**Comment/Explanation\*:***Include your justification for your proposed change to the draft standard below.*
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In review for alignment with the ANSI 301 insulation inspection remote inspection protocols there were several comments in blue below in on the proposed ckecklist. The two standards are not completely allaigned but thought I would submit the ideas incases the committee was interested in making 1450 a bit more broad.

**Proposed Change to the Draft Standard\***
*Use “strikethrough” and “underline” formatting to indicate all proposed changes. Changes must be shown with “hard-formatting” strikethrough and underline, not “track changes”.*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| **Residential Energy Inspection Req. Based on the 2021 IECC and 2018 IECC** |
| **Getting Started** - **Effective Use** |
| Definitions | **Customer:** Project owner, owner’s representative, architect, engineer, contractor, applicant, or anyone responsible for any or all parts of the project. |  |  |  |
| Process | Reference the Energy Remote Inspection Process document for scheduling and inspection preparations. |   |   |   |
| Inspection  | It is recommended that all portions of the building and all provisions of the code will be inspected.  |   |   |   |
| Connectivity difficulties | Direct customer to reschedule for another time if problem is temporary. If permanent, schedule an on-site inspection.  |   |   |   |
| Compliance certificates and reports | Customer should transmit all required certificates and documentation electronically at the time of scheduling the inspection, or include a link to the repository(s) where some or all documents are located. |   |   |   |
| **Code Section Title & Number 2021** | **Code Section Title & Number 2018** | **Code Provisions** | **Inspection Protocols/Procedures** | **Inspected** | **Date** | **N/A** |
| **2021** | **2018** | **General** |  | Y/N |   |   |
| Plans and compliance path documentation (R103.1) | Plans and compliance path documentation (R103.1) | Construction documents, technical reports, and other supporting data shall be submitted for each permit | Prior to and during inspection:  |   |   |   |
| Review plans and docs to ensure methods of compliance are met. |
| Identification (R303.1) | Identification (R303.1) | Materials, systems, and equipment shall be identified in a manner that allows determination of compliance | During inspection direct customer to show identification marks or labels of the materials, systems, and equipment installed. |   |   |   |
| Installation of Materials (R303.2) | Installation of Materials (R303.2) | Materials, systems, and equipment installed per manufacturer’s instructions, the IBC, and the IRC | Direct customer to display manufacturers' installation instructions when necessary. Review IBC and IRC as required. |   |   |   |
| **Building Thermal Envelope Insulation (R303.1.1)** | Building Thermal Envelope Insulation (R303.1.1) | An R-value identification mark shall be applied by the manufacturer to each piece of insulation that is 12 inches or greater in width. **Alternatively, the insulation installers shall provide a certification that indicates the type, manufacturer and R-value of insulation installed in each element of the building thermal envelope** | During inspection of the insulation  |   |   |   |
| ·       Direct the customer to show the R-Value of marked insulation. If not marked, review and verify the certification provided by the installer. |
| ·       For insulated siding, the *R*-value shall be labeled on the product’s package and shall be indicated on the certification. |
| ·      For open cell and closed cell insulation, direct the customer to show the depth of the insulation with a probe. Alternatively, review the certification provided by the installer. |
| ·       Direct customer to point camera at the insulation certification that is signed, dated and posted in a conspicuous location on the project site. |
| **Blown-in or sprayed roof and ceiling insulation. (R303.1.1.1)** | Blown-in or sprayed roof and ceiling insulation. (R303.1.1.1) | The thickness of blown-in or sprayed fiberglass and cellulose roof and ceiling insulation shall be written in inches (mm) on markers installed at not less than every 300 square feet (28 m2) throughout the attic space. Markers shall be affixed to the trusses or joists have minimum initial installed thickness with numbers not less than 1 inch (25 mm) in height. Each marker shall face the attic access opening.  | During inspection of attic insulation |   |   |   |
| ·       Direct customer to show markers displayed in the attic per code requirement, or probe depth of cell insulation.  |
| ·       Ensure the installed thickness and R*-*value of installed thickness are indicated on the posted certification, which shall include: |
| ·       The type of insulation used and manufacturer. |
| ·       The insulation's coverage per bag as well as the settled R-value. |
| ·       The initial and settled thickness. |
| ·       The number of bags installed. |

**Floor and frame section**

|  |  |  |  |
| --- | --- | --- | --- |
|   |   |   |   |
| **Code Section Title & Number 2021** | **Code Section Title & Number 2018** | **Code Provisions** | **Inspection Protocols/Procedures** |
| **2021** | **2018** | **Pre-slab, Footing and Foundation** |
| **General Inspection Requirements**  |  |  | **Virtual inspection footage shall be attended, directed, and recorded by the AHJ or if data collected is used in a RESNET ERI software, by a Certified Rater/RFI. A video recording may be of the entire virtual inspection or screen shots taken during the inspection, or geotaged photos may be used id in enough detail is provided to ensure photo documentation requirements found in these standards or ANSI 301 Appendix B have been met.When performing a Remote Virtual Insulation inspection:- Determine the insulation has been installed in accordance with manufactures instructions - Determine the thickness of the insulation by including a ruler measurement in several locations.- Determine the depth of the insulation installation by including a tape measurement in several locations.- Determine the depth of extension below grade of ultraviolet protection by including a tape measurement in several locations.- Determine the R-Value of the insulation by ensuring the Manufacturer’s R-Value label is included for several insulated areas, or the Manufacturer’s data sheet for the specific insulation product is provided.- Determine details of all air and water sealing at insulation joints, penetrations and/or obstructions.- Determine details of all repairs to damaged areas.- Determine thermal break between adjacent slabs (i.e conditioned house and front porch or garage slabs) - Provide Photos and/or Video-Photos or video evidence showing the full insulation installation in sufficient detail to confirm full coverage and proper installation including 100% of all areas specified for insulation. Photos shall be geotagged and dated, videos shall include a site perspective showing the specific location and surrounding area. Detail photos/video footage are required which provide all inspection items as detailed in Appendix A based on insulation type** |
| **Slab-on-Grade Floors**  | Slab-on-Grade Floors  | Check R-value requirements against plans and documentation for floors less than 12” below grade.  | During Foundation/Pre-Slab Inspection: direct customer to show slab insulation per plan requirements. Ensure any exposed insulation has protective covering.·   Perform insulation inspection in accordance with the General inspection requirements |
| **(R402.2.9) 2021** | (R402.2.10) 2018 |
|   |   |
| (R303.2.1) (Table 402.1.3) |   |
| **Slab-On-Grade Floor Insulation Installation (R402.2.9.1) 2021**  | Slab-On-Grade Floor Insulation Installation (R402.2.10) 2018  | Where installed, check insulation depth downward from the top of the slab Insulation located below grade shall be extended per referenced Table or the distance of the proposed design | Direct customer to use tape measure to display depth of insulation per Table 402.1.3 and as specified on the plan.  |
|   |   | ·       show protective covering on exposed insulation |
| (Table 402.1.3) (R303) |   | ·   Perform insulation inspection in accordance with the General inspection requirements |
| **Floor Insulation Inspection** |
| **Floors (R402.2.7) 2021**  | Floors (R402.2.8) 2018  | Check R-Value against plans and documentation: Floor framing *cavity insulation* or structural slab insulation shall be installed to maintain permanent contact with the underside of the subfloor decking or structural slabs. | During Floor Insulation Inspection: direct customer to show floor cavity insulation per plan requirements to:  |
| **(R303)** |   | ·       Provide view to ensure top of insulation is level with top of floor joists so it is in contact with subfloor. Or, |
|   |   | ·       Ensure it will be in contact with the top side of the sheathing separating the cavity and the unconditioned space. - Determine if the perimenter of the floor assembly has been air sealed in accordance with the requirments of the IECC.  Perform insulation inspection in accordance with the General inspection requirements |
| Crawl space walls (402.2.10.1) 2021 (R303) (Table 402.1.3)  | Crawl space walls (402.2.11) 2018 (R303) (Table 402.1.3)  | Check R-Value against plans and documentation | During crawl space Insulation Inspection: Direct customer to show crawl space wall insulation per plan requirements to ensure wall cavities are filled and sealed and extend 24” horizontally, and |
|   |   | A vapor retarder is installed over the exposed earth. |
| **Frame and Rough-in**  |
| Vapor retarder. (R402.1.1) | Vapor retarder. (R402.1.1) | Wall assemblies in the *building thermal envelope* shall comply with the requirements of the referenced Section of the *IRC* or of the *IBC* | During Inspection: direct customer to show a continuous vapor retarder on the interior or exterior of envelope as per plan design and compliance documentation  |
|  |
| **Exterior above grade Wall** |   |   |  Perform insulation inspection in accordance with the General inspection requirements |  |
| **Roof deck insulation** |   |   |  Perform insulation inspection in accordance with the General inspection requirements |  |
| Eave Baffles (R402.2.3) | Eave Baffles (R402.2.3) | In vented attics, a baffle shall be installed adjacent to soffit and eave vents | During Inspection: direct customer to show eave baffles at eave vents in attic per plan/code requirements. Have customer use tape measure to ensure adequate clearance for height of insulation. |  |
| Skylights (402.3) (R303.1.3) | Skylights (402.3) (R303.1.3) | *Check U*-factor and SHGC against plans and documentation | During Frame Inspection: direct customer to show skylight labels per plan/code requirements*.* |  |
|  Fenestration (R402.3.1) (R402.3.2) (R303.1.3) |  Fenestration (R402.3.1) (R402.3.2) (R303.1.3) | *Check U*-factor and SHGC against plans and documentation | During Inspection: direct customer to show each window label. Each must match plan/code compliance requirements. |  |
| Sunroom and heated garage fenestration (R402.3.5) | Sunroom and heated garage fenestration (R402.3.5) | Sunrooms and heated garages enclosing *conditioned space* shall comply with the fenestration requirements  | During Inspection: direct customer to show window labels to match plan/code compliance requirements. |  |
| Rooms containing fuel-burning appliances (R402.4.4) | Rooms containing fuel-burning appliances (R402.4.4) | • Place duct air opening and appliances outside the building thermal envelope or in an isolated enclosed room inside the thermal envelope | During Inspection: direct customer to show each combustion appliance. |  |
| (Climate zones 3-8) | (Climate zones 3-8) | • Seal and insulate the room based  | Ensure vented appliances and duct air openings are outside of the building thermal envelope |  |
|   |   | • Fully gasket the door, water lines and ducts to the room  | If in an isolated room direct customer to show: |  |
|   |   | • Air duct passing through conditioned space, insulate at ≧ R-8  | ·       The room is insulated and sealed for compliance with plans and docs  |  |
|   |   | • Direct vent appliances with intake and exhaust pipes installed continuously to the outside  | ·       Ducts passing through conditioned space are insulated ·    Intake and exhaust pipes installed continuously to the outside |  |
| Recessed Lighting (R402.4.5) | Recessed Lighting (R402.4.5) | Shall be IC-rated and *labeled* as having an air leakage rate of not greater than 2.0 cfm (0.944 L/s) | During Inspection: direct customer to show: |  |
| ·       label with rating of recessed lights per/code plan requirements |  |
| ·       lights are sealed |  |
| Insulation [Ducts] (R403.3.1) 2018 | Insulation [Ducts] (R403.3.1) 2018 | Located outside *conditioned space* shall be insulated to an *R*-value of min. R-8 for ducts 3 inches and larger and min. R-6 for ducts smaller than 3 inches  | During Frame Inspection: direct customer to show supply and return air duct insulation per plan/code requirements. |  |
| Ducts located outside conditioned space (R403.3.1) 2021  |   |  |
| R403.3.3 Ducts buried within ceiling insulation. | R403.3.3 Ducts buried within ceiling insulation. | Where supply and return air-ducts are partially or completely buried in ceiling insulation, such ducts shall comply with the following: | During inspection of ducts: direct customer to show duct insulation per plan/code requirements to ensure compliance and, |  |
| 1. The supply and return ducts shall have an insulation R-value not less than R-8.  | ·       Show vapor retarder when required by per code and climate zone  |  |
| 2. the sum of the ceiling insulation R-value against and above the top of the duct, and against and below the bottom of the duct, shall be not less than R-19 | During inspection of ceiling insulation: direct customer to show insulation above and below the duct equals minimum R-19 or per plan design requirements to ensure compliance, use measuring tape. |  |
| 3. In Climate Zones 0A, 1A, 2A and 3A, the supply ducts shall be completely buried within ceiling insulation, insulated to an *R*-value of not less than R-13 and in compliance with the vapor retarder requirements of IRC/IMC |  |
| Duct Sealing (R403.3.4) 2021 | Duct Sealing (R403.3.2) 2018 | Joints and seams shall comply with either the *IMC* or *IRC*  | During Inspection: direct customer to show duct and filter boxes joints are sealed per plan/code requirements. |  |
|   |   |  |
| Sealed Air Handlers (R403.3.4.1) 2021  | Sealed Air Handlers (R403.3.2.1) 2018  | Air handlers shall have a manufacturer’s designation for an air leakage of not greater than 2 percent | During Inspection: direct customer to show air handler joints are sealed per plan/code requirements. |  |
|   |   |  |
| Building cavities.  | Building cavities.  | *Building* framing cavities shall not be used as ducts or plenums. | During Inspection: direct customer to show complete duct installation to ensure cavities are not used as ducts or plenums per plan/code requirements. |  |
| (R403.3.7) 2021 | (R403.3.5) 2018  |  |
|   |   |  |
| Protection of piping insulation (R403.4.1)  | Protection of piping insulation (R403.4.1)  | Piping insulation exposed to weather shall be protected from damage | During Inspection: direct customer to show mechanical pipe installation to ensure insulation exposed to weather is protected against damage caused by sunlight, moisture, equipment maintenance and wind |  |
|  |
| Hot Water Pipe Insulation (R403.5.2) 2021 | Hot Water Pipe Insulation (R403.5.3) 2018 | Hot water piping with a thermal resistance, *R*-value, of not less than R-3 | During Inspection: direct customer to show pipe insulation per plan/code requirements. |  |
| Mechanical ventilation (R403.6) | Mechanical ventilation (R403.6) | Dwelling units shall be provided with mechanical ventilation that complies with the requirements of the IRC or IMC, as applicable, or with other approved means of ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers. | During Inspection: direct customer to show mechanical vents per plan/code requirements or show that they have provided the other approved means of mechanical ventilation. Also, have the customer show the dampers for intake and exhaust vents, when installed.  |  |
|   |  |
|   |   |   |   |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |