STATE OF CALIFORNIA

MULTIFAMILY DWELLING UNIT ENVELOPE LEAKAGE ACCEPTANCE

CEC-NRCA-MCH-21-H (Revised 01/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF ACCEPTANCE	NRCA-MCH-21-H
MULTIFAMILY DWELLING UNIT ENVELOPE LEAKAGE ACCEPTANCE	(Page 1 of 4)

Project Name:	Enforcement Agency:	Permit Number:
Project Address:	City:	Zip Code:
System Name or Identification/Tag:	System Location or Area Served:	

Compliance Results (technician): ◯ Complies ◯ Does Not Comply	HERS Rater in receipt of document (Signature / Date)

Intent:	Submit one Certificate of Acceptance for each dwelling unit using a Supply-Only or Exhaust-Only ventilation system to verify that the envelope leakage conforms to the requirements of the Energy Standards §120.1(b)2AivB2 and Nonresidential Reference Appendices NA7.18.2, NA2.3, ANSI/RESNET/ICC 380-2016, and ASTM E779-10 (2015). The technician is required to complete this compliance certificate prior to completing NRCA-MCH-20-H. NOTE: HERS Verification required.

A. Construction Inspection

Building:	Floor:	Room/Area/Zone:	Control System:

1	Prior to Functional Testing, verify and document all of the following.					
☐	a	Confirm the pressure boundary wall, ceiling, and floor penetrations are sealed. (NA7.18.2.1(a))				
☐	b	Confirm all gaps around the windows and doors are sealed. (NA7.18.2.1(b))				
☐	c	Confirm all chases are sealed at floor level using a hard cover and the hard cover is sealed. (NA7.18.2.1(c))				
2	Instrumentation Specifications: The equipment listed must have their calibrations checked at the manufacturer's recommended interval, and at least annually if no time is specified. Check all of the following indicating compliance and calibration. (NA2.3.2, RESNET 380 §3.1 & §3.3.5)					
☐	a	**Air-Moving Fan**. Capable of moving air into or out of the unit to achieve target pressure differences with the exterior.				
☐	b	**Manometer**. Capable of measuring pressure differences within a maximum error of 1% of reading or 25Pa (0.001 in. H2O).				
		Model:		Serial:		
☐	c	**Airflow Meter**. Capable of measuring volumetric airflow with a maximum error of 5% of measured flow.				
		Model:		Serial:		
☐	d	**Thermometer**. Capable a measuring air temperature within an accuracy of ± 1°C (2°F).				
		Model:		Serial:		
☐	e	**Blower Door**. A device that combines the Air-Moving Fan (2a), Airflow Meter (2c) and a cover to integrate into a fenestration. NOTE: it is highly recommended that the assemblage of the blower door system also integrate the Manometer (2b) and include manufacturer software that will correct CFM measurements for altitude and air temperature (i.e., air viscosity and density). Otherwise, these corrections must be made manually.				
3	Functional Test Preparation: Select Check or NA noting that "Req" in the NA column indicates that the inspection is required.					
NA	**Check**	**Procedure** (NA2.3.3(1)) as indicated, all others are from RESNET 380 §3.2)				
Req	☐	a	Open doors and windows of all directly adjacent units (all sides, top, and bottom). (NA2.3.3(1))			
Req	☐	b	Fenestration: Exterior doors and windows must be closed and latched.			
◯	◯	c	Attached Garage: Doors and windows to garage must be closed and latched.			
☐		d	Crawlspaces. Check one of the following:			
	◯		1	Unvented crawlspaces. Interior access doors and hatched must be open and exterior doors and hatches must be closed.		
	◯		2	Vented crawlspaces. Interior access doors and hatched must be closed and exterior vents left as found.		
☐		e	Attics. Check one of the following:			
	◯		1	Air Sealed & insulated Roof Deck: Interior access doors and hatches must be opened.		
	◯		2	Otherwise: Interior access doors and hatches must be closed.		
☐		f	Basement. Check one of the following:			
	◯		1	Air Sealed & Insulated: Interior access doors and hatches must be closed.		
	◯		2	Otherwise: Interior access doors and hatches must be open.		
Req	☐	g	Interior Doors: All doors between rooms inside the dwelling unit must be open.			
◯	◯	h	Chimney Dampers & Combustion-air Inlets on Solid Fuel Appliances must be closed.			

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A. Construction Inspection

Building:	Floor:	Room/Area/Zone:	Control System:

◯	◯	i			Combustion Appliance Flew Gas Vents must be left as found.
◯	◯	j			Fans must be turn off. (i.e., clothes dryer, ceiling fan, attic/crawlspace fan, kitchen/bathroom exhaust fan, air handler, ventilation fan, etc.)
		k			Dampers. Check all that apply.
◯	◯		1		Non-motorized Damper: connecting to exterior or unconditioned space, must be left as found.
◯	◯		2		Motorized Damper: connecting to exterior or unconditioned space, must be closed (not further sealed).
		l			Non-dampered Opening (Ventilation, Combustion Air, or Make-up Air), connecting to exterior or unconditioned space. Check all that apply.
◯	◯		1		Intermittent Local Exhaust: must be left open.
◯	◯		2		Intermittent Whole-House Ventilation System (include HVAC fan-integrated outdoor air inlets): must not be sealed.
◯	◯		3		Continuously Operating Local Exhaust: must be sealed at the exterior where conditions allow.
◯	◯		4		Continuously Operating Whole-House Ventilation System: must be sealed at the exterior where conditions allow.
◯	◯		5		All other openings must be left open.
◯	◯	m			Whole-building Fan Louvers/shutters must be closed. (if there is a seasonal cover, it must be installed)
◯	◯	n			Evaporative Coolers openings must be placed in off position. (if there is a seasonal cover, it must be installed)
◯	◯	o			Operable window trickle-vents and through-wall vents must be closed.
◯	◯	p			Supply Registers and Return Grills must be left as found and uncovered.
◯	◯	q			Plumbing drains with p-traps must be filled with water or sealed.
◯	◯	r			Vented combustion appliances must remain off or in pilot-only mode.
4	Installation of Functional Test Apparatus (NA2.3.3(2), RESNET 380 §3.3)				
☐	a	Blower Door (2e) Installation. Check all of the following:			
	☐	i			Installed in an existing doorway or window with no obstructions within five (5) feet of the fan inlet and two (2) feet of the fan outlet.
	☐	ii			Installed in a door or window that is NOT exposed to wind, where conditions allow.
	☐	iii			If using a fenestration to unconditioned space, the unconditioned space has unrestricted pathway to exterior and all windows and doors of the unconditioned space are open.
	☐	iv			If using a fenestration to an interior shared hallway, the hallway must be connected to exterior by open doors or windows.
	☐	v			Describe location of blower door installation:
☐	b	Tubing used to measure the pressure difference must be installed in accordance with manufacturer's instructions and vertical sections must be positioned out of direct sunlight.			

Construction Inspection Compliance Results: ◯ Complies ◯ Does Not Comply

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B. Functional Testing

Building:	Floor:	Room/Area/Zone:	Control System:

STEP		Procedures (NA2.3.3(2), NA2.3.3(3), RESNET 380 §3.3, RESNET 380 §3.4.1)		
1		Measure Temperatures (RESNET 380 §3.3.3) ◯ Deg. C ◯ Deg. F	Indoor:	
			Outdoor:	
2		Observations of general weather conditions (RESNET 380 §3.3.3)		
3		Altitude of project site above sea-level (feet) (RESNET 380 §3.3.4):		
4		Measure, or obtain from designs, the total dwelling unit surface area, which is the sum of the area of walls between dwelling units, exterior walls, ceiling, and floor. (NA2.3.3(2))		Square Feet
	a	Square footage of the dwelling unit		
	b	Sum of the area of all exterior walls		
	c	Sum of area of all walls between dwelling units		
	d	Total: (Step 4a X 2) + Step 4b + Step 4c		
5		Pretest Baseline Building Pressure: Air-Moving Fan (OFF) (SEALED) (RESNET 380 §3.4.1.1): Manometer measured pressure difference across enclosure (minimum 10 second average)		Pa
6		Induced Enclosure Pressure: Air-Moving Fan (ON) (UNSEALED) (RESNET 380 §3.4.1.2) Adjust to create an induced enclosure pressure difference of 50±3Pa (0.2 in±0.012 H2O)		◯ Pressurized ◯ Depressurized
	a	If induced enclosure pressure difference of 50±3Pa is achieved Then record the average value of the induced enclosure pressure difference and Airflow over a minimum 10-second period. Else, proceed to 6b. (RESNET 380 §3.4.1.2)		Pa
				CFM
	b	If induced enclosure pressure difference of 50±3Pa is NOT achieved: (RESNET 380 §3.4.1.4) Then employ additional fans and go to (Step 6a) above, Else record the highest induced pressure difference and airflow over a minimum 10 second period. NOTE: 15Pa (0.06 in. H20) is the minimum allowable.		Pa
				CFM
	c	If (Step 6b), then adjust to CFM50: Step 6b(CFM) x (50 ÷ Step 6b(Pa))^0.65 NOTE: a manometer equipped to make the correction is permitted. (RESNET 380 §3.4.1.4)		CFM
7		Return systems and home to normal operating or as found condition. (RESNET 380 §3.4.1.3)		

Calculations			
1		Corrected CFM50. Corrected the CFM50 measurement for air viscosity and density using the installed manufacturer integrated software for the Blower Door assemblage (Construction Inspection 2e). If the Blower Door assemblage does not include such software, then the corrections must be performed manually following the requirements of ASTM E779-10 (2015), Section 9, Equation 4. (RESNET 380 §3.4.1.5)	CFM
2		Adjusted CFM50. Corrected CFM50 (Calculations Step 1) x 1.1 (NA2.3.4(1), RESNET 380 §3.5.1(5a))	CFM
3		CFM50/ft^2. Adjusted CFM50 (Calculations Step 2) ÷ Step 4d (NA2.3.4(3))	CFM
Pass or Fail			
		Pass if Calculations Step 3, CFM50/ft^2 <= 0.3 CFM/ft^2 (NA2.3.5, §120.1(b)2AivB2)	◯ Pass ◯ Fail

Functional Test Compliance Results: ◯ Complies ◯ Does Not Comply

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Acceptance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	Phone:

FIELD TECHNICIAN'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Acceptance is true and correct.
2. I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician).
3. The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
4. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building.

Field Technician Name:	Field Technician Signature:	
Field Technician Company Name:	ATT Certification Identification (if applicable):	
Address:	Phone:	Date Signed:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance.
2. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction, or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance, and attest to the declarations in this statement (responsible acceptance person).
3. The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
4. I understand that a HERS rater will check the installation to verify compliance, and that if such checking identifies defects the responsible builder/installer shall be required to take corrective action at his expense. I understand that Energy Commission and HERS Provider representatives will also perform quality assurance checking of installations, including those approved as part of a sample group but not checked by a HERS rater, and if those installations fail to meet the requirements of such quality assurance checking, the required corrective action and additional checking/testing of other installations in that HERS sample group will be performed at the responsible builder/installer's expense.
5. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building.
6. I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Acceptance Person Name:	Responsible Acceptance Person Signature:	
Responsible Acceptance Person Company Name:	Position with Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone:	Date Signed: