|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **A. General Information** | | | | | |
| 01 | Dwelling Unit Name |  | 02 | Climate Zone |  |
| 03 | Dwelling Unit Total Conditioned Floor Area (ft2) |  | 04 | Number of Space Conditioning Systems in this Dwelling Unit |  |
| 05 | Certificate of Compliance Type |  | 06 | Method Used to Calculate HVAC Loads |  |
| 07 | Calculated Dwelling Unit Sensible Cooling Load (Btu/h) |  | 08 | Calculated Dwelling Unit Heating Load (Btu/h) |  |
| 09 | Dwelling Unit Number of Bedrooms |  |  |  |  |

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| **MCH-01c - Space Conditioning Systems Ducts and Fans - Prescriptive, Newly Constructed Buildings** |

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| **B. Design Space Conditioning (SC) System Component Specifications from CF1R**  This table reports the space conditioning system features that were specified on the registered CF1R compliance document for this project. | | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
| SC System ID/Name from CF1R | Heating System  Type | Heating  Efficiency  Type | Heating Efficiency  Value | Cooling System Type | Cooling Efficiency  SType | Cooling Efficiency  Value | Distribution System Type | Duct Location | Duct  R-value | Thermostat Type | Comments |
|  |  |  |  |  |  |  |  |  |  |  |  |
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| **C. Installed Space Conditioning (SC) System Component Information** | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| SC System  ID/Name from CF1R | SC System Description of Area Served | Conditioned Floor Area Served by the System (ft2) | Heating  System Type | Cooling  System Type | Distribution System Type | Duct Location | SC System  Thermostat Type | Cooling Zoning Type | Cooling System Compressor Speed Type | Number of Indoor Units Connected to the System's Outdoor Unit |
|  |  |  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | | | |

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| **D. Installed Heating Equipment Information (not heat pumps)** | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 006 | 007 | 008 | 009 | 010 | 011 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Does Indoor Unit Provide CFI IAQ Ventilation? | Indoor Unit Duct Status | Heating Efficiency  Type | Heating Efficiency  (%) | Heating Unit Manufacturer | Heating Unit Model Number | Heating Unit Serial Number | Rated Heating Capacity Output (Btu/h) |
|  |  |  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | | | |

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| **E. Installed Cooling System Outdoor Condensing Unit or Package Unit Equipment Information (not heat pumps)** | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Cooling Efficiency  SType | Cooling Efficiency  Evalue | Condenser or Package Unit Manufacturer | Condenser or Package Unit Model Number | Condenser or Package Unit  Serial Number | System Cooling Capacity at Design Conditions (Btu/h) | Condenser Nominal Cooling Capacity  (ton) |
|  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | |

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| **F. Installed Split System Indoor Unit (Coil or Fan Coil) Equipment Information - applicable to DX or hydronic, heating or cooling, coils and fan coil units.**  Systems with more than one indoor coil or fan coil unit (e.g. multi-split systems) shall provide information for each of the system indoor unit coils or fan coil units. | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 007 | 008 | 009 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Indoor Unit Type | Indoor Unit Duct Status | Does Indoor Unit Provide CFI IAQ Ventilation? | Indoor Unit Manufacturer | Indoor Unit Model Number | Indoor Unit Serial Number |
|  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | |

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| --- | --- | --- | --- | --- |
| **G. Installed Heat Pump System – Split System Condensing Unit or Package Unit Equipment Information** | | | | |
| 01 | 02 | 03 | 04 | 05 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Condenser or Package Unit Manufacturer | Condenser or Package Unit Model Number | Condenser or Package Unit  Serial Number |
| <<auto filled from C01>> | <<auto filled from C02>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> |
|  |  |  |  |  |
| Notes: | | | | |

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| **H. Installed Heat Pump System – Efficiency and Performance Compliance Information** | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Heating Efficiency Type | Heating Efficiency Value | System Rated  Heating Capacity at 47°F  (Btu/h) | System Rated  Heating Capacity at 17°F  (Btu/h) | System  Cooling Efficiency  Type | System Rated  Cooling Efficiency  Value | System Cooling Capacity at Design Conditions (Btu/h) | Condenser Nominal Cooling Capacity  (ton) |
|  |  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | | |

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| **I. Installed Duct System Information** | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Supply Duct Location | Supply Duct  R-Value | Return Duct Location | Return Duct  R-Value | Exemption from Min  R-Value for Ducts In Conditioned Space | Method of compliance with Airflow and Fan Efficacy Req's in 150.0(m)13 | Number of Air Filter Devices on System | Can RA3.3 Airflow Protocols be used to test this System? |
|  |  |  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | | | |

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| **J. Installed Air Filter Device Information**  Mandatory requirements for air filter devices are specified Section 150.0(m)12. The installer shall place a sticker in or near the filter grille displaying the filter grille/rack design airflow rate and the maximum allowed clean filter pressure drop at the design airflow rate. This will inform the occupant of the airflow vs pressure drop performance required for replacement air filters. | | | | | | | | | | | | |
| 01 | 02 | 03 | 004 | 005 | 06 | 007 | 08 | 09 | 10 | 11 | 12 | 013 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Air Filter Name or Description of Location | Air Filter Device Type | Design Airflow Rate  for Air Filter Device  (cfm) | Air Filter Nominal Depth  (inch) | Air Filter Nominal Length  (inch) | Air Filter Nominal Width  (inch) | Air Filter  Calculated Nominal Face Area  (inch2) | Air Filter Required  Minimum Face Area  (inch2) | Face Area Compliance | Design Allowable Pressure Drop for Air Filter Device  (inch W.C.) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | | | | | |

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| **K. Air Filter Device Requirements** | |
| 01 | The system shall be designed to ensure that all recirculated air and all outdoor air supplied to the occupiable space is filtered before passing through the system's thermal conditioning components. |
| 02 | The system shall be designed to accommodate the clean-filter pressure drop imposed by the system air filter device(s). The design airflow rate and maximum allowable clean-filter pressure drop at the design airflow rate applicable to each air filter device shall be determined by the system designer. The system installer shall affix a sticker/label to each system air filter grille/rack locations that discloses the filter's design airflow rate and the filter's maximum allowable clean-filter pressure drop at the design airflow rate. The sticker/label shall be permanently affixed to the air filter device, readily legible, and visible to a person replacing the air filter. |
| 03 | All system air filter devices shall be located and installed in such a manner as to allow access and regular service by the system owner. |
| 04 | he system shall be provided with air filter media having a designated efficiency equal to or greater than MERV 13 when tested in accordance with ASHRAE Standard 52.2, or a particle size efficiency rating equal to or greater than 50% in the 0.30-1.0 μm range and equal to or greater than 85 percent in the 1.0-3.0 μm range when tested in accordance with AHRI Standard 680. |
| 05 | The system shall be provided with air filters that have been labeled by the manufacturer to disclose efficiency and pressure drop ratings that conform to the efficiency and pressure drop requirements for the air filter grilles/racks. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

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| **L. HERS Verification Requirements for Duct Systems** | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 09 |
|  |  |  | MCH-20 | MCH-21 | MCH-22 | MCH-23 | MCH-28 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Duct Leakage Test | Duct Location Verification | AHU Fan Efficacy (W/cfm) | AHU Airflow Rate  (cfm/ton) | Return Duct Design  Table 150.0-B or C |
|  |  |  |  |  |  |  |  |
| Notes: | | | | | | | |

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| --- | --- | --- |
| **M. HERS Verification Requirements for Space Conditioning Equipment** | | |
| 01 | 02 | 03 |
|  |  | MCH-25 |
| SC System ID or Name from CF1R | SC System Description of Area Served | Refrigerant Charge |
|  |  |  |
| Notes: | | |

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| **N. Space Conditioning Systems, Ducts and Fans – Mandatory Requirements and Additional Measures**  NAdditional mandatory requirements from Section 150.0 that are not listed here may be applicable to some systems. These requirements may be applicable to only newly installed equipment or portions of the system that are altered. Existing equipment may be exempt from these requirements. | |
| **Heating Equipment** | | | |
| 01 | | Equipment Efficiency: All heating equipment must meet the minimum efficiency requirements of Section 110.1 and Section 110.2(a) and the Appliance Efficiency Regulations. | |
| 02 | | Controls: All unitary heating systems, including heat pumps, must be controlled by a setback thermostat. These thermostats must be capable of allowing the occupant to program the temperature set points for at least four different periods in 24 hours. See Sections 150.0(i), 110.2(b). | |
| 03 | | Sizing: Heating load calculations must be done on portions of the building served by new heating systems to prevent inadvertent undersizing or oversizing. See sections 150.0(h)1 and 2). | |
| 04 | | Furnace Temperature Rise: Central forced-air heating furnace installations must be configured to operate at or below the furnace manufacturer's maximum inlet-to-outlet temperature rise specification. See Section 150.0(h)4. | |
| 05 | | Standby Losses and Pilot Lights: Fan-type central furnaces may not have a continuously burning pilot light. Section 110.5 and Section 110.2(d). | |
| **Cooling Equipment** | | | |
| 06 | | Equipment Efficiency: All cooling equipment must meet the minimum efficiency requirements of Section 110.1 and Section 110.2(a) and the Appliance Efficiency Regulations. | |
| 07 | | Refrigerant Line Insulation: All refrigerant line insulation in split system air conditioners and heat pumps must meet the R-value and protection requirements of Section 150.0(j)2 and 3, and Section 150.0(m)9. | |
| 08 | | Condensing Unit Location: Condensing units shall not be placed within 5 feet of a dryer vent outlet. See Section 150.0(h)3A. | |
| 09 | | Liquid Line Filter Drier: A liquid line filter drier shall be installed according to the manufacturer’s specifications 150.0(h)3B. | |
| 10 | | Sizing: Cooling load calculations must be done on portions of the building served by new cooling systems to prevent inadvertent undersizing or oversizing. See Section 150.0(h)1 and 2. | |
| **Air Distribution System Ducts, Plenums and Fans** | | | |
| 11 | | Insulation: The minimum duct insulation value is R-6. Note that higher values may be required by the prescriptive or performance requirements. See Section 150.0(m)1. | |
| 12 | | Connections and Closures: All installed air-distribution system ducts and plenums must meet the requirements of CMC Sections 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006: Supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 otherwise a minimum of R-4.2 is allowed if the system is enclosed entirely in conditioned space as confirmed through field verification and diagnostic testing in accordance with the requirements of Reference Residential Appendix RA3.1.4.3.8. Exceptions for ducts in interior wall cavities or exposed ducts entirely in conditioned space are specified in Section 150.0(m)1B. | |
| **Heat Pump Thermostat** | | | |
| 13 | | A thermostat shall be installed that meets the requirements of Section 110.2(b) and Section 110.2(c). | |
| 14 | | The thermostat shall be installed in accordance with the manufacturers published installation specifications. | |
| 15 | | First stage of heating shall be assigned to heat pump heating. | |
| 16 | | Second stage back up heating shall be set to come on only when the indoor set temperature cannot be met. | |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | | | |

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| --- | --- | --- | --- |
| **Documentation Author's Declaration Statement** | | | |
| 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.  1. 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. 2. 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. 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: |

**CF2R-MCH-01c-E User Instructions**

**Section A. General Information**

1. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
2. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
3. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. When the project scope includes an addition to an existing building, the value is equal to the sum of the existing conditioned floor area plus the conditioned floor area of the addition. The default value from the CF1R- may be overwritten in this document. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel
4. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document, but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
5. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
6. Oversized equipment can result in reduced efficiency and capacity. Entirely new systems must be properly sized to match the heating and cooling load of the space that it serves. To do this, heating and cooling load calculations must be performed using an approved calculation methodology. These are listed here. Select the load calculation methodology used for this dwelling unit. If the project consists of a partial replacement of equipment or ducts (change-out), then load calculations are not required. Select N/A. Load calculations are always recommended, especially if the loads of the house have been changed since the original equipment has been installed (reduced via weatherization, other improvements).
7. Enter the total sensible cooling load for the dwelling unit described by this document. For projects involving dwelling units with more than one system, this will be a sum of the loads for the parts of the dwelling unit served by those systems. If the project consists of a partial replacement of equipment or ducts (change-out) then load calculations are not required. Select N/A.
8. Enter the total heating load for the dwelling unit described by this document. For projects involving dwelling units with more than one system, this will be a sum of the loads for the parts of the dwelling unit served by those systems. If the project consists of a partial replacement of equipment or ducts (change-out) then load calculations are not required. Select N/A.
9. Enter the number of bedrooms in the dwelling unit

**Section B. Design Space Conditioning (SC) System Component Specifications from CF1R**

1. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
2. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
3. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
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10. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
11. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.
12. This field is filled out automatically. It is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document.

**Section C. Installed Space Conditioning (SC) System Component Information**

1. Select System name from the list of systems identified in previous sections and originally specified on the CF1R.
2. Briefly describe the area served by this system. Examples: entire house, upstairs, downstairs, sleeping area, north wing, etc.
3. Enter the conditioned floor area served by the system described in this row. The total value of this column for all rows must equal the total dwelling unit conditioned floor area as shown in Section A.
4. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document, but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
5. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
6. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
7. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
8. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
9. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
10. This field is filled out automatically. It appears in Section B and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
11. . If the space conditioning system is a multiple-split system, then enter the number of ducted/ductless indoor units (AHU) connected to the outdoor unit

**Section D. Installed Heating Equipment Information** (not heat pumps)

1. This field is filled out automatically. It is referenced from the same row and column in the previous section.
2. This field is filled out automatically. It is referenced from the same row and column in the previous section.
3. Enter a brief name or description of the indoor unit area served. Examples: Master Bedroom, Dining Room, Living Room, etc
4. If the indoor unit is used to bring outdoor air into the dwelling, the system may be used to comply with the IAQ mechanical ventilation requirements. This is called central fan integrated ventilation (CFI). Systems that have only one indoor unit may use CFI ventilation if yes is selected in this field. Systems in multifamily dwellings, and systems with more than one indoor unit connected to one outdoor unit may not select yes.
5. Enter the description of the duct system on this indoor unit. The possible choices are Ductless; Ducted >10ft length, Ducted ≤10ft length.
6. This field is filled out automatically. It is referenced from the same row and column in the previous section
7. Enter the certified heating efficiency of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed efficiency must be greater than or equal to the required minimum efficiency.
8. Enter the name of the *installed* Heating Unit Manufacturer as shown on the equipment nameplate.
9. Enter the name of the *installed* Heating Unit Model Number as shown on the equipment nameplate.
10. Enter the name of the *installed* Heating Unit Serial number as shown on the equipment nameplate.
11. Enter the rated heating capacity (output) of the *installed* Heating Unit in Btu/h.

**Section E. Installed Cooling System Outdoor Unit or Package Unit Equipment Information** (not heat pumps)

1. This field is filled out automatically. It is referenced from the same row and column in the previous section.
2. This field is filled out automatically. It is referenced from the same row and column in the previous section.
3. Enter the certified cooling efficiency type for the installed equipment. Select a type from the list provided.
4. Enter the certified cooling efficiency of the *installed* equipment. This value is verified against the minimum value shown in Section B. The installed efficiency must be greater than or equal to the required minimum efficiency.
5. Enter the name of the *installed* Condenser or Package Unit Manufacturer as shown on the equipment nameplate.
6. Enter the name of the *installed* Condenser or Package Unit Model Number as shown on the equipment nameplate.
7. Enter the name of the *installed* Condenser or Package Unit Serial Number as shown on the equipment nameplate.
8. Enter the sensible cooling capacity at design conditions of the *installed* cooling system in Btu/h. This information is found in the system performance information on the manufacturer's published documentation for the installed system.
9. Enter the *installed* Condenser Nominal Cooling Capacity in tons. Note that this is based on the condenser, not the coil or air handler. This can usually be determined by the condenser model number.

**Section F. Installed Split System Indoor Coil or Fan Coil Unit Equipment Information** (applicable to DX or hydronic heating/cooling coils or fan coil units)

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
3. Enter a brief name or description of the indoor unit area served. Examples: Master Bedroom, Dining Room, Living Room, etc..
4. Enter the type of indoor unit or air handling unit installed by selecting one of the choices from the list.
5. Enter the description of the ducts system on this indoor unit. The possible choices are Ductless; Ducted >10ft length, Ducted ≤10ft length.
6. If the indoor unit is used to bring outdoor air into the dwelling, the system may be used to comply with the IAQ mechanical ventilation requirements. This is called central fan integrated ventilation (CFI). Systems that have only one indoor unit may use CFI ventilation if yes is selected in this field. Systems in multifamily dwellings, and systems with more than one indoor unit connected to one outdoor unit may not select yes.
7. Enter the name of the *installed* Indoor Coil or Fan Coil Unit Manufacturer as shown on the equipment nameplate.
8. Enter the name of the *installed* Indoor Coil or Fan Coil Unit Model Number as shown on the equipment nameplate.
9. Enter the name of the *installed* Indoor Coil or Fan Coil Unit Serial Number as shown on the equipment nameplate.

**Section G. Installed Heat Pump System – Split System Condensing Unit or Package Unit Equipment Information**

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
3. Enter the name of the *installed* Heat Pump Condenser or Package Unit Manufacturer as shown on the equipment nameplate.
4. Enter the name of the *installed* Heat Pump Condenser or Package Unit Model Number as shown on the equipment nameplate.
5. Enter the name of the *installed* Heat Pump Condenser or Package Unit Serial Number as shown on the equipment nameplate.

**Section H. Installed Heat Pump System – Efficiency and Performance Compliance Information**

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
3. This field is filled out automatically. It is referenced from the same row in Section C.
4. Enter the certified heating efficiency of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed efficiency must be greater than or equal to the required minimum efficiency.
5. Enter the certified heating capacity at 47°F of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed capacity must be greater than or equal to the required minimum capacity.
6. Enter the certified heating capacity at 17°F of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed capacity must be greater than or equal to the required minimum capacity.
7. Enter the certified cooling efficiency (SEER) of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed efficiency must be greater than or equal to the required minimum efficiency.
8. Enter the certified cooling efficiency (EER) of the *installed* equipment. This value is verified against the minimum value shown in Section C. The installed efficiency must be greater than or equal to the required minimum efficiency.
9. Enter the sensible cooling capacity at design conditions of the *installed* cooling system in Btu/h.
10. Enter the *installed* Condenser Nominal Cooling Capacity in tons. Note that this is based on the condenser, not the coil or air handler. Can usually be determined by the condenser model number.

**Section I. Installed Duct System Information**

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
3. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
4. This field is filled out automatically. It appears in Section B and C, and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
5. Enter the R-value of the *installed* supply ducts. This value is verified against the minimum value shown in Section C. The installed R-value must be greater than or equal to the required minimum R-value.
6. This field is filled out automatically. It appears in Section B and C, and is referenced from the Certificate of Compliance (CF1R), which must be completed prior to this document. This value may be overwritten in this document but valid discrepancies with the CF1R are uncommon. Overwriting the default value will automatically flag this entry and subject it to additional scrutiny by QA and enforcement personnel.
7. Enter the R-value of the *installed* return ducts. This value is verified against the minimum value shown in Section C. The installed R-value must be greater than or equal to the required minimum R-value.
8. The duct system may be qualified for exemptions from the minimum R-value requirement if all of the ducts are located entirely within conditioned space. There are also exemptions for ducts located in interior wall cavities, and for ducts located entirely in conditoned space. The user may select from available choices to indicate the exemption. Note: Selecting Ducts ≥R4.2 entirely in conditioned space will subject the duct system to additional HERS verification.
9. For newly constructed systems taking the performance credit for better than default air flow or fan efficacy, field verification of these criteria is required and this field is filled out automatically. Otherwise, the user may pick the appropriate choice. Refer to section 150.0(m)13 and Residential Compliance Manual Chapter 4.4 for more information.
10. Specify the number of air filter devices installed in this indoor unit's duct system. Air filter devices installed in completely new systems must be properly sized, as documented in the next section. The value entered here will determine the number of rows needed in the following section.
11. If the system is of a type that can use one of the Reference Residential Appendix RA3.3 protocols for testing the airflow rate, then enter yes. Otherwise enter no. Note: the protocol in RA3.3.3.1.5 (Alternative to Compliance with Minimum System Airflow Requirements for Altered Systems) is not one of the protocols that is allowed to be used to justify a "yes" to this question.

**Section J. Installed Air Filter Device Information**

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections
3. This field is filled out automatically. It is referenced from the same row and column in the previous sections
4. Enter a descriptive name of each air filter device so that it may be distinguished from others in the same system. Examples: FG1, filter2, etc.
5. Select the appropriate type of filter device from the list.
6. Enter the design flow in CFM of the filter device. The total for all filter devices in a single system should be greater than or equal to the total system design CFM in cooling mode (or heating mode for heat-only systems).
7. Enter the nominal depth of the filter in inches. This is the dimension that is parallel to the airflow. many filters available for sale are 1-inch depth. The 2019 standards encourage use of 2-inch depth filters.
8. Enter the nominal length of the filter. for example, if the filter is 20" x 30", enter 30.
9. Enter the nominal width of the filter, for example, if the filter is a 20" x 30", enter 20.
10. This field is calculated automatically based on your entries in 8 and 9.
11. This value is calculated automatically for 1-inch depth filters. 2-inch depth or greater filters may use a value determined by the system designer.
12. This field determines whether a 1-inch depth filter complies with the sizing requirements in section 150.0(m)12. A 2-inch depth or greater filter may use the face area determined by the system designer, however most systems have to meet airflow rate and fan efficacy requirements.
13. Enter the design static pressure drop determined by the system designer if 2-inch or greater filters are used. For 1-inch depth filters, the maximum pressure drop is mandatory 0.1 inch W.C.. Filters installed in the filter grille/rack must be capable of meeting this maximum pressure drop at the design airflow rate, as shown on the manufacturer's filter labe. Not accounting for higher filter pressure drops will result in poor system airflow characteristics, reduced capacity and reduced efficiency. This may result in not passing field verification.

**Section K. Air Filter Device Requirements.**

This table is a list of requirements for air filter devices.

**Section L. HERS Verification Requirements for duct systems**

1. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
2. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
3. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
4. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
5. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
6. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
7. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.
8. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.

**Section M. HERS Verification Requirements for Space Conditioning Equipment**

1. This field is filled out automatically. It is referenced from the same row and column in the previous sections.
2. This field is filled out automatically. It is referenced from the same row and column in the previous sections
3. This field is filled out automatically. It is calculated based on data from the CF1R and from previous sections in this document.

**Section N. Space Conditioning Systems, Ducts and Fans – Mandatory Requirements and Additional Measures**

This table is a list of mandatory measures and additional requirements for space conditioning systems, ducts and fans.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **A. General Information** | | | | | |
| 01 | Dwelling Unit Name | <<reference text from CF1R if available, else use the data in the Project Name field>> | 02 | Climate Zone | << reference text from CF1R>> |
| 03 | Dwelling Unit Total Conditioned Floor Area (ft2) | <<numeric: xxxxx;  **if1 parent is CF1R-PRF**, then  if2 project scope = Newly Constructed (Addition Alone)  then prompt user to enter a value equal to dwelling unit  existing CFA + addition CFA  else reference the value from CF1R endif2  **elseif parent is CF1R-NCB-01**, then  **if3 project scope = New Addition greater than 1,000 ft2**  then prompt user to enter a value equal to dwelling unit  existing CFA + addition CFA  **elseif project scope = Newly Constructed Building, then**  if4 building type = Single Family, then  reference value from CF1R-NCB field A10  elseif Building Type=Multifamily, then  reference value from CF1R-NCB field M02 endif4  endif3  **elseif parent is CF1R-ADD-01**, then  if5 building type= Single Family, then  reference value from field A08 from the CF1R-ALT-02 that is  required for the dwelling unit according to CF1R-ADD-01  Section J.  elseif Building Type=Multifamily, then  reference value from field A08 from the CF1R-ALT-02 that is  required for the dwelling unit according to CF1R-ADD-01  Section L. endif5  **elseif parent is CF1R-ALT-01**, then  if6 building type= Single Family, then  reference value from field A08 from the CF1R-ALT-02 that is  required for the dwelling unit according to CF1R-ALT-01  Section G.  **elseif Building Type=Multifamily, then**  reference value from field A08 from the CF1R-ALT-02 that is  required for the dwelling unit according to CF1R-ALT-01  Section letter I. endif6  elseif parent is CF1R-ALT-02, then  reference value from CF1R-ALT-02 field A08. endif1  allow user to override default and input a value; flag overridden values and report in project status notes field >> | 04 | Number of Space Conditioning Systems in this Dwelling Unit | <<integer: xx; If parent is CF1R-ALT-02 doc type, then use as default the value referenced from CF1R-ALT-02 Section A (field A10); or allow user to override the default and input a new value; flag non-default values and report in project status notes field; elseif parent is not CF1R-ALT-02 doc type, then user input the integer value>> |
| 05 | Certificate of Compliance Type | << reference document type property from CF1R: allowed values: performance (CF1R-PRF); or prescriptive additions/alterations (CF1R-ADD/CF1R-ALT); or prescriptive newly constructed (CF1R-NCB)>> | 06 | Method Used to Calculate HVAC Loads | <<user select from list:  \*ASHRAE Handbook;  \*SMACNA Residential Comfort System Installation Standards Manual;  \*ACCA Manual J  \*n/a equipment changeout, like-for-like>> |
| 07 | Calculated Dwelling Unit Sensible Cooling Load (Btu/h) | <<user entry: numeric: xxxxx (allow n/a entry if "n/a equipment changeout, like-for-like" is selected in A06) >> | 08 | Calculated Dwelling Unit Heating Load (Btu/h) | <<user entry: numeric: xxxxx (allow n/a entry if "n/a equipment changeout, like-for-like" is selected in A06) >> |
| 09 | Dwelling Unit Number of Bedrooms | <<<<calculated field: integer xx:  if CertComplianceType=performance, then use as default the value referenced from CF1R-PRF or allow user to override the default and input a new value constrained to be greater than or equal to the default value from the CF1R-PRF; flag non-default values and report in project status notes field;  elseif parent is not CF1R-PRF doc type, then user input the integer value xx>> |  | Determination of Mech01 type (this field not visible to user) | <<calculated field:  if1 CertComplianceType=performance, then  if2 CF1R-PRF Project Scope=one of the  following two types:  \*\*Addition and/or Alteration  \*\*Newly Constructed - Addition Alone  then display doc variation MCH-01d;  elseif CF1R-PRF Project Scope=Newly  Constructed,  then display doc variation MECH01a  endif2  elseif CertComplianceType=prescriptive additions/alterations,  then display doc variation MECH01b,  elseif CertComplianceType=prescriptive newly constructed,  then display doc variation MECH01c  (this field not visible to user) endif1>> |

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| **MCH-01c - Space Conditioning Systems, Ducts, and Fans - Prescriptive, Newly Constructed Buildings** |

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| **B. Design Space Conditioning (SC) System Component Specifications from CF1R**  This table reports the space conditioning system features that were specified on the registered CF1R compliance document for this project.  <<require one row of data for each SC System identified on the CF1R report that is applicable to this dwelling unit [note: SF Dwellings use section K on CF1R-NCB-01, Multifamily dwellings use Section N dwelling unit name reference and system information in Section K on CF1R-NCB-01]; do not allow user to overwrite these referenced data >> | | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
| SC System ID/Name from CF1R | Heating System  Type | Heating  Efficiency  Type | Heating Efficiency  Value | Cooling System Type | Cooling Efficiency  Type | Cooling Efficiency  Value | Distribution System Type | Duct Location | Duct  R-value | Thermostat Type | Comments |
| <auto filled text: referenced from CF1R>> | <<auto filled text: referenced from CF1R for this system name>> | <<**if** B02 = one of the following:  \*hydronic,  \*hydronic + forced air,  \*combined hydronic,  \*combined \*hydronic + forced air,  \*hydronic HP  \*hydronic HP + forced air,  **then** value = NA;  **else** auto fill text referenced from CF1R for this system name>> | << **if** B02 = one of the following:  \*hydronic,  \*hydronic + forced air,  \*combined hydronic,  \*combined hydronic + forced air,  \*hydronic HP  \*hydronic HP + forced air,  **then** value = NA;  **else** auto fill text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> | auto fill text referenced from CF1R for this system name>> | auto filled text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> | <<auto fill text referenced from CF1R for this system name>> |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **C. Installed Space Conditioning (SC) System Component Information**  << require one row of data to be entered in this table for each of the quantity of space conditioning systems entered in A04.>> | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
| SC System  ID/Name from CF1R | SC System Description of Area Served | Conditioned Floor Area Served by the System (ft2) | Heating  System Type | Cooling  System Type | Distribution System Type | Duct Location | SC System  Thermostat Type | Cooling Zoning Type | Cooling System Compressor Speed Type | Number of Indoor Units Connected to the System's Outdoor Unit |
| << User select applicable system name from a list comprised of the systems identified in column B01;  If SC system names from the CF1R are installed more than once in this dwelling unit, then duplicate SC System names are allowed in this field>> | <<user input, text, 15 characters maximum  Require each entry to be unique in this dwelling unit>> | << user input, numeric, xxxx;  \*Require the sum of the values in this column to be equal to the value in A03 as condition of completion of the doc>> | << reference value from B02 as default; allow user to override the default and pick one from list:  \*central gas furnace;  \*central split HP;  \*central packaged HP  \*central large packaged HP  \*ductless mini-split HP;  \*room HP;  \*boiler;  \*hydronic;  \*combined hydronic;  \*hydronic+forced air;  \*combined hydronic+forced air;  \*hydronic HP,  \*hydronic HP+forced air;  \*gas wall furnace;  \*gas space heater;  \*electric ;  \*Wood Heat;  \*Small duct high velocity HP;  \*ductless multi-split HP;  \*ductless VRF HP;  \*Packaged gas furnace  \*flag non-default values and report in project status notes field; a revised CF1R may be required >> | << reference value from B05 as default; allow user to override the default and pick one from list:  \*central split AC;  \*central split HP  \*central packaged AC ;  \*central packaged HP  \*central large packaged AC ;  \*central large packaged HP  \*ductless mini-split AC;  \*ductless mini-split HP;  \*gas absorption AC  \*room AC;  \*room HP;  \*hydronic HP,  \*hydronic HP+forced air;  \*evaporative - direct  \*evaporative - indirect  \*evaporative - indirectdirect  \*evaporatively cooled condenser  \*Ice Storage AC  \*no cooling;  \*small duct high velocity HP;  \*small duct high velocity AC;  \*ductless multi-split HP;  \*ductless multi-split AC;  \*ductless VRF HP;  \*ductless VRF AC;  note: cooling system type "**No Cooling"** is the flag for heating-only system type;  \*flag non-default values and report in project status notes field; a revised CF1R may be required >>>> | << reference value from B08 as default. Allow user to  override default and pick one from list:  **\*Ducted** - Air distribution systems with forced air ducts  **\*DuctsNone** - Air distribution systems without forced air ducts  \* Multiple split Indoor Units combined Ducted and Ductless .>> | <<reference value from B09 as default. Allow user to  override default and pick one from list:  **\*DuctsAttic** - Ducts located overhead in unconditioned attic  **\*DuctsCrawl** - Ducts located underfloor in unconditioned crawl space  **\*DuctsGarage** - Ducts located in an unconditioned garage  **\*DuctsInEx12** - Ducts located within the conditioned space (except < 12 lineal ft)  **\*DuctsInAll** - HVAC system(s) with all HVAC ducts located in conditioned space  **\*DuctsOutdoor** - Ducts located in exposed outdoor locations  **\*DuctsMultiplPL** - Ducts located in multiple places  \*flag non-default values and report in project status notes field; a revised CF1R may be required >> | <<reference value from B11 as default; allow user to override the default and pick one from list:  \*setback  \*OCST per JA5  \*Energy Management System  >> | <<if cooling system type (C05) = NoCooling,  then display text value=n/a;  else:  user pick one from list:  \*Zonally Controlled, \*NotZonal>> | <<if cooling system type (C05) = NoCooling,  then display text value=n/a;  else:  user pick one from list:  \*Multi-Speed \*Single Speed>> | << **if** the CF1R requires use of a Central Fan Integrated (CFI) IAQ Ventilation system,  **then** value=1,  **else** default integer value =1;  allow user to overwrite the default to enter an integer value greater than 1>> |
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| Notes: | | | | | | | | | | |

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| **D. Installed Heating Equipment Information (not heat pumps)**  <<<if all of the SC Systems listed in Section C have a value in C04 = one of the heat pump types (see list that follows below), then display the section does not apply message; else require one row of data to be entered in this table for each of the quantity of indoor units specified in C11, for each of the SC Systems in section C for which the Heating System Type listed in C04 ≠ one of the following heat pump types: | | | | | | | | | | | | | |
| \*central split HP;  \*central packaged HP  \*central large packaged HP | | | \*ductless mini-split HP;  \*hydronic HP,  \*hydronic HP+forced air; | | | | \*room HP;  \*small duct high velocity HP; | | | | \*ductless multi-split HP;  \*ductless VRF HP >> | | |
| 01 | 02 | 03 | | 04 | 05 | 06 | | 07 | 08 | 09 | | 10 | 11 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | | Does Indoor Unit Provide CFI IAQ Ventilation? | Indoor Unit Duct Status | Heating Efficiency  Type | | Heating Efficiency  (%) | Heating Unit Manufacturer | Heating Unit Model Number | | Heating Unit Serial Number | Rated Heating Capacity, Output (Btu/h) |
| <<auto filled from C01>> | <<auto filled from C02>> | <<if value in C11=1,  then value autofilled from C02;  else user input, text, 15 characters maximum;  as default,  require each entry to be unique on this MCH-01 (i.e. in this field and in F03)  allow user to override this default uniqueness rule if needed for systems such as dual-fuel systems that may have furnace information in Section D and coil information in Section F>> | | <<if C11 > 1, then value=no;  elseif building type on the CF1R= multifamily, then value=no,  elseif IAQ vent system type for this dwelling on the CF1R=one of the following three,  \*Balanced,  \*Balanced ERV  \*Balanced HRV then value=no,  else,user pick one from list:  \*Yes  \*No>> | << **if** the distribution system type value in C06 =DuctsNone,  **then** value=Ductless;  elseif, C06=\*Ducted  **then** user pick one of the following two values:  \*Ducted>10ft length  \*Ducted ≤10ft length  **elseif** C06=-  \*Multiple split Indoor Units Combined Ducted and Ductless,  **then** user pick one of the following three text values:  \*Ductless  \*Ducted >10ft length  \*Ducted ≤10ft length>> | <<reference value from B03; allowed values are  \*AFUE;  \*COP;  \*HSPF;  \*NA  >> | | <<**if** B04 = NA,  **then** text value in this field = NA;  **else** user input numeric value, 100.0≥xx.x≥0.0; check value must be ≥ value in B04, to comply;  flag non-compliant values and do not allow registration to proceed >> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> | | <<user input alphanumeric text string max 50 characters>> | <<user input, numeric, xxxx>> |
|  |  |  | |  |  |  | |  |  |  | |  |  |
| Notes: | | | | | | | | | | | | | |

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| **E. Installed Cooling System Outdoor Condensing Unit or Package Unit Equipment Information (not heat pumps)**  << if all of the SC Systems listed in Section D have a value in C05= No Cooling, then display the section does not apply message; else require one row of data to be entered in this table for each of the SC Systems listed in Section C for which C05≠no cooling and the Cooling System Type listed in C05 ≠ one of the heat pump types in the following list:  \*central split HP;  \*central packaged HP  \*central large packaged HP  \*ductless mini-split HP;  \*hydronic HP,  \*hydronic HP+forced air;  \*room HP;  \*small duct high velocity HP;  \*ductless multi-split HP;  \*ductless VRF HP >> | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Cooling Efficiency  Type | Cooling Efficiency  value | Condenser or Package Unit Manufacturer | Condenser or Package Unit Model Number | Condenser or Package Unit  Serial Number | System Cooling Capacity at Design Conditions (Btu/h) | Condenser Nominal Cooling Capacity  (ton) |
| <<auto filled from C01>> | <<auto filled from C02>> | <<autofill value from B06>> | <<user input, numeric value, xx.x;  check value must be ≥ value in B07, to comply; else flag non-compliant value and do not allow registration to proceed>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> | <<user input, numeric, xxxxxx>> | <<user input, numeric, x.x>> |
|  |  |  |  |  |  |  |  |  |
| Notes: | | | | | | | | |

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| **F. Installed Split System Indoor Unit (Coil or Fan Coil) Equipment Information - applicable to DX or hydronic, heating or cooling, coils and fan coil units.**  Systems with more than one indoor coil or fan coil unit (e.g. multi-split systems) shall provide information for each of the system indoor unit coils or fan coil units.  <<<if none of the SC Systems listed in Section C have a value in either C04 or C05 = one of the system types in the list that follows below, then display the section does not apply message; else for each of the SC Systems listed in Section C for which one of the System Types listed in either C04 or C05 is one of the system types in the following list, require one row of data to be entered in this table for each of the quantity of indoor units specified in C11 for that system. | | | | | | | | | | | | |
| \*central split AC;  \*central split HP  \*ductless mini-split AC;  \*ductless mini-split HP; | | | \*hydronic + forced air;  \*combined hydronic + forced air;  \*hydronic HP+forced air;  \*gas absorption AC; | | \*evaporatively cooled condenser;  \*Ice Storage AC; | | \*small duct high velocity AC;  \*small duct high velocity HP; | | \*ductless multi-split AC;  \*ductless multi-split HP;  \*ductless VRF AC;  \*ductless VRF HP | | \*DualFuel-HP+gas furnace>> | |
| 01 | 02 | 03 | | 04 | | 05 | 06 | 07 | | 08 | | 09 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | | Indoor Unit Type | | Indoor Unit Duct Status | Does Indoor Unit Provide CFI IAQ Ventilation? | Indoor Unit Manufacturer | | Indoor Unit Model Number | | Indoor Unit Serial Number |
| <<auto filled from C01>> | <<auto filled from C02>> | << if value in C11=1,  then value autofilled from C02;  else user input, text, 15 characters maximum;  as default,  require each entry to be unique on this MCH-01 (i.e. in this field and in D03).  allow user to override this default uniqueness rule if needed for systems such as dual-fuel systems that may have furnace information in Table D and coil information in Table F >> | | <<user pick from list:  \*HP coil  \*AC Coil  \*fancoil AHU  \*non-furnace airhandler+coil>> | | << **if** the distribution system type value in C06 =DuctsNone,  **then** value=Ductless;  **elseif**, C06= Ducted,  **then** user pick one of the following two values:  \*Ducted>10ft length  \*Ducted ≤10ft length  **elseif** C06=-  \*Multiple split Indoor Units Mixed Ducted and Ductless,  **then** user pick one of the following three values:  \*Ductless  \*Ducted >10ft length  \*Ducted ≤10ft length>> | << **if** C11> 1, then value=no;  elseif building type on the CF1R= multifamily, then value=no,  elseif IAQ vent system type for this dwelling on the CF1R= Balanced,  then value=no,  else,user pick one from list:  \*Yes  \*No>> | <<user input alphanumeric text string max 50 characters>> | | <<user input alphanumeric text string max 50 characters>> | | <<user input alphanumeric text string max 50 characters>> |
|  |  |  | |  | |  |  |  | |  | |  |
| Notes: | | | | | | | | | | | | |

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| **G. Installed Heat Pump System – Split System Condensing Unit or Package Unit Equipment Information**  <<<if none of the SC Systems listed in Section C have a value in C04 or C05 = one of the heat pump types (see list that follows), then display the section does not apply message; else require one row of data to be entered in this table for each of the SC Systems for which the System Type listed in C04 or C05 = one of the heat pump types in the following list:  \*central split HP;  \*central packaged HP  \*central large packaged HP  \*ductless mini-split HP;  \*room HP  \*hydronic HP,  \*hydronic HP+forced air;  \*small duct high velocity HP;  \*ductless multi-split HP;  \*ductless VRF HP>> | | | | |
| 01 | 02 | 03 | 04 | 05 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Condenser or Package Unit Manufacturer | Condenser or Package Unit Model Number | Condenser or Package Unit  Serial Number |
| <<auto filled from C01>> | <<auto filled from C02>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> | <<user input alphanumeric text string max 50 characters>> |
|  |  |  |  |  |
| Notes: | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **H. Installed Heat Pump System – Efficiency and Performance Compliance Information**  <<<if none of the SC Systems listed in Section C have a value in C04 or C05 = one of the heat pump types (see list that follows), then display the section does not apply message; else require one row of data to be entered in this table for each of the SC Systems for which the System Types listed in C04 or C05 = one of the heat pump types in the following list:  \*central split HP;  \*central packaged HP  \*central large packaged HP  \*ductless mini-split HP;  \*hydronic HP,  \*hydronic HP+forced air;  \*room HP;  \*small duct high velocity;  \*ductless multi-split HP;  \*ductless VRF HP >> | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Heating Efficiency Type | Heating Efficiency Value | System Rated  Heating Capacity at 47°F  (Btu/h) | System Rated  Heating Capacity at 17°F  (Btu/h) | System  Cooling Efficiency  Type | System Rated  Cooling Efficiency  Value | System Cooling Capacity at Design Conditions (Btu/h) | Condenser Nominal Cooling Capacity  (ton) |
| <<auto filled from C01>> | <<auto filled from C02>> | <<reference value from B03; allowed values are:  \*AFUE;  \*COP;  \*HSPF; or  \*NA>> | <<if B04 = NA, then text value = NA;  else user input, numeric value, 100.0≥xx.x≥0.0; check value must be ≥ value in B04, to comply; else flag non-compliant value and do not allow registration to proceed>> | <<user input, numeric value, xxxxx.x>> | <<user input, numeric value, xxxxx.x if available,  else allow user to pick text value= N/A >> | <<reference value from B06>> | << if value in B07=N/A, then result=NA;  else user input, numeric value, 100.0≥ xx.x≥0.0; check value must be ≥ value in B07, to comply; else flag non-compliant value and do not allow registration to proceed>> | <<user input, numeric, xxxxxx>> | <<user input, numeric, x.x>> |
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| Notes: | | | | | | | | | |

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| **I. Installed Duct System Information**  <<**if** all of the SC Systems listed in Section C have a Distribution System Type value in C06 =DuctsNone - Air distribution systems without forced air ducts , **then** display the section does not apply message; **else** require one row of data in this table for each indoor unit in D03 for which the value in D05 = one of the following two values [\*Ducted>10ft length; \*Ducted ≤10ft length];  **==>>ALSO** require one row of data in this table for each indoor unit in F03 for which the value in F05 = one of the following two values [\*Ducted>10ft length; \*Ducted ≤10ft length] >> | | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |  | 10 | 11 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Supply Duct Location | Supply Duct  R-Value | Return Duct Location | Return Duct  R-Value | Exemption from Min  R-Value for Ducts In Conditioned Space | Method of compliance with Airflow and Fan Efficacy Req's in 150.0(m)13 |  | Number of Air Filter Devices on System | Can RA3.3 Airflow Protocols be used to test this System? |
| <<auto filled C01>> | <<auto filled from C02>> | <<reference applicable values from D03 and F03 >> | <<reference value from C07 as default. Allow user to overwrite and pick one from list:  **\*DuctsAttic** - Ducts located overhead in unconditioned attic  **\*DuctsCrawl** - Ducts located underfloor in unconditioned crawl space  **\*DuctsGarage** - Ducts located in an unconditioned garage  **\*DuctsInEx12** - Ducts located within the conditioned space (except < 12 lineal ft)  **\*DuctsInAll** - HVAC system(s) with all HVAC ducts located in conditioned space  **\*DuctsOutdoor** - Ducts located in exposed outdoor locations  **\*DuctsMultiplPL** - Ducts located in multiple places  flag non-default values and report in project status notes field; a revised CF1R may be required >> | <<user pick from list:  \*R-4.2  \*R-6,  \*R-8,  \*R-10,  \*R-12;  **and** check value: must be ≥ value in B10 to comply subject to the following exception:  **if** I08=  \*Ducts ≥R4.2 entirely in Conditioned Space,  **then** R-4.2 complies;  else flag non-compliant value and do not allow registration to proceed >> | <<reference value from C07 as default. Allow user to overwrite and pick one from list:  **\*DuctsAttic** - Ducts located overhead in unconditioned attic  **\*DuctsCrawl** - Ducts located underfloor in unconditioned crawl space  **\*DuctsGarage** - Ducts located in an unconditioned garage  **\*DuctsInEx12** - Ducts located within the conditioned space (except < 12 lineal ft)  **\*DuctsInAll** - HVAC system(s) with all HVAC ducts located in conditioned space  **\*DuctsOutdoor** - Ducts located in exposed outdoor locations  **\*DuctsMultiplPL** - Ducts located in multiple places  flag non-default values and report in project status notes field; a revised CF1R may be required >> | <<user pick from list:  \*R-4.2  \*R-6,  \*R-8,  \*R-10,  \*R-12;  check value: must be ≥ value in B10 to comply subject to the following exception:  **if** I08=  \*Ducts ≥R4.2 entirely in Conditioned Space,  **then** R-4.2 complies;  else flag non-compliant value and do not allow registration to proceed >> | << Default Value=No Exemption,  allow user to override the default and select one or more of the following two values:  \*uninsulated ducts in wall cavity  \*Uninsulated exposed ducts  in directly conditioned space  **if** values in both I04 and I06=  \*DuctsInAll-conditioned space-entirely,  **then** also allow user to select the following value:  \*Ducts ≥R4.2 entirely in conditioned space>> | << **if** System Type in C05=no cooling,  **then** text value = "Exempt - No Cooling";  **elseif** System Type in C05=one of the following three system types:  \*evaporative - direct, or  \*evaporative - indirect, or  \*evaporative - indirectdirect,  **then** text value = "Exempt - Evaporative System";  **elseif** Section I field 11=no, **then** text value = "Exempt - RA3.3 Protocols N/A";  **elseif** one or more of the following three conditions is true:  \*\*C09=Zonally Controlled  \*\*D04=yes (is CFI IAQ System)  \*\*F06=yes (is CFI IAQ System)  then text value = "HERS Verified Fan Efficacy and Airflow Rate";  else user select one from the following two text values:  \*\*"HERS Verified Fan Efficacy and Airflow Rate;  \*\*"HERS verified Return Duct Design per Table 150.0-B, C"; >> |  | <<user enter integer value ( this value will determine number of rows per indoor unit in next section if the total duct length is greater than 10 ft)>> | <<user pick one from list:  \*\*yes  \*\*no>> |
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| Notes: | | | | | | | | | | | |

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| **J. Installed Air Filter Device Information**  Mandatory requirements for air filter devices are specified Section 150.0(m)12. The installer shall place a sticker in or near the filter grille displaying the filter grille/rack design airflow rate and the maximum allowed clean filter pressure drop at the design airflow rate. This will inform the occupant of the airflow vs pressure drop performance required for replacement air filters.  <<**if** all of the SC Systems listed in Section C have a Distribution System Type value in C06 =DuctsNone - Air distribution systems without forced air ducts, **then** display the section does not apply message; **elseif** there are no indoor units in Section I field 03 that meet one or more of the following two conditions: 1: [value in D05= \*Ducted>10ft length] 2: [Value in F05= \*Ducted>10ft length], then display the section does not apply message;  **else** require one row of data (each) for the quantity of Air filter devices in Section I field 10 for each of the Indoor units listed in Section I field 03 that meet one or more of the following two conditions: 1: [value in D05= Ducted>10ft length]; 2:[Value in F05= Ducted>10ft length] >> | | | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Air Filter Name or Description of Location | Air Filter Device Type | Design Airflow Rate  for Air Filter Device  (cfm) | Air Filter Nominal Depth  (inch) | Air Filter Nominal Length  (inch) | Air Filter Nominal Width  (inch) | Air Filter  Calculated Nominal Face Area  (inch2) | Air Filter Required  Minimum Face Area  (inch2) | Face Area Compliance | Design Allowable Pressure Drop for Air Filter Device  (inch W.C.) |
| <<auto filled from C01>> | <<auto filled from C02>> | <<auto filled from Section I field 03 | <<user input text, maximum 20 characters>> | <<user select from list:  \*Filter Grille  \*Furnace Mounted  \*Duct Mounted  >> | <<user enter numeric value, xxx>> | <<user enter integer value ≥1.00  >> | <<user enter integer value ≥1.00  >> | <<user enter integer value ≥1.00  >> | <<calculated value= J08\*J09  >> | <<**if** J07=1, **then** calculated value=(J06 ÷ 150) \* 144;  **else** display text: "specified by system designer">> | <<**if** value in J11= "specified by system designer",  **then** display text: "specified by system designer";  **elseif** J10≥J11,  then display text: "complies",  else display text:"does not comply">> | << if value in J07=1,  then value = 0.1;  else user enter value, numeric, 1.5≥x.xx≥0.01>> |
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| Notes: | | | | | | | | | | | | |

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| **K. Air Filter Device Requirements**  <<if section J does not apply, then display the section does not apply message; else display this section>> | |
| 01 | The system shall be designed to ensure that all recirculated air and all outdoor air supplied to the occupiable space is filtered before passing through the system's thermal conditioning components. |
| 02 | The system shall be designed to accommodate the clean-filter pressure drop imposed by the system air filter device(s). The design airflow rate and maximum allowable clean-filter pressure drop at the design airflow rate applicable to each air filter device shall be determined by the system designer. The system installer shall affix a sticker/label to each system air filter grille/rack locations that discloses the filter's design airflow rate and the filter's maximum allowable clean-filter pressure drop at the design airflow rate. The sticker/label shall be permanently affixed to the air filter device, readily legible, and visible to a person replacing the air filter. |
| 03 | All system air filter devices shall be located and installed in such a manner as to allow access and regular service by the system owner. |
| 04 | The system shall be provided with air filter media having a designated efficiency equal to or greater than MERV 13 when tested in accordance with ASHRAE Standard 52.2, or a particle size efficiency rating equal to or greater than 50% in the 0.30-1.0 μm range and equal to or greater than 85 percent in the 1.0-3.0 μm range when tested in accordance with AHRI Standard 680. |
| 05 | The system shall be provided with air filters that have been labeled by the manufacturer to disclose efficiency and pressure drop ratings that conform to the efficiency and pressure drop requirements for the air filter grilles/racks. |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | |

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| **L. HERS Verification Requirements for Duct Systems**  <<if all of the SC Systems listed in Section C have a Distribution System Type value in C06 =DuctsNone - Air distribution systems without ducts , then display the section does not apply message; **else** require one row of data in this table for each of the indoor units listed in Section I field 03>> | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 |  |  | 08 |
|  |  |  | MCH-20 | MCH-21 | MCH-22 | MCH-23 |  |  | MCH-28 |
| SC System ID/Name from CF1R | SC System Description of Area Served | Indoor Unit Name or Description of Area Served | Duct Leakage Test | Duct Location Verification | AHU Fan Efficacy (W/cfm) | AHU Airflow Rate  (cfm/ton) |  |  | Return Duct Design - Table 150.0-B or C |
| <<auto filled from ISection I field 01>> | <<auto filled from Section I field 02>> | <<reference applicable values from Section I field 03>> | <<Calculated field:  if C06=**DuctsNone** - Air distribution systems without forced air duct  then display result = no;  else display result=yes>> | <<Calculated field:  **if** value in C06=DuctsNone - Air distribution systems without ducts,  **then** value =no  **elseif** the value in I08 (Section I field 08)=  \*Ducts ≥R4.2 entirely in conditioned space,  **AND** the values in either I05 or I07 are <B10  **then** display result in this field=yes;  **elseif** I08= one of the following two:  \*uninsulated ducts in wall cavity  \*Uninsulated exposed ducts  in directly conditioned space,  **then** result=yes  **else** display result=no>> | <<calculated field:  if C06=DuctsNone - Air distribution systems without forced air duct then display result = no;  elseif section I field 09 result is "HERS Verified Fan Efficacy and Airflow Rate",  then result is yes,  **elseif** C05=no cooling;  **AND** one or more of the following two are true:  \*[D04=yes] (is a CFI system)  \*[F06=yes] (is a CFI system)  **then** result=yes  **else** result=no | <<calculated field:if value in **C06** =DuctsNone - Air distribution systems without ducts,  then display result =no  elseif if section I field 09 result is "HERS Verified Fan Efficacy and Airflow Rate",  then result = yes,  elseif the value in M03=yes, AND the value in L08=no, then result in this field=yes  elseif C05=no cooling;  AND one or more of the following two are true:  \*[D04=yes] (is a CFI system)  \*[F06=yes] (is a CFI system)  then result=yes  else result=no |  |  | <<calculated field:  **if** C06=**DuctsNone** - Air distribution systems without forced air ducts,  **then** display result = no;  elseif Section I field 09 result is: "HERS Verified Return Duct Design per Table 150.0-B, C"; then result=yes  else result=no>> |
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| Notes: | | | | | | | | | |

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| **M. HERS Verification Requirements for Space Conditioning Equipment**  <<require one row of data in this table for each of the SC Systems listed in E01 and H01>> | | |
| 01 | 02 | 03 |
|  |  | MCH-25 |
| SC System ID or Name from CF1R | SC System Description of Area Served | Refrigerant Charge |
| <<auto filled from C01>> | <<auto filled from C02>> | <<calculated field:  if A02= one of the following values:  2, 8, 9, 10, 11, 12, 13, 14, 15;  then result=yes,  else result=no>> |
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| Notes: | | |

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| **N. Space Conditioning Systems, Ducts and Fans – Mandatory Requirements and Additional Measures**  Additional mandatory requirements from Section 150.0 that are not listed here may be applicable to some systems. These requirements may be applicable to only newly installed equipment or portions of the system that are altered. Existing equipment may be exempt from these requirements. | |
| **Heating Equipment** | | | |
| 01 | | Equipment Efficiency: All heating equipment must meet the minimum efficiency requirements of Section 110.1 and Section 110.2(a) and the Appliance Efficiency Regulations. | |
| 02 | | Controls: All unitary heating systems, including heat pumps, must be controlled by a setback thermostat. These thermostats must be capable of allowing the occupant to program the temperature set points for at least four different periods in 24 hours. See Sections 150.0(i), 110.2(b). | |
| 03 | | Sizing: Heating load calculations must be done on portions of the building served by new heating systems to prevent inadvertent undersizing or oversizing. See sections 150.0(h)1 and 2). | |
| 04 | | Furnace Temperature Rise: Central forced-air heating furnace installations must be configured to operate at or below the furnace manufacturer's maximum inlet-to-outlet temperature rise specification. See Section 150.0(h)4. | |
| 05 | | Standby Losses and Pilot Lights: Fan-type central furnaces may not have a continuously burning pilot light. Section 110.5 and Section 110.2(d). | |
| **Cooling Equipment** | | | |
| 06 | | Equipment Efficiency: All cooling equipment must meet the minimum efficiency requirements of Section 110.1 and Section 110.2(a) and the Appliance Efficiency Regulations. | |
| 07 | | Refrigerant Line Insulation: All refrigerant line insulation in split system air conditioners and heat pumps must meet the R-value and protection requirements of Section 150.0(j)2 and 3, and Section 150.0(m)9. | |
| 08 | | Condensing Unit Location: Condensing units shall not be placed within 5 feet of a dryer vent outlet. See Section 150.0(h)3A. | |
| 09 | | Liquid Line Filter Drier: A liquid line filter drier shall be installed according to the manufacturer’s specifications 150.0(h)3B. | |
| 10 | | Sizing: Cooling load calculations must be done on portions of the building served by new cooling systems to prevent inadvertent undersizing or oversizing. See Section 150.0(h)1 and 2. | |
| **Air Distribution System Ducts, Plenums and Fans** | | | |
| 11 | | Insulation: The minimum duct insulation value is R-6. Note that higher values may be required by the prescriptive or performance requirements. See Section 150.0(m)1. | |
| 12 | | Connections and Closures: All installed air-distribution system ducts and plenums must meet the requirements of CMC Sections 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006: Supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 otherwise a minimum of R-4.2 is allowed if the system is enclosed entirely in conditioned space as confirmed through field verification and diagnostic testing in accordance with the requirements of Reference Residential Appendix RA3.1.4.3.8. Exceptions for ducts in interior wall cavities or exposed ducts entirely in conditioned space are specified in Section 150.0(m)1B. | |
| **Heat Pump Thermostat** | | | |
| 13 | | A thermostat shall be installed that meets the requirements of Section 110.2(b) and Section 110.2(c). | |
| 14 | | The thermostat shall be installed in accordance with the manufacturers published installation specifications. | |
| 15 | | First stage of heating shall be assigned to heat pump heating. | |
| 16 | | Second stage back up heating shall be set to come on only when the indoor set temperature cannot be met. | |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | | | |