1509 or are EPA certified.
(e) Masonry heaters are in accordance with the definitions in ASTM E1602 and ICC IBC, Section 2112.1.

12.4.4.3 Garages (per 901.3.1 (a) and (b)) Where installed in the common wall between the attached garage and conditioned space in the addition, the door is tightly-sealed and gasketed. A continuous air barrier is provided between walls and ceilings of the addition separating the garage space from the conditioned living spaces.

12.4.4.4 Plywood and sheathing (per 901.4 (1)) A minimum of 85% of the structural plywood used for floor, wall, and/or roof sheathing of the addition is compliant with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing is compliant with DOC PS 2. The panels are made with moisture-resistant adhesives. The trademark indicates these adhesives as follows: Exposure 1 or Exterior for plywood, and Exposure 1 for OSB.

12.4.4.5 Carpet (per 901.5 (1)) Wall-to-wall carpeting is not installed adjacent to water closets and bathing fixtures.

12.4.4. 6 Arch Coatings when building is occupied (per 901.8)

Architectural coatings. When the building is occupied during the construction of the addition a minimum of 85 percent of the architectural coatings are in accordance with either Section 901.8.1 or Section 901.8.2, not both:

901.8.1 Site-applied interior products are in accordance with one or more of the following standards:

- (1)** Zero VOC as determined by EPA Method 24 (VOC content below the detection limit for the method)
- (2)** CARB *Suggested Control Measure for Architectural Coatings*
- (3)** GS-11
- (4)** VOC limits in accordance with:
 - (a)** 50 grams/liter flat
 - (b)** 100 grams/liter non flat
 - (c)** 350 grams/liter clear wood varnish
 - (d)** 550 grams/liter clear wood lacquer

901.8.2 Site-applied interior products are in accordance with the emissions levels of CDPH 01350, as certified by a third party program such as the GREENGUARD Environmental Institute's *Children and Schools Certification Program* or the Scientific Certification Systems *Indoor Advantage Gold Program*.

12.4.4.6 Adhesives and sealant when building is occupied (per 901.9)

<p>Adhesives and sealants. When the building is occupied during the construction of the addition, a minimum of 85 percent of site-applied adhesives and sealants are in accordance with Section 901.9.1 and/or Section 901.9.2.</p>
<p>901.9.1 Exterior low-VOC adhesives and sealants: A minimum of 85 percent of site-applied products used for the installation of subfloors and on the exterior of the project are in accordance with one of the following:</p>
<p>(1) The California Air Resources Board consumer products regulation as follows:</p> <ul style="list-style-type: none"> (a) Construction Adhesives: VOC content not to exceed 7 percent by weight or 75 grams/liter, whichever is greater. (b) The VOC content of reactive sealants (i.e., silicones, polyurethanes, and hybrids, such as MS Polymer and silylated polyurethane resin or SPUR) not to exceed 4 percent by weight or 50 grams/liter, whichever is greater. (c) The VOC content of all other caulks and sealants not to exceed 2 percent by weight or 30 grams/liter, whichever is greater. (d) The VOC content of contact adhesives not to exceed 55 percent by weight or 480 grams/liter, whichever is greater.
<p>(2) GS-36</p>

12.4.4.8 Lead safe (per 901.15) *For building constructed prior to 1978, lead-safe work practices are used during renovation, remodeling, painting, and demolition.*

12.4.4.9 Spot ventilation (per 902.1.1 (1) and (2))

<p>Spot ventilation for the addition is in accordance with the following:</p>
<p>(1) Bathrooms are vented to the outdoors. The minimum ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms.</p>
<p>(2) Clothes dryers are vented to the outdoors.</p>

12.4.4.10 Radon control measures are in accordance with ICC IRC Appendix F

12.4.4.11 HVAC system protection (per 902.4 – select one measure)

<p>HVAC system protection. One of the following HVAC system protection measures is performed.</p>
<p>(1) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.</p>
<p>Addition and Renovation Note: <i>Section 902.4(1) does not apply to additions and renovations except as noted in Addition and Renovation Note (3) below.</i></p>
<p>(2) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned and the filter is replaced if necessary.</p>
<p>Addition and Renovation Note: <i>As an alternative to Section 902.4(2), one of the following options is implemented:</i></p>
<p>(1) <i>During construction, a construction indoor air quality (IAQ) schedule is developed that includes, at minimum, all of the following:</i></p> <ul style="list-style-type: none"> (a) <i>type of construction activity</i> (b) <i>ability to occupy the building or dwelling unit</i> (c) <i>IAQ protections for occupant(s) of the building or dwelling unit</i> (d) <i>hazardous waste removal</i> (e) <i>name and age of occupants of the building or dwelling unit at a specific time</i>

- (2)** *The addition or renovation area are sealed off from the occupied portion of the building or dwelling unit. The same HVAC system for conditioning the air in renovated and occupied space is not used.*
- (3)** *The building or dwelling unit is not occupied during the entire construction period and Sections 902.4(1) and 902.4(2) are implemented.*

12.4.4.12 Tile backing (per 903.1) Tile backing materials installed under tiled surfaces in wet areas are in accordance with ASTM C1178, C1278, C1288, or C1325

12.4.4.13 Capillary breaks (per 903.2.1)

A capillary break and vapor retarder are installed at all concrete slabs in the addition in accordance with Sections 903.2.1(1) or 903.2.1(2), as modified by Section 903.2.1(3):

- (1)** A minimum 4-inch (102 mm) thick bed of ½-inch (13 mm) diameter or greater clean aggregate, covered with polyethylene or polystyrene sheeting in direct contact with the concrete slab, with the sheeting joints lapped in accordance with Section 903.3.
- (2)** A minimum 4-inch (102 mm) thick uniform layer of sand, overlain with a layer or strips of geotextile drainage matting, covered with polyethylene sheeting, with the sheeting joints lapped in accordance with Section 903.3.
- (3)** Modification:
 - (a)** In areas with free-draining soils, identified as Group 1 in the ICC IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel bed or geotextile matting is not required.
 - (b)** In Dry climate locations, as defined by Figure 6(1), polyethylene sheeting is not required unless required for radon resistance (Section 902.3).

12.4.4.14 Crawlspace vapor retarder and damp proof (per 903.3.1)

Addition crawlspace vapor retarder is in accordance with the following, as applicable. Joints of vapor retarder overlap a minimum of 6 inches (152 mm) and are taped.

(1) Floors. Minimum 6 mil vapor retarder installed on the crawlspace floor and extended up the wall sufficient to allow the material to be affixed with glue and furring strips.

(2) Walls. Damp-proof walls are provided below finished grade.

12.4.4.15 Moisture in walls not yet enclosed (per 903.4.1 (2)) Walls of the addition are not enclosed (e.g. with drywall) if the insulation has a high moisture content. Wet insulation products are dry before enclosing.

12.4.4.16 Moisture content of substrates (per 903.4.2) Moisture content of subfloor, substrate, or concrete slabs in the addition is in accordance with the appropriate industry standard for the finish flooring to be applied.

12.4.4.17 Duct insulation in unconditioned space (per 903.6 (1)) All HVAC ducts, plenums, and trunks in unconditioned attics, basements, and crawl spaces of the addition are insulated to a minimum of R-6. Outdoor air supplies to ventilation systems are insulated to a minimum of R-6.

12.4.5 OPERATION, MAINTENANCE, AND BUILDING OWNER EDUCATION

A building owner’s manual is provided that includes the following, as available and applicable.

(1) A green building program certificate or completion document.

(2) List of green building features **in the addition** (can include the national green building checklist).

(3) Product manufacturer’s manuals or product data sheet for installed major equipment, fixtures, and

appliances in the addition. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.