|  |
| --- |
| 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 |

|  |  |  |
| --- | --- | --- |
| **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. | | |

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

|  |  |  |
| --- | --- | --- |
| **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) |  |

|  |  |  |
| --- | --- | --- |
| **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) |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 06 | Total Installed Equivalent Continuous Ventilation (CFM) | | |  |

|  |  |
| --- | --- |
| **E. Compliance Statement** | |
| 01 |  |

|  |  |
| --- | --- |
| **F. Other Requirements** | |
| **The items listed below (6.1 through 6.6 and 6.8 through 6.9) correspond to the information given in ASHRAE 62.2 Section 6 "Other Requirements". Refer also to Chapter 4.6 of the Residential Compliance Manual (Section 4.6.8) for information describing these "Other Requirements". The signature of the Responsible Person in the declaration statement below certifies that the building complies with these requirements specified in ASHRAE 62.2 Section 6.1 through 6.9 if applicable.** | |
| 01 | * 1. **Adjacent Spaces and Transfer Air.** Measures shall be taken to minimize air movement across envelope components to dwelling units from adjacent spaces such as garages, unconditioned crawlspaces, unconditioned attics, and other dwelling. Supply and balanced ventilation systems shall be designed and constructed to provide ventilation air directly from the outdoors.   6.1.1 **Compliance for Attached Dwelling Units**. One method of demonstrating compliance with Section 6.1 shall be to verify a leakage rate below a maximum of 0.3 cfm per ft2 (150 L/s per 100 m2) of the dwelling unit envelope area (i.e., the sum of the area of walls between dwelling units, exterior walls, ceiling, and floor) at a test pressure of 50 Pa by a blower door test conducted in accordance with either ANSI/ASTME779 or ANSI/ASTM-E1827. The test shall be conducted with the dwelling unit as if it were exposed to outdoor air on all sides, top, and bottom by opening doors and windows of adjacent dwelling units. |
| 02 | **6.2 Instructions and Labeling.** Information on the ventilation design and/or ventilation systems installed, instructions on their proper operation to meet the requirements of this standard, and instructions detailing any required maintenance (similar to that provided for HVAC systems) shall be provided to the owner and the occupant of the dwelling unit. Controls shall be labeled as to their function (unless that function is obvious, such as toilet exhaust fan switches). See Section 13 of ASHRAE Guideline 24 5 for information on instructions and labeling. |
| 03 | **6.3 Clothes Dryers.** Clothes dryers shall be exhausted directly to the outdoors.  Exception: Condensing dryers plumbed to a drain. |
| 04 | **6.4 Combustion and Solid-Fuel Burning Appliances.**  6.4.1 Combustion and solid-fuel-burning appliances must be provided with adequate combustion and ventilation air and installed in accordance with manufacturers’ installation instructions; NFPA 54/ANSI Z223.1, *National Fuel Gas Code*; NFPA 31, *Standard for the Installation of Oil-Burning Equipment*; or NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid-Fuel Burning Appliances*, or other equivalent code acceptable to the building official.  6.4.2 Where atmospherically vented combustion appliances or solid-fuelburning appliances are located inside the pressure boundary, the total net exhaust flow of the two largest exhaust fans (not including a summer cooling fan intended to be operated only when windows or other air inlets are open) shall not exceed 15 cfm per 100 ft2 (75 L/s per 100 m2) of occupiable space when in operation at full capacity. If the designed total net flow exceeds this limit, the net exhaust flow must be reduced by reducing the exhaust flow or providing compensating outdoor air. Gravity or barometric dampers in nonpowered exhaust makeup air systems shall not be used to provide compensating outdoor air. Atmospherically vented combustion appliances do not include direct-vent appliances. Combustion appliances that pass safety testing performed according to ANSI/BPI-1200, Standard Practice for Basic Analysis of Buildings,21 shall be deemed as complying with Section 6.4.2. |
| 05 | **6.5 Air tightness Requirements**  6.5.1 **Garages.** When an occupiable space adjoins a garage, the design must prevent migration of contaminants to the adjoining occupiable space. Air seal the walls, ceilings, and floors that separate garages from occupiable space. To be considered air-sealed, all joints, seams, penetrations, openings between door assemblies and their respective jambs and framing, and other sources of air leakage through wall and ceiling assemblies separating the garage from the residence and its attic area shall be caulked, gasketed, weather stripped, wrapped, or otherwise sealed to limit air movement. Doors between garages and occupiable spaces shall be gasketed or made substantially airtight with weather stripping. |
| 06 | **6.6 Ventilation Opening Area.** Spaces shall have ventilation openings as listed below. Such openings shall meet the requirements of Section 6.8. Exception: Attached dwelling units and spaces that meet the local ventilation requirements set for bathrooms in Section 5 [of ASHRAE 62.2].  6.6.1 **Habitable Spaces.** Each habitable space shall be provided with ventilation openings with an openable area not less than 4% of the floor area or less than 5 ft2 (0.5 m2).  6.6.2 **Toilets and Utility Rooms**. Toilets and utility rooms shall be provided with ventilation openings with an openable area not less than 4% of the room floor area or less than1.5 ft2 (0.15 m2).  Exceptions:  1. Utility rooms with a dryer exhaust duct.  2. Toilet compartments in bathrooms. |
| 07 | **6.8 Air Inlets.** Air inlets that are part of the ventilation design shall be located a minimum of 10 ft (3 m) from known sources of contamination such as a stack, vent, exhaust hood, or vehicle exhaust. The intake shall be placed so that entering air is not obstructed by snow, plantings, or other material. Forced air inlets shall be provided with rodent/insect screens (mesh not larger than 1/2 in. [13 mm]).  Exceptions:  1. Ventilation openings in the wall may be as close as a stretched-string distance of 3 ft (1 m) from sources of contamination exiting through the roof or dryer exhausts.  2. No minimum separation distance shall be required between windows and local exhaust outlets in kitchens and bathrooms.  3. Vent terminations covered by and meeting the requirements of the National Fuel Gas Code (NFPA 54/ANSI Z223.1)7 or equivalent.  4. Where a combined exhaust/intake termination is used to separate intake air from exhaust air originating in a living space other than kitchens, no minimum separation distance between these two openings is required. For these combined terminations, the exhaust air concentration within the intake airflow shall not exceed 10%, as established by the manufacturer. |
| 08 | **6.9 Carbon Monoxide Alarms.** A carbon monoxide alarm shall be installed in each dwelling unit in accordance with NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, and shall be consistent with requirements of applicable laws, codes, and standards. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

|  |  |
| --- | --- |
| **G. Air Moving Equipment** | |
| **The items listed below (7.1 through 7.4) correspond to the information given in ASHRAE 62.2 Section 7 "Air-Moving Equipment". Refer also to Chapter 4.6 of the Residential Compliance Manual (Section 4.6.9) for information describing these requirements in more detail. The signature of the Responsible Person in the declaration statement below certifies that the building complies with these requirements specified in ASHRAE 62.2 Section 7.1 through 7.4 if applicable.** | |
| 01 | **7.1 Selection and Installation.** Ventilation devices and equipment serving individual dwelling units shall be tested in accordance with ANSI/ASHRAE Standard 51/AMCA 210, *Laboratory Methods of Testing Fans for Aerodynamic Performance Rating*, and ANSI/AMCA Standard 300, *Reverberant Room Method for Sound Testing of Fans*, and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI) (HVI 915, *Loudness Testing and Rating Procedure*; HVI 916, *Air Flow Test Procedure* ; and HVI 920, *Product Performance Certification Procedure Including Verification and Challenge*). Installations of systems or equipment shall be carried out in accordance with manufacturers’ design requirements and installation instructions. |
| 02 | **7.2 Sound Ratings for Fans.** Ventilation fans shall be rated for sound at no less than the minimum airflow rate required by this standard as noted below. These sound ratings shall be at a minimum of 0.1 in. of water (25 Pa) static pressure in accordance with the HVI procedures referenced in Section 7.1.  Exception: HVAC air handlers and remote mounted fans need not meet sound requirements. To be considered for this exception, a remote mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways, and there must be at least 4 ft (1 m) of ductwork between the fan and the intake grille.  7.2.1 **Dwelling-Unit Ventilation or Continuous Local Exhaust Fans.** These fans shall be rated for sound at a maximum of 1.0 sone.  7.2.2 **Demand-Controlled Local Exhaust Fans.** Bathroom exhaust fans used to comply with Section 5.2 shall be rated for sound at a maximum of 3 sone. Kitchen exhaust fans used to comply with Section 5.2 shall be rated for sound at a maximum of 3 sones at one or more airflow settings greater than or equal to 100 cfm (47 L/s).  Exceptions:  1. Fans with a minimum airflow setting exceeding 400 cfm (189 L/s) need not comply.  2. Kitchen Range hoods may be rated for sound at the static pressure determined at working speed as specified in HVI 916 section 7. |
| 03 | **7.3 Exhaust Ducts.**  7.3.1 **Multiple Exhaust Fans Using One Duct.** Exhaust fans in separate dwelling units shall not share a common exhaust duct. If more than one of the exhaust fans in a single dwelling unit shares a common exhaust duct, each fan shall be equipped with a backdraft damper to prevent the recirculation of exhaust air from one room to another through the exhaust ducting system**.**  7.3.2 **Single Exhaust Fan Ducted to Multiple Inlets.** Where exhaust inlets are commonly ducted across multiple dwelling units, one or more exhaust fans located downstream of the exhaust inlets shall be designed and intended to run continuously, or a system of one or more backdraft dampers shall be installed to isolate each dwelling unit from the common duct when the fan is not running. |
| 04 | **7.4 Supply Ducts.** Where supply outlets are commonly ducted across multiple dwelling units, one or more supply fans located upstream of all the supply outlets shall be designed and intended to run continuously, or a system of one or more backdraft dampers shall be installed to isolate each dwelling unit from the common duct when the fan is not running. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Documentation Author's Declaration Statement** | | | |
| 1. I certify that this Certificate of Installation documentation is accurate and complete. | | | |
| Documentation Author Name: | | Documentation Author Signature: | |
| Documentation Author Company Name: | | Date Signed: | |
| Address: | | CEA/HERS Certification Identification (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:The information provided on this Certificate of Installation is true and correct.I am either: a) a responsible person 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 Installation and attest to the declarations in this statement, or b) I am an authorized representative of the responsible person and attest to the declarations in this statement on the responsible person’s behalf.  1. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations and the installation conforms to the requirements given on the Certificate of Compliance, plans, and specifications approved by the enforcement agency. 2. I understand that a HERS rater will check the installation to verify compliance and if such checking determines the installation fails to comply, I am required to offer any necessary corrective action at no charge to the building owner. 3. I will ensure that a registered copy of this Certificate of Installation 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 Installation is required to be included with the documentation the builder provides to the building owner at occupancy. | | | |
| Responsible Builder/Installer Name: | Responsible Builder/Installer Signature: | | |
| Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) | Position With Company (Title): | | |
| Address: | CSLB License: | | |
| City/State/Zip: | Phone: | | Date Signed: |
| Third Party Quality Control Program (TPQCP) Status: | Name of TPQCP (if applicable): | | |

**CF2R-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” (A06) = Central Fan Integrated & “Ventilation Operation Schedule” (A07) = 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.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 Ai | | | 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 |

|  |
| --- |
| 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 |

|  |  |  |
| --- | --- | --- |
| **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, or allow user to pick: \*\*Non-dwelling unit>> |
| 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) = Multifamilyand “Ventilation System Type” (A06) = Central Ventilation System – Supply, Central Ventilation System – Exhaust, or Central Ventilation System – Balanced , then display method:  **\*\*27b – Multifamily Ventilation;**  if “Building Type” (A02)= “Non-dwelling unit”; then display method:  **\*\*27d – Non-dwelling unit>>** |
| 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. | | |

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

|  |  |  |
| --- | --- | --- |
| **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 CF1R and allow user to override weather station based on climate zone;  Else if parent document is CF1R-NCB-01 or CF1R-ADD-01, user to select from list of Weather Stations from the Table B1 US Climates, Normative Appendix B shown in the instructions section of this document;  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |
| 06 | Weather and shielding factor (wsf)  (Based on the city identified above) | 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, lookup wsf based on “Name of ANSI/ASHRAE Standard 62.2-2016 weather station for climate zone” (B05) from the Table B1 US Climates, Normative Appendix B shown in the instructions section of this document;  Else if “Building Type” (A02) = “Non-dwelling unit” then value = N/A>> |

|  |  |  |
| --- | --- | --- |
| **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 ACH50 from MCH-24 D03 > 2.0, then value = B02\*2/60 (CFM);  Else if “Air Changes Per Hour at 50 Pa” (B04) = measured, and if ACH50 from MCH-24 D03 ≤ 2.0 value = B02\*ACH50 from MCH-24 D03/60>> |
| 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))]}>> |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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">> |

|  |  |
| --- | --- |
| **F. Other Requirements** | |
| **The items listed below (6.1 through 6.6 and 6.8 through 6.9) correspond to the information given in ASHRAE 62.2 Section 6 "Other Requirements". Refer also to Chapter 4.6 of the Residential Compliance Manual (Section 4.6.8) for information describing these "Other Requirements". The signature of the Responsible Person in the declaration statement below certifies that the building complies with these requirements specified in ASHRAE 62.2 Section 6.1 through 6.9 if applicable.** | |
| 01 | * 1. **Adjacent Spaces and Transfer Air.** Measures shall be taken to minimize air movement across envelope components to dwelling units from adjacent spaces such as garages, unconditioned crawlspaces, unconditioned attics, and other dwelling. Supply and balanced ventilation systems shall be designed and constructed to provide ventilation air directly from the outdoors.   6.1.1 **Compliance for Attached Dwelling Units**. One method of demonstrating compliance with Section 6.1 shall be to verify a leakage rate below a maximum of 0.3 cfm per ft2 (150 L/s per 100 m2) of the dwelling unit envelope area (i.e., the sum of the area of walls between dwelling units, exterior walls, ceiling, and floor) at a test pressure of 50 Pa by a blower door test conducted in accordance with either ANSI/ASTME779 or ANSI/ASTM-E1827. The test shall be conducted with the dwelling unit as if it were exposed to outdoor air on all sides, top, and bottom by opening doors and windows of adjacent dwelling units. |
| 02 | **6.2 Instructions and Labeling.** Information on the ventilation design and/or ventilation systems installed, instructions on their proper operation to meet the requirements of this standard, and instructions detailing any required maintenance (similar to that provided for HVAC systems) shall be provided to the owner and the occupant of the dwelling unit. Controls shall be labeled as to their function (unless that function is obvious, such as toilet exhaust fan switches). See Section 13 of ASHRAE Guideline 24 5 for information on instructions and labeling. |
| 03 | **6.3 Clothes Dryers.** Clothes dryers shall be exhausted directly to the outdoors.  Exception: Condensing dryers plumbed to a drain. |
| 04 | **6.4 Combustion and Solid-Fuel Burning Appliances.**  6.4.1 Combustion and solid-fuel-burning appliances must be provided with adequate combustion and ventilation air and installed in accordance with manufacturers’ installation instructions; NFPA 54/ANSI Z223.1, *National Fuel Gas Code*; NFPA 31, *Standard for the Installation of Oil-Burning Equipment*; or NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid-Fuel Burning Appliances*, or other equivalent code acceptable to the building official.  6.4.2 Where atmospherically vented combustion appliances or solid-fuelburning appliances are located inside the pressure boundary, the total net exhaust flow of the two largest exhaust fans (not including a summer cooling fan intended to be operated only when windows or other air inlets are open) shall not exceed 15 cfm per 100 ft2 (75 L/s per 100 m2) of occupiable space when in operation at full capacity. If the designed total net flow exceeds this limit, the net exhaust flow must be reduced by reducing the exhaust flow or providing compensating outdoor air. Gravity or barometric dampers in nonpowered exhaust makeup air systems shall not be used to provide compensating outdoor air. Atmospherically vented combustion appliances do not include direct-vent appliances. Combustion appliances that pass safety testing performed according to ANSI/BPI-1200, Standard Practice for Basic Analysis of Buildings,21 shall be deemed as complying with Section 6.4.2. |
| 05 | **6.5 Air tightness Requirements**  6.5.1 **Garages.** When an occupiable space adjoins a garage, the design must prevent migration of contaminants to the adjoining occupiable space. Air seal the walls, ceilings, and floors that separate garages from occupiable space. To be considered air-sealed, all joints, seams, penetrations, openings between door assemblies and their respective jambs and framing, and other sources of air leakage through wall and ceiling assemblies separating the garage from the residence and its attic area shall be caulked, gasketed, weather stripped, wrapped, or otherwise sealed to limit air movement. Doors between garages and occupiable spaces shall be gasketed or made substantially airtight with weather stripping. |
| 06 | **6.6 Ventilation Opening Area.** Spaces shall have ventilation openings as listed below. Such openings shall meet the requirements of Section 6.8. Exception: Attached dwelling units and spaces that meet the local ventilation requirements set for bathrooms in Section 5 [of ASHRAE 62.2].  6.6.1 **Habitable Spaces.** Each habitable space shall be provided with ventilation openings with an openable area not less than 4% of the floor area or less than 5 ft2 (0.5 m2).  6.6.2 **Toilets and Utility Rooms**. Toilets and utility rooms shall be provided with ventilation openings with an openable area not less than 4% of the room floor area or less than1.5 ft2 (0.15 m2).  Exceptions:  1. Utility rooms with a dryer exhaust duct.  2. Toilet compartments in bathrooms. |
| 07 | **6.8 Air Inlets.** Air inlets that are part of the ventilation design shall be located a minimum of 10 ft (3 m) from known sources of contamination such as a stack, vent, exhaust hood, or vehicle exhaust. The intake shall be placed so that entering air is not obstructed by snow, plantings, or other material. Forced air inlets shall be provided with rodent/insect screens (mesh not larger than 1/2 in. [13 mm]).  Exceptions:  1. Ventilation openings in the wall may be as close as a stretched-string distance of 3 ft (1 m) from sources of contamination exiting through the roof or dryer exhausts.  2. No minimum separation distance shall be required between windows and local exhaust outlets in kitchens and bathrooms.  3. Vent terminations covered by and meeting the requirements of the National Fuel Gas Code (NFPA 54/ANSI Z223.1)7 or equivalent.  4. Where a combined exhaust/intake termination is used to separate intake air from exhaust air originating in a living space other than kitchens, no minimum separation distance between these two openings is required. For these combined terminations, the exhaust air concentration within the intake airflow shall not exceed 10%, as established by the manufacturer. |
| 08 | **6.9 Carbon Monoxide Alarms.** A carbon monoxide alarm shall be installed in each dwelling unit in accordance with NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, and shall be consistent with requirements of applicable laws, codes, and standards. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

|  |  |
| --- | --- |
| **G. Air Moving Equipment** | |
| **The items listed below (7.1 through 7.4) correspond to the information given in ASHRAE 62.2 Section 7 "Air-Moving Equipment". Refer also to Chapter 4.6 of the Residential Compliance Manual (Section 4.6.9) for information describing these requirements in more detail. The signature of the Responsible Person in the declaration statement below certifies that the building complies with these requirements specified in ASHRAE 62.2 Section 7.1 through 7.4 if applicable.** | |
| 01 | **7.1 Selection and Installation.** Ventilation devices and equipment serving individual dwelling units shall be tested in accordance with ANSI/ASHRAE Standard 51/AMCA 210, *Laboratory Methods of Testing Fans for Aerodynamic Performance Rating*, and ANSI/AMCA Standard 300, *Reverberant Room Method for Sound Testing of Fans*, and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI) (HVI 915, *Loudness Testing and Rating Procedure*; HVI 916, *Air Flow Test Procedure* ; and HVI 920, *Product Performance Certification Procedure Including Verification and Challenge*). Installations of systems or equipment shall be carried out in accordance with manufacturers’ design requirements and installation instructions. |
| 02 | **7.2 Sound Ratings for Fans.** Ventilation fans shall be rated for sound at no less than the minimum airflow rate required by this standard as noted below. These sound ratings shall be at a minimum of 0.1 in. of water (25 Pa) static pressure in accordance with the HVI procedures referenced in Section 7.1.  Exception: HVAC air handlers and remote mounted fans need not meet sound requirements. To be considered for this exception, a remote mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways, and there must be at least 4 ft (1 m) of ductwork between the fan and the intake grille.  7.2.1 **Dwelling-Unit Ventilation or Continuous Local Exhaust Fans.** These fans shall be rated for sound at a maximum of 1.0 sone.  7.2.2 **Demand-Controlled Local Exhaust Fans.** Bathroom exhaust fans used to comply with Section 5.2 shall be rated for sound at a maximum of 3 sone. Kitchen exhaust fans used to comply with Section 5.2 shall be rated for sound at a maximum of 3 sones at one or more airflow settings greater than or equal to 100 cfm (47 L/s).  Exceptions:  1. Fans with a minimum airflow setting exceeding 400 cfm (189 L/s) need not comply.  2. Kitchen Range hoods may be rated for sound at the static pressure determined at working speed as specified in HVI 916 section 7. |
| 03 | **7.3 Exhaust Ducts.**  7.3.1 **Multiple Exhaust Fans Using One Duct.** Exhaust fans in separate dwelling units shall not share a common exhaust duct. If more than one of the exhaust fans in a single dwelling unit shares a common exhaust duct, each fan shall be equipped with a backdraft damper to prevent the recirculation of exhaust air from one room to another through the exhaust ducting system**.**  7.3.2 **Single Exhaust Fan Ducted to Multiple Inlets.** Where exhaust inlets are commonly ducted across multiple dwelling units, one or more exhaust fans located downstream of the exhaust inlets shall be designed and intended to run continuously, or a system of one or more backdraft dampers shall be installed to isolate each dwelling unit from the common duct when the fan is not running. |
| 04 | **7.4 Supply Ducts.** Where supply outlets are commonly ducted across multiple dwelling units, one or more supply fans located upstream of all the supply outlets shall be designed and intended to run continuously, or a system of one or more backdraft dampers shall be installed to isolate each dwelling unit from the common duct when the fan is not running. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Documentation Author's Declaration Statement** | | | |
| 1. I certify that this Certificate of Installation documentation is accurate and complete. | | | |
| Documentation Author Name: | | Documentation Author Signature: | |
| Documentation Author Company Name: | | Date Signed: | |
| Address: | | CEA/CEPE/HERS certification identification (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:The information provided on this Certificate of Installation is true and correct.I am either: a) a responsible person 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 Installation and attest to the declarations in this statement, or b) I am an authorized representative of the responsible person and attest to the declarations in this statement on the responsible person’s behalf.  1. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations and the installation conforms to the requirements given on the Certificate of Compliance, plans, and specifications approved by the enforcement agency. 2. I understand that a HERS rater will check the installation to verify compliance and if such checking determines the installation fails to comply, I am required to offer any necessary corrective action at no charge to the building owner. 3. I will ensure that a registered copy of this Certificate of Installation 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 Installation is required to be included with the documentation the builder provides to the building owner at occupancy. | | | |
| Responsible Builder/Installer Name: | Responsible Builder/Installer Signature: | | |
| Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) | Position With Company (Title): | | |
| Address: | CSLB License: | | |
| City/State/Zip: | Phone: | | Date Signed: |
| Third Party Quality Control Program (TPQCP) Status: | Name of TPQCP (if applicable): | | |