MANUFACTURED HOUSING Field Guide

Standards of Reference: Technical Standards for the Manufactured Housing Professional

2	**Health and Safety**	
	Inspected wiring and correctly identified type, specifying certified electrician if aluminum	
	Demonstrated electrical inspection for operation of outlets, lights, polarity and ground	
	Inspected plumbing for leaks, specifying repairs	
	Demonstrated scaffold set-up	
	Demonstrated proper use of personal protective equipment	
	Inspected for moisture issues in the interior wall and roof cavities	
	Identified source of moisture and specified treatment including mechanical ventilation where sources exist and cannot be removed	
5	**Belly**	
	Completed thorough inspected of belly including belly board	
	Completed thorough inspected of belly including vapor barrier	
	Completed thorough inspected of belly including insulation	
	Completed thorough inspected of belly including ductwork	
	Completed thorough inspected of belly including framing type	
	Identified and prioritized belly treatment	
	Inspected interior areas where insulation may enter home during belly blow	
	Identified proper materials and procedures for treatment dense pack wings, prioritized belly patches over insulation)	
	Explained procedures for insulating with both longitudinal and cross-wise framing	
5	**Sidewalls**	
	Identified construction type, including interior obstructions	
	Identified existing insulation	
	Identified any issues/obstructions to blowing walls (weak paneling, interior holes, electrical)	
	Demonstrated proper procedures for drilling opening and plugging/sealing holes after installation	
	Demonstrated proper tubing technique for blowing fiberglass for at least one example (explained procedures for remaining two)	
	Demonstrated wall stuffing technique	
5	**Windows and Doors**	
	Inspected for proper fit, operation, and performance	
	Identify appropriate replacement if needed	
	Demonstrate procedure to accurately measure for replacement	
3	**Roof / Ceiling**	
	Demonstrate roof inspection (drill hole visual or photograph, measure cavity and insulation	
	Identify framing type and condition of roof / ceiling	
	Identify type, location, and effectiveness of insulation and vapor barrier	
	Identify proper materials and procedures for treatment	
	Demonstrate or explain procedures for each of the following techniques: top access	
	Demonstrate or explain procedures for each of the following techniques: side access	
	Demonstrate or explain procedures for each of the following techniques: interior drill and blow	
	Inspected for proper terminations of plumbing, flues	
	Demonstrate or explain procedures for blocking around large penetrations (flues, swamp coolers)	
	Demonstrate proper techniques to seal opening when installation is complete	
	Identified strong back and procedure for getting around it	
3	**Air Sealing / Ventilation**	
	Demonstrate or explain procedure to prepare Manufactured Home for blower door test	
	Air seal ceiling for moisture mitigation and seal any large penetrations to prep for insulation	
	Prioritized insulation/air sealing measures based on results (<2000 CFM50: insulate before air sealing, 1500 CFM50 cutoff for air sealing)	
	Below 800 CFM50 made sure bath fan has at least 75 CFM rated capacity (use pressure pan or pressure drop across door to verify operation)	
	Made sure kitchen fan operates if gas range is present	
2	**Mechanical Systems**	
	Identified venting type of furnace, specified replacement if not sealed combustion	
	Identified venting type of DHW, specified replacement if interior closet and not sealed combustion	
	Inspected water heater for switchable gas valve	
	Inspected water heater closet for connections to other areas	
	Identified proper materials and procedures for air sealing DHW closet	
	Demonstrate pressure differential test to verify separation of closet from living space	
	Demonstrate pressure test to verify DHW is separate from furnace	
	Demonstrate CO testing procedures for furnace, water heater and closet area	
	Demonstrate pipe insulation for water heaters	
	Woodstove? (demonstrate CAZ depressurization test, calculate make-up air, inspect for code violations)	

3	**Combustion Safety Tests**
Correctly identified heating / cooling system types	
	e.g., Atmospheric, sealed combustion, power vented, etc
Correctly identified basic heating / cooling system operating components	
	e.g., burner, valves, supply, return, etc
Visual inspection of venting system for problems	
	Determined condition accurately
Indentified existing heating/cooling system components safety concerns	
	e.g. P&T valve, blow off discharge, fire hazards, exposed wires
Set up for natural conditions	
	Proper manometer setup
Correctly measured baseline pressure differential	
Correctly setup home in worst case condition	
	All exhaust appliances running
	Correct door closures - measured quatitatively or qualitatively
	Air handler operation impact checked
Correctly measured worst-case CAZ depressurization	
Took into account baseline pressure differential	
Calculated minimum draft pressure based on existing weather conditions	
Checked for worst case spillage in heating system	
	method used_e.g., mirror, smoke, etc
Checked for worst case spillage in DHW	
	method used_e.g., mirror, smoke, etc
Correctly identified time limits for spillage based on BPI Standards – Ask candidate	
Correctly determined if the appliance passes the spillage test	
What steps should be taken if it does not pass	
Performed worst case draft test on heating system	
	Proper probe placement
Performed worst case draft test on DHW	
	Proper probe placement
Candidate performed testing under natural conditions (use sections above to assess)	
	(only necessary if spillage detected under worst case)
Made appropriate recommendations according to BPI standards (using right table)	
Compared diagnostic results to appropriate table in the standards	
Identified the need for further evaluation when other combustion sources exist	
	(fireplace, space heater, etc)

3	**CO Testing**
Tested ambient CO outdoors	
	Properly interpreted measurements
Tested ambient CO indoors	
	Properly interpreted measurements
Measured heating system flue gas CO during combustion safety testing	
	- Proper probe placement, before mixing with ambient air, appropriate to venting type
Measured DHW flue gas CO during combustion safety testing	
	- Proper probe placement, before mixing with ambient air
Appropriate application of BPI action levels based on test results for CO in flue	
Correctly identified Action Levels based on worst case CO results – Ask candidate	
Monitored ambient CO levels in the CAZ during entire combustion safety tests	
Tested for CO in oven	
Checked for items, excessive debris inside oven	
Oven test sampling location appropriate	
Appropriate application of BPI action levels based on test results for CO in oven	

3	**Ductwork**
Demonstrate proper inspection techniques (visual, flashlight, mirror)	
Demonstrate pressure pan test and properly interpret results	
Identify areas for safe treatment	
Identify proper materials and procedures for treatment (cleaning prior to mastic, securing to avoid sagging)	
Demonstrate room to room pressure test	
Identify treatments to relieve pressure imbalances between rooms	