

**INSTALLATION CERTIFICATE****(Page 1 of 12) CF-6R**

Site Address

Permit Number

Installation certificates (CF-6R) are required for each and every dwelling unit. When the installation of measures that require field verification and diagnostic testing is complete, the builder or the builder's subcontractor shall complete diagnostic testing and the procedures specified in this section. When the installation is complete, the builder or the builder's subcontractor shall complete the CF-6R (Installation Certificate), and keep it at the building site for review by the building department. The builder also shall provide a copy of the Installation Certificate to the HERS rater for any measures requiring field verification and diagnostic testing, per Section 10-103(a).

**WATER HEATING SYSTEMS:**

| Heater Type | CEC Certified Mfr Name & Model Number | Distribution Type (Std, Point-of-Use, etc) | If Recirculation, Control Type | # of Identical Systems | Rated Input (kW or Btu/hr) <sup>1</sup> | Tank Volume (gallons) | Efficiency (EF, RE) <sup>2</sup> | Standby Loss (%) <sup>2</sup> | External Insulation R-value <sup>2</sup> |
|-------------|---------------------------------------|--|--------------------------------|------------------------|---|-----------------------|----------------------------------|-------------------------------|--|
|             |                                       |  |                                |                        |   |                       |                                  |                               |  |
|             |                                       |  |                                |                        |   |                       |                                  |                               |  |
|             |                                       |  |                                |                        |   |                       |                                  |                               |  |
|             |                                       |  |                                |                        |   |                       |                                  |                               |  |
|             |                                       |  |                                |                        |   |                       |                                  |                               |  |

- 1 For **small gas storage** (rated input of less than or equal to 75,000 Btu/hr), **electric resistance** and **heat pump water heaters**, list Energy Factor (EF). For **large gas storage water heaters** (rated input of greater than 75,000 Btu/hr), list Recovery (RE), Thermal Efficiency, Standby Loss and Rated Input. For **instantaneous gas water heaters**, list Thermal Efficiency and Rated Input.
2. R-12 external insulation is mandatory for storage water heaters with an energy factor of less than 0.58.

**Kitchen Piping:**

If indicated on the CF-1R, all hot water piping  $\geq 3/4$  inches in diameter that runs from the hot water source to the kitchen fixtures is insulated.

**Faucets & Shower Heads:**

All faucets and showerheads installed are certified to the Energy Commission, pursuant to Title 24, Part 6, Section 111.

**Central Water Heating in Buildings with Multiple Dwelling Units** (required for prescriptive)

☐ All hot water piping in main circulating loop is insulated to requirements of §150(j)

☐ Central hot water systems serving six or fewer dwelling units which have (1) less than 25' of distribution piping outdoors; (2) zero distribution piping underground; (3) no recirculation pump; and (4) insulation on distribution piping that meets the requirements of Section 150(j)

☐ Central hot water systems serving more than 6 dwelling units - presence of either a time control or a time/temperature control

☒ I, the undersigned, verify that equipment listed above my signature is: 1) the actual equipment installed; 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the *Energy Efficiency Standards* for residential buildings; and 3) equipment that meets or exceeds the appropriate requirements for manufactured devices (from the *Appliance Efficiency Regulations* or Part 6), where applicable.

|   |       |
|---|-------|
| Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner |       |
| Signature:  | Date: |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**

**INSTALLATION CERTIFICATE****(Page 2 of 12) CF-6R**

Site Address

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An installation certificate is required to be posted at the building site or made available for all appropriate inspections. (The information provided on this form is required) After completion of final inspection, a copy must be provided to the building department (upon request) and the building owner at occupancy, per Section 10-103(a).

**FENESTRATION/GLAZING:**

| Item | Manufacturer/Brand Name<br>(GROUP LIKE PRODUCTS) | Product U-factor <sup>1</sup><br>(≤ CF-1R value) <sup>2</sup> | Product SHGC <sup>1</sup><br>(≤ CF-1R value) <sup>2</sup> | # of Panes | Total Quantity of Like Product<br>(Optional) | Area Square Feet | Exterior Shading Device or Overhang | Comments/Location/<br>Special Features |
|------|--|---|---|------------|--|------------------|-------------------------------------|--|
| 1.   |  |   |   |            |  |                  |                                     |  |
| 2.   |  |   |   |            |  |                  |                                     |  |
| 3.   |  |   |   |            |  |                  |                                     |  |
| 4.   |  |   |   |            |  |                  |                                     |  |
| 5.   |  |   |   |            |  |                  |                                     |  |
| 6.   |  |   |   |            |  |                  |                                     |  |
| 7.   |  |   |   |            |  |                  |                                     |  |
| 8.   |  |   |   |            |  |                  |                                     |  |
| 9.   |  |   |   |            |  |                  |                                     |  |
| 10.  |  |   |   |            |  |                  |                                     |  |
| 11.  |  |   |   |            |  |                  |                                     |  |
| 12.  |  |   |   |            |  |                  |                                     |  |
| 13.  |  |   |   |            |  |                  |                                     |  |
| 14.  |  |   |   |            |  |                  |                                     |  |
| 15.  |  |   |   |            |  |                  |                                     |  |

<sup>1)</sup> Use values from a fenestration product's NFRC label. For fenestration products without an NFRC label, use the default values from Section 116 of the Energy Efficiency Standards.

<sup>2)</sup> Installed U-factor must be less than or equal to values from CF-1R. Installed SHGC must be less than or equal to values from CF-1R, or a shading device (exterior or overhang) is installed as specified on the CF-1R. Alternatively, installed weighted average U-factors for the total fenestration area are less than or equal to values from CF-1R. If using default table SHGC values from §116 identify whether tinted or not.

✓ ☐ I, the undersigned, verify that the fenestration/glazing listed above my signature: 1) is the actual fenestration product installed; 2) is equivalent to or has a lower U-factor and lower SHGC than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the *Energy Efficiency Standards* for residential buildings; and 3) the product meets or exceeds the appropriate requirements for manufactured devices (from Part 6), where applicable.

|                            |           |      |   |
|----------------------------|-----------|------|---|
| Item #s<br>(if applicable) | Signature | Date | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |
| Item #s<br>(if applicable) | Signature | Date | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |
| Item #s<br>(if applicable) | Signature | Date | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |

**Copies to: Building Department , HERS Rater (if applicable) Building Owner at Occupancy**

**INSTALLATION CERTIFICATE****(Page 3 of 12) CF-6R**

Site Address

Permit Number

An installation certificate is required to be posted at the building site or made available for all appropriate inspections. (The information provided on this form is required) After completion of final inspection, a copy must be provided to the building department (upon request) and the building owner at occupancy, per Section 10-103(a).

**HVAC SYSTEMS:*****Heating Equipment***

| Equip Type<br>(pkg. heat pump) | CEC Certified Mfr.<br>Name and Model<br>Number | # of<br>Identical<br>Systems | Efficiency<br>(AFUE, etc.) <sup>1</sup><br>(≥CF-1R value) | Duct<br>Location<br>(attic, etc.) | Duct or<br>Piping<br>R-value | Heating<br>Load<br>(Btu/hr) | Heating<br>Capacity<br>(Btu/hr) |
|--------------------------------|--|------------------------------|---|-----------------------------------|------------------------------|-----------------------------|---------------------------------|
|                                |  |                              |   |                                   |                              |                             |                                 |
|                                |  |                              |   |                                   |                              |                             |                                 |
|                                |  |                              |   |                                   |                              |                             |                                 |
|                                |  |                              |   |                                   |                              |                             |                                 |

***Cooling Equipment***

| Equip Type<br>(pkg. heat pump) | CEC Certified Mfr.<br>Name and Model<br>Number | # of<br>Identical<br>Systems | Efficiency<br>(SEER or EER) <sup>1</sup><br>(≥CF-1R value) | Duct<br>Location<br>(attic, etc.) | Duct<br>R-value | Cooling<br>Load<br>(Btu/hr) | Cooling<br>Capacity<br>(Btu/hr) |
|--------------------------------|--|------------------------------|--|-----------------------------------|-----------------|-----------------------------|---------------------------------|
|                                |  |                              |  |                                   |                 |                             |                                 |
|                                |  |                              |  |                                   |                 |                             |                                 |
|                                |  |                              |  |                                   |                 |                             |                                 |
|                                |  |                              |  |                                   |                 |                             |                                 |

1. ≥ symbol reads *greater than or equal to what is indicated on the CF-1R value.*

Include both SEER and EER if compliance credit for high EER air conditioner is claimed.

✓ ☐ I, the undersigned, verify that equipment listed above is: 1) is the actual equipment installed, 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the *Energy Efficiency Standards* for residential buildings, and 3) equipment that meets or exceeds the appropriate requirements for manufactured devices (from the *Appliance Efficiency Regulations* or Part 6), where applicable.

|   |       |
|---|-------|
| Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner |       |
| Signature:  | Date: |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**

**INSTALLATION CERTIFICATE**(Page 4 of 12) **CF-6R**

Site Address

Permit Number

**INSTALLER COMPLIANCE STATEMENT FOR DUCT LEAKAGE****INSTALLER COMPLIANCE STATEMENT**The building was: ☒ Tested at Final ☒ Tested at Rough-in**INSTALLER VISUAL INSPECTION AT FINAL CONSTRUCTION STAGE FOR NEW DUCTS:**

- ☐ Remove at least one supply and one return register, and verify that the spaces between the register boot and the interior finishing wall are properly sealed.
- ☐ If the house rough-in duct leakage test was conducted without an air handler installed, inspect the connection points between the air handler and the supply and return plenums to verify that the connection points are properly sealed.
- ☐ Inspect all joints to ensure that no cloth backed rubber adhesive duct tape is used *on new ducts*.

☒ **DUCT LEAKAGE REDUCTION***Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3***NEW CONSTRUCTION:**

|   | Duct Pressurization Test Results (CFM @ 25 Pa)   | Measured Values |   |
|---|--|-----------------|---|
| 1 | Enter Tested Leakage Flow in CFM:  |                 |   |
| 2 | Fan Flow: Calculated (Nominal: <input checked="" type="checkbox"/> Cooling <input checked="" type="checkbox"/> Heating) or <input checked="" type="checkbox"/> Measured<br>If Fan Flow is Calculated as 400 cfm/ton x number of tons or as 21.7 cfm/(kBtu/hr) x Heating Capacity in Thousands of Btu/hr, enter total calculated or measured fan flow in CFM: |                 | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 3 | Pass if Leakage Percentage < 5% for Final or < 4% at Rough-in without air handle:<br>[100 x [_____(Line # 1) / _____(Line # 2)]]   |                 | <input type="checkbox"/> Pass <input type="checkbox"/> Fail             |

**ALTERATIONS: Duct System and/or HVAC Equipment Change-Out**

|   |   |  |   |
|---|---|--|---|
| 4 | Enter Tested Leakage Flow in CFM from <b>Pre-Test</b> of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.                |  |   |
| 5 | Enter Tested Leakage Flow in CFM from <b>Final Test</b> of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out. |  |   |
| 6 | Enter Reduction in Leakage for Altered Duct System<br>[_____(Line # 4) Minus _____(Line # 5)] – (Only if Applicable)                                      |  |   |
| 7 | Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)  |  | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 8 | Entire New Duct System - Pass if Leakage Percentage < 5% for Final.<br>[100 x [_____(Line # 5) / _____Line # 2)]]   |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail             |

**TEST OR VERIFICATION STANDARDS: For Altered Duct System and/or HVAC Equipment Change-Out Use one of the following for Test or Verification Standards for compliance:**

|    |  |  |   |
|----|--|--|---|
| 9  | Pass if Leakage Percentage < 15% [100 x [_____(Line # 5) / _____(Line # 2)]]   |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail |
| 10 | Pass if Leakage to Outside Percentage < 10% [100 x [_____(Line # 7) / _____(Line # 2)]]  |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail |
| 11 | Pass if Leakage Reduction Percentage > 60% [100 x [_____(Line # 6) / _____(Line # 4)]]<br>and Verification by Smoke Test and Visual Inspection |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail |
| 12 | Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection   |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail |
|    | <b>Pass if One of Lines # 9 through # 12 pass</b>  |  | <input type="checkbox"/> Pass <input type="checkbox"/> Fail |

☒ I, the undersigned, verify that the above diagnostic test results were performed in conformance with the requirements for compliance credit. I, the undersigned, also certify that the newly installed or retrofit Air-Distribution System Ducts, Plenums and Fans comply with Mandatory requirements specified in Section 150 (m) of the 2005 Building Energy Efficiency standards.

|   |       |
|---|-------|
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| Signature:  | Date: |

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**INSTALLATION CERTIFICATE****(Page 5 of 12) CF-6R**

Site Address

Permit Number

**✓ ☐ THERMOSTATIC EXPANSION VALVE (TXV)***Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix RI.*

|   |                              |                             |   |                          |                          |
|---|------------------------------|-----------------------------|---|--------------------------|--------------------------|
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Access is provided for inspection. The procedure shall consist of visual verification that the TXV is installed on the system and installation of the specific equipment shall be verified. | <input type="checkbox"/> | <input type="checkbox"/> |
|   |                              |                             |   | Yes is a pass            | Pass                     |

**✓ ☐ REFRIGERANT CHARGE MEASUREMENT**

Verification for Required Refrigerant Charge and Adequate Airflow for Split System Space Cooling Systems without Thermostatic Expansion Valves

|                                       |  |                           |
|---------------------------------------|--|---------------------------|
| Outdoor Unit Serial #                 |  |                           |
| Location                              |  |                           |
| Outdoor Unit Make                     |  |                           |
| Outdoor Unit Model                    |  |                           |
| Cooling Capacity                      |  | Btu/hr                    |
| Date of Verification                  |  |                           |
| Date of Refrigerant Gauge Calibration |  | (must be checked monthly) |
| Date of Thermocouple Calibration      |  | (must be checked monthly) |

**Standard Charge Measurement Procedure (outdoor air dry-bulb 55°F and above):***Procedures for Determining Refrigerant Charge using the Standard Method are available in RACM, Appendix RD2.*

Note: The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.

**Measured Temperatures**

|   |  |    |
|---|--|----|
| Supply (evaporator leaving) air dry-bulb temperature (Tsupply, db)  |  | °F |
| Return (evaporator entering) air dry-bulb temperature (Treturn, db) |  | °F |
| Return (evaporator entering) air wet-bulb temperature (Treturn, wb) |  | °F |
| Evaporator saturation temperature (Tevaporator, sat)                |  | °F |
| Suction line temperature (Tsuction, db)                             |  | °F |
| Condenser (entering) air dry-bulb temperature (Tcondenser, db)      |  | °F |

**Superheat Charge Method Calculations for Refrigerant Charge**

|  |  |    |
|--|--|----|
| Actual Superheat = Tsuction, db – Tevaporator, sat                         |  | °F |
| Target Superheat (from Table RD-2)   |  | °F |
| Actual Superheat – Target Superheat (System passes if between -5 and +5°F) |  | °F |

**Temperature Split Method Calculations for Adequate Airflow***Split Method Calculation is not necessary if Adequate Airflow credit is taken*

|   |  |    |
|---|--|----|
| Actual Temperature Split = T return, db Tsupply, db   |  | °F |
| Target Temperature Split (from Table RD3)   |  | °F |
| Actual Temperature Split Target Temperature Split (System passes if between -3°F and +3°F or, upon remeasurement, if between -3°F and -100°F) |  | °F |

**INSTALLATION CERTIFICATE****(Page 6 of 12) CF-6R**

Site Address

Permit Number

**Standard Charge Measurement Summary:**

System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

☐ Yes☐ No

System Passes

**Alternate Charge Measurement Procedure** (outdoor air dry-bulb below 55 °F)

Note: The system should be installed and charged in accordance with the manufacturer's specifications and installer verification shall be documented on CF-6R before starting this procedure. If outdoor air dry-bulb is 55 °F or above, installer shall use the Standard Charge Measure Procedure:

*Procedures for Determining Refrigerant Charge using the Alternate Method are available in RACM, Appendix RD3.*

**Weigh-In Charging Method for Refrigerant Charge**

|   |  |    |
|---|--|----|
| Actual liquid line length:  |  | ft |
| Manufacturer's Standard liquid line length:   |  | ft |
| Difference (Actual – Standard):   |  | ft |
| Manufacturer's correction (ounces per foot) _____ x difference in length = _____ ounces<br>(+ = add) (- = remove) |  |    |

**Measured Airflow Method for Adequate Airflow Verification** *available in RACM, Appendix RD2.6*

|   |
|---|
| Calculated Airflow: Cooling Capacity (Btu/hr)_____ X 0.033 (cfm/Btu-hr) = _____ CFM           |
| Measured Airflow is _____ CFM (Measured airflow must be greater than the calculated airflow). |

**Alternate Charge Measurement Summary:**

System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

☐ Yes☐ No

System Passes

|   |       |
|---|-------|
| Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner |       |
| Signature:  | Date: |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**

**INSTALLATION CERTIFICATE****(Page 7 of 12) CF-6R**

Site Address

Permit Number

**MISCELLANEOUS CREDITS****✓ ☐ DIAGNOSTIC SUPPLY DUCT LOCATION, SURFACE AREA AND R-VALUE***Procedures for field verification and diagnostic testing for this group compliance credits are available in RACM, Appendix RC, RE & RH.***✓ ☐ LESS THAN 12 LINEAL FEET OF SUPPLY DUCT OUTSIDE OF CONDITIONED SPACE****COMPLIANCE CREDIT**

|   |                              |                             |   |
|---|------------------------------|-----------------------------|---|
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Less than 12 lineal feet of supply duct outside of conditioned space. |
|   |                              |                             | Yes to this compliance credit is a pass                               |
|   |                              |                             | ✓ <input type="checkbox"/> Pass                                       |
|   |                              |                             | ✓ <input type="checkbox"/> Fail                                       |

**✓ ☐ SUPPLY DUCTS LOCATED IN CONDITIONED SPACE COMPLIANCE CREDIT**

|   |                              |                             |  |
|---|------------------------------|-----------------------------|--|
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Ducts are located within the conditioned volume of building. |
|   |                              |                             | Yes to this compliance credit is a pass                      |
|   |                              |                             | ✓ <input type="checkbox"/> Pass                              |
|   |                              |                             | ✓ <input type="checkbox"/> Fail                              |

**Duct System Design verification is required for a compliance credit for the following:**

1. Supply duct surface area reduction
2. Buried supply ducts on the ceiling
3. Deeply buried supply ducts

**✓ ☐ DUCT SYSTEM DESIGN VERIFICATION**

|   |                              |                             |   |
|---|------------------------------|-----------------------------|---|
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Adequate airflow verified   |
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | The duct system design plan meets the requirements specified in RACM, Appendix RE, Section RE.4.2           |
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | The duct system design plan exists on building plans  |
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Duct sizes, duct system layout and locations of supply & return registers match the duct system design plan |
|   |                              |                             | Yes to all is a pass  |
|   |                              |                             | ✓ <input type="checkbox"/> Pass   |
|   |                              |                             | ✓ <input type="checkbox"/> Fail   |

**✓ ☐ SUPPLY DUCTS SURFACE AREA REDUCTION COMPLIANCE CREDIT**

| Attic                                 | Crawl Space                  | Basement                    | Covered                      | Deeply Covered           | Other                    | Duct Diameter | R-4.2 Surface Area   | R-6.0 Surface Area            | R-8.0 Surface Area            |
|---------------------------------------|------------------------------|-----------------------------|------------------------------|--------------------------|--------------------------|---------------|----------------------|-------------------------------|-------------------------------|
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| <input type="checkbox"/>              | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |               |                      |                               |                               |
| Total Surface Area for Each R-Value = |                              |                             |                              |                          |                          |               |                      |                               |                               |
| ✓                                     | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Matches Performance's CF-1R? |                          |                          |               |                      | ✓                             | ✓                             |
|                                       |                              |                             |                              |                          |                          |               | Yes to all is a pass | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail |

**✓ ☐ BURIED DUCTS ON THE CEILING COMPLIANCE CREDIT**

|                          |                              |                             |  |
|--------------------------|------------------------------|-----------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Buried Ducts on the Ceiling  |
| <input type="checkbox"/> | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Verified High Insulation Installation Quality  |
|                          |                              |                             | Yes to duct system design, supply duct surface area reduction and this compliance credit is a pass |
|                          |                              |                             | <input type="checkbox"/> Pass  |
|                          |                              |                             | <input type="checkbox"/> Fail  |

**✓ ☐ DEEPLY BURIED DUCTS COMPLIANCE CREDIT**

|   |                              |                             |  |
|---|------------------------------|-----------------------------|--|
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Deeply Buried Ducts  |
| ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Verified High Insulation Installation Quality  |
|   |                              |                             | Yes to duct system design, supply duct surface area reduction and this compliance credit is a pass |
|   |                              |                             | <input type="checkbox"/> Pass  |
|   |                              |                             | <input type="checkbox"/> Fail  |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**

**INSTALLATION CERTIFICATE****(Page 8 of 12) CF-6R**

Site Address

Permit Number

**✓ ☐ FAN WATT DRAW***Procedures for measuring the air handler watt draw are available in RACM, Appendix RE3.2.*

|   |                             |  |  |                          |                          |
|---|-----------------------------|--|--|--------------------------|--------------------------|
| <b>✓ Method For Fan Watt Draw Measurement</b>                 |                             |  |  |                          |                          |
| <input type="checkbox"/>                                      | RE3.2.1                     | Portable Watt Meter Measurement  |  |                          |                          |
| <input type="checkbox"/>                                      | RE3.2.2                     | Utility Revenue Meter Measurement  |  |                          |                          |
|   |                             |  |  |                          |                          |
| Measured Fan Watt Draw  |                             |  |  |                          | Watts                    |
| Measured Fan Flow (enter total cfm from airflow verification) |                             |  |  |                          | cfm                      |
| Enter results of Watts/cfm                                    |                             |  |  |                          | Watts/cfm                |
|   |                             |  |  | ✓                        | ✓                        |
| ✓ <input type="checkbox"/> Yes                                | <input type="checkbox"/> No | Measured fan watt/cfm draw is equal to or lower than the fan watt/cfm draw documented in CF-1R |  | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Yes is a pass</b>  |                             |  |  | Pass                     | Fail                     |

**✓ ☐ ADEQUATE AIRFLOW VERIFICATION***Procedures for measuring the airflow are available in RACM, Appendix RE3.1.*

|   |                             |   |  |      |           |
|---|-----------------------------|---|--|------|-----------|
| <b>✓ Method For Airflow Measurement</b> |                             |   |  |      |           |
| <input type="checkbox"/>                | RE4.1.1                     | Diagnostic Fan Flow Using Flow Capture Hood                 |  |      |           |
| <input type="checkbox"/>                | RE4.1.2                     | Diagnostic Fan Flow Using Plenum Pressure Matching          |  |      |           |
| <input type="checkbox"/>                | RE4.1.3                     | Diagnostic Fan Flow Using Flow Grid Measurement             |  |      |           |
| <input type="checkbox"/> Yes            | <input type="checkbox"/> No | Duct design exists on plans                                 |  |      |           |
| Measured Airflow:                       |                             |   |  |      | Total cfm |
| Rated Tons cfm/ton                      |                             |   |  |      | cfm/ton   |
|   |                             |   |  |      |           |
| ✓ <input type="checkbox"/> Yes          | <input type="checkbox"/> No | Measured airflow is greater than the criteria in Table RE-2 |  | ✓    | ✓         |
| <b>Yes is a pass</b>                    |                             |   |  | Pass | Fail      |

**✓ ☐ MAXIMUM COOLING CAPACITY***Procedures for determining maximum cooling load capacity are available in RACM, Appendix RF3.*

|  |   |                              |                             |  |                          |                          |
|--|---|------------------------------|-----------------------------|--|--------------------------|--------------------------|
| 1  | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Adequate airflow verified (see adequate airflow credit)  |                          |                          |
| 2  | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Refrigerant charge or TXV  |                          |                          |
| 3  | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Duct leakage reduction credit verified   |                          |                          |
| 4  | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Cooling capacities of installed systems are ≤ to maximum cooling capacity indicated on the Performance's CF-1R and RF-3.   |                          |                          |
| 5  | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | If the cooling capacities of installed systems are > than maximum cooling capacity in the CF-1R, then the electrical input for the installed systems must be ≤ to electrical input in the CF-1R. | ✓                        | ✓                        |
|  |   |                              |                             |  | <input type="checkbox"/> | <input type="checkbox"/> |
| Yes to 1, 2, and 3; and Yes to either 4 or 5 is a pass |   |                              |                             |  | Pass                     | Fail                     |

**✓ ☐ HIGH EER AIR CONDITIONER***Procedures for verification are available in RACM, Appendix RI.*

|   |   |                              |                             |  |                          |                          |
|---|---|------------------------------|-----------------------------|--|--------------------------|--------------------------|
| 1   | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | EER values of installed systems match the CF-1R          |                          |                          |
| 2   | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | For split system, indoor coil is matched to outdoor coil | ✓                        | ✓                        |
| 3   | ✓ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Time Delay Relay Verified (If Required)                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Yes to 1 and 2; and 3 (If Required) is a pass |   |                              |                             |  | Pass                     | Fail                     |

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner

Signature:

Date:

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**



**INSTALLATION CERTIFICATE****(Page 9 of 12) CF-6R**

Site Address

Permit Number

An installation certificate is required to be posted at the building site or made available for all appropriate inspections. (The information provided on this form is required) After completion of final inspection, a copy must be provided to the building department (upon request) and the building owner at occupancy, per Section 10-103(a).

**BUILDING ENVELOPE LEAKAGE DIAGNOSTICS****✓ ☐ ENVELOPE SEALING INFILTRATION REDUCTION**

*Procedures for field verification and diagnostic testing of envelope leakage are available in RACM, Appendix RC.*

| <b>Diagnostic Testing Results</b> |                                 |                                |  |   |
|-----------------------------------|---------------------------------|--------------------------------|--|---|
|                                   | ✓                               | ✓                              | Building Envelope Leakage (CFM @ 50 Pa) as measured by Rater:  |   |
| 1.                                | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | Measured envelope leakage less than or equal to the required level from CF-1R?   |   |
| 2.                                | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | Is Mechanical Ventilation shown as required on the CF-1R?  |   |
| 2a.                               | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | If Mechanical Ventilation is required on the CF-1R ('Yes' in line 2), has it been installed?   |   |
| 2b.                               | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | Check this box 'yes' if mechanical ventilation is required ('Yes' in line 2) and ventilation fan watts are no greater than shown on CF-1R.<br>Measured Watts =   |   |
| 3.                                | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | Check this box "yes" if measured building infiltration (CFM @ 50 Pa) is greater than the CFM @ 50 values shown for an SLA of 1.5 on CF-1R<br>(If this box is checked no, mechanical ventilation is required.)  |   |
| 4.                                | <input type="checkbox"/><br>Yes | <input type="checkbox"/><br>No | Check this box "yes" if measured building infiltration (CFM @ 50 Pa) is less than the CFM @ 50 values shown for an SLA of 1.5 on CF-1R, mechanical ventilation is installed and house pressure is greater than minus 5 Pascal with all exhaust fans operating. |   |
|                                   |                                 |                                | Pass if:<br>a. Yes in line 1 and line 3, or<br>b. Yes in line 1 and line 2, 2a, and 2b, or<br>c. Yes in line 1 and Yes in line 4.<br>Otherwise fail.   | <div>✓</div> <div><input type="checkbox"/><br/>Pass</div> |
|                                   |                                 |                                |  | <div>✓</div> <div><input type="checkbox"/><br/>Fail</div> |

✓ ☐ I, the undersigned, verify that the building envelope leakage meets the requirements claimed for building leakage reduction below default assumptions as used for compliance on the CF-1R. This is to certify that the above diagnostic test results and the work I performed associated with the test(s) is in conformance with the requirements for compliance credit. (The builder shall provide the HERS provider a copy of the CF-6R signed by the builder employees or subcontractors certifying that diagnostic testing and installation meet the requirements for compliance credit.)

|   |       |
|---|-------|
| Test Performed  |       |
| Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner |       |
| Signature:  | Date: |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE), BUILDING OWNER AT OCCUPANCY**

Site Address

Permit Number

## Insulation Installation Quality Certificate

✓ ☐ Description of Insulation, (CF-6R, formerly IC-1) signed by the installer stating: insulation manufacturer's name, material identification, installed R-values, and for loose-fill insulation: minimum weight per square foot and minimum inches

✓ ☐ Installation meets all applicable requirements as specified in the High Quality Insulation Installation Procedures (ACM, Appendix RH)

|                                   |                                |                                |  |
|-----------------------------------|--------------------------------|--------------------------------|--|
| <b>✓ FLOOR</b>                    |                                |                                |  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Insulation in contact with the subfloor or rim joists insulated  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Insulation properly supported to avoid gaps, voids, and compression  |
| <b>✓ WALLS</b>                    |                                |                                |  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | <i>Wall stud cavities caulked or foamed to provide an air tight envelope</i>   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Wall stud cavity insulation uniformly fills the cavity side-to-side, top-to-bottom, and front-to-back  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | No gaps  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | No voids over 3/4" deep or more than 10% of the batt surface area.   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Hard to access wall stud cavities such as; corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Small spaces filled  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Rim-joists insulated   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Loose fill wall insulation meets or exceeds manufacturer's minimum weight-per-square-foot requirement  |
| <b>✓ ROOF/CEILING PREPARATION</b> |                                |                                |  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | All draft stops in place to form a continuous ceiling and wall air barrier   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | All drops covered with hard covers   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | All draft stops and hard covers caulked or foamed to provide an air tight envelope   |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | All recessed light fixtures IC and air tight (AT) rated and sealed with a gasket or caulk between the housing and the ceiling                |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Floor cavities on multiple-story buildings have air tight draft stops to all adjoining attics  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Eave vents prepared for blown insulation - maintain net free-ventilation area  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Knee walls insulated or prepared for blown insulation  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Area under equipment platforms and cat-walks insulated or accessible for blown insulation  |
| <input type="checkbox"/><br>Yes   | <input type="checkbox"/><br>No | <input type="checkbox"/><br>NA | Attic rulers installed   |

**INSTALLATION CERTIFICATE****(Page 11 of 12) CF-6R**

Site Address

Permit Number

**✓ ROOF/CEILING BATTS**

|                          |                          |                          |   |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | No gaps   |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | No voids over ¼ in. deep or more than 10% of the batt surface area. |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Insulation in contact with the air-barrier                          |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Recessed light fixtures covered                                     |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <i>Net free-ventilation area maintained at eave vents</i>           |
| Yes                      | No                       | NA                       |   |

**✓ ROOF/CEILING LOOSE-FILL**

|                          |                          |                          |   |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Insulation uniformly covers the entire ceiling (or roof) area from the outside of all exterior walls.   |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Baffles installed at eaves vents or soffit vents - maintain net free-ventilation area of eave vent  |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Attic access insulated  |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Recessed light fixtures covered   |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Insulation at proper depth – insulation rulers visible and indicating proper depth and R-value  |
| Yes                      | No                       | NA                       |   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <i>Loose-fill insulation meets or exceeds manufacturer's minimum weight and thickness requirements for the target R-value. Target R-value _____. Manufacturer's minimum required weight for the target R-value _____ (pounds-per-square-foot). Manufacturer's minimum required thickness at time of installation _____. Manufacturer's minimum required settled thickness _____. Note: To receive compliance credit the HERS rater shall verify that the manufacturer's minimum weight and thickness has been achieved for the target R-value. (CF-6R only)</i> |
| Yes                      | No                       | NA                       |   |

**DECLARATION**

✓ ☐ I hereby certify that the installation meets all applicable requirements as specified in the Insulation Installation Procedures.

|   |       |
|---|-------|
| Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner |       |
| Signature:  | Date: |

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE), BUILDING OWNER AT OCCUPANCY**

**INSTALLATION CERTIFICATE****(Page 12 of 12) CF-6R**

Site Address \_\_\_\_\_

Permit Number \_\_\_\_\_

County Subdivision \_\_\_\_\_

Lot Number \_\_\_\_\_

**Description of Insulation (Formerly IC-1 Form)****1. RAISED FLOOR**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**2. SLAB FLOOR/PERIMETER**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_  
Perimeter Insulation Depth (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**3. EXTERIOR WALL**

Frame Type \_\_\_\_\_

**A. Cavity Insulation**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**B. Exterior Foam Sheathing**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**4. FOUNDATION WALL**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**5. CEILING**Batt or Blanket Type \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_

Loose Fill Type \_\_\_\_\_

Brand \_\_\_\_\_

Contractor's min installed weight/ft<sup>2</sup> \_\_\_\_\_ lb

Minimum thickness \_\_\_\_\_ inches

Manufacturer's installed weight per square foot to achieve Thermal Resistance (R-Value) \_\_\_\_\_

**6. ROOF**Material \_\_\_\_\_  
Thickness (inches) \_\_\_\_\_Brand Name \_\_\_\_\_  
Thermal Resistance (R-Value) \_\_\_\_\_**Declaration**

✓ ☐ I hereby certify that the above insulation was installed in the building at the above location in conformance with the current *Energy Efficiency Standards* for residential buildings (Title 24, Part 6, California Code of Regulations) as indicated on the Certificate of Compliance, where applicable.

|                            |                               |   |
|----------------------------|-------------------------------|---|
| Item #s<br>(if applicable) | Signature _____<br>Date _____ | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |
| Item #s<br>(if applicable) | Signature _____<br>Date _____ | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |
| Item #s<br>(if applicable) | Signature _____<br>Date _____ | Installing Subcontractor (Co. Name) OR<br>General Contractor (Co. Name) OR Owner<br>OR Window Distributor |