



CERTIFICATE OF INSTALLATION		CF2R-ENV-23-H
Quality Insulation Installation (QII) - Insulation Installation		(Page 1 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

A. QUALITY INSULATION INSTALLATION (QII) PREPARATION FOR INSULATION

01	Air barrier installation and preparation for insulation was done and verified at framing stage prior to insulation being installed. Where applicable, CF3R-ENV-21, 24 and 22 forms have been signed off.
02	All structural framing areas shall be insulated in a manner that resists thermal bridging of the assembly separating conditioned from unconditioned space. Structural bracing, tie-downs, and framing of steel, or specialized framing used to meet structural requirements of the CBC are allowed and must be insulated. These areas shall be called out on the building plans with diagrams and/or specific design drawings indicating the R-value of insulation and fastening method to be used. It is recommended that spray foam be used.

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

B. QUALITY OF ALL INSTALLED INSULATION

01	Installed insulation R-values are the same or greater than specified on the CF1R.
02	No gaps or voids between the insulation and framing.
03	Gaps between studs shall be filled with insulation.
04	Batt insulation - ensure the ends are cut so there are no gaps.
05	Batt insulation is cut around obstructions such as electrical boxes; there shall be no gaps.
06	Batt insulation is not compressed (no stuffing of the insulation into the cavity).
07	Batt insulation is delaminated around all plumbing and electrical lines in ceilings, walls, and floors.
08	An air barrier is installed at all exposed faces of batt, loose fill, and SPF insulation.
09	Loose-fill insulation is installed to the minimum installed weight per square foot, and depth, consistent with the manufacturer's labeled R-value specification.
10	SPF insulation shall be spray-applied to fully adhere to structural assembly framing, floor and ceiling joists, and other framing surfaces within the construction cavity.
11	SPF - when multiple layers are applied, each foam lift (i.e. spray application) adheres at substrate and foam interfaces.
12	SPF - if values other than R-5.8 per inch for closed-cell SPF (ccSPF) and R-3.6 per inch for open-cell SPF (ocSPF) are used, the ICC Evaluation Service Report (ESR) number (e.g. ESR-xxxx) will be documented in the CF2R-ENV-03.
13	ccSPF - in areas where an air barrier is required the foam is at least two inches thick.
14	ocSPF - depressions in the foam insulation surface are not greater than 1-inch of the required thickness provided these depressions do not exceed 10% of the surface area being insulated.
15	ocSPF - insulation completely fills cavities of 2x4 inch framing or less.
16	ocSPF - cavities greater than 2x4 inch framing are filled to the thickness that meets the required R-value used for compliance.
17	SPF installed as an air barrier is sprayed at a minimum thickness of 5.5 inches for open cell and 2.0 inches for closed cell.
18	A CF2R-ENV-03 is provided with this document that specifies each type of insulation material installed. Labels or specification/data sheets are attached to the CF2R-ENV-03 for each insulating material. Blown in material also includes insulation material bag labels or coverage charts.

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



CERTIFICATE OF INSTALLATION		CF2R-ENV-23-H
Quality Insulation Installation (QII) - Insulation Installation		(Page 2 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City	Zip Code

C. CEILING/ROOF INSULATION QUALITY

01	Insulation extends to the outside edge of the exterior top plates and is flush against any ventilation dams/baffles.
02	Insulation is in direct contact with ceiling so there are no gaps between the ceiling and the insulation.
03	Chimneys and flues (except for zero clearance) require a sheet metal collar around the stack. The collar must be at least as tall as the depth of the insulation. The collar shall be 1" from the chimney/flue for double wall vents, and 6" from the chimney/flue for single wall vents" unless the manufacturer requires otherwise. The collar must be sealed to the ceiling with high temperature sealant to prevent air leakage. The insulation is in contact with the sheet metal collar.
04	Required eave ventilation shall not be obstructed – the net free-ventilation area of the eave vent is Maintained.
05	Eave vent baffles are installed to prevent air movement under or into the ceiling insulation
06	Recessed downlights are covered with insulation. If they are not covered to the same depth as required by the CF1R for ceiling insulation then an area weighted calculation is required. Recessed downlights are AT and IC rated.
07	SPF insulation shall not be applied directly to exposed recessed lighting fixtures. Recessed downlights where SPF insulation is installed shall: <ul style="list-style-type: none"> (a) be covered with a minimum of 1.5 inches of mineral fiber insulation, or (b) be enclosed in a box fabricated from 1/4 inch plywood, 18 gauge metal, 3/8 inch hard board or gypboard. Hard board or gypboard does not cause a recessed downlights to meet the zero clearance insulation contact requirements.
08	Walkways and mechanical platforms are insulated to the same R-value as required by the CF1R for ceiling insulation. If not an area weighted calculation is completed and turned in with this form (using form CF1R-ENV-02-E).
09	Soffits, chases, and drop ceiling areas have a sealed hard cover and the insulation is in direct contact with the hard cover.
10	Knee walls – an air dam the full depth of the ceiling insulation is added to the exterior edge of the knee wall so the ceiling insulation overlaps the knee wall to the full depth of the ceiling insulation.
11	Attic access doors are insulated to the same R-value required by the CF1R for roof insulation and the insulation is permanently attached using adhesive or mechanical fasteners. The preferred method is rigid insulation.
12	Attic access forms an airtight seal from conditioned space to unconditioned space. Vertical attic access requires mechanical compression using screws, or latches.
13	Attic access must have a dam around the access to at least the same depth as the insulation.
14	Insulation batts must be cut to fit around cross bracings and truss webs.
15	Attic rulers appropriate to the material are installed and evenly distributed throughout the attic to verify depth (one ruler for every 250 square feet). The rulers are clearly readable from the attic access and scaled to read inches of insulation and the R-value installed.
16	Loose fill and SPF insulation – a HERS rater shall measure the installed thickness (including low and high areas) and density of insulation in at least 6 random locations on roof/ceilings, and floors to ensure minimum thickness levels and installed density necessary to meet the R-value specified on the Certificate of Compliance, and consistency with the manufacturer's coverage chart.
17	Steel-framed knee walls, skylight shafts, and gable ends – external surfaces of steel studs are covered with insulation
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

D. WALL INSULATION QUALITY

01	Batts, loose fill mineral fiber, mineral and natural wool, and cellulose – Insulation completely fills the framed cavity and is in contact with the air barrier on all six sides.
02	ocSPF – insulation completely fill cavities of 2x4 inch framing or less. Not required to fill cavities greater than 2x4 inch framing unless necessary to meet the required R-value used for compliance.
03	ccSPF – insulation is not required to fill the cavities of framed assemblies unless necessary to meet the required R-value used for compliance.
04	Double walls and bump-outs – insulation shall fill the entire cavity, or an additional air barrier shall be installed inside the double wall or bump-out in contact with the insulation so that the insulation fills the cavity on all six sides unless SPF is used. Insulation shall be installed on the exterior of the double walls/bump-outs.
05	Low expanding foam is used around windows and doors if allowed by the manufacturer. If not allowed, fill the cavity snugly with insulation; batts are not allowed to be stuffed into space.
06	Electrical panel in exterior insulated wall – the panel is air tight and insulation is installed behind the panel.
07	Skylight shafts and attic knee walls – insulation must meet all the requirements for walls and contact with the air barrier on six sides unless SPF is used.
08	Skylight shafts and attic knee walls – insulation shall be in full contact with the drywall or other interior wall finish. Batt insulation must be cut to fit around 2x4's that are laid flat.
09	Skylight shafts and attic knee walls – insulation shall be completely enclosed by vertical and horizontal framing, including horizontal plates at the top and bottom of the insulation.
10	Band/Rim joists are insulated to the same R-value as the wall.
11	Hard to access wall stud cavities, such as corner channels or wall intersections, are insulated to the proper R-value prior to the installation of exterior sheathing or exterior stucco lath.
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

Registration Number:

Registration Date/Time:

HERS Provider:

CA Building Energy Efficiency Standards - 2013 Residential Compliance

March 2015



CERTIFICATE OF INSTALLATION		CF2R-ENV-23-H
Quality Insulation Installation (QII) - Insulation Installation		(Page 3 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

E. RAISED FLOOR INSULATION QUALITY

01	Insulation is in full contact with the air barrier – usually the subfloor.
02	Insulation hangers are spaced at 18 inches or less; insulation hangers do not compress insulation.
03	Netting or mesh can be used if the cavity under the floor is filled and in contact with the subfloor.
04	When daylight basements are adjacent to crawlspaces, if the basement is conditioned, the walls adjacent to the crawlspace are insulated to the R-value listed on the CF1R. This includes framed stem walls, and vertical concrete retaining walls.
05	If access to the crawlspace is from the conditioned area, the raised floor includes an airtight insulated access hatch. Where possible locate the crawl space access from the exterior.
06	The cantilevered floor joists must be insulated to a minimum R-value of R-19 as would be required for the subfloor prior to closing.

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

F. FLOOR ABOVE GARAGE INSULATION QUALITY

01	Insulation must be in full contact with the subfloor if the air barrier is at the band joist at the garage house wall.
02	Insulation hangers are spaced at 18 inches or less; insulation hangers must not compress insulation.
03	Netting or mesh can be used if the cavity under the floor is filled and in contact with the subfloor.
04	If the air barrier is at the perimeter of the garage, below the conditioned subfloor, then the insulation may be placed on the garage ceiling. The perimeter of the subfloor must also be insulated.

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

G. CANTILEVERED FLOOR INSULATION QUALITY

01	Insulation is in full contact with the cantilevered subfloor. Insulation hangers are spaced at 18 inches or less; insulation hangers do not compress insulation. Netting or mesh can be used if the cavity under the floor is filled and in contact with the subfloor.
02	Sealed blocking shall be installed between joists where the wall rim joist would have been located in the absence of a cantilever. Insulation shall be placed on both sides of this block.

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

H. ATTACHED PORCH ROOF INSULATION QUALITY

01	The exterior wall at the intersection with the porch roof is fully insulated above, below and behind the roof line.
02	Where truss framing is used, airtight blocking is installed at the top and bottom of each wall/roof section and insulated.

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



CERTIFICATE OF INSTALLATION		CF2R-ENV-23-H
Quality Insulation Installation (QII) - Insulation Installation		(Page 4 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT		
1. I certify that this Certificate of Installation documentation is accurate and complete.		
Documentation Author Name:	Documentation Author Signature:	
Documentation Author Company Name:	Date Signed:	
Address:	CEA/HERS Certification Identification (if applicable):	
City/State/Zip:	Phone:	
RESPONSIBLE PERSON'S DECLARATION STATEMENT		
I certify the following under penalty of perjury, under the laws of the State of California:		
<ol style="list-style-type: none"> The information provided on this Certificate of Installation is true and correct. I am 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 (responsible builder/installer), otherwise I am an authorized representative of the responsible builder/installer. 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 plans and specifications approved by the enforcement agency. I understand that a HERS rater will check the installation to verify compliance, and that if such checking identifies defects; I am required to take corrective action at my expense. I understand that Energy Commission and HERS Provider representatives will also perform quality assurance checking of installations, including those approved as part of a sample group but not checked by a HERS rater, and if those installations fail to meet the requirements of such quality assurance checking, the required corrective action and additional checking/testing of other installations in that HERS sample group will be performed at my expense. I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the scope of construction or installation identified on this Certificate of Installation, and I have ensured that the requirements that apply to the construction or installation have been met. I will ensure that a registered copy of this Certificate of Installation shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy. 		
Responsible Builder/Installer Name:	Responsible Builder/Installer Signature:	
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)	Position With Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone	Date Signed:
Third Party Quality Control Program (TPQCP) Status:	Name of TPQCP (if applicable):	

LINE ITEMS ADDRESSED:

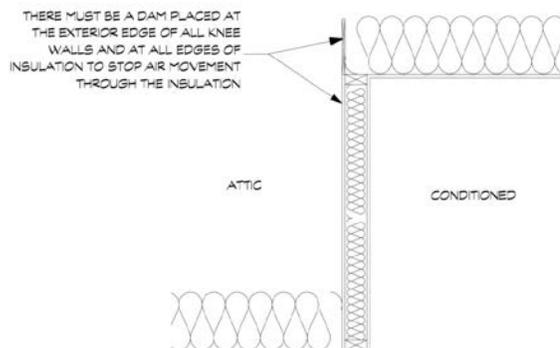
- B 08:** An air barrier is installed at all exposed edge faces of batt, loose fill and SFP insulation.
- C 10:** Knee walls – an air dam the full depth of the ceiling insulation is added to the exterior edge of the knee wall so the ceiling insulation overlaps the knee wall to the full depth of the ceiling insulation.
- C 13:** Attic access must have a dam around the access to at least the same depth as the insulation.
- C 17:** Steel-framed knee walls, skylight shafts, and gable ends - external surfaces of steel studs are covered with insulation.
- D 04:** Double walls and bump-outs - insulation fills the cavity, or additional air barrier is installed so the insulation fills the cavity and is in contact with the insulation on all six sides unless SPF is used. Insulation shall be installed on the exterior of the double walls/bump-outs.
- D 06:** Electrical panel in exterior insulated wall - the panel is air tight and insulation is installed behind the panel.

LINE ITEM CLARIFICATIONS:**B 08: An air barrier is installed at all exposed edge faces of batt, loose fill and SFP insulation.**

- This is to stop air movement into the insulation and to ensure full depth of insulation.
- Typical locations where this occurs is on top of knee walls, around fireplace and flues.
- SPF does not require an air barrier if it can be installed to its full depth.

C 10: Knee walls – an air dam the full depth of the ceiling insulation is added to the exterior edge of the knee wall so the ceiling insulation overlaps the knee wall to the full depth of the ceiling insulation.

- The dam must be at least the same depth as the attic insulation to ensure full depth and to stop air migration into the insulation.
- This shall be a solid material to keep the insulation in place. Some of the materials that can be used are listed on the CF2R-ENV-21-H.

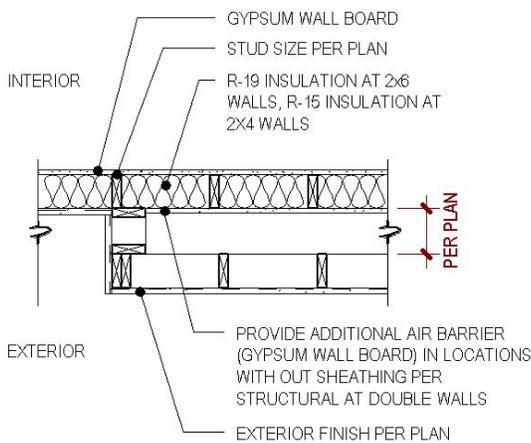
**C 13: Attic access must have a dam around the access to at least the same depth as the insulation.**

- A dam must be installed around the attic access that is at least the same depth as the attic insulation to ensure full depth around the attic access.
- Most insulation manufacturer instructions require a rigid dam around the attic access for all types of insulation. Check insulation manufacturer instructions.
- For R38 most insulation would require a 13 ¾ to 14 ½" dam. R48 would require a 17" dam in most situations.
- The depth of the dam would be measured from the ceiling to the top of the dam.

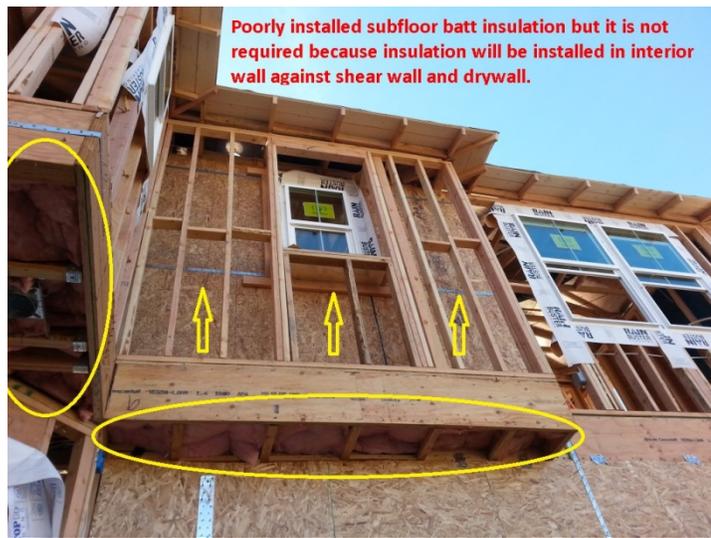
C 17: Steel-framed knee walls, skylight shafts, and gable ends - external surfaces of steel studs are covered with insulation.

D 04: Double walls and bump-outs - insulation fills the cavity, or additional air barrier is installed so the insulation fills the cavity and is in contact with the insulation on all six sides unless SPF is used. Insulation shall be installed on the exterior of the double walls/bump-outs.

- All wall insulation must be in contact with the air barrier on all six sides, unless SPF is used.
- Allowed materials that can be used as the interior air barrier are listed in the CF2R-ENV-21 and must be installed per manufacturer instructions. Verify if house wrap manufacturer instructions allow material to be installed in these locations.
- To keep the integrity of the building envelope it is best to keep the air barrier and insulation in one continuous plane. In situations where there is a double wall or bump out it is best to keep the insulation on the interior wall. An air barrier must be added to the exterior of the insulation so it is in contact with air barrier on all six sides. The form will be changed in the future to not require insulation on the exterior.



INSULATION AT INTERIER DOUBLE WALL





In this example it would be best to insulate the interior wall. An air must be added to the interior wall that is sealed to the bottom plate, top plate, and all penetrations sealed. Ensure interior bottom plate is sealed to subfloor. A rigid air dam must be added above the interior wall similar to Line Item C10 in this document.

In this example 2 inch spacers are added to the exterior air barrier. Insulation is only required on the conditioned side of the wall.

D 06: Electrical panel in exterior insulated wall the panel is air tight and insulation is installed behind the panel.

- When an electric panel is installed on insulated wall the panel must be sealed.
- Seal perimeter of electrical panel to the exterior air barrier.
- Seal all openings in the panel.
- Use tape, caulk or foam. Ensure sealing products do not enter into the electrical panel.