ATTACHMENT 4

Staff proposed final modifications to Compliance Forms are noted below by specific form:

Compliance Forms

Quality Insulation Installation (QII) - Framing Stage Checklist (CF-4R-ENV-21)

Air leakage and infiltration control must be done at the framing stage before insulation is installed. All field verification cells in compliance forms MUST be filled out and each person taking responsibility for signing compliance forms MUST be indicated in the right-hand column. Compliance forms with incomplete field verification checkoffs and Responsible Party signatures cannot be accepted by the building department.

Note 1: Structural bracing, tie-downs, and framing of steel or specialized framing used to meet structural requirements of the CBC are allowed. These areas shall be called out on the building plans with diagrams and/or specific design drawings indicating the R-value amount and fastening method to be used. All structural framing areas shall be insulated in a manner that resists thermal bridging from the outside to the inside of the assembly separating unconditioned from conditioned space. The insulation and air barrier integrity shall be verified by the HERS rater.

Note 2: SPF insulation used as the air barrier shall be a minimum of 5.5 inches in thickness for ocSPF or 2.0 inches in thickness for ccSPF; alternatively, SPF insulation shall be installed at a thickness that meets an air permeance no greater than 0.02 L/s-m2 at 75 Pa pressure differential when tested in accordance to ASTM E2178 or ASTM E283. The bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, shall be sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF or 2.0 inches away from the framing for ccSPF insulation respectively, or filled to the thickness meeting ASTM testing as an air barrier.

✓ **FLOOR AIR BARRIER**				**Responsible Person Signatures (1, 2 or 3)**
☐ Yes	☐ No	☐ NA	All gaps in the raised floor to unconditioned space or to outside larger than 1/8” filled with foam or caulk. (NA if SPF)	
☐ Yes	☐ No	☐ NA	All openings on a second floor including under a tub where the drain penetrates the floor, sealed	
✓ **WALL AIR BARRIER**				
☐ Yes	☐ No	☐ NA	All gaps in wall exterior sheathing to unconditioned space or to outside larger than 1/8” filled with foam or caulk.	
☐ Yes	☐ No	☐ NA	No gaps in exterior sheathing against the garage, attic, or covered patio. All gaps larger than 1/8” filled with foam or caulk. (NA if ccSPF used in cavity)	
☐ Yes	☐ No	☐ NA	All gaps in Rim-joists in interior and exterior walls to the outside, including holes drilled for electrical and plumbing larger than 1/8”, filled with foam or caulk. (NA if SPF)	
☐ Yes	☐ No	☐ NA	Rope caulk, foam gasket, or caulking bead around the entire sole plate of the home	
☐ Yes	☐ No	☐ NA	All gaps around windows filled with minimally expansive foam or caulked with backer rod	
✓ **ATTIC INSPECTION**				
☐ Yes	☐ No	☐ NA	Attic rulers appropriate to the material installed evenly throughout the attic to verify depth and scaled to read inches of insulation and the installed R-value. (NA if SPF or batt)	
☐ Yes	☐ No	☐ NA	Attic area (sqft) _____ / 250 = _____ minimum number of rulers installed. Must round up. Number of rulers actually installed _____(NA if SPF or batt)	
☐ Yes	☐ No	☐ NA	Baffles installed at all eave vents to prevent air movement under or into insulation. (NA if SPF in cavity)	
☐ Yes	☐ No	☐ NA	Area of eave vent baffle is the same or larger than the net free-ventilation area of the eave vent.	
✓ **CEILING AIR BARRIER**				
☐ Yes	☐ No	☐ NA	All draft stops in place to form a continuous ceiling air barrier no gaps larger than 1/8”. (NA if SPF)	
☐ Yes	☐ No	☐ NA	All drops covered with hard covers. Gaps around or in the hard cover larger than 1/8” filled with foam or caulk.	
☐ Yes	☐ No	☐ NA	All recessed light fixtures in non-conditioned space IC and air tight (AT)	
☐ Yes	☐ No	☐ NA	All recessed light fixtures sealed with a gasket or caulk between the housing and the ceiling.	

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☐ Yes	☐ No	☐ NA	Openings around flue shafts fully covered with flashing and sealed around shaft with fire-rated caulk or sealant.	
☐ Yes	☐ No	☐ NA	Piping shafts openings fully sealed and caulked. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	Penetrations from wiring in interior walls, electrical boxes, fire alarms etc. sealed with caulk or sealant. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	All duct chases, fireplace chases, and double walls sealed air tight at the ceiling level. All gaps into shafts filled with foam or caulk. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	All exhaust vents which terminate on the wall between conditioned floors dampered on the outside of the building.	
☐ Yes	☐ No	☐ NA	All exhaust vents have working damper installed in fan housing.	
✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (no conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	Air barrier installed at joists in garage to house transition (between floors). No gaps larger than 1/8". SPF: gaps in air barrier not required to be filled.	
✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor, no gaps over 1/8" in the subfloor. Air barrier installed at joists in garage to house transition (between floors). (NA if SPF is used	
☐ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage, no gaps over 1/8" at the ceiling and joists to the outside. (NA if SPF)	

Quality Insulation Installation (QII) - Insulation Stage Checklist (CF-4R-ENV-22)

Note 1: Structural bracing, tie-downs, and framing of steel or specialized framing used to meet structural requirements of the CBC are allowed. These areas shall be called out on the building plans with diagrams and/or specific design drawings indicating the R-value amount and fastening method to be used. All structural framing areas shall be insulated in a manner that resists thermal bridging from the outside to the inside of the assembly separating unconditioned from conditioned space. The insulation and air barrier integrity shall be verified by the HERS rater.

Note 2: SPF insulation used as the air barrier shall be a minimum of 5.5 inches in thickness for ocSPF or 2.0 inches in thickness for ccSPF; alternatively, SPF insulation shall be installed at a thickness that meets an air permeance no greater than 0.02 L/s-m2 at 75 Pa pressure differential when tested in accordance to ASTM E2178 or ASTM E283. The bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, shall be sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF or 2.0 inches away from the framing for ccSPF insulation respectively, or filled to the thickness meeting ASTM testing as an air barrier.

FLOOR INSULATION				**Responsible Person Signatures (1, 2 or 3)**
☐ Yes	☐ No	☐ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with raised subfloor, NO gaps. (NA if floors are slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with air barrier on all five sides. (i.e., ends, sides, and back of cavity framing). NA if floors are slab on grade.	
☐ Yes	☐ No	☐ NA	**Batts:** cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).	
☐ Yes	☐ No	☐ NA	**Batts:** insulation has continuous support. (NA if loose fill, SPF, or slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation R-value same or greater that listed on CF-1R.	
☐ Yes	☐ No	☐ NA	**SPF:** properly adhered to avoid gaps.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. -ccSPF: minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness shall be no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	**SPF:** required floor cavity R-value from CF-1R, R-_____. List tested average depth of insulation____ in X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	

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✓ **WALL INSULATION**				
☐ Yes	☐ No	☐ NA	**Batts, loose fill mineral fiber and mineral wool, and cellulose:** For standard depth cavities insulation fills cavity and is in contact with air barrier on all six sides. **ocSPF:** shall completely fill cavities of 2x4 inch framing or less. Cavities greater than 2x4 inch framing dimensions may be filled to the thickness necessary to meet the required R-value used for compliance provided that the bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, are sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF insulation or 2.0 inches for ccSPF, or filled to the thickness meeting ASTM testing as an air barrier.	
☐ Yes	☐ No	☐ NA	For double walls and bump-outs, insulation fills the entire cavity or additional air barrier installed inside the double wall or bump-out in contact with the insulation so that the insulation fills the cavity formed with the additional air barrier; entire double wall or bump-out is air tight. Insulation touches all six sides. (NA if SPF installed to meet the required R-value and sprayed on the entire surface of framing as specified above).	
☐ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.	
☐ Yes	☐ No	☐ NA	**Batts:** no void/depression deeper than ¾" in ANY stud bay. (NA if loose fill mineral fiber and wool, cellulose or SPF insulation)	
☐ Yes	☐ No	☐ NA	**Batts:** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, and cellulose:** no gaps or voids of any depth allowed. (NA if batts or SPF).	
☐ Yes	☐ No	☐ NA	Steel tie-downs and structural framing/bracing are insulated at front, back and sides per manufacturer's recommendations or as indicated on plans.	
☐ Yes	☐ No	☐ NA	**SPF:** depressions in the foam insulation's surface of ccSPF not greater than 1/2-inch less than the required thickness at any given point of the surface area being insulated. Depressions in the foam insulation surface of ocSPF not greater than 1-inch less than the required thickness provided these depressions do not exceed 10% of the surface area being insulated.	
☐ Yes	☐ No		Any gaps between studs or insulation larger than 1/8" filled with insulation or foam.	
☐ Yes	☐ No	☐ NA	All Rim-joists to the outside insulated to wall R-value.	
☐ Yes	☐ No	☐ NA	Gaps at corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value and/or filled with insulation and sealed.	
☐ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with drywall or wall finish of skylight shafts and attic kneewalls.	
☐ Yes	☐ No	☐ NA	Wall insulation same or better than what is listed on the CF-1R.	
☐ Yes	☐ No	☐ NA	**SPF:** insulation properly adhered to avoid gaps and provide an air seal.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness shall be no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	**SPF:** required floor cavity R-value from CF-1R, R-_____. List tested average depth of insulation____ in X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	
✓ **ROOF/CEILING INSULATION**				
☐ Yes	☐ No		**Batts:** no gap/void/depression deeper than ¾". (NA if loose fill mineral fiber and mineral wool, cellulose or SPF insulation).	
☐ Yes	☐ No		**Batts:** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).	
☐ Yes	☐ No	☐ NA	No gaps or voids allowed for loose fill and SPF. (NA if batts).	
☐ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.	
☐ Yes	☐ No		Insulation in substantial contact with the ceiling, NO gaps.	
☐ Yes	☐ No		Insulation in contact with air barrier on all five sides.	
☐ Yes	☐ No	☐ NA	**Batts:** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**Batts:** taller than the trusses must expand so that they touch each other over the trusses. No gaps in insulation above trusses. (NA for loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness no more than 1 inch less than the required thickness for the R-value. (NA if loose fill or batts).	

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☐ Yes	☐ No	☐ NA	Insulation fully fills cavity below any platform or cat-walk. ccSPF: minimum 3 inches. ocSPF: minimum of 5.3 inches. (NA if no platforms or cat-walks)	
☐ Yes	☐ No	☐ NA	Attic access gasketed or sealed.	
☐ Yes	☐ No	☐ NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R	
☐ Yes	☐ No	☐ NA	Recessed light fixtures shall be covered to full depth of insulation meeting required R-value. **SPF:** shall not be applied directly to recessed lighting fixtures and left exposed. Recessed light fixtures insulated with SPF insulation shall be protected from ignition by a combination of one or more of the following methods: (1) be covered with a minimum of 1.5 inches of mineral fiber insulation, or (2) be enclosed in a box fabricated from 1/4 inch plywood, 18 gauge metal, 3/8inch hard board or gypboard. The exterior of the box may then be insulated with SPF provided: (1) the SPF insulation is covered with an approved ignition barrier coating tested and supported by an ICC Evaluation Services Report (ESR) or code compliance research report approved by the local agency; or (2) the exposed condition of the SPF insulation is supported by testing with an ICC ESR or research report approved by the local agency.	
☐ Yes	☐ No	☐ NA	R-value of roof/ceiling insulation same or better than what is listed on the CF-1R. In ventilated attics kneewalls and skylights shall be insulated to a minimum of R-19. In unvented attics with insulation placed directly below or above the structural roof sheathing, all knee wells and gable ends insulated. **SPF:** shall be protected from ignition by: (1) covering with an approved ignition barrier coating tested and supported by an ICC Evaluation Services Report (ESR) or code compliance research report approved by the local agency; or (2) the exposed condition of the SPF insulation is supported by testing with an ICC ESR or research report approved by the local agency.	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** installed to proper depth; insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** uniformly covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** meets or exceeds manufacturer's minimum weight and thickness requirement for the target R-value. Target R-value _____. Manufacturer's minimum required weight for the target R-value _____ (pounds-per-square foot). Sample weight _____ (pounds per square foot).	
☐ Yes	☐ No	☐ NA	Manufacturer's minimum required thickness at time of installation _____ (inches). Manufacturer's minimum required settled thickness _____ (inches). Number of days since loose-fill insulation was installed _____ (days). At the time of installation, the insulation shall be greater than or equal to the manufacturer's minimum initial insulation thickness. If the HERS rater does not verify the insulation at the time of installation, and if the loose-fill insulation has been in place less than seven days the thickness shall be greater than the manufacturer's minimum required thickness at the time of installation less 1/2 inch to account for settling. If the insulation has been in place for seven days or longer the insulation thickness shall be greater than or equal to the manufacturer's minimum required settled thickness. Minimum thickness measured (inches).	
☐ Yes	☐ No	☐ NA	**SPF:** required ceiling cavity R-value from CF-1R, R-_____. List tested average depth of insulation____ in X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R. (NA for other forms of insulation)	
✓ **GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(no conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition (between floors). All wall insulation requirements above must be met. (NA if conditioned space over garage).	
✓ **GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	If insulation is installed at subfloor, insulation must also be installed at joists against the air barrier in the garage to house transition (between floors). All ceiling and wall insulation requirements above met. (NA if no conditioned space over garage).	
☐ Yes	☐ No	☐ NA	Insulation installed at ceiling of garage also has joists to the outside insulated and all the insulation requirements listed above met. (NA if no conditioned space over garage).	
☐ Yes	☐ No	☐ NA	**SPF:** properly adhered to avoid gaps, and provide an air seal.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness no more than ½ inch less than the required thickness for the R-value.	

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			ocSPF: minimum thickness no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	**SPF:** required floor cavity R-value from CF-1R, R-_____. List tested average depth of insulation____ in X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R. (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	

Quality Insulation Installation (QII) - Framing Stage Checklist (CF-6R-ENV-21-HERS)

Air leakage and infiltration control must be done at the framing stage before insulation is installed. All field verification cells in compliance forms MUST be filled out and each person taking responsibility for signing compliance forms MUST be indicated in the right-hand column. Compliance forms with incomplete field verification checkoffs and Responsible Party signatures cannot be accepted by the building department.

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Note 2: SPF insulation used as the air barrier shall be a minimum of 5.5 inches in thickness for ocSPF or 2.0 inches in thickness for ccSPF; alternatively, SPF insulation shall be installed at a thickness that meets an air permeance no greater than 0.02 L/s-m2 at 75 Pa pressure differential when tested in accordance to ASTM E2178 or ASTM E283. The bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, shall be sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF or 2.0 inches away from the framing for ccSPF insulation respectively, or filled to the thickness meeting ASTM testing as an air barrier.

✓ **FLOOR AIR BARRIER**				**Responsible Person Signatures (1, 2 or 3)**
☐ Yes	☐ No	☐ NA	All gaps in the raised floor to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF)	
☐ Yes	☐ No	☐ NA	All openings on a second floor including under a tub where the drain penetrates the floor are sealed	
✓ **WALLS AIR BARRIER**				
☐ Yes	☐ No	☐ NA	All gaps in wall exterior sheathing to unconditioned space or to outside larger than 1/8" filled with foam or caulk. (NA if SPF used in cavity)	
☐ Yes	☐ No	☐ NA	No gaps in sheathing against the garage, attic, or covered patio. All gaps larger than 1/8" filled with foam or caulk. (NA if SPF)	
☐ Yes	☐ No	☐ NA	All gaps in Rim-joists in interior and exterior walls to the outside including holes drilled for electrical and plumbing larger than 1/8" filled with foam or caulk. (NA if SPF)	
☐ Yes	☐ No	☐ NA	Rope caulk, foam gasket, or caulking bead around the entire sole plate of the home.	
☐ Yes	☐ No	☐ NA	All gaps around windows filled with minimally expansive foam or caulked with backer rod	
✓ **ATTIC INSPECTION**				
☐ Yes	☐ No	☐ NA	Attic rulers appropriate to the material installed evenly throughout the attic to verify depth and scaled to read inches of insulation and the installed R-value. (NA if SPF or batt)	
☐ Yes	☐ No	☐ NA	Attic area (sqft) _____ ÷ 250 = _____ minimum number of rulers installed. Must round up. Number of rulers actually installed _____. (NA if SPF or batt)	
☐ Yes	☐ No	☐ NA	Baffles installed at all eave vents to prevent air movement under or into insulation. (NA if SPF in cavity)	
☐ Yes	☐ No	☐ NA	Area of eave vent baffle is the same or larger than the net free-ventilation area of the eave vent.	
✓ **CEILING AIR BARRIER**				
☐ Yes	☐ No	☐ NA	All draft stops in place to form a continuous ceiling air barrier no gaps larger than 1/8". NA if SPF.	
☐ Yes	☐ No	☐ NA	All drops covered with hard covers. Gaps around or in the hard cover larger than 1/8" filled with foam or caulk.	
☐ Yes	☐ No	☐ NA	All recessed light fixtures in non conditioned space are IC rated and air tight (AT).	

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☐ Yes	☐ No	☐ NA	All recessed light fixtures sealed with a gasket or caulk between the housing and the ceiling	
☐ Yes	☐ No	☐ NA	Openings around flue shafts fully covered with flashing and sealed around shaft with fire-rated caulk or sealant.	
☐ Yes	☐ No	☐ NA	Piping shaft openings fully sealed and caulked. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	Penetrations from wiring in interior walls, electrical boxes, fire alarms etc. sealed with caulk or sealant. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	All duct chases, fireplace chases, and double walls sealed air tight at the ceiling level. All gaps into shafts filled with foam or caulk. (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	All exhaust vents that terminate on the wall between conditioned floors are dampered on the outside of the building.	
☐ Yes	☐ No	☐ NA	All exhaust vents have working damper installed in fan housing.	
✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (no conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	Air barrier installed at joists in garage to house transition (between floors). No gaps larger than 1/8" allowed. SPF: gaps in air barrier not required to be filled.	
✓ **GARAGE ROOF/CEILING AIR BARRIER FOR TWO STORIES (conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	If insulation is to be installed at subfloor, no gaps over 1/8" in the subfloor. Air barrier installed at joists in garage to house transition (between floors). (NA if SPF is used)	
☐ Yes	☐ No	☐ NA	If insulation is to be installed at ceiling of garage, no gaps over 1/8" at the ceiling and joists to the outside. (NA if ccSPF)	

Quality Insulation Installation (QII) - Insulation Stage Checklist (CF-6R-ENV-22-HERS)

Note 1: Structural bracing, tie-downs, and framing of steel or specialized framing used to meet structural requirements of the CBC are allowed. These areas shall be called out on the building plans with diagrams and/or specific design drawings indicating the R-value amount and fastening method to be used. All structural framing areas shall be insulated in a manner that resists thermal bridging from the outside to the inside of the assembly separating unconditioned from conditioned space. The insulation and air barrier integrity shall be verified by the HERS rater.

Note 2: SPF insulation used as the air barrier shall be a minimum of 5.5 inches in thickness for ocSPF or 2.0 inches in thickness for ccSPF; alternatively, SPF insulation shall be installed at a thickness that meets an air permeance no greater than 0.02 L/s-m2 at 75 Pa pressure differential when tested in accordance to ASTM E2178 or ASTM E283. The bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, shall be sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF or 2.0 inches away from the framing for ccSPF insulation respectively, or filled to the thickness meeting ASTM testing as an air barrier.

Insulation Stage Checklist ✓ FLOOR INSULATION				**Responsible Person Signatures (1, 2 or 3)**
☐ Yes	☐ No	☐ NA	All floor joist cavity insulation installed to uniformly fit the cavity side-to-side and end-to-end. (NA if floors slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with the raised subfloor, NO gaps. (NA if floors are slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with air barrier on all five sides. (i.e., ends, sides, and back of cavity framing). NA if floors are slab on grade.	
☐ Yes	☐ No	☐ NA	**Batts:** cut to fit around wiring and plumbing, or split (delaminated). (NA if loose fill, SPF, or slab on grade).	
☐ Yes	☐ No	☐ NA	**Batts:** insulation has continuous support. (NA if loose fill, SPF, or slab on grade).	
☐ Yes	☐ No	☐ NA	Insulation R-value same or greater than listed on the CF-1R.	
☐ Yes	☐ No	☐ NA	**SPF:** properly adhered to avoid gaps.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness shall be no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	**SPF:** required floor cavity R-value from CF-1R, R=_____. List tested average depth of insulation (inches) ____ X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	

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✓ **WALL INSULATION**				
☐ Yes	☐ No	☐ NA	**Batts, loose fill mineral fiber and mineral wool, and cellulose:** standard depth cavities insulation fills cavity is in contact with air barrier on all six sides. **ocSPF:** shall completely fill cavities of 2x4 inch framing or less. Cavities greater than 2x4 inch framing dimensions may be filled to the thickness necessary to meet the required R-value used for compliance provided that the bottom and top plates of vertical framing and both ends of horizontal framing, including band and rim joists, are sprayed to completely fill the cavity adjacent to and in contact with the framing to a distance of 5.5 inches away from the framing for ocSPF insulation or 2.0 inches for ccSPF, or filled to the thickness meeting ASTM testing as an air barrier.	
☐ Yes	☐ No	☐ NA	For double walls and bump-outs, insulation fills the entire cavity or additional air barrier installed inside the double wall or bump-out in contact with the insulation so that the insulation fills the cavity formed with the additional air barrier; entire double wall or bump-out is air tight. Insulation touches all six sides. (NA if SPF installed to meet the required R-value and sprayed on the entire surface of framing as specified above).	
☐ Yes	☐ No		Behind tub/shower, walls under stairs, and fireplace, insulation touches air barrier on five sides. Not required to fill the space. Cavity required to be air tight.	
☐ Yes	☐ No	☐ NA	**Batts:** no void/depression deeper than ¾" in ANY stud bay. (NA if loose fill mineral fiber and mineral wool, cellulose or SPF insulation)	
☐ Yes	☐ No	☐ NA	**Batts:** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, and cellulose:** no gaps or voids of any depth allowed. (NA if batts or SPF).	
☐ Yes	☐ No	☐ NA	Steel tie-downs and structural framing/bracing are insulated at front, back and sides per manufacturer's recommendations or as indicated on plans.	
☐ Yes	☐ No	☐ NA	**SPF:** depressions in the foam insulation's surface of ccSPF not greater than 1/2-inch less than the required thickness at any given point of the surface area being insulated. Depressions in the foam insulation surface ocSPF not greater than 1-inch less than the required thickness provided these depressions do not exceed 10% of the surface area being insulated.	
☐ Yes	☐ No	☐ NA	Any gaps between studs or insulation larger than 1/8" filled with insulation or foam.	
☐ Yes	☐ No	☐ NA	All Rim-joists to the outside insulated to wall R-value.	
☐ Yes	☐ No	☐ NA	Gaps at corner channels, wall intersections, and behind tub/shower enclosures insulated to proper R-Value and/or filled with insulation and sealed.	
☐ Yes	☐ No	☐ NA	All skylight shafts and attic kneewalls insulated with minimum R-19.	
☐ Yes	☐ No	☐ NA	Insulation in substantial contact with drywall or wall finishes of skylight shafts and attic kneewalls.	
☐ Yes	☐ No		Wall insulation same or better than what is listed on the CF-1R.	
☐ Yes	☐ No	☐ NA	**SPF:** insulation properly adhered to avoid gaps and provide an air seal.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness shall be no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	**SPF:** required wall cavity R-value from CF-1R, R-_____. List tested average depth of insulation (inch) ____ X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	
✓ **ROOF/CEILING INSULATION**				
☐ Yes	☐ No		**Batts:** no gap/void/depression deeper than ¾". (NA if loose fill mineral fiber and mineral wool, cellulose or SPF insulation).	
☐ Yes	☐ No		**Batts:** voids/depressions less than 3/4" allowed as long as the area is not greater than 10% of the surface area for each stud bay. (NA if loose fill or SPF).	
☐ Yes	☐ No	☐ NA	No gaps or voids allowed for loose fill and SPF. (NA if batts).	
☐ Yes	☐ No		All ceiling insulation installed to uniformly fit the cavity side-to-side and end-to-end.	
☐ Yes	☐ No		Insulation in substantial contact with the ceiling, NO gaps.	
☐ Yes	☐ No		Insulation in contact with air barrier on all five sides.	
☐ Yes	☐ No	☐ NA	**Batts:** cut to fit around wiring and plumbing, or split (delaminated). (NA for loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**Batts:** taller than the trusses must expand so that they touch each other over the trusses. No gaps in insulation above trusses. (NA for loose fill or SPF).	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness shall be no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness shall be no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation)	

ATTACHMENT 4

☐ Yes	☐ No	☐ NA	Insulation fully fills cavity below any platform or cat-walk. ccSPF: minimum of 3 inches. ocSPF: minimum of 5.3 inches. (NA if no platforms or cat-walks)	
☐ Yes	☐ No	☐ NA	Attic access gasketed or sealed.	
☐ Yes	☐ No	☐ NA	Attic access insulated with rigid foam or batt insulation using adhesive or mechanical fastener. R-value same as ceiling R-value listed on CF-1R	
☐ Yes	☐ No	☐ NA	Recessed light fixtures covered to full depth of insulation meeting required R-value. **SPF:** shall not be applied directly to recessed lighting fixtures and left exposed. Recessed light fixtures insulated with SPF insulation shall be protected from ignition by a combination of one or more of the following methods: (1) be covered with a minimum of 1.5 inches of mineral fiber insulation, or (2) be enclosed in a box fabricated from 1/4 inch plywood, 18 gauge metal, 3/8inch hard board or gypboard. The exterior of the box may then be insulated with SPF provided: (1) the SPF insulation is covered with an approved ignition barrier coating tested and supported by an ICC Evaluation Services Report (ESR) or code compliance research report approved by the local agency; or (2) the exposed condition of the SPF insulation is supported by testing with an ICC ESR or research report approved by the local agency.	
☐ Yes	☐ No	☐ NA	R-value of roof/ceiling insulation same or better than what is listed on the CF-1R. In ventilated attics kneewalls and skylights shall be insulated to a minimum of R-19. In unvented attics with insulation placed directly below or above the structural roof sheathing, all kneewalls and gable ends insulated. **SPF:** shall be protected from ignition by: (1) covering with an approved ignition barrier coating tested and supported by an ICC Evaluation Services Report (ESR) or code compliance research report approved by the local agency; or (2) the exposed condition of the SPF insulation is supported by testing with an ICC ESR or research report approved by the local agency.	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** installed to proper depth; insulation rulers visible and indicating proper depth and R-value for blown in insulation. (NA for batts or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** uniformly covers the entire ceiling (or roof) area from outside of all exterior walls. (NA for batts or SPF).	
☐ Yes	☐ No	☐ NA	**Loose fill mineral fiber and mineral wool, or cellulose:** meets or exceeds manufacturer's minimum weight and thickness requirements for the 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_____(inches). Manufacturer's minimum required settled thickness_____(inches). 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. (NA for batts or SPF).	
✓ **GARAGE ROOF/CEILING INSULATION FOR TWO STORIES (no conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	Insulation installed at joists against the air barrier in the garage to house transition (between floors). All wall insulation requirements above must be met. (NA if conditioned space over garage).	
✓ **GARAGE ROOF/CEILING INSULATION FOR TWO STORIES(conditioned space over garage)**				
☐ Yes	☐ No	☐ NA	If insulation is installed at subfloor, insulation must also be installed at joists against the air barrier in the garage to house transition. All ceiling and wall insulation requirements above met. (NA if no conditioned space over garage).	
☐ Yes	☐ No	☐ NA	Insulation installed at ceiling of garage also has joists to the outside insulated and all the insulation requirements listed above met. (NA if no conditioned space over garage).	
☐ Yes	☐ No	☐ NA	**SPF:** properly adhered to avoid gaps, and provide an air seal.	
☐ Yes	☐ No	☐ NA	**SPF:** average thickness is equal to or greater than that listed on the CF-1R. ccSPF: minimum thickness no more than ½ inch less than the required thickness for the R-value. ocSPF: minimum thickness no more than 1 inch less than the required thickness for the R-value. (NA for other forms of insulation).	
☐ Yes	☐ No	☐ NA	**SPF:** required floor cavity R-value from CF-1R, R-_____. List tested average depth of insulation____ in X 5.8 R-value/inch for ccSPF or 3.6 R-value/inch for ocSPF = _____ R-value. This is the installed R-value and must be equal to or greater than listed on CF-1R. (NA for other forms of insulation)	
☐ Yes	☐ No	☐ NA	Measure thickness of insulation in 6 random measurements. Must be within ½ inch of the required depth.	