



Program Manual

EarthCraft House Single Family Program

January 1, 2017



viridiant

EarthCraft House Project Process

Process Overview

All EarthCraft Builders and EarthCraft Technical Advisors must follow a specific project process in order to certify and verify EarthCraft House projects. All EarthCraft Builders working on their first EarthCraft project are also required to participate in an EarthCraft Design Review with an EarthCraft Technical Advisor.

Step 1	Project Registration
Step 2	Project Information Submittal
Step 3	Preliminary Energy Model
Step 4	Design Review
Step 5	Pre-Drywall Inspection
Step 6	Pre-Drywall Inspection Report Submittal
Step 7	Final Inspection
Step 8	Confirmed Energy Model
Step 9	Final Inspection Report Submittal
Step 10	Certification
Additional Steps	As required, based on project

Documentation Naming

Instructions

Documents submitted to Viridiant must be submitted in electronic format and named according to the naming conventions below. EarthCraft Technical Advisors are required by RESNET to keep a copy of architectural plans and documentation associated with the creation of the confirmed rating for 3 years.

- All submittal packages must be e-mailed to the Viridiant Quality Assurance Designee (QAD).
- Include the project's community name if applicable.

Document	File Name Convention
E-Mail Subject Line	ABCHomes_123MainSt_Community_PDWI_Submittal_
EarthCraft Preliminary Workbook	ABCHomes_123MainSt_Preliminary_Workbook_.xls
EarthCraft Inspection Notes	ABCHomes_123MainSt_Notes_.pdf
Manual J Load Calculation	ABCHomes_123MainSt_ManJ_.pdf

Step 1: Project Registration

To officially begin an EarthCraft House project, each project must be registered with Viridiant prior to the Pre-Drywall Inspection. Online project registration is available www.viridiant.org. The registration fee is non-refundable and does not guarantee the project will be certified.

EarthCraft Technical Advisor Responsibilities

Verify project registration with Viridiant

EarthCraft Technical Advisors are responsible for ensuring that each project they provide services for is registered with Viridiant.

EarthCraft Builder Responsibilities

Register each project with Viridiant

EarthCraft Builders are responsible for registering each project and the registration fee. The builder must be an active EarthCraft Builder Member at the time of registration.

Step 2: Project Information Submittal

Each EarthCraft House project must be inspected by an EarthCraft Technical Advisor throughout the construction project. The EarthCraft Builder must coordinate with an EarthCraft Technical Advisor. The project information submittal step provides the information necessary for subsequent steps in the process.

EarthCraft Technical Advisor Responsibilities

Follow-up with Builder

- Review Project Information Submittal and ask questions about any items of concern.
- Confirm preliminary EarthCraft Workbook meets minimum program requirements.
- Identify any appropriate points of clarification for the plans and specifications to support program compliance during construction.
- Request Project Information Submittal from EarthCraft Builder if not received two weeks prior to Pre-Drywall Inspection.

EarthCraft Builder Responsibilities

Submit Project Information to EarthCraft Technical Advisor

The following information must be submitted to the EarthCraft Technical Advisor at least two weeks prior to the Pre-Drywall Inspection:

- House Plans
- Workbook
 - Cover Sheet
 - Preliminary Points Tab
- Construction Spec Sheet
- Manual J load calculation
- Additional verification documentation as required by EarthCraft Technical Advisor based on items identified by the EarthCraft Builder on the EarthCraft Workbook (e.g. Manual D duct design)

Step 3: Preliminary Energy Model

After receiving a complete Project Information Submittal package from the EarthCraft Builder, the EarthCraft Technical Advisor will perform a preliminary energy model and provide the results to the EarthCraft Builder.

EarthCraft Technical Advisor Responsibilities

Develop preliminary energy model for project

- Determine project's ability to meet program requirements
- Identify effective cost trade-offs for improving building performance
- If ineligible, develop options to meet program requirements

Report results to EarthCraft Builder

- Provide notification of projects:
 - Eligibility to meet program requirements
 - Options developed to meet program requirements if a home is ineligible

EarthCraft Builder Responsibilities

Follow-up with EarthCraft Technical Advisor

- Read report results and ask questions about any items of concern
- Request written report from EarthCraft Technical Advisor if not received prior to Pre-Drywall Inspection

Step 4: Design Review

The Design Review is an opportunity to identify project goals and look carefully at the house and site plans and determine how the EarthCraft program can be best applied to meet the project goals. The EarthCraft Workbook and energy modeling results will be used to guide the discussion.

Overview

The Design Review must be conducted on the first project the EarthCraft Builder intends to build to EarthCraft specifications. The Design Review must also be conducted on each initial project with which the EarthCraft Builder teams with a new EarthCraft Technical Advisor.

Scope

During the Design Review, the EarthCraft Builder and EarthCraft Technical Advisor should discuss the program requirements for home specifications, documentation and submittal timelines, inspection visits and testing, fees and payment timelines, and communication strategies. The EarthCraft Builder and EarthCraft Technical Advisor will review the house plans for project goals and EarthCraft criteria incorporation. If available, the EarthCraft Builder and EarthCraft Technical Advisor may also work with the energy model to identify optimum building strategies and systems for maximizing energy performance while minimizing construction costs. Viridian encourages EarthCraft Builders to invite other project team members to participate in the design review for maximum coordination and project communication of project goals, EarthCraft requirements, and roles and responsibilities.

Objectives

Successful Design Reviews will accomplish the following objectives:

- Communication strategy
- EarthCraft compliance strategies and responsible team members
- Confirmation the project can meet mandatory items and minimum point requirements in every program category
- Completed preliminary EarthCraft House Workbook with anticipated certification level
- Completed Construction Specification Sheet

EarthCraft Technical Advisor Responsibilities

Preparation

In preparation for the Design Review, the EarthCraft Technical Advisor must do the following:

- Confirm EarthCraft Builder has registered the project
- Complete Step 2: Project Information Submittal
- Complete Step 3: Preliminary Energy Model (when possible)

Review plans prior to submittal for incorporation of recommended EarthCraft House concepts and consistency with sustainability objectives.

Facilitate meeting

Meet with stakeholders to discuss comments and clarify any detail questions. Establish existing benchmarks and energy goals for the project.

Follow Up

Produce report summarizing suggested modifications that should be incorporated to reach certification and hold meeting with stakeholders for any needed clarification.

EarthCraft Builder Responsibilities

Preparation

In preparation for the Design Review, the EarthCraft builder must do the following:

- Attend an EarthCraft Builder Training
- Maintain a EarthCraft Builder Membership
- Maintain membership with the local HBA
- Complete Step 1: Project Registration
- Complete Step 2: Project Information Submittal
- Determine project goals and probable strategies for EarthCraft compliance
- Generate a copy of the site plan and house plans for use during the Design Review
- Generate a copy of Erosion Control Workshop Certificate

Step 5: Pre-Drywall Inspection

All EarthCraft House projects must pass a Pre-Drywall Inspection conducted by an EarthCraft Technical Advisor. The Pre-Drywall Inspection provides an on-site evaluation of the house in terms of the EarthCraft House guidelines, including a visual inspection of air sealing and duct sealing. The Pre-Drywall Inspection provides opportunities for identifying additional construction considerations that may impact the performance of the home.

EarthCraft Technical Advisor Responsibilities

Perform Field Inspection

EarthCraft Technical Advisors are responsible for performing the Pre-Drywall Inspection at the time agreed upon by the EarthCraft Technical Advisor and EarthCraft Builder. At the Pre-Drywall Inspection, EarthCraft Technical Advisors must inspect and verify:

- Plans represent home as constructed
- Building Report represents home as constructed
- Manual J and installed HVAC equipment meets EarthCraft standards
- HVAC systems are sealed and code compliant, and document installation design recommendations
- EarthCraft Inspection Notes items

- Items identified by the EarthCraft Builder on the EarthCraft House Workbook are in program compliance (some items may require additional documentation to be provided by the EarthCraft Builder at the Pre-Drywall Inspection)

EarthCraft Technical Advisors are encouraged to call EarthCraft Builders to ensure the project is ready for inspection on the day prior to the scheduled inspection.

EarthCraft Builder Responsibilities

Schedule Pre-Drywall Inspection

The EarthCraft Builder is responsible for scheduling the Pre-Drywall Inspection to occur after insulation is installed, but before drywall is installed, providing adequate notification to the EarthCraft Technical Advisor to prevent construction delays.

- Builder notifies EarthCraft Technical Advisor that project will be ready for inspection at least 1 week in advance, and schedules a specific timeframe for the Pre-Drywall Inspection.

Ensure project is ready for inspection

EarthCraft Builders are responsible for ensuring their projects are ready for inspections. Failure to be prepared for an inspection may result in a re-inspection with additional fees. Common phases of construction that must be completed in preparation for a Pre-Drywall Inspection include:

- Framing is complete
- Window rating labels are displayed on doors and windows (typically a sticker)
- Rough-ins complete
- Insulation is installed (but not drywall)
- Pre-Drywall air sealing is complete
- All required verification documentation is ready for the EarthCraft Technical Advisor to review onsite as specified on the EarthCraft Workbook and in the EarthCraft Builder Guidelines

EarthCraft Builders are encouraged to work with EarthCraft Technical Advisors to ensure the project is ready for inspection prior to the inspection date.

Step 6: Pre-Drywall Inspection Report Submittal

Upon completion of the Pre-Drywall Inspection, EarthCraft Technical Advisors are required to provide inspection reporting to the EarthCraft Builder and Viridiant. EarthCraft Builders are responsible for following-up on any program compliance issues identified during the Pre-Drywall Inspection as reported by the EarthCraft Technical Advisor.

EarthCraft Technical Advisor Responsibilities

Submit Documents to Viridiant

Submit the following documents* to Viridiant within **20** business days** of the Pre-Drywall Inspection:

- Pre-Drywall Inspection Notes section of the Inspection Notes tab of the EarthCraft Workbook
- Manual J load calculation (and manual D, if applicable)
- Preliminary energy model
- RESNET Standard Disclosure form

Incomplete documents or documents not meeting EarthCraft program standards will not be processed and the EarthCraft Technical Advisor will receive a Correction Notice.

Notes:

*EarthCraft Technical Advisors: See Document Naming Conventions page for specific information on how to submit project documentation to Viridiant.

Pre-Drywall Inspection Reports received more than **20 business days after the Pre-Drywall Inspection will result in a \$25 late submittal fee charged to the EarthCraft Technical Advisor. Incomplete documents or documents not meeting EarthCraft program standards will not be processed and the EarthCraft Technical Advisor will receive a Correction Notice. If complete packages are not resubmitted within 10 days, a \$25 late submittal fee will be charged to the EarthCraft Technical Advisor.

Inform Builder of Pre-Drywall Inspection Results

EarthCraft Technical Advisors must provide the following information to EarthCraft Builders following the Pre-Drywall Inspection:

- Inform the EarthCraft Builder of the inspection results verbally, immediately following the Pre-Drywall Inspection.
- A written report stating any concerns or missing requirements and recommend appropriate remedies.

This communication must be in a format that can be retained by the EarthCraft Technical Advisor such as email or a carbon-copy paper form with EarthCraft Builder signature acknowledging receipt of report.

EarthCraft Builder Responsibilities

Follow-up with EarthCraft Technical Advisor

- Read inspection report results and ask questions if there are any items of concern or confusion.
- Request written report from EarthCraft Technical Advisor if not received within **10** business days of Pre-Drywall Inspection.
- Complete any incomplete measures as identified by the EarthCraft Technical Advisor prior to the drywall being installed or final inspection, whichever is appropriate.

Step 7: Final Inspection

All EarthCraft House projects must pass a Final Inspection conducted by an EarthCraft Technical Advisor. During the Final Inspection, an EarthCraft Technical Advisor verifies all program criteria through visual inspection,

documentation review and diagnostic testing of the home. EarthCraft Builders provide project documentation to support the final inspection.

EarthCraft Technical Advisor Responsibilities

Perform Field Inspection

EarthCraft Technical Advisors are responsible for performing the Final Inspection at the time agreed upon by the EarthCraft Technical Advisor and EarthCraft Builder. At the Final Inspection, EarthCraft Technical Advisors must inspect and verify:

- Plans represent the project as constructed
- Building Report continues to represent project as constructed
- Diagnostic testing of building envelope and duct system for program compliance and performance.
- Verify the remaining Minimum Rated Features (detailed in section 303.8 of the RESNET Standards) that have been installed.
- Items identified by the EarthCraft Builder on the EarthCraft House Workbook are in program compliance (some items may require additional documentation to be provided by the EarthCraft Builder at the final inspection)

EarthCraft Technical Advisors are encouraged to call EarthCraft Builders to ensure the project is ready for inspection on the day prior to the scheduled inspection.

EarthCraft Builder Responsibilities

Schedule Final Inspection

The EarthCraft Builder is responsible for scheduling the final inspection once the home is ready for occupancy and all EarthCraft measures have been completed.

- Builder notifies EarthCraft Technical Advisor that project will be ready for inspection at least 1 week in advance, and schedules a specific timeframe for the Final Inspection.
- Builder ensures that an EarthCraft Builder representative will be available onsite.
- The EarthCraft Builder confirms no conflicting trades will be working onsite, e.g. floor finishers, touch-up painters, carpet installers, etc, during the Final Inspection. The EarthCraft Technical Advisor must be able to access the entire home, control the mechanical systems and close all exterior openings.

The EarthCraft Builder confirms no conflicting trades will be working onsite, e.g. floor finishers, touch-up painters, carpet installers, etc, during the Final Inspection. The EarthCraft Technical Advisor must be able to access the entire home, control the mechanical systems and close all exterior openings.

Notes:

Occupied Final Inspections – NO EXCEPTIONS

In the event that an occupied final inspection must be performed, the following rules apply:

- Builder must be onsite the entire time
- All pets crated or removed from the home
- All ducts must be accessible; EarthCraft Technical Advisors may not move homeowners' personal belongings
- Conversations are between the EarthCraft Technical Advisor and the Builder; the Builder is responsible for all conversations with homeowners.
- An additional fee will be charged.

Ensure project is ready for inspection

Homes ready to receive a Certificate of Occupancy are typically ready for a Final Inspection. The following items must be completed prior to the Final Inspection:

- Any EarthCraft items not verified at the Pre-Drywall Inspection, and any items identified as non-compliant at the Pre-Drywall Inspection
- All items on the EarthCraft Workbook
- All required verification documentation is ready for the EarthCraft Technical Advisor to review on-site as specified on the EarthCraft Workbook and in the EarthCraft Builder Guidelines

Complete project documentation

At the completion of the Final Inspection, the EarthCraft Builder is required to:

- Sign the final version of the EarthCraft Workbook for the project acknowledging project's compliance with EarthCraft program guidelines and requirements

Step 8: Confirmed Energy Model

After the Final Inspection, a confirmed energy model for each project is required to verify program compliance.

EarthCraft Technical Advisor Responsibilities

Finalize energy model for project

The EarthCraft Technical Advisors must:

- Revise the energy model at project completion to reflect as-built conditions
- Record the final HERS index
- Confirm project meets program requirements
- Develop options to meet program requirements if a project is ineligible

Report results to EarthCraft Builder and Viridiant

- Notify the EarthCraft Builder of project's eligibility to meet program requirements and of options to meet program requirements if a project is ineligible within **15** business days of final inspection.

EarthCraft Builder Responsibilities

Follow-up with EarthCraft Technical Advisor

- Read and review report results and ask question about any items of concern or confusion.
- Request written report from EarthCraft Technical Advisor if not received within **15** business days of final inspection.

Step 9: Final Inspection Report Submittal

EarthCraft Technical Advisors are required to submit Final Inspection reports to the EarthCraft Builder and Viridiant.

EarthCraft Technical Advisor Responsibilities

Submit Documents to Viridiant

The EarthCraft Technical Advisor must submit the following documents* to Viridiant within 20 days** of the Final Inspection***:

- In the event a final submission exceeds 20 days the Technical Advisor is responsible for notifying Viridiant of delays.

All projects

- Final Inspection Notes
- Final EarthCraft Workbook

- EarthCraft Workbook Cover signed by EarthCraft Builder and EarthCraft Technical Advisor
- AHRI Certificate or Manufacturer equivalent for HVAC and water heater
- REMRate™ Building File Report
- Elevation and Mechanical verification photos
- ENERGY STAR Compliance for Platinum Certification
 - Rater Design Review Checklist and Rater Field Checklist
 - HVAC Design Report
 - HVAC Commission Checklist
 - Water Management System Builder Requirements

Notes:

*EarthCraft Technical Advisors: See Document Naming Conventions page for specific information on how to submit project documentation to Viridiant.

Final Inspection Reports received more than **20 business days after the Final Inspection will result in a \$25 late submittal fee charged to the EarthCraft Technical Advisor.

***If a re-inspection is required, EarthCraft Technical Advisors must submit the Final Inspection Report within 10 business days of the Final Inspection, and the Final Re-Inspection Report within 10 business days of the Final Re-Inspection.

Inform EarthCraft Builder of Final Inspection Results

The EarthCraft Technical Advisor must provide the following information to EarthCraft Builders following the Final Inspection:

- Inform the EarthCraft Builder of the inspection results verbally, immediately following the Final Inspection
- A written report stating any concerns or missing requirements, and recommend appropriate remedies

This communication must be in a format that can be retained by the EarthCraft Technical Advisor such as an email or a carbon-copy paper form with EarthCraft Builder signature acknowledging receipt of report.

EarthCraft Builder Responsibilities

Follow-up with EarthCraft Technical Advisor

- Read inspection report results and ask questions if there are any items of concern or confusion.
- Request written report from EarthCraft Technical Advisor if not received within **10** business days of Final Inspection.

Step 10: Certification

Final home certification is approved by Viridiant working with the EarthCraft Technical Advisor. Viridiant will issue the following when projects are certified.

Certifications and Reports

- EarthCraft House Certification
- EarthCraft House Certification Label
- Home Energy Report Certification with HERS Index

Additional Steps

The process outlined above illustrates a project that is a repeat project between an EarthCraft Builder and an EarthCraft Technical Advisor that does not run into any major problems. As every project is unique, there are additional steps that may be required in order for a project to become EarthCraft Certified

Pre-Drywall Duct Leakage Test or Building Envelope Leakage Test

Some EarthCraft Builders may choose to request a pre-drywall duct leakage test or building envelope leakage test to identify leaks prior to drywall installation. Viridiant encourages new EarthCraft Builders and EarthCraft Builders switching duct sealing or air sealing crews to take advantage of this service for an additional charge of \$0.05 per sq ft. Projects that will have the majority of the ductwork covered by drywall are also good candidates for the pre-drywall duct leakage test to prevent any surprises at the Final Inspection. All projects must still be tested for duct leakage and building envelope leakage at the final inspection regardless of pre-drywall testing

Additional Inspections, Documentation and Testing

Based on the strategies chosen by the EarthCraft Builder for compliance with the EarthCraft House program, additional inspections or verification services may be required. For example, EarthCraft Builders seeking Gold certification are required to have the ducts tested for air flow balancing. This requires the EarthCraft Builder to have the HVAC contractor test and balance the ductwork, and the EarthCraft Technical Advisor confirm airflows.

Other strategies chosen by the EarthCraft Builder may be appropriate for photo documentation to confirm the specific measure was completed during the construction process. The EarthCraft Builder should work with the EarthCraft Technical Advisor during the design review to identify any additional testing or verification requirements for the project.

Re-Inspection

If a project does not meet the criteria for the EarthCraft program at the time of the inspection, the EarthCraft Builder has the option of making improvements to the project in order to meet the guidelines. In order to certify the house at this point, the EarthCraft Builder must contact their EarthCraft Technical Advisor for a re-inspection. There is typically additional cost for re-inspections.

Note:

The EarthCraft Technical Advisor will determine whether the issues identified within the project may realistically be improved and therefore whether a re-inspection is appropriate for the project. Some projects may be ineligible for re-inspections due to the inability to meet program criteria.

Cancellation

If a project is not ready for inspection at the time of the scheduled inspection, Viridiant may charge a \$75 cancellation fee requiring the EarthCraft Builder to reschedule the inspection for a time when the project will be ready for the inspection. To avoid cancellation fees, it is the EarthCraft Builder's responsibility to cancel an inspection within 24 hours.

Project Close-Out

EarthCraft Builders are responsible for ensuring that all projects seeking EarthCraft certification comply with project certification requirements. However, not all projects that were registered with EarthCraft will meet these requirements. Both Viridiant and EarthCraft Technical Advisors have the authority to determine that projects cannot meet requirements of the program.

Registered projects that have no activity for a period of **9** months will be automatically closed-out by Viridiant staff, unless a written notification of delay has been received by Viridiant staff. In order to re-open closed

projects, a fee of \$125 will be charged to the party that registered the project. Projects that have been inactive for over **12** months are not eligible to be re-opened and certified.

Projects that do not ultimately become certified for any reason will not be refunded any fees (including registration fees).