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| Title 24, Part 6, Section 150.0(o) **Ventilation for Indoor Air Quality.** All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2016 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings subject to the amendments specified by Title 24, Part 6, Section 150.0(o)1 |

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| **A. Dwelling Mechanical Ventilation - General Information** | | |
| 01 | Dwelling Unit Name |  |
| 02 | Building Type |  |
| 03 | Project Scope |  |
| 04 | Total Conditioned Floor Area of Dwelling 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 System Type |  |
| 07 | Ventilation Operation Schedule |  |
| Note:  Non-dwelling units do not meet the definition for a dwelling unit as defined in Section 100.1(b). Non-dwelling units are not designed to provide independent living facilities and do not provide permanent provisions for living, sleeping, eating, cooking and sanitation. | | |

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| **MCH-27a – Single Family** **Attached/Detached Ventilation** |

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| **B. Single Family Attached/Detached General Information** | | |
| 01 | Average Ceiling Height |  |
| 02 | Total Conditioned Volume |  |
| 03 | Vertical distance between the lowest and highest above-grade points within the pressure boundary in feet |  |
| 04 | Air Changes Per Hour at 50 Pa |  |
| 05 | Name of ANSI/ASHRAE Standard 62.2-2016 weather station for climate zone |  |
| 06 | Weather and shielding factor (wsf)  (Based on the city identified above) |  |

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| **C. Ventilation - Total Ventilation Rate**  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 150.0(o)1Ci | | |
| 01 | Total Required Ventilation rate, (Qtot) |  |
| 02 | Enclosure Leakage Rate (Q50) |  |
| 03 | Effective Annual Average Infiltration Rate (Qinf) |  |
| 04 | Total Exterior Envelope Surface Area |  |
| 05 | Unshared Exterior Envelope Surface Area  (exclude surface areas attached to garages or other dwelling units) |  |
| 06 | Required Mechanical Ventilation Rate (Qfan) |  |

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| **D. Installed Ventilation - Total Ventilation Rate**  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 150.0(o)1Ci | | | | |
| 01 | 02 | 03 | 04 | 05 |
| Fan Name | Fan Location | Runtime (Min/Hr) | Installed Mechanical Ventilation Rate (CFM) | Equivalent Continuous Ventilation (CFM) |
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|  |  |  |  |  |
| 06 | Total Installed Equivalent Continuous Ventilation (CFM) | | |  |

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| **E. Compliance Statement** | |
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| **F. 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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| **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: |

**CF3R-MCH-27a-H User Instructions**

**Section A. General Information**

1. Building Unit Name: This field is filled out automatically. It is referenced from the CF2R-MCH-01, which must be completed prior to this document. 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. Building Type: This field is filled out automatically. It is referenced from the CF1R. Values are “Single Family Attached”, “Single Family Detached” and “Multifamily”. User is allowed to overwrite imported value with “Non-dwelling unit” selection.
3. Project Scope: This field is filled out automatically. It is referenced from the CF1R.

* If parent document is the CF1R-PRF-01, values are “Newly Constructed”, “Newly Constructed (Addition Alone)” and “Addition and /or Alteration”
* If parent document is CF1R-NCB-01, values are “Newly Constructed” and “Newly Constructed (Addition Alone)”
* If parent document is CF1R-ADD-01, values are “ADU Addition < 300 ft2”,” ADU Addition > 300 to < 400 ft2”,” ADU Addition > 400 to < 700 ft2” and “ADU Addition > 700 to < 1000 ft2”.

1. Total Conditioned Floor Area of Dwelling Unit: This field is filled out automatically. It is referenced from the CF2R-MCH-01.
2. Number of Bedrooms in Dwelling Unit: This field is filled out automatically. It is referenced from the CF2R-MCH-01.
3. Ventilation system Type: This may be filled out automatically or be user input.

* If parent document is the CF1R-PRF-01, the value will be filled out automatically.
* If building type is equal to Non-dwelling unit, an N/A value will be filled out automatically.
* If parent document is the CF1R-NCB or CF1R-ADD, user selects from list of Supply, Exhaust, Balanced, Balanced – ERV, Balanced – HRV, Central Fan Integrated (CFI), Central Ventilation System – Supply and Central Ventilation System – Exhaust and Central Ventilation System Balanced.

1. Ventilation operation schedule: This may be filled out automatically or be user input.

* Building type is equal to Non-dwelling unit; an N/A value will be filled out automatically.
* User selects from list of Continuous, Short-Term Average, Scheduled and Real-time Control.
* Note if “Ventilation System Type” (A11) = Central Fan Integrated & “Ventilation Operation Schedule” (A06) = Continuous; then user will not be allowed to proceed.

**Section B. Single Family Attached/Detached General Information**

1. Average Ceiling Height: This may be filled out automatically or be user input.

* If parent document is the CF1R-PRF-01, the value will be filled out automatically.
* If parent document is the CF1R-NCB or CF1R-ADD, user enter value in feet.

1. Total Conditioned Volume: This field is calculated and filled out automatically.
2. Vertical distance between the lowest and highest above-grade points within the pressure boundary in feet: This may be filled out automatically or be user input.

* If parent document is the CF1R-PRF-01, the value will be filled out automatically.
* If parent document is the CF1R-NCB or CF1R-ADD, user enters value in feet.

1. Air Changes Per Hour at 50 Pa: This may be filled out automatically or be user selected

* If Building type is equal to Non-dwelling unit, an N/A value will be filled out automatically.
* If Building type does not equal Non-dwelling unit, then user may select from Default (ACH50=2.0) or Measured (ACH50<2.0)

1. Name of ANSI/ASHRAE Standard 62.2-2016 weather station for climate zone: This may be filled out automatically or be user input.

* If parent document is the CF1R-PRF-01, the value will be filled out automatically.
* If Building type is equal to Non-dwelling unit, an N/A value will be filled out automatically.
* If parent document is the CF1R-NCB or CF1R-ADD, user select value from Weather Stations from the Table X1 US Climates, Normative Appendix X.

1. Weather and shielding factor (wsf): This value is automatically entered based on the selection in #6.

**Section C. Whole Building Continuous Ventilation – Total Ventilation Rate Method**

1. This value is automatically calculated using equation 150.0-B from the Energy Standards.
2. This value automatically calculates using either equation 150.0-C or 150.0-D from the Energy Standards.

* If air changes per hour from section B is equal to “Default” then equation, 150.0-C will be used.
* If air changes per hour from section B is equal to “Measured” and the leakage value from the CF2R-MCH-24 is < 2.0 then equation 150.0-D will be used.
* If air changes per hour from section B is equal to “Measured” and the leakage value from the CF2R-MCH-24 is ≥ 2.0 then equation 150.0-C will be used.

1. This value is automatically calculated using equation 150.0-E from the Energy Standards.
2. Total Exterior Envelope Surface Area: This value may be filled out automatically or be user input.

* If building type from section A equals “Single Family Detached”, an N/A value will be filled out automatically.
* If building type from section A equals “Single Family Attached or multi-family” and the parent document is the CF1R-PRF-01 then value will be automatically entered.
* If building type from section A equals “Single Family Attached or Multi-family” and the parent document is the CF1R-NCB-01 or CF1R-ADD-01 then user enter value (ft2).

1. Unshared Exterior Surface Area: This value may be filled out automatically or be user input.

* If building type from section A equals “single family detached”, an N/A value will be filled out automatically.
* If building type from section A equals “single family attached or multi-family” and the parent document is the CF1R-PRF-01 then value will be automatically entered.
* If building type from section A equals “single family attached or multi-family” and the parent document is the CF1R-NCB-01 or CF1R-ADD-01 then user enter value (ft2).

1. This value is automatically calculated using equation 150.0-F from the Energy Standards.

**Section D. Installed Ventilation – Total Ventilation Rate Method**

1. User input text identifying the fan name for each installed ventilation fan.
2. User input text identifying the fan location for each installed ventilation fan.
3. Runtime (Min/Hr): This value may be filled out automatically or be user input.

* If ventilation operation schedule from section B = “continuous”, then value of 60 will be automatically entered.
* If ventilation operation schedule from section B = “short term average”, then user enter value of less than or equal to 60 for each installed ventilation fan.

1. User to enter CFM value from test procedures described in RA3.7.4 for each installed ventilation fan.
2. Equivalent continuous ventilation CFM is automatically calculated for each ventilation fan.
3. Total installed equivalent continuous ventilation CFM is automatically calculated based on the installed ventilation fans.

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| NORMATIVE APPENDIX B: | | | | | | | | | | |
| INFILTRATION EFFECTIVENESS WEATHER AND SHIELDING FACTORS (WSF) | | | | | | | | | | |
| TABLE X1 U.S. Climates | | | | | | | | | | |
| TMY3 | | wsf | | Weather Station | Latitude | | Longitude | | State | |
| 690150 | | 0.50 | | Twentynine Palms | 34.30 | | –116.17 | | California | |
| 722860 | | 0.43 | | March AFB | 33.90 | | –117.25 | | California | |
| 722868 | | 0.45 | | Palm Springs Intl | 33.83 | | –116.50 | | California | |
| 722869 | | 0.42 | | Riverside Muni | 33.95 | | –117.45 | | California | |
| 722880 | | 0.39 | | Burbank–Glendale–Pasadena AP | 34.20 | | –118.35 | | California | |
| 722885 | | 0.39 | | Santa Monica Muni | 34.02 | | –118.45 | | California | |
| 722886 | | 0.39 | | Van Nuys Airport | 34.22 | | –118.48 | | California | |
| 722895 | | 0.55 | | Lompoc (AWOS) | 34.67 | | –120.47 | | California | |
| 722897 | | 0.51 | | San Luis Co Rgnl | 35.23 | | –120.63 | | California | |
| 722899 | | 0.45 | | Chino Airport | 33.97 | | –117.63 | | California | |
| 722900 | | 0.38 | | San Diego Lindbergh Field | 32.73 | | –117.17 | | California | |
| 722903 | | 0.39 | | San Diego/Montgomery | 32.82 | | –117.13 | | California | |
| 722904 | | 0.40 | | Chula Vista Brown Field NAAS | 32.58 | | –116.98 | | California | |
| 722906 | | 0.39 | | San Diego North Island NAS | 32.70 | | –117.20 | | California | |
| 722926 | | 0.40 | | Camp Pendleton MCAS | 33.30 | | –117.35 | | California | |
| 722927 | | 0.38 | | Carlsbad/Palomar | 33.13 | | –117.28 | | California | |
| 722930 | | 0.39 | | San Diego Miramar NAS | 32.87 | | –117.13 | | California | |
| 722950 | | 0.42 | | Los Angeles Intl Arpt | 33.93 | | –118.40 | | California | |
| 722956 | | 0.38 | | Jack Northrop Fld H | 33.92 | | –118.33 | | California | |
| 722970 | | 0.38 | | Long Beach Daugherty Fld | 33.83 | | –118.17 | | California | |
| 722976 | | 0.34 | | Fullerton Municipal | 33.87 | | –117.98 | | California | |
| 722977 | | 0.36 | | Santa Ana John Wayne AP | 33.68 | | –117.87 | | California | |
| 723805 | | 0.51 | | Needles Airport | 34.77 | | –114.62 | | California | |
| 723810 | | 0.59 | | Edwards AFB | 34.90 | | –117.87 | | California | |
| 723815 | | 0.58 | | Daggett Barstow–Daggett AP | 34.85 | | –116.80 | | California | |
| 723816 | | 0.62 | | Lancaster Gen Wm Fox Field | 34.73 | | –118.22 | | California | |
| 723820 | | 0.57 | | Palmdale Airport | 34.63 | | –118.08 | | California | |
| 723830 | | 0.68 | | Sandberg | 34.75 | | –118.72 | | California | |
| 723840 | | 0.43 | | Bakersfield Meadows Field | 35.43 | | –119.05 | | California | |
| 723890 | | 0.45 | | Fresno Yosemite Intl AP | 36.78 | | –119.72 | | California | |
| 723895 | | 0.42 | | Porterville (AWOS) | 36.03 | | –119.07 | | California | |
| 723896 | | 0.43 | | Visalia Muni (AWOS) | 36.32 | | –119.40 | | California | |
| 723910 | | 0.45 | | Point Mugu Nf | 34.12 | | –119.12 | | California | |
| NORMATIVE APPENDIX B: | | | | | | | | | | |
| INFILTRATION EFFECTIVENESS WEATHER AND SHIELDING FACTORS (WSF) | | | | | | | | | | |
| TABLE X1 U.S. Climates | | | | | | | | | | |
| TMY3 | wsf | | Weather Station | | | Latitude | | Longitude | | State |
| 723925 | 0.44 | | Santa Barbara Municipal AP | | | 34.43 | | –119.85 | | California |
| 723926 | 0.43 | | Camarillo (AWOS) | | | 34.22 | | –119.08 | | California |
| 723927 | 0.45 | | Oxnard Airport | | | 34.20 | | –119.20 | | California |
| 723940 | 0.52 | | Santa Maria Public Arpt | | | 34.92 | | –120.47 | | California |
| 723965 | 0.53 | | Paso Robles Municipal Arpt | | | 35.67 | | –120.63 | | California |
| 724800 | 0.55 | | Bishop Airport | | | 37.37 | | –118.35 | | California |
| 724815 | 0.46 | | Merced/Macready Fld | | | 37.28 | | –120.52 | | California |
| 724830 | 0.51 | | Sacramento Executive Arpt | | | 38.50 | | –121.50 | | California |
| 724837 | 0.45 | | Beale AFB | | | 39.13 | | –121.43 | | California |
| 724838 | 0.50 | | Yuba Co | | | 39.10 | | –121.57 | | California |
| 724839 | 0.51 | | Sacramento Metropolitan AP | | | 38.70 | | –121.58 | | California |
| 724915 | 0.49 | | Monterey Naf | | | 36.60 | | –121.87 | | California |
| 724917 | 0.54 | | Salinas Municipal AP | | | 36.67 | | -121.60 | | California |
| 724920 | 0.50 | | Stockton Metropolitan Arpt | | | 37.90 | | -112.23 | | California |
| 724926 | 0.47 | | Modesto City – County AP | | | 37.63 | | -120.95 | | California |
| 724927 | 0.53 | | Livermore Municipal | | | 37.70 | | -121.82 | | California |
| 724930 | 0.54 | | Oakland Metropolitan Arpt | | | 37.72 | | -122.22 | | California |
| 724935 | 0.47 | | Hayward Air Term | | | 37.67 | | -122.12 | | California |
| 724936 | 0.53 | | Concord – Buchanan Field | | | 38.00 | | -122.05 | | California |
| 724940 | 0.60 | | San Francisco Intl AP | | | 37.62 | | -122.40 | | California |
| 724945 | 0.48 | | San Jose Intl AP | | | 37.37 | | -121.93 | | California |
| 724955 | 0.55 | | Napa Co. Airport | | | 38.22 | | -122.28 | | California |
| 724957 | 0.49 | | Santa Rosa (AWOS) | | | 38.52 | | -122.82 | | California |
| 725845 | 0.44 | | Blue Canyon AP | | | 39.30 | | –120.72 | | California |
| 725846 | 0.66 | | Truckee–Tahoe | | | 39.32 | | –120.13 | | California |
| 725847 | 0.64 | | South Lake Tahoe | | | 38.90 | | –120.00 | | California |
| 725905 | 0.47 | | Ukiah Municipal AP | | | 39.13 | | –123.20 | | California |
| 725910 | 0.50 | | Red Bluff Municipal Arpt | | | 40.15 | | –122.25 | | California |
| 725920 | 0.47 | | Redding Municipal Arpt | | | 40.52 | | –122.32 | | California |
| 725945 | 0.56 | | Arcata Airport | | | 40.98 | | –124.10 | | California |
| 725946 | 0.60 | | Crescent City Faa | | | 41.78 | | –124.23 | | California |
| 725955 | 0.55 | | Montague Siskiyou County AP | | | 41.78 | | –122.47 | | California |
| 725958 | 0.59 | | Alturas | | | 41.50 | | –120.53 | | California |
| 745090 | 0.45 | | Mountain View Moffett Fld NAS | | | 37.40 | | –122.05 | | California |
| 745160 | 0.67 | | Travis Field AFB | | | 38.27 | | –121.93 | | California |
| 746120 | 0.52 | | China Lake Naf | | | 35.68 | | –117.68 | | California |
| 747020 | 0.50 | | Lemoore Reeves NAS | | | 36.33 | | –119.95 | | California |
| 747185 | 0.46 | | Imperial | | | 32.83 | | –115.58 | | California |
| 747187 | 0.46 | | Palm Springs Thermal AP | | | 33.63 | | –116.17 | | California |
| 747188 | 0.48 | | Blythe Riverside Co Arpt | | | 33.62 | | –114.72 | | California |

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| Title 24, Part 6, Section 150.0(o) **Ventilation for Indoor Air Quality.** All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2016 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings subject to the amendments specified by Title 24, Part 6, Section 150.0(o)1 |

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| **A. Dwelling Mechanical Ventilation - General Information** | | |
| 01 | Dwelling Unit Name | <<calculated field, referenced data from MCH-01, “Dwelling Unit Name” (A01).>> |
| 02 | Building Type | << calculated field, referenced data from CF1R, allowed values = multifamily, single family detached, single family attached >> |
| 03 | Project Scope | << calculated field, referenced data from CF1R;  If parent document is CF1R-PRF-01, allowed values = Newly Constructed, Newly Constructed (Addition Alone), and Addition and /or Alteration;  Else if parent document is CF1R-NCB-01, allowed values = Newly Constructed and Newly Constructed (Addition Alone);  Else if parent document is CF1R-ADD-01, allowed values = ADU Addition < 300 ft2, ADU Addition > 300 to < 400 ft2, ADU Addition > 400 to < 700 ft2, and ADU Addition > 700 to < 1000 ft2>> |
| 04 | Total Conditioned Floor Area of Dwelling Unit  (For addition projects the conditioned floor area equals existing area plus addition area) | <<calculated field: referenced from MCH-01, “Dwelling Unit Total Conditioned Floor Area (ft2)” (A03) >> |
| 05 | Number of Bedrooms in Dwelling Unit  (For addition projects the number of bedrooms equals the existing bedrooms plus addition bedrooms) | <<calculated field: referenced from MCH-01, “Dwelling Unit Number of Bedrooms” (A09); if value from MCH-01 = 0 replace with 1>> |
| 06 | Ventilation System Type | << calculated value if registered CF1R form equals CF1R-PRF-01, reference data from CF1R; Else if registered CF1R form equals CF1R-NCB-01 or CF1R-ADD-01, user pick one from list:  \*\*Supply  \*\*Exhaust; or  \*\*Balanced; or  \*\*Balanced – ERV; or  \*\*Balanced – HRV; or  \*\*Central Fan Integrated (CFI); or  \*\*Central Ventilation System – Supply; or  \*\*Central Ventilation System – Exhaust; or  \*\*Central Ventilation System – Balanced; or  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 07 | Ventilation Operation Schedule | << calculated value if registered CF1R form equals CF1R-PRF-01, reference data from CF1R;  Else if “Building Type” (A02) = “Non-dwelling unit”, then value = N/A; Else if registered CF1R form equals CF1R-NCB-01 or CF1R-ADD-01, user pick one from list:  \*\*Continuous; or  \*\*Short-Term Average;  Else if “Ventilation System Type” (A06) = Central Fan Integrated & “Ventilation Operation Schedule” (A07)= Continuous; then display:  “Central Fan Integrated Ventilation System Not Allowed to Operate Continuously **- Do Not Proceed”>>** |
| 08 | determine compliance method for this document; display applicable tables below;  (this row not visible to user) | <<calculated field:  if “Building Type” (A02) = Single Family Detached or Single Family Attached and “Ventilation System Type” (A06) = Supply, Exhaust, Balanced, Balanced – ERV, Balanced – HRV, or Central Fan Integrated and “Ventilation Operation Schedule (A07) = Continuous, or Short-Term Average then display method:  **\*\*27a – Single Family Attached/Detached Ventilation;**  Else if “Building Type” (A02) = Single Family Detached, Single Family Attached, or Multifamily and “Ventilation System Type” (A06) = Supply, Exhaust, Balanced, Balanced – ERV, Balanced – HRV and “Ventilation Operation Schedule (A07) = Scheduled or Real-Time Control, then display method:  **\*\*27c – Scheduled or Real-Time Control Ventilation System;**  Else if “Building Type” (A02) = Multifamily and “Ventilation System Type” (A06) = Central Ventilation System – Supply, Central Ventilation System – Exhaust, or Central Ventilation System – Balanced, then display method:  **\*\*27b – Multifamily Ventilation>>** |
| 09 | Climate Zone (this row is not visible to the user) | <<value from CF1R>> |
| Note:  Non-dwelling units do not meet the definition for a dwelling unit as defined in Section 100.1(b). Non-dwelling units are not designed to provide independent living facilities and do not provide permanent provisions for living, sleeping, eating, cooking and sanitation. | | |

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| **MCH-27a – Single Family Attached/Detached** |

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| **B. Single Family Attached/Detached General Information** | | |
| 01 | Average Ceiling Height | << calculated field; If parent document is CF1R-PRF-01, reference value from CF1R;  Else if parent document is CF1R-NCB-01 or CF1R-ADD-01, user to enter nonnegative number with up to two decimals places (X.XX);  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 02 | Total Conditioned Volume | <<calculated value, “Conditioned Floor Area (A04)” \* “Averaged Ceiling Height” (B01);  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 03 | Vertical distance between the lowest and highest above-grade points within the pressure boundary in feet | << calculated field; If parent document is CF1R-PRF-01, reference value from CF1R;  Else if parent document is CF1R-NCB-01 or CF1R-ADD-01, user to enter nonnegative number with up to two decimals places (X.XX);  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 04 | Air Changes Per Hour at 50 Pa | <<user pick from list: \*\*Default;  \*\*Measured;  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 05 | Name of ANSI/ASHRAE Standard 62.2-2016 weather station for climate zone | <<Calculated field: If parent document is CF1R-PRF-01, reference value from it but allow user to override it. If not overridden, result is stored in B05\_WeatherStationANSI\_ASHRAE;  Else if user overrides CF1R-PRF-01 value Or parent is CF1R-NCB-01 or CF1F-ADD-01, user selects from list of weather stations based on value in A09\_ClimateZone and this is stored in B05\_WeatherStationCZ# where # is the climate zone;  Else If A02\_ResidentialBuildingType == NonDwellingUnit result = N/A>> stored in NotApplicableMessage>> |
| 06 | Weather and shielding factor (wsf)  (Based on the city identified above) | <<Calculated field: If parent document is CF1R-PRF-01 And B05\_WeatherStationANSI\_ASHRAE has a value, reference value from CF1R-PRF-01;  Else If B05\_WeatherStationCZ# (# is the climate zone) has a value, based on weather station value in B05\_WeatherStationCZ#, assign lookup wsf from Table B1 US Climates, Normative Appendix B shown in the instructions section of the layout document;  Else If A02\_ResidentialBuildingType == NonDwellingUnit result = N/A stored in NotApplicableMessage>> |

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| **C. Ventilation - Total Ventilation Rate**  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 150.0(o)1Ci | | |
| 01 | Total Required Ventilation rate, (Qtot) | <<calculated field, numeric: (use equation 4.1a): [(0.03 \* Total Conditioned Floor Area of Dwelling Unit (A04)) + (7.5\*(A05 + 1)], (cfm). >> |
| 02 | Enclosure Leakage Rate (Q50) | <<calculated field, if “Air Changes Per Hour at 50 Pa” (B04) = default, then value = “Total Conditioned Volume” (B02)\*2/60 (CFM);  Else if “Air Changes Per Hour at 50 Pa” (B04) = measured, and if value from the CF2R-MCH-24 ≤ 2.0, then value = “Total Conditioned Volume” (B02)\*(measurement from MCH-24)/60 (CFM);  Else if “Air Changes Per Hour at 50 Pa” (B04) = measured, and if value from the CF2R-MCH-24 > 2.0, then value = “Total Conditioned Volume” (B02)\*2/60 (CFM)>> |
| 03 | Effective Annual Average Infiltration Rate (Qinf) | <<calculated field, 0.052\* “Enclosure Leakage Rate (Q50)” (C02)\* “Weather and shielding factor (wsf)” (B06)\*(“Vertical distance from the lowest above-grade floor to the highest ceiling” (B03)/8.2)^0.4>> |
| 04 | Total Exterior Envelope Surface Area | << calculated field, if Building Type (A01) = Single family Detached then value equals N/A;  Else if Building Type (A01) = Single family Attached and if parent document is CF1R-PRF-01, then use imported value from CF1R and allow user to overwrite;  Else if Building Type (A01) = Single family Attached and if parent document is CF1R-NCB-01 or CF1R-ADD-01, then user then user enter whole number value (ft^2)>> |
| 05 | Unshared Exterior Envelope Surface Area  (exclude surface areas attached to garages or other dwelling units) | << calculated field, if Building Type (A01) = Single family Detached then value equals N/A;  Else if Building Type (A01) = Single family Attached and if parent document is CF1R-PRF-01, then use imported value from CF1R and allow user to overwrite;  Else if Building Type (A01) = Single family Attached and if parent document is CF1R-NCB-01 or CF1R-ADD-01, then user then user enter whole number value (ft^2)>> |
| 06 | Required Mechanical Ventilation Rate (Qfan) | <<calculated value, if “Building Type” (A02) = Single Family Detached and “Ventilation System Type” (A06) = Balanced, Balanced – ERV or Balanced - HRV, then value = ‘Total Required Ventilation rate” (C01) – [1\*(“Effective Annual Average Infiltration Rate” (C03)\*1)];  Else if “Building Type” (A02) = Single Family Attached and “Ventilation System Type” (A06) = Balanced, Balanced – ERV or Balanced - HRV, then value = ‘Total Required Ventilation rate” (C01) – {1\*[“Effective Annual Average Infiltration Rate” (C03) \* (”Unshared Exterior Envelope Surface Area” (C05)/”Total Exterior Envelope Surface Area” (C04))]};  Else if “Building Type” (A02) = Single Family Detached and “Ventilation System Type” (A06) = Supply, Exhaust, or Central Fan Integrated, then value = ‘Total Required Ventilation rate” (C01) – [(Effective Annual Average Infiltration Rate (C03)/”Total Required Ventilation rate” (C01))\*(“Effective Annual Average Infiltration Rate” (C03)\*1)];  Else if “Building Type” (A02) = Single Family Attached and “Ventilation System Type” (A06) = Supply, Exhaust, or Central Fan Integrated, then value = ‘Total Required Ventilation rate” (C01) – {(Effective Annual Average Infiltration Rate (C03)/”Total Required Ventilation rate” (C01))\*[“Effective Annual Average Infiltration Rate” (C03) \* (”Unshared Exterior Envelope Surface Area” (C05)/”Total Exterior Envelope Surface Area” (C04))]}>> |

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| **D. Installed Ventilation - Total Ventilation Rate**  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 150.0(o)1Ci | | | | |
| 01 | 02 | 03 | 04 | 05 |
| Fan Name | Fan Location | Runtime (Min/Hr) | Installed Mechanical Ventilation Rate (CFM) | Equivalent Continuous Ventilation (CFM) |
| << user input, text>> | <<user input, text>> | <<calculated field: if value in “Ventilation Operation Schedule” (A07) equals Continuous, then value equals 60;  Else if value in “Ventilation Operation Schedule” (A07) equals Short Term Average ,then user input value positive integer ≤ 60>> | << user input, positive integer>> | <<calculated field, value = (“Runtime (Min/Hr)” (D03) \* “Installed Mechanical Ventilation Rate (CFM)” (D04)) / 60 (CFM)>> |
|  |  |  |  |  |
|  |  |  |  |  |
| 06 | Total Installed Equivalent Continuous Ventilation (CFM) | | | <<calculated field, value = sum of values in column “Equivalent Continuous Ventilation (CFM)” (D05)>> |

|  |  |
| --- | --- |
| **E. Compliance Statement** | |
| 01 | << If ‘Building Type” (A02) = ‘Non-dwelling Unit’ then display text: “Building Passes”; If the ‘Total Installed Mechanical Ventilation (D06) ≥ Required Mechanical Ventilation Rate (C06), then display text: "Building Passes Mechanical Ventilation Rate Test” else display text: "Building Fails Mechanical Ventilation Rate Test">> |

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| **F. 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 | <<if E01 = Building Passes Mechanical Ventilation Rate Test, then display: Complies: All specified verification protocol requirements on this document are met; else display: Does not comply: One or more specified verification protocol requirements on this document are not met>> |







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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: |