INDOOR AIR QUALITY AND MECHANICAL VENTILATION

CERTIFICATE OF VERIFICATION		CF3R-MCH-27c-H
Indoor Air Quality and Mechanical Ventilation		(Page 1 of 2)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

Title 24, Part 6, Section 150.0(o) **Ventilation for Indoor Air Quality.** All dwelling units shall meet the requirements of ANSI/ASHRAE Standard62.2. Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. ***Equation and table numbering on this form corresponds to the numbering for that information in the published ANSI/ASHRAE Standard 62.2-2010.***

A. Dwelling Mechanical Ventilation - General Information		
01	Dwelling Unit Name	
02	Building Type	
03	Project Scope	
04	Total Conditioned Floor Area of ~~d~~Dwelling ~~u~~Unit (For addition projects the conditioned floor area equals existing area plus addition area)	
05	Number of Bedrooms in Dwelling Unit (For addition projects the number of bedrooms equals the existing bedrooms plus addition bedrooms)	
06	Ventilation Operation Schedule	
07	Whole-Building Ventilation Rate Calculation Method.	
08	Whole Building Ventilation System Type	

MCH-27c - Intermittent Ventilation Airflow - Fan Vent Rate Method

B. Whole-Building Continuous Ventilation - Fan Ventilation Rate Method A mechanical supply system, exhaust system, or combination thereof shall provide whole-building ventilation with outdoor air each hour at no less than the rate in 62.2 equation 4.1a.		
01	Required Continuous Whole-Building Ventilation Rate (Q_{fan})	

C. Intermittent Ventilation The effective ventilation rate of an **intermittent** system is the combination of its delivered capacity, its fractional on-time, cycle time, and the ventilation effectiveness from Table 4.2.		
01	In a single on off cycle, what is the ON time in hours?	
02	In a single on off cycle, what is the OFF time in hours?	
03	Fan Cycle Time Check	
04	Daily Fractional On Time (*f* used in Table 4.2).	
05	Daily Fractional On Time Check.	
06	Turnover (N used in Table 4.2)	
07	Ventilation Effectiveness (e, from Table 4.2)	
08	Intermittent Ventilation Rate	
09	Installed Intermittent Ventilation Rate	
10	System Fan Efficacy Compliance Status	
11	System Fan Efficacy Compliance	

D. Compliance Statement	
01	

E. Determination of HERS Verification Compliance All applicable sections of this document shall indicate compliance with the specified verification protocol requirements in order for this Certificate of Verification as a whole to be determined to be in compliance.	
01	

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Project Name:	Enforcement Agency:	Permit Number:
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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Verification documentation is accurate and complete.	
Documentation Author Name:	Documentation Author Signature:
Company:	Date Signed:
Address:	CEA/HERS Certification Information (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'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 Verification is true and correct.
2. I am the certified HERS Rater who performed the verification identified and reported on this Certificate of Verification (responsible rater).
3. The installed features, materials, components, manufactured devices, or system performance diagnostic results that require HERS verification identified on this Certificate of Verification comply with the applicable requirements in Reference Appendices RA2, RA3, and the requirements specified on the Certificate of Compliance for the building approved by the enforcement agency.
4. The information reported on applicable sections of the Certificate(s) of Installation (CF2R) signed and submitted by the person(s) responsible for the construction or installation conforms to the requirements specified on the Certificate(s) of Compliance (CF1R) approved by the enforcement agency.
5. I will ensure that a registered copy of this Certificate of Verification 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 registered copy of this Certificate of Verification is required to be included with the documentation the builder provides to the building owner at occupancy.

BUILDER OR INSTALLER INFORMATION AS SHOWN ON THE CERTIFICATE OF INSTALLATION	
Company Name (Installing Subcontractor, General Contractor, or Builder/Owner):	
Responsible Builder or Installer Name:	CSLB License:

HERS PROVIDER DATA REGISTRY INFORMATION	
Sample Group Number (if applicable):	Dwelling Test Status in Sample Group (if applicable):

HERS RATER INFORMATION	
HERS Rater Company Name:	
Responsible Rater Name:	Responsible Rater Signature:
Responsible Rater Certification Number w/ this HERS Provider:	Date Signed:

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CF3R-MCH-27c-H User Instructions

Section A. General Information

1 This information is automatically pulled from the CF1R. This is the unique identifier for this dwelling unit. Needed mostly for multifamily dwelling units. Ventilation is calculated and provided for each dwelling unit individually.

2 This information is automatically pulled from the CF1R. Choices are "single family" and "low-rise multifamily".

3 This information is automatically pulled from the CF1R. Choices are "New Construction" and "Addition greater than 1,000 sqft".

4 Value to be entered in the field equals the conditioned floor area of the space for which the ventilation is being calculated, in square feet. For additions over 1,000 sqft, this will be the floor area of the existing home plus the addition.

5 Value to be entered in the field equals the number of bedrooms in the home. For additions over 1,000 sqft, this will be the number of bedrooms in the existing home plus the number of bedrooms in the addition.

6 Select the Ventilation Operation Schedule method used from the choices provided:

- Continuous (the fan that provides ventilation will run 24/7.
- Intermittent (the fan that provides ventilation will be on some of the time and off some of the time)

7 Select the Whole Building Ventilation Rate Calculation Method from the choices provided:

- Fan Ventilation Rate Method (only assumes ventilation from the ventilation fan)
- Total Ventilation Rate Method (assumes that some ventilation is provided by infiltration)

8 Select the Whole Building Ventilation System Type from the choices provided:

- Standalone – Exhaust (ventilation fan[s] push air out of the house)
- Standalone – Supply (ventilation fan[s] push air into house)
- Standalone - Balanced (ventilation fan[s] push air into AND out of the house in equal amounts)

Central Fan Integrated – CFI (central space condition system fan is used to pull air into the house) Note: these may not run continuously. If "Continuous" is chosen in A06 an error message will be shown.

Section B. Whole Building Continuous Ventilation – Fan Ventilation Rate Method

1 This value is automatically calculated using equation 4.1a. The equation used to calculate this value in the field equals:

a. If A02= Single Family then [(0.01 x conditioned floor area A04) + 7.5(Number of bedrooms A05 + 1)] = Continuous Whole-Building Ventilation Rate

b. If A02= Multifamily then [(0.03 x conditioned floor area A04) + 7.5(Number of bedrooms A05 + 1)] = Continuous Whole-Building Ventilation Rate

Section C. Intermittent Ventilation

1 Intermittent ventilation requires controls that ensure a regular operating schedule every 24 hours. Within a 24 hour period there will be one or more regular on off cycles. For a single on off cycle, enter the ON time in hours. This value will be verified by a HERS rater.

2 Intermittent ventilation requires controls that ensure a regular operating schedule every 24 hours. Within a 24 hour period there will be one or more regular on off cycles. For a single on off cycle, enter the OFF time in hours. This value will be verified by a HERS rater.

3 This row performs an automatic check. The intermittent ventilation system must operate at least once every 24 hours. For this to occur, the on time plus the off time in a single on off cycle must be less than 24 hours. If this is true, "OK" will appear. If this is not true, an error will appear here and correct values will need to be entered into Rows C01 and C02. The equation used to calculate this value in the field equals: Time on in hours row C01 + Time off in hours row C02.

4 This value is automatically calculated. It is the daily fractional on time (*f*) used in 62.2 Table 4.2. A value of 0.60 means that in a 24 hour period the fan will run 60% of the time. The equation used to calculate this value in the field equals: On time in Hours row C01/(On time in Hours row C01 + Off time in Hours row C02)= Daily fractional on time (decimal).

5 This row performs an automatic check. The ventilation system must operate at least 10% of the time. Row C04 must be greater than or equal to 0.10. If this is true, "OK" will appear. If this is not true, an error message will appear here and correct values will need to be entered into Rows C01 and C02.

6 This value is automatically calculated. It is the turnover (N) used in 62.2 Table 4.2. The equation used to calculate this value in the field equals: [12.8 x Continuous Whole-Building Ventilation Rate row B01 x (On time in Hours row C01 + Off time in Hours row C02)]/ Conditioned floor area of dwelling unit row A04= Turnover N

7 User entered value from ~~t~~Table 4.2. Use the daily fractional time (*f*) from Row C04 and the turnover (N) from Row C06 to determine the ventilation effectiveness value (e) from 62.2 ~~t~~Table 4.2.

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TABLE 4.2

Mechanical Ventilation Effectiveness for Intermittent Fans

Fractional On-Time, f	Turnover, N 0	1	1.5	2	2.5	3	3.5	4	5	6	8	12	20	40	100+
0.00	1.00	0.95	0.88	0.78	0.60	0.00									
0.05	1.00	0.96	0.90	0.81	0.67	0.41	0.00								
0.10	1.00	0.96	0.91	0.83	0.72	0.55	0.21	0.00							
0.15	1.00	0.96	0.92	0.85	0.76	0.63	0.44	0.18	0.00						
0.20	1.00	0.97	0.93	0.87	0.79	0.69	0.56	0.40	0.03	0.00					
0.25	1.00	0.97	0.94	0.89	0.82	0.74	0.64	0.53	0.26	0.02	0.00				
0.30	1.00	0.98	0.95	0.90	0.85	0.78	0.71	0.62	0.42	0.24	0.00				
0.35	1.00	0.98	0.95	0.92	0.87	0.82	0.76	0.69	0.54	0.39	0.14	0.00			
0.40	1.00	0.98	0.96	0.93	0.89	0.85	0.80	0.75	0.63	0.52	0.32	0.02	0.00		
0.45	1.00	0.99	0.97	0.94	0.91	0.88	0.84	0.79	0.70	0.61	0.45	0.21	0.00		
0.50	1.00	0.99	0.97	0.95	0.93	0.90	0.87	0.83	0.76	0.69	0.57	0.37	0.13	0.00	0.00
0.60	1.00	0.99	0.98	0.97	0.96	0.94	0.92	0.90	0.86	0.81	0.74	0.61	0.45	0.27	0.14
0.70	1.00	1.00	0.99	0.98	0.98	0.97	0.96	0.94	0.92	0.90	0.85	0.78	0.68	0.55	0.46
0.80	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.98	0.97	0.96	0.94	0.90	0.85	0.77	0.70
0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.97	0.96	0.93	0.88
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

8 This value is automatically calculated using 62.2 equation 4.8. ~~-~~It represents the required airflow in cfm that must be delivered during the ventilation system ON times. ~~-~~This value will be verified by a HERS rater. The equation used to calculate this value in the field equals: Continuous Whole-Building Ventilation Rate row B01/(~~-~~Daily fractional on time row C04 x ventilation effectiveness value row C07= required Intermittent ventilation rate (CFM).

9 User entered value equals the installed intermittent ventilation rate in (CFM)

10 This information is automatically pulled from the registered MCH-22 row B07 Note: this line only visible if CFI System selected in A08.

11 This information is automatically calculated based on C10 Note: this line only visible if CFI System selected in A08.

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