



# ENERGY STAR Qualified Homes, Version 3 (Rev. 03) Water Management System Builder Checklist<sup>1,2,3</sup>

Home Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_

Inspection Guidelines	Must Correct	Builder Verified	Rater Verified	N/A
<b>1. Water-Managed Site and Foundation</b>				
1.1 Patio slabs, porch slabs, walks, and driveways sloped $\geq 0.25$ in. per ft. away from home to edge of surface or 10 ft., whichever is less. <sup>4</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Final grade is, or is scheduled by builder to be, sloped $\geq 0.5$ in. per ft. away from home for $\geq 10$ ft. and back-fill tamped to prevent settling <sup>4</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using either: <sup>5</sup>				
1.3.1 4 in. bed of $\geq 0.5$ in. clean aggregate covered with $\geq 6$ mil polyethylene sheeting lapped 6-12 in. or $\geq 1$ " extruded polystyrene insulation with taped joints, in direct contact with concrete slab above, <b>OR</b> ;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3.2 4 in. uniform layer of sand overlaid with geotextile drainage matting and covered with sheeting or $\geq 1$ " extruded polystyrene insulation with taped joints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 Capillary break for all crawlspace floors using either: <sup>5</sup>				
1.4.1 Concrete slab over $\geq 6$ mil polyethylene sheeting, lapped 6-12 in., <b>OR</b> ;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4.2 $\geq 6$ mil polyethylene sheeting, lapped 6-12 in. and either a) lapped up each wall or pier far enough to be fastened with furring strips or equivalent, or b) secured in the ground at the perimeter using stakes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 Exterior surface of below-grade walls finished as follows: <ul style="list-style-type: none"> <li>• For poured concrete, concrete masonry, and insulated concrete forms, finish with damp-proofing coating</li> <li>• For wood framed walls, finish with polyethylene and adhesive or other equivalent waterproofing</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6 Class 1 vapor retarders not installed on the interior side of air permeable insulation in exterior below-grade walls <sup>6</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7 Sump pump covers mechanically attached with full gasket seal or equivalent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.8 Drain tile surrounded with clean gravel and fabric filter <sup>7</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. Water-Managed Wall Assembly</b>				
2.1 Flashing at bottom of exterior walls with weep holes included for masonry veneer and weep screed for stucco cladding systems, or equivalent drainage system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Fully sealed continuous drainage plane behind exterior cladding that laps over flashing in Section 2.1. Additional bond-break drainage plane layer provided behind all stucco and non-structural masonry cladding wall assemblies <sup>8</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Window and door openings fully flashed <sup>9</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Water-Managed Roof Assembly</b>				
3.1 Step and kick-out flashing at all roof-wall intersections, extending $\geq 4$ " on wall surface above roof deck and integrated with drainage plane above <sup>10</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 For homes that don't have a slab-on-grade foundation and do have expansive or collapsible soils, gutters & downspouts provided that empty to lateral piping that deposits water on sloping final grade $\geq 5$ ft. from foundation or to underground catchment system $\geq 10$ ft. from foundation. <sup>11</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Self-sealing bituminous membrane or equivalent at all valleys & roof deck penetrations <sup>12</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4 In 2009 IECC Climate Zones 5 and higher, self-sealing bituminous membrane or equivalent over sheathing at eaves from the edge of the roof line to $> 2$ ft. up roof deck from the interior plane of the exterior wall. <sup>12</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4. Water-Managed Building Materials</b>				
4.1 Wall-to-wall carpet <u>not</u> installed within 2.5 feet of toilets, tubs, and showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2 Cement board or equivalent moisture-resistant backing material installed on all walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Paper-faced backerboard shall not be used <sup>13</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3 In Warm-Humid climates, Class 1 vapor retarders not installed on the interior side of air permeable insulation in above-grade walls, except at shower and tub walls <sup>6</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4 Building materials with visible signs of water damage or mold <u>not</u> installed <sup>14</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5 Interior walls <u>not</u> enclosed (e.g., with drywall) if either the framing members or insulation products have high moisture content <sup>15</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Builder Employee: _____				
Builder Signature: _____ Date: _____				
<i>Builder has completed Builder checklist in its entirety, except for items that are checked in the Rater Verified column (if any)</i> <sup>2</sup>				
Rater Signature: _____ Date: _____				



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1. The specifications in this checklist are designed to help improve moisture control in new homes compared with homes built to minimum code. However, these features alone cannot prevent all moisture problems. For example, leaky pipes or overflowing sinks or baths can lead to moisture issues and negatively impact the performance of this checklist's specified features.
2. This checklist shall be provided by the Rater to the Builder who shall complete the checklist. Upon completion, the Builder shall return the checklist to the Rater for review. If desired by the Builder, the Rater may verify any item on this checklist. When this occurs, the Rater shall check the box of the verified items in the Rater Verified column. The Rater is only responsible for ensuring that the Builder has completed the Builder checklist in its entirety and for the items that are checked in the Rater Verified column (if any). The Rater is not responsible for assessing the accuracy of the field verifications for items in this checklist that are not checked in the Rater Verified column. Instead, it is the builder's exclusive responsibility to ensure the design and installation comply with the Builder checklist.
3. A completed and signed Indoor airPLUS Verification Checklist may be submitted in lieu of the Water Management System Builder checklist. For more information, see [www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)
4. Where setbacks limit space to less than 10 ft., swales or drains designed to carry water from foundation shall be provided. Backfill tamping is not required if proper drainage can be achieved using non-settling compact soils, as determined by a certified hydrologist, soil scientist, or engineer.
5. Polyethylene sheeting is not required in Dry (B) climates as shown in 2009 IECC Figure 301.1 and Table 301.1, except in U.S. EPA Zone 1 Radon areas. Polyethylene sheeting is also not required for raised pier foundations with no walls. In areas with free-draining soils, identified as Group 1 in the IRC by a certified hydrologist, soil scientist, or engineer through a site visit, a gravel layer or geotextile matting is not required. EPA recommends, but does not require, radon-resistant features for homes built in EPA Radon Zones 1, 2 and 3. For more information, see [www.epa.gov/indoorairplus](http://www.epa.gov/indoorairplus)
6. The 2009 IRC defines Class I vapor retarders as a material or assembly with a rating of  $\leq 0.1$  perm, as defined using the desiccant method with Procedure A of ASTM E 96. The following materials are typically rated at  $\leq 0.1$  perm and therefore shall not be used on the interior side of air permeable insulation in above-grade exterior walls in warm-humid climates or below-grade exterior walls in any climate: rubber membranes, polyethylene film, glass, aluminum foil, sheet metal, foil-faced insulating sheathings, and foil-faced non-insulating sheathings. These materials can be used on the interior side of walls if air permeable insulation is not present (e.g., foil-faced extruded polystyrene rigid insulation board adjacent to a below-grade concrete foundation wall is permitted).

Note that this list is not comprehensive and other materials with a perm rating  $\leq 0.1$  also shall not be used. Also, if manufacturer specifications for a specific product indicate a perm rating above 0.1, then the material may be used, even if it is in this list. Also note that open-cell and closed-cell foam generally have perm ratings above this limit and may be used unless manufacturer specifications indicate a perm rating  $\leq 0.1$ .

Several exemptions to these requirements apply:

- Class I vapor retarders, such as ceramic tile, may be used at shower and tub walls;
- Class I vapor retarders, such as mirrors, may be used if they are mounted with clips or other spacers that allow air to circulate behind them.

7. Protected drain tile shall be installed at the footings of basement and crawlspace walls, level or sloped to discharge to outside grade (daylight) or to a sump pump. The top of each drain tile pipe shall always be below the bottom of the concrete slab or crawlspace floor. Each pipe shall be surrounded with at least 6 inches of  $\frac{1}{2}$  to  $\frac{3}{4}$  inch washed or clean gravel. The gravel layer shall be fully wrapped with fabric cloth or drain tile pre-wrapped with a fabric filter to prevent clogging of the drain tile with sediment.
8. Any of the following systems may be used: a monolithic weather-resistant barrier (i.e., house wrap) sealed or taped at all joints; weather resistant sheathings (e.g., faced rigid insulation) fully taped at all "butt" joints; lapped shingle-style building paper or felts; or other water-resistive barrier recognized by ICC-ES or other accredited agency.
9. Include pan flashing at sills, side flashing that extends over pan flashing, and top flashing that extends over side flashing.
10. Intersecting wall siding shall terminate 1 in. above the roof or higher, per manufacturer's recommendations. Continuous flashing shall be installed in place of step flashing for metal and rubber membrane roofs.
11. The assessment of whether the soil is expansive or collapsible shall be completed by a certified hydrologist, soil scientist, or engineer. Gutters shall be not required in dry climates as shown in 2009 IECC Figure 301.1 and Table 301.1. A roof design without gutters is also acceptable if it deposits rainwater to a grade-level rock bed with a waterproof liner and a drain pipe that deposits water on a sloping finish grade  $\geq 5$  ft. from foundation. Rainwater



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harvesting systems may also be used to meet this requirement when designed to properly drain overflow, meeting the discharge-distance requirements above.

12. Not required in dry climates as shown in 2009 IECC Figure 301.1 and Table 301.1.
13. Monolithic tub and shower enclosures (e.g., fiberglass with no seams) are exempt from this backing material requirement unless required by the manufacturer. Paper-faced backerboard may only be used behind monolithic enclosures and only if it meets ASTM mold-resistant standards ASTM D3273 or ASTM D6329.
14. If mold is present, effort should be made to remove all visible signs of mold using detergent or other method. If removal methods are not effective, then the material shall be replaced.
15. For wet-applied insulation products, follow manufacturer's drying recommendations. As guidance, EPA recommends that lumber not exceed 18% moisture content.