

## ENERGY SERIES: What Can Builders Do to Help Prevent Moisture Problems in New Construction?

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Buildings should be designed and built to provide comfortable and healthy levels of relative humidity. They should also prevent both liquid water from migrating through building components and water vapor from being trapped in building assemblies, like walls.

Moisture prevention includes quality construction to shed water away from the building and its foundation; vapor (region dependent) and air barrier systems that hinder the flow of air infiltration and water vapor; quality building products and installation that can help reduce the chance of leaks; and cooling and heating systems designed to provide comfort throughout the year. The following checklist provides a list of actions that you and your builder can do or install in your home to make it less prone to moisture problems.

### Building Features

- All interior wall surfaces > 3 Perms.
- No vapor barriers on inside of exterior wall assemblies in hot, humid climates; no vapor barriers on inside or outside of walls in mixed, humid climates.
- All armored/metal hoses from service to appliance.
- All Air Handler Units (AHUs) equipped with secondary drain pan and automatic shutoff.
- Conduct a plumbing integrity test.

### Site / Elevation / Slab

- Finished floor level at least 12" above 100-year flood plain.

- Grade level under floor (slab, stem wall, crawl space) is at least 8" above the surrounding finished grade, including landscaping.
- Grade slopes away from building on all sides for proper drainage.
- Drainage tile on and around top of footing.
- Drainage board for below grade walls.
- Garage floor elevation and appropriate driveway slope.

### Outside House

#### *Walls*

- 8" or greater clearance between building exterior cladding and final earth grade, including landscaping.
- Siding and exterior trim primed on all sides.

#### *Exterior Flashing*

- All exterior flashing installed per manufacturer's instructions and/or per Energy and Environmental Building Association's *Water Management Guide* specifications.

#### *Roof*

- Roof slope > 3-in-12.
- Eaves at least 18" and rake (gable) at least 12".
- Secondary water protection installed on roof.
- Roof covering above and below flashing.
- Rain gutters on eaves installed.
- Downspouts discharge > 3' from building.

## **Inside House**

### ***Floors***

- Drain in laundry and mechanical room(s).
- Splashboards/capillary break in laundry and mechanical room(s).

### ***Walls***

- Seal all top plate penetrations.
- Capillary break between foundation and framing.

### ***Windows and Doors***

- Avoid pocket doors in humid areas (such as bathrooms).
- Avoid single pane aluminum windows.

### ***Plumbing***

- Faucets do not drip or leak upon occupancy.
- Automatic water sensors / shutoff system installed.
- Air admittance vents.
- Gasketed access panels to plumbing fixtures.

### ***Heating, Ventilation & Air Conditioning***

- Mechanical core with access to wet walls.
- Sealed combustion furnace.
- Whole house positive ventilation strategy.
- Condensate line(s) discharge >2 feet from house.
- Bathroom ventilation fan with humidistat or timer vented to exterior.
- Kitchen range hood vented to exterior.

## ***Humidity Control***

- Room by room load analysis including whole house latent load analysis (*Manual J* v. 8).
- Air handling unit in conditioned space.
- Advanced humidity control HVAC system.
- Humidistat.
- Achieve “air tight” duct credit.

## ***Appliances***

- Water heater equipped with secondary drain pan.
- Water heater equipped with shutoff.
- User friendly washer water shutoff valves.
- Washer and dryer outside of conditioned space.
- Drain pan under washer.
- Dishwasher with condensing water drain.
- Sealed water heater combustion, or isolated from conditioned area and power vented.

## **Landscape**

- Landscape exists primarily on rainfall; no permanent irrigation system.
- Plants minimum of 3' from foundation and when mature, won't touch the structure.
- Irrigation/sprinkler system located >2' from house; water doesn't hit house while operating.
- Onsite designated retention area.

Developed as part of the NASULGC/DOE Building Science Community of Practice.

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