

Heating Professional Task List

Job Designation	Knowledge Area	Subject Area	Task
1.1	Building Science (Fundamentals) This Section is Inclusive For All Designations	Basic Terms & Definitions (to comprehend and use)	ACH (air changes per hour)
1.2			ACH50 (air changes per hour and 50 pascals)
1.3			CFM (cubic feet per minute)
1.4			CFM25 (cubic feet per minute at 25 pascals)
1.5			CFM50 (cubic feet per minute at 50 pascals)
1.6			CFMn (cubic feet per minute natural)
1.7			Alternating Current
1.8			Direct Current
1.9			AFUE
1.10			SEER
1.12			EER
1.13			HSPF
1.14			SSE (Steady
1.15			Carbon Monoxide
1.16			Carbon Dioxide
1.17			Oxygen
1.18			Sulfur Dioxide
1.19			Effective leakage area
			FPM (feet per minute)
			Area weighted R-Value
	Backdrafting		
	Baseload		
	British thermal unit (Btu)		
	Condensation		
	Condensate		
	Sones		
	Pressure differential		
	Temperature differential		
	Efficiency		
	Watt-hour		

			Static Pressure Drop, Total External Static Pressure	
			Oil Viscosity	
	Heating Systems and their interaction with other Building Systems (Intermediate)	Principles of Energy, Air & Moisture	Thermodynamics	
			Factors that affect insulation performance	
			Factors that effect mechanical system performance	
			Wind-driven house pressurization/depressurization	
			Natural and Mechanical driving forces of infiltration/exfiltration as well as pressurization/depressurization	
			Heat gain/loss	
			BTU content of fuels	
			Moisture transport mechanisims	
			Principles of combustion	
	Heating Systems and their interaction with other Building Systems (Intermediate) continued	Combustion Science	Carbon Dioxide (CO2)	F
			Carbon Monoxide (CO)	F
			Oxygen (O2)	F
			Sulfur Dioxide (SO2)	F
			Combustion process	F
			Combustion air	F
			Combustion appliance zone	F
			Spillage	F
			Draft	F
			Combustion appliance venting and concerns	F
			Effect of duct leakage on depressurization of CAZ	F
			Worse Case Depressurization	F
			Combustion Analysis	F
			Steady State Efficiency	F
			Effect of fuel overpressure/underpressure	F
	Heating Systems and their interaction with other Building Systems (Intermediate) continued	Building Components	Duct configurations and components	F
			Hydronic distribution configurations and components	F

		Structural components of residential construction	F
		Thermal boundary: insulation and air barrier location, effectiveness	F
		Electrical components and safety considerations	F
		Fuel delivery systems and safety considerations	F
		Vent system components and safety considerations	F
		Bulk water management components (drainage plumbing gutters sumps etc)	F
		Vapor barriers, weather-resistant barriers	F
		Radiant barrier principles and installations	F
		Understand/recognize heat and energy recovery ventilators	F
		Understand fenestration types and efficiencies	F
		Understand issues involved with basements crawlspaces and slabs	F
		Understand issues involved with conditioned space	F
		Understand issues involved with attics, crawl spaces, basements, attached garages	F
		Understand issues involved with attached garages	F
		Understand issues involved with interstitial building cavities and bypasses	F
		Understand issues involved with ventilation equipment	F
		Understand basic heating equipment components controls and operation	F
		Understand basic cooling equipment components controls and operation	F
		Understand basic DHW equipment components controls and operation	F
		Identify common mechanical safety controls	F
		Identify insulation types and R-Values	F
		Understand various mechanical ventilation equipment and strategies	F
	Heating Systems and their interaction with other Building Systems (Intermediate) continued	Conservation Strategies	
		Understand appropriate applications for fenestration upgrades including modifications or replacement	F
		Understand appropriate insulation and air sealing opportunities for upgrades based on existing conditions	F
		Opportunity for ENERGY STAR lighting and appliances	F
		Identify duct sealing opportunities and applications	F
		Understand importance of air leakage control and remediation procedures	F
		Understand importance of air leakage control in conjunction with insulation performance/ improvements	F
		DHW conservation strategies	F
		Heating & cooling efficiency applications	F

			Proper use of available resources to determine heating and cooling equipment sizing distribution system sizing equipment selection (i.e. ANSI/ACCA Manual J/S/D/T or equivalent)	F
			Appropriate application of insulation on the duct/ pipe distribution system	
			Appropriate applications for sealed crawlspaces basements and attics	
	Heating Systems and their interaction with other Building Systems (Intermediate) continued	Comprehensive Building Assessment Process	Understand/recognize areas/topic of customer complaints to determine in interview	F
			Understand/recognize need for conducting appropriate diagnostic procedures	F
			Interaction between mechanical systems envelope systems and occupant behavior	F
			Understand basic mathematics & science	
	Heating Systems and their interaction with other Building Systems (Intermediate) continued	Design Considerations	Appropriate insulation applications based on existing conditions	F
			Understand/recognize building locations where non-flammable materials must be used	F
			Understand/recognize building locations where opportunities for retrofit materials and processes are needed to correct problems and/or enhance performance	F
			Understand climate specific concerns	F
			Understand indoor environment considerations for the environmentally sensitive	F
			Understand impact of building orientation	F
			Understand impact of landscape drainage and site grading	F
			Understand impact of shading on loads	F
			Awareness for solar gain reduction in cooling climate	F
			Awareness for solar gain opportunities in heating climate	F
			Appropriate applications for sealed crawlspaces basements and attics	F
			Determine basement air-sealing strategy dependant on the	F
			Interpretation and application of blower door test results	
	Measurement and Verification of Building Performance (Intermediate)	Applied Diagnostics & Troubleshooting	Application of measured air leakage test results	F
			Apply fundamental construction mathematics and unit conversions	F
			Calculate building tightness levels (minimum ventilation requirements)	F
			Ventilation calculations and strategies	F
			Proper methods for identifying/testing fuel leaks	F
			Psychrometric evaluation	F
			Spillage evaluation	F

		Working knowledge of proper vent design and components	F
		Draft testing	F
		Blower door measurements	F
		Duct leakage testing (total leakage and leakage to outside)	F
		Pressure pan testing	F
		CAZ depressurization	F
		Carbon monoxide measurements	F
		Basic pressure diagnostic procedures including understanding "With Reference To" (WRT)	F
		Recognize contributing factors to health/safety and comfort problems	F
		Recognize contributing factors to performance/reliability/durability problems	F
		Recognize contributing factors to efficiency problems	F
		Combustion gas analysis and data interpretation/application	F
		Measure and verify temperature rise/drop interpret results and apply corrective actions	F
		Inspect for areas containing moisture or bulk water in undesirable locations	F
		Check for proper duct system balance between supply and return	F
		Measure and verify individual register airflow and compare to design specifications	F
		Heat exchanger inspection and appropriate actions	F
		Determine fan cycle settings and sequence of operation	F
		Heating system safety testing	F
		DHW system safety testing	F
		Visual evaluation of the distribution system	F
		Determine and adjust firing rate of appliances	F
		Ensure proper polarity and grounding of the heating system	F
		Fuel storage and delivery system integrity and appropriate actions	F
		Understand and inspect for basic electric safety	F
		Understand and inspect vent/chimney applications	F
	Measurement and Verification of Building Performance (Intermediate) continued	Tools and Equipment	
		Proper applications and use of temperature measuring devices	F
		Appropriate equipment for identification of air distribution problems	F
		Appropriate equipment for identification of hydronic distribution problems	F
		Proper applications and use of blower door equipment	F
		Fuel leak detection	F

		Proper application and use of combustion analysis equipment	F	
		Methods of duct leakage testing & equipment	F	
		Proper application and use of a pressure differential measuring device	F	
	BPI National Standards and Project Specifications	Comprehensive Building Assessment	Understand applicability content and intent of BPI National Standards	F
			Understand applicability and intent of local/state/national codes	F
			Understand applicability and intent of industry good/best practices	F
			Understand applicability and intent of Home Performance with ENERGY STAR	F
			Understand hazards associated with knob & tube wiring and be able to determine if it is live using basic electrical inspection techniques	F
			Use and apply appropriate codes & standards for chimney applications & appropriate material clearances (i.e NFPA-54)	F
			Address attic ventilation requirements	F
			Be able to specify materials and processes needed for building performance projects	F
	Optimizing the Installation, Operation, and Maintenance of Building Systems	Comprehensive Building Assessment	Recognize need for airsealing measures and their impact on other building systems	F
			Recognize need for mechanical equipment improvements	F
			Understand blower door use for identifying critical air sealing areas	F
			Apply blower door test results and Building Tightness Limit (minimum ventilation requirements) in development of improvement strategies	F
			Understand needs for protective shielding and baffling for the preparation of insulation installation	F
			Verify installed airflow rates of ventilation devices	F
			Test and balance a supply/return ventilation system for optimal performance	F
			Apply appropriate strategies for assuring insulation/air barrier alignment occurs	F
			Working knowledge of various types of insulation and air sealing techniques and materials	F
			Methods for determining if dense packing procedure has reached appropriate density	F
			Blown: Air pressure to material ratio manufacturers recommended density to achieve the R-value	F
			Using combustion safety testing results for appropriate actions	F
			Understand the impact on load associated with lighting and appliance retrofits	F
	Optimizing the Installation, Operation, and Maintenance of Building Systems (continued)	Appliances and Lighting	Understand impact on load associated with lighting and appliance retrofits	F
	Professional Ethics, Conduct & Communications (Fundamentals) continued	Conservation Strategies	Present options for comprehensive conservation strategies that are consistent with sound building science practices	F
			Understand the implications of building performance improvements on occupants and other building systems/components	F

			Understand the impact of installed actions on cost-benefit analysis guidance	F
			Understand the non energy benefits of building performance improvements	F
	Professional Ethics, Conduct & Communications (Fundamentals) continued	Comprehensive Building Assessment	Elements of effective oral communication with customer	
			Elements of a documentation system	
			Elements of effective written communication with customer	
			Understand the role of and basic elements of a quality management system	
	Professional Ethics, Conduct & Communications (Fundamentals) continued	Personal Safety & Work Practices	Locations in which to identify indoor air quality issues	F
			Material Safety Data Sheets	
			Federal/State/Local Requirements (EPA OSHA)	
			Isolation procedures for pollutants	
			Practice building science within your limits of professional competency	
			Precautions when working around chemical, biological and other potential hazards	
			Understand the roles and responsibilities of the envelope professional	