

**DOCKETED**

<b>Docket Number:</b>	18-BSTD-02
<b>Project Title:</b>	2019 ENERGY CODE COMPLIANCE MANUALS
<b>TN #:</b>	232779-31
<b>Document Title:</b>	2019-CF3R-ENV-21-HERS-QII-FramingStagepdf
<b>Description:</b>	N/A
<b>Filer:</b>	Corrine Fishman
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Public Agency
<b>Submission Date:</b>	4/20/2020 9:09:36 AM
<b>Docketed Date:</b>	4/20/2020



CERTIFICATE OF VERIFICATION		CF3R-ENV-21-H
Quality Insulation Installation (QII) –Air Infiltration Sealing - Framing Stage		(Page 1 of 5)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

**A. Air Barrier Materials**

01	A continuous sealed exterior air barrier is required in all thermal envelope assemblies to limit air movement between unconditioned/outside spaces and conditioned/inside spaces, and must comply using one of the following methods: <ol style="list-style-type: none"> <li>Using individual materials that have an air permeance not exceeding 0.004 cfm/ft<sup>2</sup> under a pressure differential of 0.3 in. w.g. (1.57 pcf) (0.02 L/s.m<sup>2</sup> at 75 pa) when tested in accordance with ASTM E2178; or</li> <li>Using assemblies of materials and components that have an average air leakage not to exceed 0.04 cfm/ft<sup>2</sup> under a pressure differential of 0.3 in. w.g. (1.57 pcf) (0.2 L/s.m<sup>2</sup> at 75 pa) when tested in accordance with ASTM E2357, ASTM E1677, ASTM E1680, or ASTM E283; or</li> <li>Testing the complete building and demonstrating that the air leakage rate of the building envelope does not exceed 0.40 cfm/ft<sup>2</sup> at a pressure differential of 0.3 in. w.g. (1.57 pcf) (2.0 L/s.m<sup>2</sup> at 75 pa) in accordance with ASTM E779 or an equivalent approved method.</li> </ol>	
02	Method of Compliance	
03	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
04	Correction Notes	
<p>Note:</p> <p>SPF insulation is an acceptable air barrier and sealant when installed to a minimum thickness of 2 inches for closed cell and 5.5 inches for open cell, except where not allowed by manufacturer (e.g., flues, vents, can lights, etc.).</p> <p><b>The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met unless otherwise noted in the Verification Status and the Correction Notes.</b></p>		

**B. Raised Floor Adjacent to Unconditioned Space or Separate Dwelling Units**

01	All gaps in the raised floor are sealed.	
02	All chases are sealed at floor level using a sealed hard cover.	
03	All holes (e.g., for plumbing and electrical wires) that penetrate the floor or bottom plates of walls are sealed.	
04	Subfloor sheathing is glued or sealed at all panel edges to create a continuous air tight subfloor air barrier.	
05	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
06	Correction Notes	
<p><b>The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met unless otherwise noted in the Verification Status and the Correction Notes.</b></p>		



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**C. Walls Adjacent to Unconditioned Space**

01	All penetrations through the exterior wall air barrier are sealed to provide an air tight envelope to unconditioned spaces such as the outdoors, attic, garage, and crawlspace.	
02	Exterior wall air barrier is sealed to the top plate and bottom plate in each stud bay.	
03	All electrical boxes, including knockouts, that penetrate the air barrier to unconditioned space are sealed.	
04	All openings in the top and bottom plate, including all interior and exterior walls, to unconditioned space are sealed; such as holes drilled for electrical and plumbing.	
05	Exterior bottom plates (all stories) are sealed to the floor.	
06	All gaps around windows and doors are sealed. The sealant used follows manufacturer specifications.	
07	Rim joist gaps and openings are fully sealed.	
08	Fan exhaust duct outlet/damper at the exterior wall are sealed.	
09	Knee walls have solid and sealed blocking at the bottom, top, left and right sides to prevent air movement into insulation.	
10	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
11	Correction Notes	
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**D. Ceiling Air Barrier Adjacent to Unconditioned Space**

01	There is a continuous air barrier at the ceiling level. All openings into walls, drops, chases or double walls are sealed.	
02	All penetrations through the top plate of interior and exterior walls are sealed.	
03	Fire sprinklers penetrating a ceiling air barrier shall be sealed to prevent air movement according to the manufacturer's instructions.	
04	All fixtures cut into ceiling air barrier (e.g., HVAC registers, electrical boxes, fire alarm boxes, exhaust fan housing, and recessed lighting fixtures) are sealed to the surrounding dry wall. If it is not possible to seal the fixture directly, a secondary air barrier shall be created around the fixture.	
05	All installed recessed lighting fixtures that penetrate the ceiling to unconditioned space are rated to be Insulation Contact and Airtight (IC and AT) which allow direct contact with insulation.	
06	All dropped ceiling areas are covered with hard covers that are sealed to the framing, or else the bottom and sides of dropped ceiling areas are all insulated and sealed as ceilings and walls as required on the Certificate of Compliance.	
07	All vertical chases (e.g., HVAC ducts and plumbing) and soffits are sealed at the ceiling level.	
08	Chimneys and flues require sheet metal flashing at the ceiling level. The flashing shall be sealed to the chimney/flue with fire rated caulk. The flashing shall be sealed to the surrounding framing.	
09	Framing locations where air may move down into the walls from the attic (e.g., double walls, pocket doors, architectural bump-outs, etc.) have a sealed hard cover to prevent air movement.	
10	Attic access forms an airtight seal between the conditioned space and unconditioned space. Vertical attic access requires mechanical compression using screws or latches.	
11	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
12	Correction Notes	
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**QII - AIR INFILTRATION SEALING – FRAMING STAGE**

CEC-CF3R-ENV-21-H (Revised 01/19)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF VERIFICATION		CF3R-ENV-21-H
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**E. Roof Air Barrier – Unvented Attics Adjacent to Unconditioned Space**

01	There is a continuous air barrier at the roof deck and gable ends.	
02	Chimneys and flues require sheet metal flashing at the roof deck. The flashing is sealed to the chimney/flue with fire rated caulk. The flashing is sealed to the surrounding framing.	
03	All penetrations in the roof deck and gable ends for plumbing, electrical, etc. are sealed.	
04	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
05	Correction Notes	
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**F. Conditioned Space Above or Adjacent to Garage Air Barrier**

01	All penetrations in the subfloor above the garage into conditioned space must follow the raised floor air barrier requirements.	
02	Infiltration between the space above the garage and the subfloor is prevented by one of the following methods: <ul style="list-style-type: none"> <li>Seal all edges of the garage ceiling (typically drywall) at the perimeter of the garage to create a continuous air tight surface between the garage and adjacent conditioned envelope. Seal all plumbing, electrical, and mechanical penetrations between the garage and adjacent conditioned space. For an open-web truss, airtight blocking is added on all four sides of the garage perimeter. Insulation can be placed on the garage ceiling.</li> <li>Seal the band joist above the wall at the garage to conditioned space transition. Seal all subfloor seams and penetrations between the garage and adjacent conditioned space. Insulation must be placed in contact with the subfloor below the conditioned space.</li> </ul>	
03	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
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**G. Cantilevered Floor Air Barrier**

01	Airtight blocking is installed between joists where the wall rim joist would have been located in the absence of a cantilever.	
02	Exterior sheathing is installed to the bottom of the cantilever so that there is a continuous air and weather barrier for the cantilever. The cantilevered joist must be insulated to the same R-value as would be required for the subfloor prior to closing.	
03	Any gaps, cracks or penetrations in the air barrier of the cantilever are sealed. Recessed can lights in the cantilever are IC and AT and properly sealed to the sheathing.	
04	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
05	Correction Notes	
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**QII - AIR INFILTRATION SEALING – FRAMING STAGE**

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**H. Walls for Attached Porch, Attic, Double Wall Air Barrier**

01	An exterior wall air barrier is required at the intersection of the porch and exterior wall when there is conditioned space on the other side. The exterior wall includes an air barrier where the attic attaches to the conditioned space.	
02	Truss framing blocking is used at the top and bottom of each wall/roof section.	
03	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
04	Correction Notes	
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**I. Air Barriers in Multifamily Dwellings**

01	Each dwelling unit must be sealed to stop air movement between dwelling units. Treat adjacent dwelling units as unconditioned space for air sealing.	
02	All penetrations through the floor and ceiling of each dwelling unit are sealed, including electric and gas utilities, water pipes, drain pipes, fire protection service pipes, and communication wiring.	
03	Elevator penthouse, mechanical penthouse, stairwell doors, roof access hatches, and plumbing stacks that separate conditioned and unconditioned space are all sealed.	
04	Vertical chases for garbage chutes, elevator shafts, HVAC ducting and plumbing shall be treated as unconditioned space for sealing.	
05	Common hallways shall be treated as unconditioned space for sealing.	
06	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
07	Correction Notes	
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**J. Special Requirements for SIPs**

01	SIPs are considered an air barrier when properly sealed at top, bottom, sides and all penetrations.	
02	Air barrier is continuous across all surfaces, including between SIPs and non-SIP sections.	
03	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
04	Correction Notes	
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**K. Special Requirements for ICF**

01	ICF sections are considered an air barrier when properly sealed at top, bottom, sides and all penetrations.	
02	Air barrier is continuous across all surfaces, including between ICF and non-ICF sections.	
03	Verification Status	<input type="checkbox"/> <u>Pass - all applicable requirements are met; or</u> <input type="checkbox"/> <u>Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or</u> <input type="checkbox"/> <u>All N/A - This entire table is not applicable.</u>
04	Correction Notes	
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**L. Determination of HERS Verification Compliance**

All applicable sections of this document shall indicate compliance with the specified verification protocol requirements in order for this Certificate of Verification as a whole to be determined to be in compliance.	
01	

Registration Number:

Registration Date/Time:

HERS Provider:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

January 2019

**QII - AIR INFILTRATION SEALING – FRAMING STAGE**

CEC-CF3R-ENV-21-H (Revised 01/19)

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CERTIFICATE OF VERIFICATION		CF3R-ENV-21-H
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Dwelling Address:	City:	Zip Code:

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**

1. I certify that this certificate of verification documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Date Signed:
Address:	CEA/HERS Certification Information (if applicable):
City/State/Zip:	Phone:

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**

I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this Certificate of Verification is true and correct.
- I am the certified HERS Rater who performed the verification identified and reported on this Certificate of Verification (responsible rater).
- The installed features, materials, components, manufactured devices, or system performance diagnostic results that require HERS verification identified on this Certificate of Verification comply with the applicable requirements in Reference Appendices RA2, RA3, and the requirements specified on the Certificate of Compliance for the building approved by the enforcement agency.
- The information reported on applicable sections of the Certificate(s) of Installation (CF2R) signed and submitted by the person(s) responsible for the construction or installation conforms to the requirements specified on the Certificate(s) of Compliance (CF1R) approved by the enforcement agency.
- I will ensure that a registered copy of this Certificate of Verification shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Verification is required to be included with the documentation the builder provides to the building owner at occupancy.

**BUILDER OR INSTALLER INFORMATION AS SHOWN ON THE CERTIFICATE OF INSTALLATION**

Company Name (Installing Subcontractor, General Contractor, or Builder/Owner):	
Responsible Builder or Installer Name:	CSLB License:

**HERS PROVIDER DATA REGISTRY INFORMATION**

Sample Group Number (if applicable):	Dwelling Test Status in Sample Group (if applicable):
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**HERS RATER INFORMATION**

HERS Rater Company Name:	
Responsible Rater Name:	Responsible Rater Signature:
Responsible Rater Certification Number w/ this HERS Provider:	Date Signed:

**CF3R-ENV-21 User Instructions**

Quality Insulation Installation (QII) applies to the entire building (roof/ceiling, walls, and floor) for new construction and requires field verification by a third-party HERS Rater. For Alterations to existing buildings, compliance credit can only be taken when the “existing, plus addition, plus alteration” approach is used, but credit will only apply to the new surfaces in the new zone.

**A. Air Barrier Materials**

2. Method of Compliance: Using the drop down menu, indicate which method is being used to comply with the continuous air barrier requirements [e.g., Method 1 (Individual Materials), Method 2 (Assemblies of Materials), Method 3 (Complete Building)].
3. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
4. Correction Notes: Rater must enter the reason for failure.

**B. Raised Floor Adjacent to Unconditioned Space or Separate Dwelling Unit**

5. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
6. Correction Notes: Rater must enter the reason for failure.

**C. Walls Adjacent to Unconditioned Space**

10. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
11. Correction Notes: Rater must enter the reason for failure.

**D. Ceiling Air Barrier Adjacent to Unconditioned Space**

11. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
12. Correction Notes: Rater must enter the reason for failure.

**E. Roof Air Barrier – Unvented Attics Adjacent to Unconditioned Space**

4. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
5. Correction Notes: Rater must enter the reason for failure.

**F. Conditioned Space Above or Adjacent to Garage Air Barrier**

3. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
4. Correction Notes: Rater must enter the reason for failure.

**G. Cantilevered Floor Air Barrier**

4. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
5. Correction Notes: Rater must enter the reason for failure.

**H. Walls for Attached Porch, Attic, Double Wall Air Barrier**

3. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
4. Correction Notes: Rater must enter the reason for failure.

**I. Air Barrier in Multifamily Dwellings**

6. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
7. Correction Notes: Rater must enter the reason for failure.

**J. Special Requirements for SIPs**

3. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
4. Correction Notes: Rater must enter the reason for failure.

**K. Special Requirements for ICF**

3. Verification Status: HERS Rater to select from list:
  - a. Pass – all applicable requirements are met.
  - b. Fail – one or more applicable requirements are not met. Rater must enter reason for failure in correction notes field below.
  - c. All N/A – This entire table is not applicable.
4. Correction Notes: Rater must enter the reason for failure.