

**Weatherization Program
Installation Checklist**
(Refer to Specifications for
additional details)



1. Ceiling Insulation in Attics		Verified
1.1	Notification: The appropriate utility was provided with at least 72 hours advance notice for in-progress verifications.	<input type="checkbox"/>
1.2	Debris: Degradable and absorbent scrap materials have been removed from the attic.	<input type="checkbox"/>
1.3	Water issues: Known water leaks and moisture damage has been repaired prior to installing insulation.	<input type="checkbox"/>
1.4	Knob-and-tube wiring: Insulation installed in contact with active knob-and-tube wiring was approved in writing by a licensed electrician. A Knob and Tube Wiring Inspection Report has been submitted to the utility, if K&T is present.	<input type="checkbox"/>
1.5	Interior access: Access to the interior of the home has been obtained to identify heat producing fixture locations.	<input type="checkbox"/>
1.6	Shields: Rigid, non-combustible materials. Extend min. 4" above new insulation and 3" clearance around non-IC fixtures. Attached to framing. Insulation removed from top and inside of shield.	<input type="checkbox"/>
1.7	Flues and chimneys: Insulation with no clearance around flues and chimneys is non-combustible (labeled as meeting ASTM E-136) and permitted by a local code official.	<input type="checkbox"/>
1.8	Kitchen exhaust ducts: Kitchen fan ducts are at least 28-gauge metal.	<input type="checkbox"/>
1.9	Exhaust ducts: Sheet metal or flex duct, mechanically fastened and sealed so as to vent to the outdoors, insulated to R-4, supported to prevent sagging, and must be as straight as possible, with no more than two 90deg turns, or equivalent. Newly-installed ducts are sized properly (see specs p.81, or see below). No vinyl coil duct.	<input type="checkbox"/>
1.10	Exhaust duct penetrations sealed: Gaps around exhaust fans have been air sealed with spray foam or equivalent.	<input type="checkbox"/>
1.11	Open chases sealed: Accessible open chases have been covered with an air-impermeable material and air sealed.	<input type="checkbox"/>
1.12	Insulation depth rulers installed: Installed 1 for every 300 square feet of attic area.	<input type="checkbox"/>
1.13	Attic hatch dams: Rigid wooden dams (or insulation batts laid flat) are installed around attic accesses to prevent insulation spilling into living/storage space to maintain consistent insulation levels. Cardboard not used.	<input type="checkbox"/>
1.14	Hatches: Attic access doors have weather-stripping and are insulated (R-30 for horizontal doors, and R-19 for vertical doors) if adjacent to conditioned spaces.	<input type="checkbox"/>
1.15	Pull-down stairs: Weatherstripped, insulated to min. R-10, or a new assembly with min. R-5 and weatherstripping.	<input type="checkbox"/>
1.16	Attic walls/Kneewalls: Insulated to min R-13, with new & existing insulation covered with vapor permeable air barrier.	<input type="checkbox"/>
1.17	Exterior accesses secured: Attic access openings to the outdoors or a garage are animal-proof with a cover and a mechanical fastener (latch or screw). Covers are wood or a framed screen (not cardboard or visqueen).	<input type="checkbox"/>
1.18	Soffit baffles: Insulation/debris removed from vents. Baffles are rigid, air impermeable, and extend at least 4" above final attic insulation. Opening between baffle and roof sheathing equal or greater than area of soffit vent. Baffles reach exterior side of top plate and attach to rafters.	<input type="checkbox"/>
1.19	Ventilation: Attic passive ventilation has a net free-ventilating area of at least 1/150, or 1/300 if split high/low. Soffit/eave/gable vents are clear and baffled, with baffles extending 4" above finished insulation level.	<input type="checkbox"/>
1.20	Vapor retarder: If present, the vapor retarder is installed in contact with attic side of ceiling. No vapor retarder installed over existing attic insulation.	<input type="checkbox"/>
1.21	Fully insulated: Final R-value is a minimum of R-49, or the highest R-value approaching R-49 that is practical. In attics with floor decking, insulation has been installed under the decking so that the cavities are filled.	<input type="checkbox"/>

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2. Exterior Roof Insulation		Verified
2.1	Notification: The appropriate utility was provided with at least 72 hours advance notice for in-progress verifications.	<input type="checkbox"/>
2.2	Rigid Insulation: Insulation is rigid board form, with an insulation value of at least R-20.	<input type="checkbox"/>
2.3	Open cavities: Insulation is not installed over a cavity that is ventilated with the outdoors.	<input type="checkbox"/>
2.4	Weather-proof detailing: Roof covering, flashing and drainage are installed to prevent water leaks.	<input type="checkbox"/>
3. Interior Roof & Sloped Ceiling Insulation		
3.1	Notification: The appropriate utility was provided with at least 72 hours advance notice for in-progress verifications.	<input type="checkbox"/>
3.2	Sloped ceilings with ventilated cavities: Where ceiling cavities are <i>not</i> completely filled with insulation, there exists at least a 1 inch air gap between the insulation and roof deck, and the net free-ventilating area is at least 1/150 (or 1/300 split between hi/low) so that moisture can escape.	<input type="checkbox"/>
3.3	Short sloped ceilings (<8ft) with filled cavities: Where the length of the slope is <i>less</i> than 8 feet, and where a ventilated attic exists both above and below the slope, and the ceiling joist cavities have been filled with insulation, the finished ceiling has been air sealed, the upper and lower cavity openings are left vapor-permeable, and the net free-ventilating area is at least 1/150 (or 1/300 split between hi/low) so that moisture can escape.	<input type="checkbox"/>
3.4	Full sloped ceilings (>8ft) with filled cavities: Where the length of the slope is <i>greater</i> than 8 feet and the ceiling cavities have been filled with insulation, the insulation value is at least R-24 (or as high as possible given the cavities), the insulation material is an air-impermeable vapor retarder, and the perimeters of the insulation are sealed at all seams to create a continuous air barrier to prevent condensation on the bottom side of the roof deck.	<input type="checkbox"/>
3.5	ICAT fixtures: All recessed fixtures in sloped ceiling assembly are UL rated for Insulation Contact Air Tight (ICAT).	<input type="checkbox"/>
4. HVAC Duct Insulation & Duct Sealing		
4.1	Ducts prepared before attic insulation: HVAC ducts located in attics have been sealed with mastic and insulated prior to being made inaccessible by newly-installed attic insulation. See BPA requirements for duct sealing.	<input type="checkbox"/>
4.2	Fasteners: HVAC duct insulation is fastened to the ducts using mechanical fasteners (straps, twine, pins, etc).	<input type="checkbox"/>
4.3	Duct R-value: Newly-installed HVAC duct insulation has an insulation value of no less than R-8.	<input type="checkbox"/>
5. Insulated Doors		
5.1	ENERGY STAR: Doors are pre-hung and rated as ENERGY STAR.	<input type="checkbox"/>
5.2	Voids filled with insulation: All interior or exterior voids over 3/8" were filled with non-expanding foam or similar.	<input type="checkbox"/>
5.3	Water-resistive barrier: Door incorporated into the home's water-resistive barrier.	<input type="checkbox"/>
5.4	Finished door: Doors are installed square, plumb and level. Doors operate smoothly and properly. When in the closed position, doors make a fully sealed contact with weather stripping and threshold.	<input type="checkbox"/>

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6. Floor Insulation		Verified
6.1	Before work: All scrap materials removed from the crawlspace. Plumbing or sewer leaks repaired. Standing water in the crawlspace drained. Bulk water problems repaired.	<input type="checkbox"/>
6.2	Ground-moisture barrier: Approved materials used, no soil left exposed, seams overlap by 12”.	<input type="checkbox"/>
6.3	Knob-and-tube wiring: Insulation installed in contact with active knob-and-tube wiring was approved in writing by a licensed electrician. A Knob and Tube Wiring Inspection Report has been submitted to the utility, if K&T is present.	<input type="checkbox"/>
6.4	Exhaust ducts: Sheet metal or flex duct, mechanically fastened and sealed so as to vent to the outdoors, supported to prevent sagging, and must be as straight as possible, with no more than two 90deg turns, or equivalent. Newly-installed ducts are sized properly (see specs p.81, or see below). No vinyl coil duct. For dryer exhaust, metal clamps used (no screws), comply with local code and manufacturer specifications, don't exceed 25 feet, and slope downward toward the termination fitting.	<input type="checkbox"/>
6.5	Penetrations sealed: Accessible electrical and plumbing penetrations have been air sealed with spray foam or equivalent. Open chases or openings under bathtubs have been covered and air sealed. (For manufactured homes with an intact rodent barrier, penetrations may be considered inaccessible.)	<input type="checkbox"/>
6.6	External access hatches: Fasteners/hinges made from corrosion-resistant materials, horizontal hatches shed water away from foundation, wood in contact with ground is moisture- and rot-resistant, existing access covers in good condition, weather- and vermin-resistant.	<input type="checkbox"/>
6.7	Inside access hatches: Weatherstripped and insulated (R-25 for horizontal doors, and R-13 for vertical doors) using staples and twine, or equivalent, if adjacent to conditioned space.	<input type="checkbox"/>
6.8	Ventilation: Total net free area not less than 1 sqft per 150 sqft of underfloor area. (Utility rep may allow reduced ratio of 1/1500 for dry crawlspaces or basements.)	<input type="checkbox"/>
6.9	Vent openings: Vent openings covered with corrosion-resistant wire mesh with openings not more than 1/4” in width or length. Located close to corners and provide cross ventilation in crawl space.	<input type="checkbox"/>
6.10	Vertical walls: Walls to conditioned space are insulated to min R-13, with newly-installed insulation covered with a vapor permeable air barrier.	<input type="checkbox"/>
6.11	Batt insulation: Cut to fit around obstructions. No gaps or voids. Cavities are fully insulated (at least R-19 for 6” joists; R-25 for 8” joists; or R-30 for 10” joists). Vapor-retarder (if present) installed against floor sheathing.	<input type="checkbox"/>
6.12	Insulation support: Insulation supported with wood lath, polypropylene twine, or wire, and fastened to floor joists no more than 18” apart (or for joists spaced at 48”, supports are fastened no more than 12” apart).	<input type="checkbox"/>
6.13	Exposed floors: Any insulation that is not enclosed by a crawlspace and is exposed to the weather (wind, etc) is protected by an air barrier and an animal-proof cover system.	<input type="checkbox"/>
6.14	Blown floor insulation: Insulation restrainer installed securely to floor joists. Approved insulation material installed in full contact with sub-floor. Holes in the insulation restrainer are permanently patched (using plugs or repair material affixed with outward clinch stitch-staples or adhesive, or equivalent).	<input type="checkbox"/>

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7. Wall Insulation		Verified
7.1	Notification: The appropriate utility was provided with at least 72 hours advance notice for in-progress verifications.	<input type="checkbox"/>
7.2	Knob-and-tube wiring: Insulation installed in contact with active knob-and-tube wiring was approved in writing by a licensed electrician. A Knob and Tube Wiring Inspection Report has been submitted to the utility, if K&T is present.	<input type="checkbox"/>
7.3	Below-grade walls: No fiberglass is in contact with masonry or concrete.	<input type="checkbox"/>
7.4	Wall R-value: Insulated to R-11, or the highest practical R-value. All cavities in accessible exterior walls are filled, including small cavities above, below and on the sides of windows and doors.	<input type="checkbox"/>
Blown Wall Insulation		
7.5	Interior access: Access to the interior of the home has been obtained to identify heat producing fixture locations.	<input type="checkbox"/>
7.6	Wall-mounted heaters: Blocked to prevent contact with insulation. If blocking can't be installed, cavity not insulated.	<input type="checkbox"/>
7.7	Insert-tube method: Where the insert-tube method was used, the tube was inserted to the very top and bottom of each cavity. Cavities were filled completely.	<input type="checkbox"/>
7.8	Two-hole method: Where the two-hole method was used, the lower holes are located no higher than 48" above the floor, and the upper holes located no lower than 12" from top of wall. Cavities were filled completely.	<input type="checkbox"/>
7.9	Holes through siding are paint-ready: Where holes were drilled through siding, holes are plugged, sealed, weatherproof, and ready to paint. If the surface of the plug is below the surface of the siding, the hole is filled with non-shrinking filler.	<input type="checkbox"/>
7.10	Holes beneath siding: Holes that were drilled beneath siding are plugged and completely covered by the siding. Partially exposed plugs are covered by a properly-lapped weather paper.	<input type="checkbox"/>
7.11	Siding replaced: Siding that was removed was replaced and securely fastened back in place. The homeowner was contacted to discuss what to do about any damaged siding.	<input type="checkbox"/>
7.12	Clean up: After completion of work, electrical outlets and switches and interior surfaces were inspected. Insulation material was removed as needed.	<input type="checkbox"/>
Batt Wall Insulation		
7.13	Air barrier: Existing & newly-installed wall insulation in open cavities (i.e. knee walls) is covered with a vapor-permeable air barrier (i.e. house wrap) to keep insulation in contact with the wall and to provide improved insulation performance.	<input type="checkbox"/>
Rigid Exterior Wall Insulation		
7.14	Water resistive barrier: Code-approved water resistive barrier (house wrap or similar) was installed during retrofit.	<input type="checkbox"/>
7.15	Continuous insulation: If installed, sheets are fitted tightly together so they are continuous across wall section.	<input type="checkbox"/>
7.16	Windows details: Water resistive barrier was incorporated into the window flashing to provide a continuous drainage plane.	<input type="checkbox"/>

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8. Windows (and sliding glass or French patio doors)		Verified
8.1	NFRC rating: Windows have appropriate documentation of NFRC rating. If a manufacturer's order confirmation is not available, then the NFRC stickers have been saved for homeowner and utility use.	<input type="checkbox"/>
8.2	Windows arrived free of defects: Windows have been inspected before installation. Damaged windows have been set aside for manufacturer replacement.	<input type="checkbox"/>
8.3	Old windows: Carefully removed with framing and trim left undamaged. Damaged framing or flashing replaced.	<input type="checkbox"/>
8.4	Fastener materials: All replacement fasteners and hardware is stainless steel or other corrosion-resistant material.	<input type="checkbox"/>
8.5	Pressure-treated wood: Any wood that touches the ground or concrete is pressure-treated.	<input type="checkbox"/>
8.6	Window supports: Weight of window supported by the sill, using shims under main vertical supports.	<input type="checkbox"/>
8.7	Voids filled with insulation: All interior or exterior voids (including window-weight channels) over 3/8" were filled with backer rod, non-expanding foam, or equivalent window manufacturer-approved material prior to any caulking.	<input type="checkbox"/>
8.8	Sealing: Windows are installed so that they are weather tight and prevent water penetration and air infiltration.	<input type="checkbox"/>
8.9	Safety glass: Safety glass was installed in locations where the risk of glass breakage is high (including patio doors, and windows near doors), as required by code. Manufacturer's safety glazing label is visible on glass panes.	<input type="checkbox"/>
8.10	Exposed windows: Where overhangs are absent, metal head flashing installed behind exterior siding and house wrap at least 1", overlapping sides of windows, with at least 1/4" downward-bending lip on front and ends of flashing.	<input type="checkbox"/>
8.11	Wood is paint-ready: All exterior wood, including frame, sash, trim, stops and sills on all sides and ends has been caulked and primed.	<input type="checkbox"/>
8.12	Window size: Replacements windows do not result in an increased window area, unless they are meeting minimum code egress requirements.	<input type="checkbox"/>
8.13	Finished windows: Windows are installed so they are square, plumb and level, are free from exposed burrs, sharp corners and other hazardous conditions, operate smoothly and properly, and provide a workmanlike installation.	<input type="checkbox"/>
Nailing-Fin Windows		
8.14	Fasteners: Heads wide enough to span nailing-fin holes. Fasteners not over-driven, nailing-fin is not deformed.	<input type="checkbox"/>
8.15	Window supports: Window's weight not supported by nailing-fin.	<input type="checkbox"/>
Block-Frame or Finless Windows		
8.16	Fasteners: Secured to rough opening within 4" of each corner and a min. 12" along remainder. Screws fastened through the window frame with screws designed for this purpose. Jamb clips fastened to the window and to the opening in separate steps, if used.	<input type="checkbox"/>
Flush-Fin Windows		
8.17	Caulking: Backside of window fin caulked with a sealant that remains flexible. Caulking interrupted on bottom fin at 1" on each side of the weep hole.	<input type="checkbox"/>
8.18	Fasteners: Secured to rough opening within 4" of each side corner and a min. 12" on center along remainder. Screws fastened through the window frame with screws designed for this purpose. Fastening plates fastened to the window and to the opening in separate steps, if used.	<input type="checkbox"/>

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APPENDIX 2: EXHAUST FAN PRESCRIPTIVE DUCT SIZING

Use table below to size new exhaust fan ducts correctly.

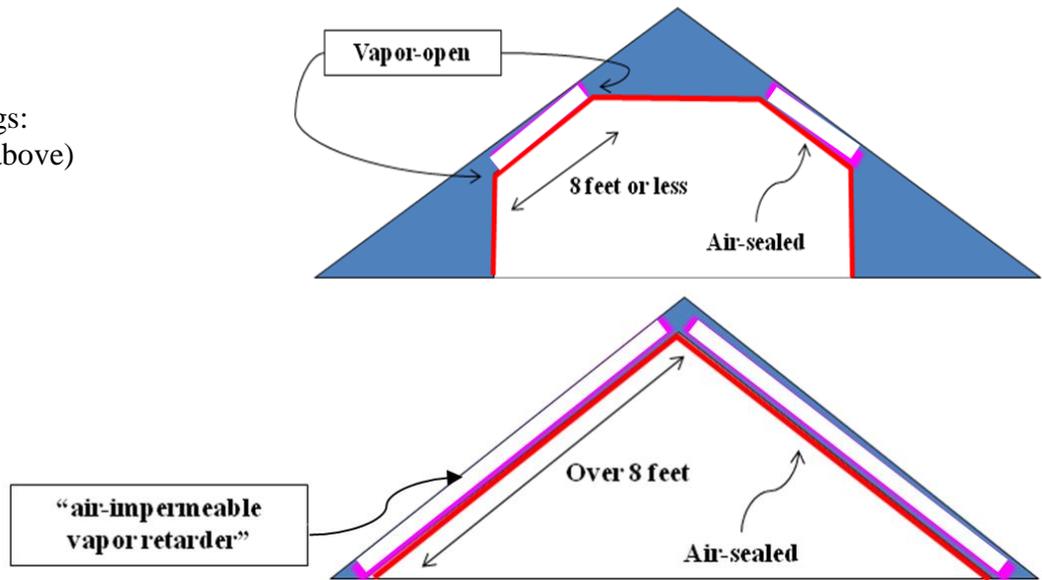
Table 13 - Exhaust Fan Prescriptive Duct Sizing

Duct Dia.	Rated Fan CFM							
	50	80	100	125	150	200	250	300
Smooth Hard Duct - Maximum Duct Length in Feet								
3"	5	X	X	X	X	X	X	X
4"	114	31	10	X	X	X	X	X
5"	NL	152	91	51	28	X	X	X
6"	NL	NL	NL	168	112	53	25	9
7"	NL	NL	NL	NL	NL	148	88	54
8"	NL	NL	NL	NL	NL	NL	198	133
HVAC Flex Duct - Maximum Duct Length in Feet								
3"	X	X	X	X	X	X	X	X
4"	56	4	X	X	X	X	X	X
5"	NL	81	42	16	2	X	X	X
6"	NL	NL	158	91	55	18	1	X
7"	NL	NL	NL	NL	161	78	40	19
8"	NL	NL	NL	NL	NL	189	111	69

NL: No limit;
X: not allowed
Table assumes no elbows. Deduct 15 ft from allowable duct length for each elbow.

Exhaust duct sizing:
(see also 1.9, above)

Sloped ceiling drawings:
(see also 3.3 and 3.4, above)



Window types:
(see also 8.14 - 8.18, above)

