

PRESCRIPTIVE RESIDENTIAL ALTERATIONS THAT DO NOT REQUIRE ECC FIELD VERIFICATION



CALIFORNIA ENERGY COMMISSION

CEC-CF2R-ALT-05-E

CERTIFICATE OF INSTALLATION

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

This compliance document is only applicable to simple alterations that do not require verification for compliance. When field verification is required, a CF1R-ALT-01 shall first be registered with an ECC Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from field verification requirements may use the CF1R-ALT-05 and CF2R-ALT-05 Compliance Documents. Possible exemptions from duct leakage testing include: less than 25 feet (ft) of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by an ECC Rater. If space conditioning systems are altered and are not exempt from field verification, then a CF1R-ALT-02 must be completed and registered with a ECC Provider Data Registry.

Alterations that utilize closed cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value greater than 5.8 per inch, or open cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ALT-01 with an ECC Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

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A. General Information

Field	Field Name	Data Entry
01	Project Name	
02	Date Prepared	
03	Project Location	
04	Building Front Orientation (deg or cardinal)	
05	CA City	
06	Number of Altered Dwelling Units	
07	Zip Code	
08	Fuel Type	
09	Climate Zone	
10	Total Conditioned Floor Area (ft ²)	
11	Building Type	Single Family
12	Slab Area (ft ²)	
13	Project Scope	Select as many as are applicable from list: <input type="checkbox"/> Insulation (Show tables B, C, D, E, F) <input type="checkbox"/> Roofing/Radiant Barrier (Show table G, H, I, J, K) <input type="checkbox"/> Fenestration (Show table L, M) <input type="checkbox"/> Space Heating System (display Table N) <input type="checkbox"/> Space Cooling System (display Table N) <input type="checkbox"/> Space Conditioning Duct System (display Table N) <input type="checkbox"/> Water Heating (Show tables O, P)

Note: See the user instructions.

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Insulation

The altered components shall comply with all applicable requirements in The Energy Standards, Sections 110.0-110.9, 150.0(a)-(q), and 150.2(a)1; All joints, penetrations and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weather stripped, or otherwise sealed to limit infiltration and exhalation.

B. Roof/Ceiling Insulation

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	I.D.			
02	Manufacturer and Brand			
03	Frame Type			
04	Frame Depth (inches)			
05	Frame Spacing (inches)			
06	Insulation Type			
07	ESR Number	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A
08	Cavity Insulation R-value			
09	Insulation Depth (inches)			
10	Below Deck Insulation R-value			

Note: See the user instructions.

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C. Framed Wall Insulation

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	I.D.			
02	Manufacturer and Brand			
03	Framing Type			
04	Frame Depth (inches)			
05	Frame Spacing (inches)			
06	Insulation Type			
07	ESR Number	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A
08	Cavity Insulation R-value			
09	Insulation Depth (inches)			
10	Exterior Wall Insulation R-value			
11	Interior Wall Insulation R-value			

Note: See the user instructions.

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D. Masonry/Mass Wall Insulation

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	I.D.			
02	Manufacturer and Brand			
03	Above or Below Grade?			
04	Masonry/Mass Wall Thickness (inches)			
05	Furring Strip Type/Depth (inches)			
06	Insulation Type			
07	Exterior Insulation R-value			
08	Interior Insulation R-value			

Note: See the user instructions.

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E. Raised Floor Insulation

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	I.D.			
02	Manufacturer and Brand			
03	Framing Type			
04	Frame Depth (inches)			
05	Frame Spacing (inches)			
06	Insulation Type			
07	ESR Number	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A
08	Cavity Insulation R-value			
09	Insulation Depth (inches)			
10	Exterior Wall Insulation R-value			
11	Interior Wall Insulation R-value			

Note: See the user instructions.

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F. Slab Floor/Perimeter Insulation

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	I.D.			
02	Manufacturer & Brand			
03	Floor Type			
04	Insulation Type			
05	Insulation Depth (inches)			
06	Insulation R-value			
07	Vertical Insulation Length (inches)			
08	Horizontal Insulation Length (feet)			

Note: See the user instructions.

Roofing and Radiant Barrier

G. Radiant Barrier

This section does not apply to this project

Field	Field Name	Data Entry
01	Brand Name and Product Number	
02	Installation Type	Attached to underside of roof deck; Attached to bottom of truss/rafters; Attached between truss/rafters; Draped over top of truss/rafters; Attached to underside of roof deck with air space; or Attached to underside of roof deck with baffle
03	Total Attic Area (ft ²)	

Note: See the user instructions.

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H. Required Vent Area

This section does not apply to this project

Field	Field Name	Data Entry
01	Combined net free area (NFA) of installed upper and lower vents (in ²)	
02	Minimum required combined net free area (NFA) of upper and lower vents (in ²)	
03	Net free area (NFA) of installed upper vents (in ²)	
04	Minimum required net free area (NFA) of upper vents (in ²)	

Note: See the user instructions.

I. Roofing Products (Cool Roof) Installation Information

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	Roof Pitch			
02	CRRC Product ID Number			
03	Product Type			
04	CRRC Listed Aged Solar Reflectance	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
05	Initial Solar Reflectance			
06	Aged Solar Reflectance			
07	Thermal Emittance			
08	SRI (Optional)			

Note: See the user instructions.

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J. Radiant Barrier and Attic Ventilation – Additional Requirements

This section does not apply to this project

The responsible person's signature on this compliance document affirms that all applicable requirements in Section J have been met.

Radiant Barrier

Field	Description
01	Radiant barrier must be installed on all vertical surfaces in the attic including gable ends.
02	The emittance of the radiant barrier shall be less than or equal to 0.05 as tested with American Society for Testing and Materials (ASTM) C1371, or E408.
03	The product shall meet all requirements for California certified insulation materials [radiant barriers] of the Department of Consumer Affairs, Bureau of Household Goods and Services, as specified by California Referenced Standards Code (California Code of Regulations), Title 24, Part 12, Chapter 12-13, Standards for Insulating Material.
04	When determining the Total Attic Area, the area over unconditioned spaces such as the garage is included when the attic spaces are connected.

Lower Vents

Field	Description
05	Lower vents are within one foot of the eave.

Upper Vents

Field	Description
06	Upper vents are within three feet of the ridge.

Vent Area

Field	Description
07	The net free area (NFA) of upper vents must be within required NFA range of upper vents. Note: per Exception to R806.2 of the California Building Code (CBC) Title 24, Part 2, Vol. 2.5, if the net free ventilating area is less than 1:150, then the upper ventilation must be at least 40 percent and no more than 50 percent. Part 2 contains additional requirements that must be met if the area is less than 1:150.

Note: See the user instructions

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K. Roofing Products (Cool Roof) – Additional Requirements

This section does not apply to this project

The responsible person’s signature on this compliance document affirms that all applicable requirements in Section K have been met.

Field	Description
01	Any roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels are exempt from the above Cool Roof requirements.
02	Liquid field applied coatings must comply with installation criteria from section 110.8(i)4.
03	Mass roof 25 pounds per square foot (lb/ft ²) or greater: Mass roofs are not required to have a cool roof even if the climate zone specifies minimum performance requirements.

Note: See the user instructions

Fenestration

L. Fenestration/Glazing

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	Tag/ID			
02	Manufacturer/ Brand			
03	Fenestration Area (ft ²)			
04	Orientation			
05	Chromogenic	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
06	U-factor			
07	U-factor Source			
08	SHGC			
09	SHGC Source			
10	Fenestration Type			
11	Exterior Shading Devices (Describe)			
12	Comments/Special Features			

Note: See the user instructions

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M. Fenestration/Glazing – Additional Requirements

This section does not apply to this project

The responsible person’s signature on this compliance document affirms that all applicable requirements in Section M have been met.

Field	Description
01	For existing buildings the U-factor and solar heat gain coefficient (SHGC) values should be the same or better than the required Energy Commission prescriptive requirements.
02	Temporary labels should not be removed until verified by the building inspector.
03	The fenestration product manufacturer’s installation specifications shall be followed when installing these products. The space between the fenestration product and rough opening shall be completely filled with insulation. If batt insulation is used, it is cut to size and placed properly around the fenestration product.

Mechanical and Plumbing

N. Space Conditioning (SC) Systems – Heating/Cooling (Section 150.2(b))

This section does not apply to this project

Alterations to Space Conditioning Systems shall be exempt from Field verification requirements as prerequisite for use of the CF1R-ALT-05 and CF2R- ALT-05 Compliance Documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from field verification, then a CF1R-ALT-02 shall be completed and registered with an ECC-Provider Data Registry. In each row below for each space conditioning system, select the applicable exemption from the dropdown list in the Field Verification Compliance:

- Space conditioning system was not altered;
- Less than 25 feet (ft) of ducts were added or replaced;
- (exempt from duct leakage testing) if: the existing duct system was insulated with asbestos;
- (exempt from duct leakage testing) if: the existing duct system was previously tested and passed by an ECC-Rater.

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	SC System Identification or Name			
02	SC System Location or Area Served			
03	Exemption from ECC Verification			

Note: See the user instructions

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O. Water Heating Systems (Section 150.2(a)1D)

This section does not apply to this project

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. Gas or propane water heating system; or
2. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has a ANSI/CTA-2045-B communication port; or
3. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater

Field	Field Name	Data Entry
01	Is natural gas connected to the existing water heater?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
02	Water Heating System ID or Name			
03	System Option (from §150.2(b)1Hiii)			
04	Water Heater Type			
05	Fuel Type			
06	Tank Volume	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A

Note: See the user instructions

P. Installed Water Heater Manufacturer Information

This section does not apply to this project

Field	Field Name	Data Entry 1	Data Entry 2	Data Entry 3
01	Water Heating System ID or Name			
02	Manufacturer			
03	Model Number			

Note: See the user instructions



<p>Documentation Author's Declaration Statement</p> <p>1. I certify that this Certificate of Installation documentation is accurate and complete.</p>	<p>Author Name</p> <p>Author Signature</p> <p>Date Signed</p> <p>Company Name</p> <p>CEA/AEA/ECC Certification ID</p> <p>Address</p> <p>City/State/Zip</p> <p>Phone</p>
<p>RESPONSIBLE PERSON'S DECLARATION STATEMENT</p> <p>I certify the following under penalty of perjury, under the laws of the State of California:</p> <p>1. The information provided on this Certificate of Installation is true and correct.</p> <p>2. 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.</p> <p>3. 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.</p> <p>4. I understand that a completed signed copy of this Certificate of Installation shall be posted or made available with the building permit(s) issued for the building and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to fulfill this requirement.</p> <p>5. I understand that a completed signed copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to fulfill this requirement.</p>	<p>Responsible Name</p> <p>Responsible Signature</p> <p>Date Signed</p> <p>Company Name</p> <p>Title</p> <p>CSLB License</p> <p>Address</p> <p>City/State/Zip</p> <p>Phone</p>

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

CF2R-ALT-05-E User Instructions

NOTE: If more space is needed, print a duplicate page and fill in.

Minimum requirements for prescriptive alteration compliance can be found in Building Energy Efficiency Standards Section 150.2(b)1.

Completing these documents will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards. This document contains the Joint Appendices which are used to determine climate zone. When the term CF2R is used it means the CF2R-ALT-05. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as ENV-02.

Instructions for sections with column numbers and row letters are given separately.

If any part of the alteration does not comply, prescriptive compliance fails, in which case the performance compliance approach must be used in an attempt to achieve compliance.

A. General Information: This section is required.

1. Project Name: Identifying information, such as owner's name.
2. Date Prepared: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front orientation expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. Indicate cardinal if it is a subdivision project built in multiple orientations. The Standards (Section 100.1) include the following additional details for determining orientation:
 - Cardinal covers all orientations (for buildings that will be built in multiple orientations);
 - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
 - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
 - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
 - West is oriented to within 45 degrees of true west, including 45 degrees south of west.
5. CA City: Legal city/town of property.
6. Number of Dwelling Units:
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type is limited to the one of the following: Natural Gas, Propane, or Electricity.
9. Climate zone: From Reference Appendices, Joint Appendix, JA2.1.1.
10. Total Conditioned Floor Area: Enter the new conditioned floor area in square feet (ft²), as measured from the outside of exterior walls of the dwelling unit or building being altered.
11. Building Type: Fixed value = "Single Family".
12. Slab Area: Area of the first floor slab (if any) in square feet (ft²).
13. Project Scope: Insulation, Roof Replacement, Fenestration/Glazing, Heating System, Cooling System, Duct System, and/or Water Heating System alteration.

B. Roof/Ceiling Insulation: This section is required if A13 contains Insulation.

1. I.D.: Pull data from the CF1R-ALT-05.
2. Manufacturer & Brand: Indicate the manufacturer and brand of the product being installed.
3. Framing Type: Pull data from the CF1R-ALT-05, allowed values: Metal or Wood Framing.
4. Frame Depth: Pull data from the CF1R-ALT-05 which may include N/A; allowed values are: 2x4, 2x6, 2x8, 2x10, 2x12, 2x14.
5. Frame Spacing: Pull data from the CF1R-ALT-05 which may include N/A; allowed values are: 16 in. O. C., 24 in. O. C., 48 in. O. C.
6. Insulation Type is limited to the one of the following: User input, allowed values: Cellulose, Cement EPS compound, Expanded polystyrene, Extruded polystyrene, Fiberglass, Insulation other, Mineral wool, Plastic polyisocyanurate, Plastic polystyrene, Polyurethane, Spray Foam Insulation (SPF), Urea formaldehyde or None, (NoInsulation); If the insulation you used is not listed, please select “Insulation Other.”
7. ESR Number: If using a non-standard R-value for SPF insulation, complete an ICC Evaluation Services Report and record the ESR number, Else result is N/A.
8. Cavity Insulation R-value: Pull data from the CF1R-ALT-05 but you can override with a value equal to or greater than the CF1R value.
9. Insulation Depth: Pull data from the CF1R-ALT-05 but user can override with a value equal to or greater than the CF1R value.
10. Below Deck Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed below the roof deck.

C. Framed Wall Insulation: This section is required if A13 contains Insulation.

1. I.D.: Pull data from the CF1R-ALT-05.
2. Manufacturer & Brand: Indicate the manufacturer and brand of the product being installed.
3. Framing Type: Pull data from the CF1R-ALT-05, allowed values: Metal or Wood Framing.
4. Frame Depth: Pull data from the CF1R-ALT-05 allowed values are: 2x4, 2x6, 2x8, 2x10, 2x12, 2x14.
5. Frame Spacing: Pull data from the CF1R-ALT-05 allowed values are 16 in. O. C., 24 in. O. C., 48 in. O. C.
6. Insulation Type is limited to the one of the following: Cellulose, Cement EPS compound, Expanded polystyrene, Extruded polystyrene, Fiberglass, Insulation other, Mineral wool, Plastic polyisocyanurate, Plastic polystyrene, Polyurethane, Spray Foam Insulation (SPF), Urea formaldehyde; If the insulation you used is not listed, please select “Insulation Other”.
7. ESR Number: If using a non-standard R-value for SPF insulation, complete an ICC Evaluation Services Report and record the ESR number, Else result is N/A.
 1. Cavity Insulation R-value: Pull data from the CF1R-ALT-05 but user can override with value equal to or greater than the CF1R value.
 2. Insulation Depth: Indicate, in inches, the amount of insulation installed.
 3. Exterior Wall Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the outside of the wall.
 4. Interior Wall Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the inside of the wall.

D. Masonry/Mass Wall Insulation: This section is required if A13 contains Insulation.

1. I.D.: Pull data from the CF1R-ALT-05.
2. Manufacturer & Brand: Indicate the manufacturer and brand of the product being installed.
3. Above or Below Grade?: Indicate the location of the insulation: Above Grade or Below Grade.
4. Masonry/Mass Wall Thickness: Indicate the thickness of the masonry/mass, in inches, the insulation is applied to.
5. Furring Strip Type/Depth: Indicate the type, and thickness, of furring material installed (e.g., wood/1.0 inch thick).
6. Insulation Type is limited to the one of the following: Cellulose, Cement EPS compound, Expanded polystyrene, Extruded polystyrene, Fiberglass, Insulation other, Mineral wool, Plastic polyisocyanurate, Plastic polystyrene, Polyurethane, Spray Foam Insulation (SPF), Urea formaldehyde; If the insulation you used is not listed, please select “Insulation Other”.
7. Exterior Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the outside of the assembly.
8. Interior Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the inside of the assembly.

E. Raised Floor Insulation: This section is required if A13 contains Insulation.

1. I.D.: Pull data from the CF1R-ALT-05.
2. Manufacturer & Brand: Indicate the manufacturer and brand of the product being installed.
3. Framing Type: Pull data from the CF1R-ALT-05, allowed values: Metal or Wood Framing.
4. Frame Depth: Pull data from the CF1R-ALT-05 which may be N/A, 2x4, 2x6, 2x8, 2x10, 2x12, 2x14
5. Frame Spacing: Pull data from the CF1R-ALT-05 which may be N/A, 16 in. O. C., 24 in. O. C., 48 in. O. C.
6. Insulation Type is limited to the one of the following: Cellulose, Cement EPS compound, Expanded polystyrene, Extruded polystyrene, Fiberglass, Insulation other, Mineral wool, Plastic polyisocyanurate, Plastic polystyrene, Polyurethane, Spray Foam Insulation (SPF), Urea formaldehyde; If the insulation you used is not listed, please select “Insulation Other”.
7. ESR Number: If using a non-standard R-value for SPF insulation, complete an ICC Evaluation Services Report and record the ESR number, Else result is N/A.
8. Cavity Insulation R-value: Pull data from the CF1R-ALT-05 but user can override with value equal to or greater than the CF1R value.
9. Insulation Depth: Indicate, in inches, the amount of insulation installed.
10. Exterior Floor Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the outside of the floor.
11. Interior Floor Insulation R-Value: Indicate the R-value of the continuous insulation, having no framing penetration, installed on the inside of the floor.

F. Slab Floor/Perimeter Insulation: This section is required if A13 contains Insulation.

1. I.D.: Pull data from the CF1R-ALT-05.
2. Manufacturer & Brand: Indicate the manufacturer and brand of the product being installed.
3. Floor Type: Pull data from the CF1R-ALT-05 values are: SlabOnGrade, SlabConcreteRaised, SlabHeated
4. Insulation Type is limited to the one of the following: Cellulose, Cement EPS compound, Expanded polystyrene, Extruded polystyrene, Fiberglass, Insulation other, Mineral wool, Plastic polyisocyanurate, Plastic polystyrene, Polyurethane, Spray Foam Insulation (SPF), Urea formaldehyde; If the insulation you used is not listed, please select “Insulation Other”.
5. Insulation Depth: Indicate, in inches, the depth of insulation installed.

6. Insulation R-Value: Indicate the insulation R-value being installed vertically and horizontally (if applicable).
7. Vertical Insulation Length: Indicate, in inches, the length of the insulation being installed; Else If no vertical insulation result is N/A.
8. Horizontal Insulation Length: Indicate, in feet, the length of the insulation being installed from the outside edge of the vertical insulation to the center of the slab; Else If no horizontal insulation result is N/A

G. Radiant Barrier: This section is required if A13 contains Roof Radiant Barrier.

1. Brand Name and Product Number: Indicate the brand name and product number of the product used.
2. Installation Type is limited to one of the following:
 - i. Attached to underside of roof deck;
 - ii. Attached to bottom of truss/rafters;
 - iii. Attached between truss/rafters;
 - iv. Draped over top of truss/rafters;
 - v. Attached to underside of roof deck with air space; or
 - vi. Attached to underside of roof deck with baffle.

NOTE: One of these six installation methods must be used; no other methods are allowed.

3. Total Attic Area (ft²): Provide the total attic area over conditioned space. When determining the total attic area, the area over unconditioned spaces such as garage is included when the attic spaces are connected. At least one square foot of net free venting area is required for each 300 square feet of attic (1:300).

H. Required Vent Area: This section is required if A13 contains Roof Radiant Barrier.

1. Combined net free area (NFA) of installed upper and lower vents (in²): Indicate the total combined NFA of installed upper and lower vents in square inches.
2. Minimum required combined net free area (NFA) of upper and lower vents (in²): Total attic area divided by 300 and multiplied by 144.
3. Net free area (NFA) of installed upper vents (in²): Indicate the total NFA of installed upper vents in square inches.
4. Minimum required net free area (NFA) of upper vents (in²): Calculated field = H2 (combined NFA of installed upper and lower vents) multiplied by 0.3.

I. Roofing Products (Cool Roof) Installation Information: This section is required if A13 contains Roof Radiant Barrier.

1. Roof Pitch is limited to one of the following: $\geq 2:12$ or $< 2:12$.
2. CRRC Product ID Number: If a cool roof is installed, obtain the Product ID Number from the Cool Roof Rating Council's (CRRC) product packaging label or rated products directory.
3. Product Type is limited to one of the following: AsphaltShingles, BuiltUpRoofing, ClayRoofTiles, FactoryAppliedCoating, FieldAppliedCoating, FluidAppliedMembrane, MetalRoof, MetalShakesShingles, ModifiedBitumin, PolymerCompositeSteepSlope, RoofPavers, SinglePlyThermoplastic, SinglePlyThermoset, SprayPolyurethaneFoam, StoneAggregateBallast.
4. CRRC Listed Aged Solar Reflectance: State whether the 3-year aged solar reflectance value of the product used is listed on the Cool Roof Rating Council's (CRRC) product packaging label or rated products directory—Yes or No.
5. Installed Initial Solar Reflectance: Indicate the initial solar reflectance value of the product used;

obtained from the Cool Roof Rating Council’s (CRRC) product packaging label or rated products directory.

6. Aged Solar Reflectance: Indicate the aged solar reflectance value of the product used; If I04 = Yes, obtained from the CRRC product packaging label or rated product directory.
Else If I04 = No, If the 3-year aged value is not available then use the equation in Section 110.8(i)2 of the Energy Standards to calculate an aged solar reflectance Or by using the “Calculated Aged Solar Reflectance” from the Solar Reflectance Index (SRI) Calculator” available at the California Energy Commission’s website.
7. Thermal Emittance: Indicate the thermal emittance value of the product used; obtained from the Cool Roof Rating Council’s (CRRC) product packaging label or rated products directory. This can be either the initial or aged value.
8. Solar Reflectance Index (SRI): If applicable, obtain the value of the product used from the Cool Roof Rating Council’s (CRRC) rated products directory, or the “Solar Reflectance Index (SRI) Calculator” available at the California Energy Commission’s website.

J. Radiant Barrier and Attic Ventilation – Additional Requirements: This section is required if A13 contains Roof Radiant Barrier.

This section contains additional requirements for Radiant Barriers, Lower Vents, Upper Vents, and Vent Area.

K. Roofing Products (Cool Roof) – Additional Requirements: This section is required if A13 contains Roof Radiant Barrier.

This section contains additional requirements for Roofing Products. Other exceptions apply for additions and/or alterations.

L. Fenestration/Glazing: This section is required if A13 contains Fenestration

1. Tag/ID: Pull data from the CF1R-ALT-05
2. Manufacturer/Brand: Provide the manufacturer and brand name which identifies the fenestration product being installed.
3. Fenestration Area (ft²): Pull data from the CF1R-ALT-05.
4. Orientation: Pull data from the CF1R-ALT-05. Use different lines if the orientation of the same fenestration varies. Enter N, S, E, or W.
5. Chromogenic: Is the glazing product chromogenic? Yes or No
6. U-factor: Pull data from the CF1R-ALT-05, but user can override with value equal to or less than CF1R. Do not mix different types on the same line.
7. U-factor Source is limited to one of the following: NFRC; Tables 110.6-A and 110.6-B; Equations NA 6-1 and NA 6 -2; Area-weighted Average Worksheet (CF1R-ENV-02). All windows installed must have a label certificate which identifies the window’s efficiencies. NFRC rated products have a temporary label that can be looked up in the [NFRC product directory](#).
8. SHGC: Pull data from the CF1R-ALT-05 which may be N/A If A09 = 1, 3, 5 or 16; Allow user to override.
9. SHGC Source: Pull data from the CF1R-ALT-05 which may be N/A If L08 = N/A; Else allowed values are: NFRC; Tables 110.6-A and 110.6-B; Equations NA 6-1 and NA 6 -2; and Area-weighted Average Worksheet (CF1R-ENV-02). All windows installed must have a label certificate which identifies the window’s efficiencies. NFRC rated products have a temporary label that can be looked up in the [NFRC product directory](#).
10. Fenestration Type: Pull data from the CF1R-ALT-05. Provide a description of the window type, for instance, the frame material, coatings, whether it is operable or fixed.

11. Exterior Shading Devices: Pull data from the CF1R-ALT-05 allowed values are: Standard Bug Screen, Sun Screen, Louvered Sun Screen, Low Sun Angle Louvered Sun Screen, Operable Awnings, Retractable Awnings, Drop Arm Awnings, Roll Down Blinds Or Slats, Vertical Roller Or Shades, and None.
12. Comments/Special Features: Additional information for the field inspector.

M. Fenestration/Glazing – Additional Requirements: This section is required if A13 contains Fenestration. This section contains additional requirements for Fenestration/Glazing.

N. Space Conditioning (SC) Systems – Heating/Cooling: This section is applicable if A13 contains Space Conditioning.

Requirements of the Standards apply to a heating and cooling system alteration based on the type of alteration and the system type (Section 150.2(b)1). A completely new system will meet all mandatory and prescriptive requirements, which vary by climate zone (based on Section 150.2(b)1C).

When parts of a system are replaced, it may trigger some of the same requirements that apply to new systems and duct alterations. A Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02) is required for each dwelling unit with a space conditioning system alteration. Exemption from Field Verification is limited to one of the following:

1. SC System Identification or Name: Name of the space conditioning (SC) system or any other identifying name.
2. SC System Location or Area Served: Zone, or area, served by the space conditioning (SC) system.
3. Exemption from Field Verification: Section 150.2(b)1E
 - a. Space Conditioning (SC) System was not altered.
 - b. Exception Ducts < 25ft.
 - c. Exception Ducts Asbestos.
 - d. Exception Ducts Verified By ECC.

O. Installed Water Heating System: This section is required if A13 includes Water Heating. Water heating compliance for an alteration is described in Section 150.2(b)1H.

Options:

1. Gas or propane water heating system; or
2. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has a ANSI/CTA-2045-B communication port; or
3. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater

NOTE: If the proposed installation does not meet the requirements allowed specifically for alterations, then use the computer performance approach to show compliance.

1. Is natural gas connected to the existing water heater? Yes or No.
2. Water Heating System Identification or Name: Pull data from the CF1R-ALT-05
3. System Option (from §150.2(b)1Hiii): if O01 = no, then user picks from list: 2, 3, 4; Else if O01 = yes, then user picks from list: 1, 2, 3;
4. Water Heater Type: Pull data from the CF1R-ALT-05

Allowed values are If O03 = Option1 (Gas Propane), select from Instantaneous Consumer, Storage Consumer;

Else If O03 = Option2 (HP), result = Heat Pump Water Heater

Else If O03 = Option3 (Tier3 HP), result = NEEA_Tier3HP;

Else If O03 = Option4 (Electric), select from Heat Pump Water Heater, Electric POU Consumer, Instantaneous Consume

5. Fuel Type: If O02 = Option2 (HP) Or Option3 ((Tier3HP) result = Water Heating HP; Else If O02= Option4 (Electric) result = Electricity
6. Tank Volume: Tank capacity in gallons; if O04 = Instantaneous, value = NA

P. Installed Water Heater Manufacturer Information: This section is required if A13 includes Water Heating. This table reports the manufacturer information of the installed water heater(s). Require one line for each installed water heater.

1. Water Heating System ID or Name: Reference value from O02.
2. Manufacturer: Provide the manufacturer's name which identifies the water heater being installed.
3. Model Number: Provide the model number which identifies the water heater being installed.

Documentation Declaration Statements

1. The person who prepared the CF2R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.