
3.10 Compliance Documentation

Field Inspection Energy Checklist

New for the compliance forms is the Field Inspection Energy Checklist now combined with ENV-1C, LTG-1C, MECH-1C and RWH-1C. The Checklist is designed to help Field Inspectors look at specific features that are critical to envelope compliance and is submitted as part of the Energy Documentation that accompanies the plans. Field inspector checkboxes are incorporated directly into the ENV-1C as part of the Opaque Surfaces, Fenestration Surface Details and Roofing Product sections of the form.

Under the Prescriptive Approach, the Documentation Author is responsible for completing the Field Inspection Energy Checklist. For the Performance Approach this Checklist will automatically be completed by the approved computer program.

A copy shall be made available to the Field Inspector so that during different stage inspection. This is where the Field Inspector will verify whether or not the energy features installed in the field match the values listed in the ENV-1C, LTG-1C, MECH-1C and RWH-1C.

As an example, the Field Inspection Energy Checklist portion is designed to help Field Inspectors look at specific features that are critical to envelope compliance. These features should match the building plans as indicated on the ENV-1C. If they do, then feature “Passes” – if they don’t, then it “Fails.”

The Field Inspector must verify after the installation of each measure (e.g. Opaque Surface, Fenestration Surface Details and Roofing Products). The Field Inspector in addition must collect a signed ENV-INST (Installation Certificate) from the installer.

In the case if the Field Inspection Energy Checklist does not match exactly the building plans or the ENV-INST form, the field inspector must verify the features are meeting the minimum efficiency or better and if so no further compliance is required from the Architect or responsible party. In the case the features fails to meet the efficiencies (worse), the enforcement agency shall require resubmittal of the actual energy compliance documentation to reflect the actual installed features.

Opaque Surface Details

The Field Inspector need only check the Pass or Fail check boxes only after the measures have been verified and comply. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation. See ENV-1C Page1 of 4.

Fenestration Surface Details

The Field Inspector need only check the Pass or Fail check boxes only after the measures have been verified and comply. The local enforcement agency determines the adequacy of the justification, and may reject a

building or design that otherwise complies based on the adequacy of the special justification and documentation. See ENV-1C Page 1 of 4.

Roofing Product (Cool Roofs)

The Field Inspector need only check the Pass, Fail or Not Applicable (N/A) check boxes only after the measures have been verified and comply. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation. See ENV-1C Page 2 of 4.

Discrepancies

If any of the Fail boxes are checked off, the field inspector shall indicate appropriate action of correction(s). See ENV-1C Page 2 of 4.

3.10.1 ENV-1C: Certificate of Compliance and Field Inspection Energy Checklist

ENV-1C Page 1 of 4

The ENV-1C Certificate of Compliance and Field Inspection Energy Checklist has four pages. All pages must appear on the plans (usually near the front of the architectural drawings). A copy of these forms should also be submitted to the enforcement agency along with the rest of the compliance submittal at the time of building permit application. With enforcement agency approval, the applicant may use alternative formats of these forms (rather than the Energy Commission's forms), provided the information is the same and in similar format.

Project Description

PROJECT NAME and ADDRESS is the title of the Project and Address, as shown on the plans and known to the enforcement agency.

DATE is the date of preparation of the compliance submittal package. It should be on or after the date of the plans, and on or before the date of the building permit application.

CLIMATE ZONE is the official California climate zone number where the building is located. Refer to California Climate Zone Description, Reference Joint Appendix JA2 or at http://www.energy.ca.gov/maps/building_climate_zones.html for a listing of cities and their climate zones.

CONDITIONED FLOOR AREA (CFA) has specific meaning under the Standards. Refer to §101 for a discussion of this definition. Typically CFA is defined as conditioned space, which includes floor and volume.

General Information

BUILDING TYPE is specified because there are special requirements for Nonresidential, High-Rise Residential and Hotel/Motel Guest room occupancies. All other occupancies that fall under the Nonresidential Standards are designated “Nonresidential” including Schools. Check either the Conditioned Space or Unconditioned or if the building contains both the marked both. It is possible for a building to include more than one building type, in which case check all applicable types here. See §101(b) for the formal definitions of these occupancies.

Skylight Area for Large Enclosed Spaces - This requirement applies only if the proposed building contains an enclosed space with floor area greater than or equal to 8,000 ft², a ceiling height greater than 15 ft and an LPD for general lighting of at least 0.5 W/ft². If Skylight area is checked then also include the ENV-4C, Minimum Skylight Area Worksheet.

Relocatables Structures

Note: Relocatable Public School buildings, special conditions apply. The relocatable structure can comply with either a specific climate zone or all climate zones.

In the case of relocatables structures, there are two choices of prescriptive criteria:

1. Table 143-C in the Standards may be used for relocatable school buildings that can be installed in any climate zone in the state. In this case, the compliance is demonstrated in climates 14, 15, and 16 and this is accepted as evidence that the classroom will comply in all climate zones. These relocatables will have a permanent label that allows it to be used anywhere in the state.
2. Table 143-A in the Standards may be used for relocatable school buildings that are to be installed in only specific climate zones. In this case, compliance is demonstrated in each climate zone for which the relocatable has been designed to comply. These relocatables will have a permanent label that identifies in which climate zones it may be installed. It is not lawful to install the relocatable in other climate zones. See Reference Nonresidential Appendix NA4 for further details.

PHASE OF CONSTRUCTION indicates the status of the building project described in the documents:

- A. NEW CONSTRUCTION should be checked for all new buildings, newly conditioned space or a stand-alone addition submitted for envelope compliance.
- B. ADDITION should be checked for an addition which is not treated as a stand-alone building, but which uses existing plus addition performance compliance, as described in See §149(a).
- C. ALTERATION should be checked for alterations to existing building envelopes. See §149(b)

APPROACH OF COMPLIANCE indicates which method is being used and documented with this submittal:

1. COMPONENT for the envelope component method. Form ENV-2C must be included in the compliance documentation as well as the ENV-1C.
2. OVERALL ENVELOPE TDV Energy Approach for the overall envelope method. Form ENV-3C must be included in the compliance documentation.
3. UNCONDITIONED should be checked when the building is not intended as conditioned space, or when the owner chooses to defer demonstrating envelope compliance, see Section 1.7.3 Speculative Buildings for a full discussion. The enforcement agency may require the owner to **file an affidavit** declaring the building to be unconditioned and acknowledging that all the Standards requirements must be met when the building is conditioned. See §100(e), Sections Applicable to Particular Buildings.
4. Select the buildings Front Orientation: N, E, S, W or indicate in Degrees: _____. This information may be found on building plans.

ENV-1C Page 1 of 4

Field Inspection Energy Checklist

The information on Page 1 summarizes the information about the building envelope that can be readily verified by the plans examiner and the field inspector. This form should be included on the plans. Alternatively, the information may be incorporated into framed assemblies and glazing schedules on the plans, provided it is complete and in substantially the same format as this form.

Opaque Surfaces Details

1. TAG/ID – Provide a name or designator for each unique type of opaque surface such as Wall-1, Ceiling-1, Roof-1 and Floor-1. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) to identify each surface. It should also be consistently used on the other forms in the compliance documentation.
2. ASSEMBLY NAME – Indicate the type of assembly to include; Wood or metal 2x4 frame, LW CMU 8” Mass, Furred Wall, etc. Additional assemblies can be found in the Reference Joint Appendix JA4.
3. SURFACE AREA – Indicate the total gross surface area of the surface of each different assembly type.
4. SURFACE ORIENTATION – Indicate the actual orientation of the assembly type. If multiple different walls exist in the same orientation indicate on a separate line or an additional page. Typically the front entrance is the front door or entrance to the building.
5. STANDARD U-FACTOR – Enter the Standard U-factor of the assembly (Roofs/Ceiling, Walls, Floor/Soffit) from Table 143-A, or 143-B or 143-C.
6. JOINT APPENDIX U-FACTOR – Enter the U-factor (Roofs/Ceiling, Walls, Floor/Soffit) from the Joint Appendix, JA4. Note: the Joint Appendix U-factor must be equal to or less than the Standard U-factor, Column 5.

7. JOINT APPENDIX TABLE – Enter the appropriate table number that matches the Assembly Type in Column 2.
8. CAVITY R-VALUE – Entered the proposed R-Value in the cavity for the framed (Roofs/Ceiling, Walls, Floor/Soffit) assembly.
9. EXTERIO R-VALUE – If continuous insulation R-value is being used in the exterior frame then enter the R-value of the insulation.
10. INTERIOR R-VALUE – If continuous insulation R-value is being used in the interior frame then enter the R-value of the insulation.
11. EXTERIOR FURRING framing R-value – Enter the proposed R-value of the cavity when a furred wall is being installed; otherwise enter N/A (not applicable). This alerts the Plan Examiner and Field Inspector that such wall will be installed.
12. INTERIOR FURRING framing R-value – Enter the proposed R-value of the cavity when a furred wall is being installed; otherwise enter N/A (not applicable). This alerts the Plan Examiner and Field Inspector that such wall will be installed.
13. CONDITION STATUS – Indicate the status of the opaque surface by choosing either N for New, E for Existing, or A for Alteration. This alerts the Plan Examiner and Field Inspector the type of wall being installed as new, existing or altered.
14. PASS/FAIL - Looking at the Opaque Surfaces table on the ENV-1C, the last two columns on the right-hand side of table contain Pass/Fail check boxes. This is where the Field Inspector will verify whether or not the energy features of an assembly installed in the field match the values listed in the table. If they do, the assembly “PASSES” if they don’t the assembly “FAILS” and does not meet energy compliance. Verify plans for accuracy and if necessary resubmit energy compliance.

Fenestration Surface Details

Note: If applicable at the time of submittal provide either an NFRC label certificate or the Energy Commission Default U-factor and SHGC Label Certificate Form, FC-1/FC-2. The label shall be made available no later and before installation phase. The ENV-2A Acceptance form must be filled out by the responsible party or the installer; see Section 3.2.1. Also see Nonresidential Appendix NA7.4 for Acceptance testing.

1. TAG/ID – Provide a name or designator for each unique type of fenestration surface. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) such as, Window-1, Skylight-1 and etc...to identify each surface. It should also be consistently used on the other forms in the compliance documentation.

2. FENESTRATION TYPE – Provide a designator for each unique type of window (i.e., Metal, Vinyl, Thermal Block Window, Curtain Wall, Skylight, Clear, Tinted, Reflective, low-e, etc.) in the Column.
3. SURFACE AREA – Indicate the total ft² of all of the fenestration with the same like characteristics.
4. SURFACE ORIENTATION – Indicate the actual orientation of the fenestration type. If multiple different fenestrations exist in the same orientation indicate on a separate line or an additional page.
5. NUMBER OF PANES – Indicate whether it's a single or double pane.

Maximum U-factor

6. MAX U-FACTOR VALUE – Indicate the proposed Maximum U-factor for windows from Table 143-A, B or C, NFRC Label Certificate or the Energy Commission's Default Table U-factors Table 116-A, See Section 3.2.1 or Reference Nonresidential Appendix NA6 Alternative Calculation.
7. U-FACTOR SOURCE – Enter the source of the U-factor, either from NFRC, or from the CEC. Also fill out the Energy Commission's Fenestration Certificate FC-1/ FC-2.
8. MAX (R)SHGC - Enter the proposed Maximum SHGC value for windows using NFRC Label Certificate or the Energy Commission's Default Table U-factors Table 116-B, See Section 3.2.1 or Reference Nonresidential Appendix NA6 Alternative Calculation.
9. SHGC SOURCE – Enter the source of the SHGC, either from NFRC, or from the CEC. Also fill out the Energy Commission's Fenestration Certificate FC-1/ FC-2.
10. OVERHANG – Check box if overhangs are going to be installed in the project. Overhangs dimensions and location should be indicated on the building plans for verification by the enforcement agency.
11. CONDITION STATUS – Indicate the status of the fenestration surface by choosing either N for New, E for Existing, or A for Alteration. This alerts the Plan Examiner and Field Inspector the type of wall being installed as new, existing or altered.
12. PASS/FAIL - Looking at the Opaque Surfaces table on the ENV-1C, the last two columns on the right-hand side of table contain Pass/Fail check boxes. This is where the Field Inspector will verify whether or not the energy features of an assembly installed in the field match the values listed in the table. If they do, the assembly "PASSES" if they don't the assembly "FAILS" and does not meet energy compliance. Verify plans for accuracy and if necessary resubmit energy compliance.

Roofing Products (Cool Roofs)

The mandatory measures require that roofing products be tested and labeled through the Cool Roof Rating Council. Liquid applied products also must meet

minimum standards for performance and durability per §118(i)4. Note that installing cool roofs is *not* a mandatory measure.

If the roofing product is not listed with the Cool Roof Rating Council (CRRC) then the Prescriptive Envelope Component Approach may not be used, go to the Prescriptive Overall Envelope TDV Energy approach or the Performance approach.

ALTERNATIVES/EXEMPTION TO THE ROOFING PRODUCTS “COOL ROOF” REQUIREMENT – There are seven alternatives/exceptions to the minimum prescriptive requirements for solar reflectance and thermal emittance or the SRI. By checking the box for any of the exception will exempt the cool roof criteria.

1. CRRC PRODUCT ID NUMBER – The Product ID Number can be obtained from the Cool Roof Rating Council’s Rated Product Directory at www.coolroofs.org/products/search.php.
2. ROOF SLOPE – Check the appropriate box for the slope ratio for roofs less than or equal to 2:12 or if the ratio is greater than 2:12 of the roof which the cool roof is being applied on.
3. PRODUCT WEIGHT – Indicate the unit weight of the product which is being considered to be installed, less than 5lb/ft² roofing materials (like asphalt shingles, metal roofing products, and composite roofing) than for roofs that weigh 5lb/ft² or more (such as concrete and clay tile). This information may be obtained from the manufacturer’s data sheet.
4. PRODUCT TYPE- Indicate the type of product is being used for the roof top. For example, is the roof top an asphalt roof, metal roof, single-ply roof, etc...
5. AGED SOLAR REFLECTANCE – The aged solar reflectance can be obtained from the Cool Roof Rating Council’s Rated Product Directory at www.coolroofs.org/products/search.php
6. THERMAL EMITTANCE – The thermal emittance can be obtained from the Cool Roof Rating Council’s Rated Product Directory at www.coolroofs.org/products/search.php or from the CRRC label on the product packaging. If the aged reflectance is not available in the Cool Roof Rating Council’s Rated Product Directory then use the initial reflectance value from the directory and use the equation $(0.2+0.7(\rho_{\text{initial}} - 0.2))$ to obtain a calculated aged value. Also, check the box if the aged reflectance is a calculated value using the equation.
7. SRI – To calculate the SRI the 3-year aged value of the roofing product must be used. The calculator can be found at <http://www.archenergy.com/library/cectools>.
8. PASS/FAIL - Looking at the Opaque Surfaces table on the ENV-1C, the last two columns on the right-hand side of table contain Pass/Fail check boxes. This is where the Field Inspector will verify whether or not the energy features of an assembly installed in the field match the values listed in the table. If they do, the assembly “PASSES” if they don’t the assembly “FAILS.”

LIQUID FIELD APPLIED COATINGS – There are a number of qualifying liquid products, including elastomeric coatings and white acrylic coatings. The Standards specify minimum performance and durability requirements for liquid field applied coatings. Please note that these requirements do not apply to industrial coatings that are factory-applied, such as metal roof panels. The requirements address elongation, tensile strength, permeance, and accelerated weathering. The requirements depend on the type of coating and are described in greater detail in Section 3.4.

The coating must be applied across the entire roof surface to meet the dry mil thickness or coverage recommended by the coating manufacture, taking in consideration the substrate on which the coating is applied. Also, the liquid coatings must meet the requirements listed in §118(i)4 and Table 118-B.

Check the Aluminum –Pigmented Asphalt roof Coating or Cement-Based Roof Coating or chose other and identify coating.

DISCREPANCIES –

If there is a discrepancy then the field inspector shall list and describe the discrepancy. The plan examiner should be made aware of the discrepancy so that corrective action can be taken.

ENV-1C (Page 3 of 4)

Required Acceptance Test

DESIGNER- The designer is required to check the acceptance tests and list all the fenestration products that require an acceptance test. If all the site-built fenestration of a certain type requires a test, list the different fenestration products and the number. Section NA7, in the Appendix of the Nonresidential Reference Appendices Manual, describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

BUILDING DEPARTMENTS - Before Occupancy Permit is granted for a newly constructed building or space or when ever new fenestration is installed in the building or space shall be certified as meeting the Acceptance Requirements.

The ENV-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and