RESIDENTIAL REQUIREMENTS

A Guide for the General Contractor or Home Builder

Updated April 1, 2019
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PERMIT APPLICATIONS AND PARCEL NUMBERS

All building permit applications submitted must have a current parcel number. NO building permits can be accepted without a parcel number.

If the application is for a lot in a recorded subdivision and the parcel number has not yet been established by the Assessor’s Office, the Building Department will accept an application.

Parcel numbers are to be obtained from the Assessor’s Office. The Building Department can also research for parcel numbers; however, we may refer you to the Assessor’s Office if we cannot locate a current parcel number.

If you do not have a parcel number, you must first meet with the Planning Staff on Call to determine if this is a legal lot before you can submit for a building permit. Applicants must provide a copy of the recorded deed to the planner, who will determine if this is a legal lot. This research may take minutes or days depending on the situation. If the Planner determines the lot in question is legal, the Building Department will accept the application at that time.

It is highly recommended to bring a warranty deed for the parcel. This will help identify the location and ownership at time of submittal.
Plan Submittal Checklist

RESIDENTIAL CONSTRUCTION*

The following items are required, along with a completed permit application and fees, to initiate a permit for a new structure. The applicant must be the homeowner or a County-licensed contractor. Plans will not be accepted that have been marked with a red marker or red pen (Plans Examiners use red ink to mark corrections on the plans). When in doubt, please call the Building Staff-on-Call at (970) 498-7660.

For properties located within the Estes Valley Area, call the Estes Park Community Development Department at (970) 577-3721 to confirm submittal items required by the Estes Park Development Code.

For properties located in or around a floodplain, see separate checklist for additional submittal items required by the Larimer County Engineering Department pursuant to the County’s Land Use Code.

SEVEN COPIES of a plot plan drawn to scale (Scale 1”= 10’ or Scale 1” = 100). Show entire property, location of all existing and proposed structures, natural water features, distance to property lines, easements, setbacks, direction north, roadways, streets and access, owner’s name, parcel number, address.

TWO COPIES of the following stapled together and drawn to scale (1/8”, 3/16” or ¼” per foot) on maximum 24” x 36” paper:

___ Foundation Plan Engineered plans are usually required along the Front Range, and on steeply sloped lots in the foothills and mountains. Engineered plans must be wet-stamped and signed by a Colorado Registered Structural Engineer. All plans must show footing size and location, pad sizes and location, foundation wall details and beam sizes.

___ Floor Framing Plan Show size, spacing, species and grade of lumber to be used for floor joists. All beam and header sizes are to be noted on the plans. (For a simple one-floor house, these may be noted on the floor plan).

___ Roof Framing Plan Show size, spacing, species and grade of lumber to be used for the rafters. If using engineered trusses, truss layout plans from the truss manufacturer are required. These plans must show beam and header sizes. A full set of stamped, engineered truss plans must be on site for the framing inspection.

___ Floor Plans of all levels. Label use of each room and show window sizes, door swings and sizes, plumbing fixture placement, stairways, etc.

___ Wall Bracing Plan Identify the bracing method used, location/spacing of braced wall lines, location and length of braced wall panels on each braced wall line, wall and floor diaphragm connections details, continuous load path from top of wall to foundation, and return panels or hold-downs at ends of braced wall lines. PLANS LACKING PROPER WALL BRACING INFORMATION WILL NOT BE ACCEPTED.

___ Elevations of all sides. Show roof pitch, roofing material, window and door placements, siding, any steps to grade.

___ Slope Profile (required for non-engineered foundation plans) An accurate slope profile drawing is required for all structures in the Class “B” roofing area lacking engineered foundation plans.

___ Energy Conservation Prescriptive Package Attach County Form to plans. Circle your choice of energy package. Attach Manual J, S and D calculations. Show how you satisfy whole house mechanical ventilation requirements, specify system controls and efficiency of any fans or equipment that are part of this system.

___ Frame Section Identify cross-section submitted with plan. (Foundation section is not adequate.) Must show section from bottom of footing to top of roofline. Identify framing and insulation details.

___ Stair Section Show cross-section, details including rise/run, stair openings, handrails, landings, etc.

___ Detail Sections of critical construction or special structural items like decks, porches, retaining walls over four feet, etc.

___ Fire Sprinkler Plans If you are installing an NFPA-13 system, submit plans and obtain a permit through your local fire department. If you are installing a P2904 residential system, supply floor plans showing location of all sprinklers, size/type of pipe, sprinkler cut sheets, and hydraulic calculations for the two most hydraulically demanding heads.

* For complete information, please see “Residential Requirements: A Guide for the General Contractor or Home Builder.”
BUILDING PERMIT APPLICATION REQUIREMENTS: submitting plans for any residential structure

TWO COMPLETE SETS OF PLANS, PLUS A MINIMUM OF SEVEN PLOT PLANS shall be submitted with each application for a permit that involves proposed new construction or additions to existing structures. One set of plans remains on file in the office. One set is returned to the customer to keep on the job for subcontractor’s and inspector’s use. PLANS FOR ALTERATIONS, REPAIRS OR RESUBMITTALS NEED PERTAIN ONLY TO WORK TO BE DONE OR INVOLVED, BUT MUST BE COMPLETE ENOUGH TO DEMONSTRATE THAT THEY COMPLY WITH ZONING ORDINANCES AS WELL AS THE BUILDING CODE.

An initial plan review and plot plan review fee is collected at permit submittal. The remainder of the permit fees, which are based on square footage of the structure and estimated valuation, as well as all other applicable fees are collected at building permit issuance. For further questions regarding plan check fees or building fees contact the Building Permit Technicians at (970) 498-7670.

It can take up to six weeks for a permit issuance to take place. During busy times this may take longer. Incomplete submittals may delay your project and we begin these time frames from the time we get all the information needed. An email will be sent letting the applicant know the permit is ready to be issued as well as a total amount due.

PLANS WILL NOT BE ACCEPTED THAT HAVE BEEN MARKED WITH A RED MARKER OR RED PEN. Plans Examiners use red ink to mark corrections on the plans.

Following is a list of what is required to be submitted:

I Seven (7) plot plans of total parcel DRAWN TO SCALE. (See examples attachment D-F)

___ A. Show all dimensions of all property lines.
___ B. Identify scale used. Minimum scale is 1 inch = 20 feet or 1/16 inch = one foot (preferred). For large parcels, a vicinity map accompanied by an enlargement of the construction site will be acceptable (max. size paper that will be accepted is 24” x 36”).
___ C. Identify north direction.
___ D. Identify easements for utilities including overhead utilities (you are responsible for knowing where these are even if they are not on your plot plan).
___ E. Show name of all adjacent roads. Clearly show driveway location and access point.
___ F. Identify vehicle parking areas.
___ G. Show section, township, and range.
___ H. Show subdivision name, lot, block, and filing number, if applicable.
___ I. Show property owner’s name, address and phone number.
___ J. Show and label all existing structures with their use and distance to the proposed structure. Include bay windows, window wells, and any structural appendages including their distance to property lines.
___ K. Show distance from the proposed structure to ALL property lines, building envelopes and to the centerline of all adjacent roads. If an existing structure straddles the property line, it must be shown on the plot plan.
___ L. Show location of any stream or stream bed (wet or dry), river, lake or any other body of water within 100 feet of the structure. Note distance from structure to water.
If your property is in a Flood Plain, approval from County Engineering is required. Applicants who suspect their property may be in a Flood Plain should contact Engineering as soon as possible at 498-5700. New structures cannot be built in floodways, and structures must be elevated in Flood Fringes.

Verify with Planning and Zoning the minimum setbacks for proposed structure(s) on your property. Failure to meet minimum setback requirements will result in delays in the review process.

II Floor and Structural Plans (see attachments J-K for examples).

A. Provide floor plan for each floor, stating the use of each room. Preferred scale is 1/4 inch = 1 foot.

B. Provide footing/foundation plan including cross section. If your property is in a subdivision, list subdivision name, lot, block, and filing number. If an engineered foundation plan is required, the Engineer’s seal must bear the words REGISTERED IN THE STATE OF COLORADO and must be an original, not a copy. These plans must be stamped and personally signed by the Structural Engineer.

C. Framing plan must show direction, size, type, span and spacing of floor joists, roof rafters, girders, beams, columns, piers and header sizes. If using engineered trusses, truss layout map at a minimum is required at plan submittal. Full set of engineered/stamped truss drawings is required on site for framing inspection.

D. Show door and window sizes and location, and direction of all door swings.

E. Show location of all bathroom fixtures, kitchen cabinets, water heater, boiler or furnace, and fireplaces.

III Exterior Elevation all sides (see attachments H-I for examples).

A. Show front view, scale at 1/4 inch = 1 foot.

B. Show rear and both side views, preferred scale 1/8 inch = 1 foot.

C. Identify finished floor lines.

D. Identify finished grade line at building.

E. Show exterior wall finish and roof covering material.

IV Detail and Sections (see attachment M-O for examples).

A. Provide cross-section of exterior wall showing details from footings to roof, and listing materials used, including insulation R-values. Preferred scale is 3/8 inch = 1 foot.

B. Provide cross-section of structure at critical points, such as where floors are at various levels, fireplaces, finished attic space, etc. Preferred scale is 1/4 inch = 1 foot.

C. Provide cross-section through stairs, including rise/run, headroom clearance, landings, railings and surrounding framing. Preferred scale is 1/4 inch = 1 foot.

V Roof Details (see attachment L for example).

A. Provide truss or rafter layout and header sizes.

VI Topography Requirement (See pages 7-9 for examples).

If you are not providing an engineered footing and foundation plan, you must provide a slope profile to verify clearances to any slopes exceeding 1 unit vertical in 3 horizontal. There are two options you can use:

- Slope Profile Option: Show the slope profile for a distance of 50 feet on each side of the building.
- Corner Elevation Option: Include the elevations of all corners of your building on the plot plan.

VII Energy Conservation Prescriptive Package (see pages 10-11)

Show insulation R-values for ceiling, walls, floors, crawl spaces and basement walls, and U-value of windows on floor plans. Fill out Residential Energy Conservation form specifying which energy code compliance path you are using: Prescriptive, REScheck, or Performance.
What is a Plot Plan?

A plot plan is an accurate, scaled drawing illustrating the following:
- Property's dimension and shape
- Location of roads
- The relationship and precise location of man-made features on the property (buildings, structures, driveways)
- Natural water features (creeks, streams, rivers, lakes)
- Architectural features (cornices, canopies, eaves, awnings, bay windows, window wells, cantilevered walls, chimneys)

Plot plans show what currently exists on the site and the physical changes you plan to make to the site.

A Plot Plan is required when submitting a building permit application for:
- Residential Buildings
- Accessory Buildings
- Decks, porches, gazebos & awnings
- Garages (attached and detached)
- Pole Barns
- Storage Buildings larger than 120 sq ft

Note: Commercial Buildings

Site Plan approval is required from the Planning Department before submitting a building permit application for a commercial building or alteration of an existing commercial building. Please contact the Planning Department at 970-498-7683.

Plot Plan Basics

Note: Aerial photos will not be accepted

1. DRAWN TO SCALE
   Like a map that depicts a 10-mile stretch of highway with a 1 inch line, a scaled plot plan represents the relationship between the actual property and its size on paper.

   Common measures of scale for plot plans:
   - Scale 1" = 10' 0 0 10 ft
   - Scale 1" = 100' 0 0 100 ft
   - Include an arrow showing North

2. PLOT PLAN PAPER
   - Minimum Size 8½" x 11"
   - Maximum Size 24" x 36"
   - Larger parcels of land may require multiple sheets of paper.

3. PROPERTY DIMENSIONS
   - Draw and label property lines and length
   - Indicate if property is a corner lot and label all roads

4. EASEMENTS and RIGHT OF WAY
   - Show easements, e.g., utility, drainage, landscape, access.
   - Structures cannot be built in, over or under ANY easement or right-of-way including architectural features such as eaves and window wells.

5. ROADS, STREETS, ACCESS
   - Named and unnamed roads (public, private, county roads & state highways)
   - Driveways, existing and proposed
   - Vehicle parking

1. SETBACKS  Land Use Code Section 4.9 and 8.9

Q. What are setbacks?

A. The Larimer County Land Use Code defines setbacks as;
   "The distance, measured perpendicular or radial, from a property line or right-of-way centerline between a building and the property line or right-of-way centerline."

Q. I’m getting ready to submit my building permit application. How can I find my setbacks?

A. Setbacks vary by Zoning District and a property’s proximity to roads and highways. A planner can tell you what the setbacks are for your property. Contact the Larimer County Planning Department at 970-498-7683.

SETBACK CERTIFICATION

Larimer County Land Use Code Regulations require the property owner to clearly identify the boundary corners of the lot and/or building envelope. Whenever the proposed building is less than five feet beyond the required setback or building envelope boundary, the owner will be required to certify the building location.

Certification, in the form of a letter, must be signed by and include the seal of a surveyor licensed to practice in the State of Colorado. The letter must include the building permit number issued for the site in question.
Job Site Address: 123 Any Street, Fort Collins
Property Owner: John & Jane Doe
Owner’s Phone: 970-555-5555
Parcel No: 97114-13-901
Zoning District: Open
Setbacks: Front=25’ side=25’ rear=25’

North Arrow
Plot Plan Scale
Property Owner Info
Parcel No. & Zoning

A Property Dimensions
B Easements
C Roads and Streets
D Stream, Creek or River (& intermittent streams)

Use arrows to show distance from buildings to setbacks.

Existing buildings
Use solid lines to indicate existing structures

Proposed buildings
Use dotted lines to indicate proposed structures

Note: This sample uses color. Your plot plan does not need to be in color.
ENGINEERED FOOTING AND FOUNDATION REQUIREMENTS

Larimer County is divided into two areas (Area “B” & “C”) by wildfire hazard area and roofing requirements. Area “B” is the foothill and mountain areas, while area “C” is along the Front Range. Due to the prevalence of shrink/swell soils in Larimer County, especially along the Front Range, an engineered footing and foundation plan or a site-specific soils report indicating non-expansive soil will be required on all home sites in area “C”.

New subdivisions already have soil reports done at the development stage, and are flagged as to whether engineered footings and foundations are required. These prescriptive requirements apply to older subdivisions, metes and bounds parcels, and 35-acre subdivisions or tracts in area “C”. If their soils report indicates that foundations can be poured on conventional spread footings, then the county’s minimum footings/foundation standards may be used and engineered designs are not required. Otherwise, engineered footing and foundation plans will be required.

Exceptions: Unenclosed patio covers and porches, decks, one-story agriculture pole buildings under 3,000 square feet in area, and accessory unheated detached one-story utility buildings less than 24 feet in depth (truss length) and 48 feet wide are exempt from engineered footing and foundation requirements when they meet Larimer County’s Prescriptive Design Standards.

In area “B” (foothills and mountains), where the subdivision approval requires an engineered footing and foundation, an engineered design will be required. (See below for other engineered foundation requirements.) If building on or near a steep slope or where the presence of shrink/swell soils is indicated, an engineered foundation system may be required. Slope profiles are required on non-engineered plans in area “B” to show the steepness of terrain 50 feet around the structure.

Other Colorado Registered Engineered foundation requirements include:

1. All steel buildings, throughout the county.
2. All foundation walls over 9’-0” and all retaining walls 4’-0” and more in height, throughout the county.
3. All commercial projects, throughout the county.
4. All unconventional building designs and foundation systems, throughout the county.
5. Utility buildings, depending on the size and type of construction (steel buildings with steel girders imposing point loads, for instance) throughout the county.
6. All habitable structures within 15 feet of the toe a slope or within 40 feet of the top of a slope when the slope exceeds 1 unit vertical in 3 units horizontal.
1. A slope profile drawing is required at the time of plan submittal for all structures in the Class “B” roofing area. Exceptions are when fully engineered footing and foundation plans are submitted, or if it is an interior remodel.

2. The applicant is to provide an accurate slope profile drawing. A Colorado Registered Structural Engineer may be required to design the foundation system for the structure if no slope profile is provided or is inadequate.

This procedure is for all habitable structures within the Class B roofing/Wildfire Hazard area (see attachment A for map). Any building site found to have “sloping site” concerns throughout Larimer County may come under the above listed requirements at the determination of the Chief Building Official or his designee. If you are building within 15 feet of the toe or 40 feet of the top of a slope exceeding one unit vertical in three units horizontal, to avoid delays at the footing stage it is recommended to have an engineer visit the site and design foundations accordingly.

**SLOPE PROFILE INSTRUCTIONS FOR BUILDING PERMIT APPLICATIONS**

Your contractor or engineer should be able to produce these for you. If not, here’s some help.

**Here’s how to start:**

1. Stake the four corners of the proposed building site.
2. Measure 50 feet out from the center on each side and place a stake.
3. Go to the low point on the line - we’ll call this elevation 00 feet.
4. Estimate the difference in elevation from this point to the other stake (high point).
   * Let’s say the difference is 50 feet higher - call this elevation +50 feet.
5. Estimate the elevation of the pad and draw its location on the slope.
   * In the side profile example below the pad is 10 feet higher than the low point.
   * Call this elevation + 10 feet.
6. Repeat this procedure for the other profile.
How to estimate elevations:

- Measure the distance from the ground to your eye level - let’s say it’s 5½ feet.
- Stand at the stake at the low point - sight level along the line to a spot above you.
- Have your partner stand at this point so you are sighting on their feet.
  * This means that point is 5½ feet above the stake where you are standing.
- Repeat this procedure until you can sight level and see the upper stake or higher.

![Diagram of elevation estimation process]

- Multiply the number of times you had to do this by 5½ feet.
  * Let’s say you had to do it ten times - 10 X 5½ feet = 55 feet.

So the upper stake is 55 feet higher than the lower stake!

Adjustments: Let’s say the last time you sighted you were looking at your partner’s belt. Measure the distance from the ground to the beltline - say 3 feet - and subtract that from the 55 feet. In this case the true elevation difference is 52 feet.

If you have questions or would like help on site, please call Larimer County Building Dept. at (970) 498-7700.
TOPOGRAPHY REQUIREMENTS FOR BUILDING PERMIT APPLICATIONS

A review of the building site topography as it relates to your proposed building is required as part of the plan review process to assure that building code requirements for foundation design and/or setbacks are met. To properly assess these requirements, you must submit either:

1) cross-section drawings of the slope profile of the building site from the front and side, or
2) elevations of the staked corners of the building site on the plot plan.

The plan review process cannot be completed without this information.

1) SLOPE PROFILE OPTION: Two sheets are provided to draw the slope profiles. Each side of the squares is 20 feet long. You are required to show the slope profile for a distance of 50 feet on either side of the building. To accurately represent the slope you will have to find the difference in elevation between the low point on this line and the highest point. You may want to show some points in between if the slope varies from one end of this line to the other. The building should be drawn near the middle of the sheet with the slope profile drawn for 50 feet on either side. A minimum of three elevations must be shown - the end points of the profile line and the building pad elevation.

EXAMPLE SLOPE PROFILE SHEETS

2) CORNER ELEVATION OPTION: Use the techniques described on the accompanying page to find the elevations of the corners of the staked building site. Include the elevations on the plot plan included in your plans.

EXAMPLE:
Residential Energy Conservation Rules

There are four options to comply with the 2018 energy code:

Please indicate which option you are choosing by marking 1, 2, 3 or 4 below.

1) **Prescriptive Package:** see chart on reverse side for insulation and glazing requirements. Decide if you will be installing 2x6 stud walls with R-20 insulation or using footnote (f), and make sure that detail is on your plans. All window NFRC (U-factor) labels must be left on windows until the insulation inspection has been approved. Provide required information for Options A or B below.

HVAC contractor shall size heating/cooling equipment and appliances in accordance with ACCA Manual S based on building loads calculated per ACCA Manual J, 8th Edition. Manual J and S reports shall be submitted with plans for new residences. Heat loss calculations using approved software (Wrightsoft, Adtek, Elite, Carmelsoft, Avenir HeatCAD/LoopCAD, Cool Calc, or Florida Solar Energy Center’s Energy Gauge) are required. Calculations shall show the size, make, model, and BTU’s/SEER Rating (A/C) for furnaces, air conditioners and boilers. Electric baseboard heater manufacturer’s specs must be provided. Duct systems for heating, cooling and ventilation shall be sized in accordance with ACCA Manual D.

The following thermal design parameters shall be used for Larimer County:

- Winter Outdoor Design Dry-bulb (4°F)
- Winter Indoor Design Dry-bulb (72°F)
- Summer Outdoor Design Dry-bulb (91°F)
- Summer Indoor Design Dry-bulb (75°F)
- Summer Design Wet-bulb (62°F)
- 6368 Degree Days Heating
- 479 Degree Days Cooling

2) **Total UA Alternative (RESCheck):** Provide REScheck Compliance Certification showing you pass the 2012 IECC; an architect or HVAC contractor may be able to assist you. Heating/AC equipment to be detailed on REScheck report with BTUs and efficiency ratings. Input data must match building plans. Free software is at [energycodes.gov](http://energycodes.gov) and click on REScheck. In addition, must comply with IECC Mandatory requirements.

3) **Simulated Performance Alternative (HERS)** done by a certified energy rater: go to [resnet.us](http://resnet.us) to find certified raters. Larimer County allows a $75 rebate on permit fee if a certified energy rater inspects and documents with a compliance report showing how the home meets or exceeds 2012 IECC residential requirements. In addition, must comply with IECC Mandatory requirements.

4) **Energy Rating Index (ERI):** The rated design shall have an ERI less than 61 compared to the reference design, using approved software tools in accordance with RESNET/ICC 301, with compliance verification documentation provided by an approved third party. In addition, must comply with IECC Mandatory requirement.
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<th>Climate Zone</th>
<th>Maximum Fenestration U-Factor</th>
<th>Maximum Skylight U-factor(b)</th>
<th>Minimum Ceilings R-value(m)</th>
<th>Minimum frame wall R-value</th>
<th>Minimum Mass Wall R-value (g)</th>
<th>Minimum Floor R-value over unheated space</th>
<th>Minimum Basement Wall R-value continuous/ cavity(c)</th>
<th>Minimum Slab perimeter R-value/ Depth(d)</th>
<th>Minimum Crawl Space R-value Cont./ cavity(c)</th>
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<tr>
<td>5</td>
<td>0.32</td>
<td>0.55</td>
<td>49</td>
<td>20(3) or 13+5(0)</td>
<td>13/17</td>
<td>30(i)</td>
<td>10/13</td>
<td>10, 2ft.</td>
<td>10/13</td>
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(a) R-19 permitted to be compressed into a 2x6 cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value. If this method is used, supplement with insulated sheathing of at least R-2.

(b) The fenestration U-factor column excludes skylights; use the Skylight U-factor column.

(c) The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation method meets the requirement.

(d) R-5 insulation shall be added to the required slab edge R-values for heated slabs.

(e) R-38 shall be deemed to satisfy the requirements of R-49 wherever full height R-38 insulation extends over the wall top plate at the eaves.

(f) 13+5 means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-5 sheathing is not required where the structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

(g) The second R-value applies when more than half the insulation is on the interior.

(h) Larimer County will also accept a REScheck Compliance Report that passes using 2012 International Energy Conservation Code (IECC), and any Home Energy Rating Score (HERS) by a certified energy rater showing the home passes the 2012 IECC, or a maximum 61 Energy Rating Index provided by an approved third party using RESNET/ICC 301 software. For additional information on energy codes or free REScheck download, go to energycodes.gov.

(i) Or insulation sufficient to fill the framing cavity, R-19 minimum.

**Other Residential Energy Code Provisions of Note**

- All heating and cooling equipment shall be sized such that the total sensible capacity of the cooling equipment does not exceed the total sensible load by more than 25% for cooling-only applications, or by more than 40% for heating applications.
- At least 75 percent of lamps in permanently installed lighting fixtures shall be high-efficacy lamps.
- A signed air leakage testing report by an approved third party showing a maximum rate of three air changes per hour at 50 Pascals pressure must be provided to the building official. Testing must be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827.
- All ductwork outside the building thermal envelope requires a passing duct leakage test report be turned in to the building official by final inspection per IRC Section N1103.3.3.

Revised 3/8/19
Blower Door/Air Leakage Test Report Requirements

Air leakage testing is required for all new residences and commercial buildings under the 2018 International Residential (IRC) and Energy Conservation (IECC) Codes.

Residential - Per 2018 International Energy Conservation Code (IECC) and 2018 International Residential Code (IRC), “testing shall be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at an air pressure of 0.2 inch w.g. (50 Pascals).” In our Climate Zone 5B, a passing test requires three or fewer (3) Air Changes per Hour (ACH). Testing shall be conducted by an approved third party with a written report provided to the building official showing the test results at ACH50. If the first test fails, the tester shall recommend corrective measures to improve air tightness, then perform a second test after corrections have been made. If the home still fails but has significantly improved its air tightness, the owner may request code modification approval by submitting both test results and an explanation of the corrective actions taken.

To be considered an “approved third party,” an air leakage tester must demonstrate knowledge and experience of test procedures and protocols, through certification by a recognized organization such as RESNET (Residential Energy Services Network) or BPI (Building Performance Institute), or otherwise demonstrate their competence at air leakage testing to the satisfaction of the Chief Building Official. A partial list of approved third party testers is on the back of this handout. Some may no longer be in business.

Many Home Energy (HERS) Raters will perform air leakage testing as part of their overall energy ratings. Either a complete rating report including air leakage testing, or a report of a stand-alone test, will be acceptable to meet the testing requirement.

Commercial - The building thermal envelope shall be tested in accordance with ASTM E 779 at a pressure differential of .3 inch water gauge (75 Pa) or an equivalent method approved by the building official and deemed to comply with the provisions of this section when the tested air leakage rate of the building thermal envelope is not greater than 0.40 cfm/ft² (2.0 L/s x m2). A note from the approved testing agent shall be placed upon the final report submitted for building division review indicating compliance with the 2018 IECC requirements. If the first test fails, the tester shall recommend corrections to pass the test. After corrective measures are taken, the building must be re-tested and the passing test turned in to the building official. If the building still fails but has significantly improved its air tightness, the owner may request code modification approval by submitting both test results and an explanation of the corrective actions taken.

Exceptions: 1. The building official may waive the air leakage testing requirement for buildings or portions thereof that are not fully enclosed and fully conditioned, such as warehouses and repair garages with overhead doors that are frequently open while in operation. Testing can be conducted with the overhead doors masked and taped. 2. Townhouses and condominiums may use the City of Fort Collins Protocol for New Multifamily Building Air Tightness Testing as an alternative test.

Approved Air Leakage (Blower Door) Testers in Larimer County

Annadel Building Solutions, P.O. Box 741, Mangos CO 81328, (970) 533-1548
Architectural Energy Corporation, 2540 Frontier Ave. Ste 100 Boulder CO 80301 www.archenergy.com (303) 459-7405
Tim Burgess Construction, 9033 E. Easter Drive, Ste. 200, Centennial, CO 80112 www.burgess-inc.com (303) 300-4527
Colorado Professional Inspections, 1780 Hyde Ct., Loveland CO 80538 www.coloradoprofessionalinspections.com (970) 430-1819
E3 Power, 1616 17th St. #383, Denver CO 80202, www.e3power.net, (303) 292-1233
Green Insight LLC, 917 E. Prospect Rd. Unit B, Fort Collins CO 80525, www.thegreeninsight.com, (833) 476-8326
Green Your Home, Colleen Locker, greennyourhomedenver@gmail.com (720) 628-7290
Greg Bowdish, Progressive Engineering, greg@progressiveengineering.biz, (970) 590-6059
Group 14 Engineering, Josh Marcou, jmarcou@group14eng.com, Sarah Hong, shong@group14eng.com (303) 861-2070
GS Services, Paul Higman, 2000 S. College Ave. Suite 308, Fort Collins CO 80525 phigman@gmema.com (970) 219-6776 (Res. & Com.)
John Henry and Associates, 3513 Costilla Ave., Centennial CO 80122, (720) 496-3520, andersonarch@aol.com
Justin Heldenbrand, L & L Insulation, 401 N. Link Lane, Fort Collins, CO 80521, www.ll-insulation.com, 970-817-4973
Mike Truitt, This Efficient House, 1600 Crescent Dr. Fort Collins CO 80525, www.thisservicehouse.com, (970) 204-9931
Nate Gagliano, NoCo Energy Solutions, 4805 NCR 23E, Laporte CO 80535, www.nocoenergysolutions.com, 310-6240
PIE Consulting & Engineering, 6275 Joyce Drive, Suite 200, Arvada, CO 80403. www.pieglobal.com, (866) 552-5246
Richard Anderson, Anderson Associates, andersonarch@aol.com, 422 E. Oak St., Fort Collins CO 80524, (970) 484-0306
Scott Home Inspection, 3728 W County Road 10, Berthoud CO 80513, www.scotthomeinspection.com (970) 532-2424
Sustainably Built, 1720 15th St., Boulder CO 80302, www.sustainablybuilt.com, (303) 447-0237
Timberline Insulation Inc., 4109 Ziegler Rd., Ft Collins CO 80525, john.timerlineinsulation@gmail.com, (970) 888-1395

List is not exclusive – Air Leakage Testers certified by Building Performance Institute, Air Barrier Association of America RESNET, or other approved agencies/local jurisdictions, can be added to this list by verifying credentials and experience.
Whole House Mechanical Ventilation

January 29, 2019

The 2018 International Residential Code requires homes in our climate zone be tightly sealed with no more than 3 air changes per hour (ACH). In order to preserve indoor air quality and provide adequate air to occupants, a whole house mechanical ventilation system must be installed.

M1505.4.1 System Design. The whole-house ventilation system shall consist of one or more supply or exhaust fans, or a combination of such, and associated ducts and controls. Local exhaust or supply fans are permitted to serve such a system. Outdoor air ducts connected to the return side of an air handler shall be considered to provide supply ventilation.

Kitchens and bathrooms require continuous local exhaust of at least 25 and 20 cubic feet per minute (cfm) respectively (100 and 50 cfm intermittent). These rates can be figured into the total ventilation. Range hoods, in-line fans and bath fans at or above 90 cfm must meet minimum efficiency requirements of 2.8 cfm/watt, with smaller bath fans at 1.4 cfm/watt. Outdoor air intakes require dampers that close when the air handler isn’t running.

The ventilation system must have controls to enable manual over-ride. The system must operate continuously, unless the controls allow intermittent operation for at least 25% of each 4-hour period, and the net ventilation rate must meet the requirements of this table:

<table>
<thead>
<tr>
<th>Dwelling Unit Floor Area (square feet)</th>
<th>Number of Bedrooms</th>
<th>Airflow in CFM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1</td>
<td>2-3</td>
</tr>
<tr>
<td>&lt;1,500</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>1,501-3,000</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>3,001-4,500</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>4,501-6,000</td>
<td>75</td>
<td>90</td>
</tr>
<tr>
<td>6,001-7,500</td>
<td>90</td>
<td>105</td>
</tr>
<tr>
<td>&gt;7,500</td>
<td>105</td>
<td>120</td>
</tr>
</tbody>
</table>

Care must be taken with an exhaust-only system to avoid backdrafting natural gas appliances like draft-hood water heaters and fireplaces.
**LARIMER COUNTY ENGINEERING DEPARTMENT INFORMATION**

**ACCESS PERMITS**
A County Road Access permit is required if the driveway accesses a county road or if the roads are county maintained. This permit is applied for along with the building permit. A $50 fee must be paid at time of application. An additional plot plan will be required with this application showing the proposed access location. The Access and Utility Coordinator will field check property access locations, therefore please post your address in the field. The Access and Utility Coordinator will also verify the contractor’s insurance coverage requirements. This process may involve five working days. The Access and Utility Coordinator can be reached at 498-5709 or Engineering at 498-5700. See page 26 for more information and permit application form.

**GRADING CERTIFICATION**
A grading certification may be required for your home on your lot to show compliance with a subdivision grading plan. Check with County Engineering at 498-5700.

**FLOOD HAZARD AREAS (FLOOD PLAIN)**
If your property is in a Flood Plain, review and approval from County Engineering is required. Applicants who may be in a Flood Plain should contact Engineering as soon as possible at 498-5700. New structures cannot be built in floodways, and new construction must be elevated in Flood Fringes.

**STATE ELECTRICAL BOARD INFORMATION**

**ELECTRIC PERMITS**
LARIMER COUNTY DOES NOT ISSUE ELECTRIC PERMITS OR INSPECT ELECTRICAL WORK. A separate permit is required by the State Of Colorado Electrical Board. (THIS IS SEPARATE FROM LARIMER COUNTY BUILDING INSPECTION DEPARTMENT.) Permit applications are available in our office. If you have any questions regarding electric requirements, please contact the Colorado Electrical Board at (303) 894-2985. See attachment B-C for an example of the permit application.

**FIRE DEPARTMENT/FIRE SPRINKLER INFORMATION**

**FIRE SPRINKLERS**
If your subdivision status sheet requires a fire sprinkler system be installed in the house, plans must be submitted to your local fire department for approval at the same time your building permit application is being made. If you are not in one of the fire districts below, you either need to get a permit from the State of Colorado, Division of Fire Prevention and Control (DFPC), OR through Larimer County by submitting two sets of sprinkler plans reviewed and approved by a state-certified Fire Suppression System Inspector. The list of state-certified fire suppression systems inspectors is located at [colorado.gov/pacific/dfpc/suppression-systems](http://colorado.gov/pacific/dfpc/suppression-systems).

Berthoud Fire Protection District (970) 532-2264 * Estes Valley Fire Protection District (970) 577-0900
Loveland Fire and Rescue Authority (970) 962-2536 * Poudre Fire Authority (970) 221-6570
Windsor-Severance Fire Protection District (970) 686-2626

If allowed by the Fire Dept. and subdivision approval, a residential fire sprinkler system meeting the requirements of International Residential Code Section P2904 may be designed and installed by a Colorado Master Plumber (or homeowner). Submit two sets of plans to the Building Dept. including detailed floor plans drawn to scale, location and type of sprinklers, room sizes, ceiling configurations, distance to walls, heat sources, fans and obstructions, location of shutoff valves, pumps, cisterns and all other system equipment, water pipe material, size, spacing of supports, listing and manufacturer’s cut sheets for each type of sprinkler, pressure/flow calculations for two most hydraulically demanding sprinkler heads, and freezing protection detail for sprinklers in non-conditioned spaces.
ZONING
New construction must meet minimum Land Use Code setback requirements. Setbacks are measured from all lot lines, adjacent roads, existing structure, streams, creeks and rivers, and must be shown on the plot plan. Please check with County Planning at 498-7669 prior to permit application for minimum setback and use requirements.

RADON
Many new subdivisions require radon tests be done on finished homes before a Certificate of Occupancy can be issued (see back of permit inspection card for radon requirements). Certain areas require a passive radon system be installed and inspected at time of under-slab and rough-in plumbing inspections. If you have questions concerning your area, please contact the Building Dept. at 498-7700. If you have questions regarding mitigation requirements, please contact the plans examiners at 498-7660. See attachments P-Q for examples of Passive Radon Systems.

LARIMER COUNTY HEALTH DEPARTMENT INFORMATION

HEALTH DEPARTMENT
Septic permits are applied for at the Environmental Health Department AFTER applying for a building permit. See page 24 for septic permit information.

SEWER AND WATER
Proof that sewer and water service is available for your proposed building is required. A copy of your Colorado well permit will be required or the verification form signed by your sewer and water services provider, which is provided when you apply for your building permit.

COLORADO DEPARTMENT OF WATER RESOURCES

WELLS
For well information contact: 970-352-8712
Water Resources Division:
810 9th Street, Suite 200
Greeley, CO 80631
www.water.state.co.us
BUILDING INSPECTIONS

GENERAL INFORMATION

The yellow building permit card must be posted on the job site. The address number must be posted at the County road or street. The customer’s copy of the approved plans must be on the job site for inspector's review for the inspection to be performed. A re-inspection fee of $50 is charged if the permit card and plans are not on site for the inspection, or in cases of repeated trips on correction notices or as deemed necessary by the inspector. This is for the inspector's time and extra trip required returning for inspection.

Most areas of Larimer County are inspected daily. Mountain areas have inspections on certain days. If you are not sure which area applies to your permit, call our offices at 498-7700. To request an inspection call 498-7697 or use our online Customer Access Portal. You must have the permit number and IVR number to schedule inspections. Requests confirmed before 11:59 pm can be done the next working day. Requests received at 12:00 am or later will be conducted no earlier than the day after the next working day.

INSPECTION CANCELLATION—The Building Official requires inspectors to charge a fee of $48 for an inspection that is not ready as requested. The fee will be waived if our office is contacted and the inspection canceled before the inspector goes to the site. Please call as early as possible to prevent assessing this fee.

REQUIRED INSPECTIONS

The following is a list of required inspections in their normal order of completion. Although they all may not be applicable to your particular project, please use this list as a general guideline:

Step 1 Inspections (must be approved before scheduling Step 2 inspections)

1. Setback and Footings—this is the initial inspection. Property pins must be located. Concrete forms must be placed on undisturbed soil, installed as shown on approved building plans. Reinforcing steel, in place, supported and splices tied (concrete cannot be placed before inspection approval). Caissons must be inspected by the engineer of record, with a wet-stamped letter approving the caissons given to the inspector.
   1.a. If an open hole inspection is required by a design engineer or county plans examiner, contact that engineer or hire one to perform an inspection after the crawl space or basement is excavated and prior to forming footings, to make sure the soil and water table are per design perimeters.
   1.b. At the time of footing and setback inspection, if you are in a Wildfire Hazard Area, the initial Wildfire Inspection is required.
   1.c If a survey certification is required for the setback inspection, the surveyor’s stamped letter must be provided to the building department at or before the foundation inspection showing the building is located per the approved plot plan. Foundations may not be poured until setbacks are approved.

2. Foundation—this is done after the foundation walls have been formed and the reinforcing steel is installed, but also prior to placement of concrete. Any prescribed below-grade insulation must also be in place.
   2.a. Concrete slab—inspections of interior slabs are only required when poured monolithically with the foundation wall; when the slab requires reinforcing in excess of 6x6 10/10 w.w.m.; or when building equipment, conduit, piping accessories, and other ancillary equipment items exist in-slab and under-slab. Exterior flatwork including driveways is exempt. All items to be placed in slab must be in place and soil compacted. Concrete cannot be placed before inspection approval.
3. **Rough-In Underground Plumbing**—this is done after the underground or under-slab plumbing is installed but prior to its being covered (water test or five psi air test is required). The water supply line is to be bestubbed into the basement. Wrap all plumbing lines where they will penetrate the slab.

   3.a. **Radon mitigation**—If a radon mitigation system is required for the property (see conditions of approval on permit card), the sub-slab work must be ready at the time of underground plumbing inspection. The floor slab cannot be poured until this is completed. Radon pipe rough-in through the roof must be inspected prior to or concurrent with framing.

   3.b. **Slab insulation**—if you have a walk-out basement, slab insulation is required by the Energy Code. The slab insulation must be ready at the time of underground plumbing inspection. The foundation cannot be backfilled until this is approved.

**Step 2 Inspections** (may only be scheduled after all applicable Step1 inspections have been approved)

4. **Septic System**—call the Larimer County Department of Health & Environment at (970) 498-6775 for septic system inspection requirements.

5. **Public Sewer Hook-Up**—call the applicable sewer district for your area for sewer hookup inspection requirements.

6. **Well or Water Service**—call the Colorado Division of Water Resources at (970) 352-8712 for well information or the water district for your area for water hookup inspection requirements.

7. **Gas Line Air Test**—this is done after gas piping, fittings, unions, and valves authorized by the permit have been installed and before any such piping has been covered or concealed or any fixture or appliance has been attached thereto. (A 10 psi air test is required.) Provide 18” depth for copper, polyethylene pipe (PE requires an 18 ga. tracer wire or metal tape), and factory- wrapped black iron. (Field-wrapped pipe cannot be installed underground.) If using an elevated pressure system (2 psi or greater meter set), a 30# pressure test is required upstream of the regulator. Regulator will be checked at final.

8. **Rough plumbing and Air/Water Test**—this is done after the above ground plumbing (water and drainage piping) is installed and prior to or concurrent with the framing inspection. A ten foot head of water test or five psi air test is required for the drain-waste-vent piping. Nails plates and stud shoes must be in place.

9. **Rough Heating & Vent**—this is done after the heating, vent, and duct work has been installed. This inspection should also precede or be concurrent with the framing inspection. Clearances and venting are required per the manufacturer's installation instructions, which must be at the job site for inspection. Heating and cooling equipment sized per Manual J and ducts sized properly.

10. **Electrical Rough-In**— Larimer County does not issue electrical permits or inspect electrical work. A separate permit is required by the State of Colorado Electrical Board. Call the State Electrical Board for permit and inspection requirements at (303) 894-2300. For the Estes Park area, call State Electrical Inspector Dave Cearlock at (970) 586-4464, extension 3309. Typically, a rough-in electrical inspection is done after the premises wiring system has been installed, and before or concurrent with the framing inspection.
11. **Fireplace/wood stoves**—this is done before or concurrently with the frame inspection. Wood-burning fireplaces must meet clean air emissions requirements (see page 23 for more information). Zero-clearance fireplace or wood stove chimney inspections are made during heat and vent inspection. Masonry fireplace inspections (a) firebox, throat and damper are in place, and the first flue tile is ready to be set; and (b) after all flue tile is in place before capping. The wood stove must be in place at time of final inspection or vent capped off in a finished manner. Listed wood stove installation instructions must be on site for final inspection so clearance to combustibles and venting can be verified.

12. **Fire Sprinkler**—if required, the fire sprinkler system is to be inspected and approved by the fire department having jurisdiction or the state-certified fire suppression system inspector (before frame inspection is called for). For a residential fire sprinkler when allowed (IRC P2904), the county inspector will need to do a rough and final sprinkler inspection. Check subdivision status sheet to see if sprinklers are required and what type.

13. **Frame**—this is done after the structure’s walls, floors, and other framing members are in place and after the exterior sheathing has been installed. The roof must be completed to the point where the building interior can be considered to be weather-protected. Stamped truss engineer's drawings and truss layout must be on site with County-approved plans for inspector to check truss bracing. All sub-systems such as plumbing, mechanical, and electrical, must be inspected prior to the installation of insulation, interior sheathing and wallboard. Any engineer’s letters on footings and foundation, and perimeter drain, damp proofing roof and wall sheathing certifications must be on site for inspector. Interior shear walls will be inspected later.

13.a. **Narrow Wall Bracing**—required where less than two feet of structural wood sheathing is installed by garage or window openings as called out on plans. Inspection called for before weather barrier and siding installed, with certification on sheathing fasteners signed and on site. In addition, porch roof or deck partial framing (such as columns that may be wrapped or roofs that may be soffited) must be inspected before being covered.

14. **Insulation**—(after approval of the framing inspection and prior to the installation of wallboard) the insulation inspection will verify proper R values, air sealing, insulation fire blocking, and general workmanship as required by the Energy Code. Blown attic insulation is inspected at final inspection, as are exposed insulation blankets attached to unfinished concrete walls in basement and crawl spaces. Combustible insulation facings cannot be left exposed. The county inspector may allow framing corrections reinspection along with insulation at his/her discretion, if corrections will be visible.

The following shall be caulked, gasketed, weather stripped or otherwise sealed with an air barrier material, suitable film or solid material: all joints, seams & penetrations, site-built windows, doors, and skylights, openings between window and door assemblies and their respective jambs and framing, utility penetrations, dropped ceilings or chases adjacent to the thermal envelope, knee walls, walls and ceilings separating the garage from conditioned spaces, behind tubs and showers on exterior walls, common walls between dwelling units, attic access openings, rim joists junctions, and other sources of penetrations.

Recessed lights must meet one of the following conditions: **Type IC** rated with no penetrations between the inside of the fixture and ceiling cavity; **Type IC or non-IC** rated and installed in a sealed box constructed with ½” gypsum wallboard or other approved assembly; or **Type IC** rated, tested and labeled as “airtight”. See pages 10-11 for energy conservation insulation and window requirements.

15. **Gypsum board and plaster**—required ONLY where fire-resistive-rated construction is required between dwelling units, when exterior walls are within three feet of property line or for gypsum shear walls required by the design engineer. Gypsum inspections when needed will be made after gypsum board is in place, but before plaster or gypsum board joints and fasteners are taped and finished.

16. **Roofing**—this is done after roofing completed; need to leave proof of Class A or B label in the
foothills or mountains and Class A, B, or C along the front range. Roofing contractor’s certification letter -
that roof covering and fasteners were installed per manufacturer’s requirement for appropriate wind speeds of
Larimer County and roof ice barrier was used in the Class B area – should be on site or already approved.

17. **EIFS “Synthetic Stucco”**—this is done by certification letter. All wood residential structures
must have a weather-resistive barrier. The first certification letter certifies that the installer wrapped
windows, doors, and wood sheathing according to ICC acceptance criteria and their manufacturer’s
installation requirements; the second certification letter certifies that the sealant is installed per ICC
acceptance criteria and their manufacturer’s installation requirements.

18. **Final Inspections**—these are done after all work shown on the approved plans has been completed. Final
inspection approvals are typically required from the Building Department, County Health & Environment (if
on septic), State Electrical Board, and possibly Fire Dept.

19. **Building Department**—this inspection is done after finish grading, the building is completed and ready for
occupancy, all plumbing fixtures set, heating equipment set and working, blower door test approval, and final
electric inspection signed off by State inspector. All applicable conditions of approval, such as drainage
certification, radon test, and fire-sprinkler approval by fire departments when required, must be provided for
certificate of occupancy.

**CERTIFICATE OF OCCUPANCY (CO), TEMPORARY CERTIFICATE OF
OCCUPANCY (TCO), AND LETTER OF COMPLETION**

For new buildings, a CO is required prior to occupying the building. In certain cases, a Temporary Certificate of
occupancy (TCO) can be issued pending minor remaining items awaiting completion or where only portions of the
building are complete. For alterations to residences, outbuildings and projects which do not add significantly to the
building space, a letter of completion is issued upon request.

**Temporary Certificates of Occupancy**—TCOs may be issued, but only when an inspector verifies that all
life-safety issues have been addressed and all agencies approve issuing a TCO. There is a $600 fee for
TCOs, which are valid for 180 days. If a full CO is issued within the first 30 days, all but $40 will be
refunded. If a full CO is issued prior to the 180 day expiration, $100 shall be refunded for each full 30 day
period remaining out of the original 180 day TCO period Life-safety issues include:

- One complete working bathroom, with shower or tub, sink and toilet
- Kitchen sink installed and working
- Heating system (furnace, boiler or other) and water heater installed and working
- Electrical final approved by Colorado State Electrical inspector
- Health Department final (if applicable) approved
- Engineering drainage, access and flood finals (if applicable) approved
- Stairs, handrails, guardrails, smoke and CO detectors at building inspector’s discretion
- Wildfire final inspection approved
- Final approval from applicable Fire Department if required by conditions of approval

Once all final inspection approvals are obtained, a CO issued for residential and commercial permits. COs are not
issued for cabins; a Letter of Completions is issued upon request. For accessory structures, such as barns, garages,
or storage buildings, a Letter of Completion may be requested when final inspection has been approved.

If you are unsure which final inspections are required prior to certificate of occupancy or letter of completion
issuance, please contact our offices at (970) 498-7700.
ALTERATIONS

For alterations, such as basement finishes, a floor plan drawn to scale is required showing walls to be constructed, as well as existing walls. Rooms must be labeled stating their use and show door, window, furnace, boiler/water heater and fireplace locations.

ADDRESSING

If the property needs an address, it may take up to 3 or 4 weeks. The plot plan must be drawn to scale and show the driveway access. Any parcel not located in a subdivision must show legal distance from a section corner.

RESUBMITTALS

A resubmittal is required for any changes to your plans that alter the structure, such as moving beams, changing beam or header size, enlarging windows or doors, changing floor joist type, size or direction. Two sets of plans are required. A minimum $48 fee is collected as existing plans must be pulled and rechecked. Additional fees based on valuation may apply if you are adding to the footprint or finishing additional space. Minor changes, such as moving a same size door or window a few feet on the same wall, or moving a non-bearing wall, usually do not require a resubmittal. Your building inspector will help determine if you need to resubmit plans. If square footage is added, or if the structure is relocated on the property, five additional plot plans are also required with the resubmittal. Resubmittals on properties with septic systems that either add to the footprint or add bedrooms, will be reviewed by the County Environmental Health Dept. Adding to the footprint will also trigger review by Zoning.

To avoid these additional costs and possible delay of your project, it is best to have your structural issues and building placement resolved before submitting for a building permit. No resubmittal can be accepted after framing is approved. At that point, a new permit for the addition or alteration will be required.

APPLICATIONS

Building permit applications can be obtained at the Community Development Division or on the County web page at: larimer.org/building. You are not able to submit online at this time.
Wildfire Safety
Are you FireWise?

Wildfires are a major concern in the mountain areas of Larimer County. A study conducted by the Colorado State Forest service ranked Larimer County as the most hazardous county in Colorado for wildfire hazards. As more forested lands are developed and recreation uses increase, the potential for loss of life and property caused by wildfire is an ever increasing problem.

Protecting your home and property from wildfire is YOUR responsibility. Don't assume firefighters can save your home or property. As much as they may want to, resources are limited and conditions may make it impossible for emergency personnel to safely reach and protect your home.

Advance planning and knowing how to protect structures in these areas can lessen the impacts of a wildfire. When designing or building your home, consider choosing a FireWise location, developing a defensible space around your structure, and selecting fire resistive building materials.

FireWise Location

Choose the location of your home carefully. The chance that your home could survive a wildfire could depend on the decisions that you make.

Fire Protection
- Become familiar with your local fire department and see what fire protection is available in your area.

Building Site
- Evaluate the building site. Choose a site away from heavily vegetated areas (trees and shrubs). Build on the most level portion of the land.
- Avoid natural chimneys or draws, these act as natural pathways during a fire and could draw heat and flames to your home.
- Set your structure a minimum of 30 feet back from ridge or cliff; increase the distance to 75-100 feet if home will be higher than one story.

Access
- Provide easy access for emergency vehicles. A steep, narrow or winding driveway can impede access of larger emergency vehicles.
- Try to place the driveway on the downhill side of your home or on the side that faces the wind. This makes a good fire break.
- A locked gate could stop firefighters from reaching your home. If you must have a locked gate, leave a sparekey with your local fire agency.

Make Your Home Easy to Find
- Clearly mark your location so firefighters can find you.
- Addresses should be visible from both directions.
- Keep brush and trees cut back so that the address always stands out.
Create and maintain a FireWise environment around your home.

Create a defensible space around your home and the major structures on your property by reducing the vegetation surrounding the structures. This does not mean that your landscape has to be barren. Defensible space is an area where the vegetation is modified to slow the rate of spread and intensity of an advancing wildfire. This space also provides room for the firefighters to work and protect the forest should a structure fire occur. For further information regarding these issues please refer to larimer.org/wildfire or contact Derek Rosenquist, Larimer County Wildfire Safety Coordinator at (970) 498-5301.

FireWise Construction

Roofing

- A structure’s number one danger in wildfires is a combustible roof. Roofs usually have the largest surface areas that are exposed to airborne sparks. Use class A or B roofing materials, such as asphalt shingles, slate or clay tile, or metal panels.

Siding / walls

- Use construction materials that are fire-resistant or non-combustible whenever possible.
- Use a minimum of a Class III flame spread siding material. Stone, brick and stucco are best.
- Shakes and shingles are required to be sawn and have a minimum Class B fire rating when used as siding material.
- Walls should be constructed of fire resistive materials from the ground to the roof overhang.

Foundation

- The foundation of a building is often the first area to come in contact with a spreading wildfire. Construct a closed foundation with concrete block, concrete poured walls, or use other fire resistive materials.

Windows

- Windows are often overlooked as fire hazards, but can be a serious risk. Radiant heat can pass through them and set fire to curtains and furniture.
- Minimize the size and number of windows on the side of the house that would most likely be exposed to a wildland fire- the side facing downhill.
- Consider both size and materials for windows, double pane glass and tempered glass are more effective than single pane glass by reducing the amount of radiant heat; plastic skylights can melt.

Other Areas / Ideas

- To prevent sparks from entering your home through vents, cover attic, soffit and floor vents with wire mesh no larger than 1/8 of an inch, make sure eave and soffit vents are closer to the roof line than the wall. Box in eaves, but provide adequate ventilation to prevent condensation.
- Prevent combustible materials and debris from accumulating beneath patio deck or elevated porches: screen under or box in areas below ground line with wire mesh no larger than 1/8 of an inch.
- Design decks so that they are not located at the top of a hill where they will be in direct line of a fire moving up slope.
- Place fire resistive landscaping-such as rocks, under decks. Keep areas under decks vegetation free by using a fabric weed barrier.
- Landscape with fire resistive plants.
- Incorporate walkways and retaining walls as man-made fuel breaks.
- Clean gutters, eaves and roofs regularly.
- Stack firewood uphill from or on the contour of your home.
FIREPLACES, WOOD STOVES & FIREPLACE INSERTS

INSTALLATION REQUIREMENTS

All fireplaces installed on or after January 1, 2002 in the Restricted Area shown on the map on the reverse side shall be one of the following:

(i) A gas fireplace or fireplace with a gas log installed and functioning at time of final inspection;
(ii) An electric device; or
(iii) A fireplace that meets the Phase III (Phase II EPA) emissions standards for wood stoves established by the Colorado Air Quality Control Commission or any other clean burning device that is approved by the commission.

Within the Nonrestricted Area, fireplaces, including but not limited to masonry and factory built fireplaces (such as metal and zero clearance fireplaces), are allowed and are not required to meet the standards above.

All fireplaces installed prior to January 1, 2002 in the Restricted Area shall be allowed to remain in use until such time as the owner voluntarily replaces it. Upon replacement, such fireplace shall be one of the types specified above.

EMISSIONS STANDARDS

All wood stoves and fireplace inserts installed on or after January 1, 2002, in unincorporated Larimer County shall meet the Phase III (Phase II EPA) emissions standards for wood stoves established by the Colorado Air Quality Control Commission.

Also, particulate matter emissions must be at:
- Catalytic: 4.5 grams per hour maximum
- Non-catalytic: 7.5 grams per hour maximum

All wood stoves and fireplace inserts installed prior to January 1, 2002, in unincorporated Larimer County shall be allowed to remain in use until such time as the owner voluntarily replaces it. Upon replacement, such wood stove or fireplace insert shall meet the Phase III (Phase II EPA) emission standards for wood stoves established by the Colorado Air Quality Control Commission.

PERMITS & INSPECTIONS

A miscellaneous permit and inspection are required for factory-built fireplaces, fireplace inserts, and wood stoves. A masonry fireplace requires a combination permit to verify the building structure will support the weight. The manufacturer’s recommended installation instructions must be on site for the inspector. The fireplace, fireplace insert, and/or woodstove must also meet all clearances to combustible materials per the manufacturer’s instructions.
BUILDING-MOUNTED AND GROUND-MOUNTED SOLAR ENERGY PERMITS

A building permit (separate from a residential, commercial or utility permit) is required to install solar systems/facilities, whether ground-, roof- or wall-mounted. Please refer to the Accessory Solar and Small Solar Facilities handout (page 22) for requirements for solar system permits. Solar permit fees are processed separately from building permits. All solar permits will be reviewed for compliance with zoning use, height and setback requirements of the Land Use Code.

**A Colorado State Electrical Board Permit is also required**
Solar systems and facilities must obtain an electrical permit for inspection of electrical work. Please contact:

Colorado State Electrical Board  
1560 Broadway, Suite 1500  
Denver, CO 80202  
Telephone: 303-894-2985
MANUFACTURED AND MODULAR HOMES OUTSIDE MANUFACTURED HOME PARKS

A. Double wide manufactured and modular homes (DWMH) are allowed on legal lots if the structures have a HUD (Department of Housing and Urban Development) or Colorado Division of Housing Seal, Manufactured Housing Installation Program (MHIP) insignias, and are attached to a permanent foundation.

B. Any single wide manufactured home (SWMH) transportable over state highways as a single, complete dwelling unit, located outside a manufactured home park, must meet the following requirements of Section 18.2.1, Larimer County Land Use Code.
   1. The manufactured home and any additions to it must be permanently anchored to a permanent foundation.
   2. The manufactured home and any additions to it must have standard exterior siding.
   3. The manufactured home and any additions to it must have a pitched roof structure with standard roofing materials.
   4. The manufactured home must be incorporated into a larger structure that includes one or more of the following: additional bedrooms; recreation room; patio; carport or garage.
   5. The requirements noted above must be completed within 18 months of the date that the building permit is issued. The Chief Building Official may grant an 18-month extension upon finding that significant progress has been made in the completion of the requirements or there have been other circumstances, beyond the control of the property owner, that have delayed completion.

C. Manufactured homes may be used to provide dwellings for farm, ranch or dairy help as part of a Farmstead Accessory Dwelling when meeting the requirements of Section 4.3.10.A of the Larimer County Land Use Code (Reference the Farmstead handout proved by the Planning Department).

B. Temporary manufactured homes are allowed for use as housing for up to 18 months during construction of a principal residential building when issued at the same time as the principal residential building. Temporary manufactured homes may be used as an Extended Family Dwelling when meeting the requirements of Section 4.3.10.I of the Larimer County Land Use Code (Reference the Extended Family Dwelling handout proved by the Planning Department).

C. Site, support-blocking, foundation, floor, elevations, and setup plans need to be submitted by the applicant at the time of building permit application. Foundation plans east of the foothills in Larimer County may have to be designed by a Colorado Registered Engineer. Manufactured homes in the foothills and mountains may have to be designed for a 40, 50 or 70 pound snow load, meet site design wind load requirements, and have a Class “B” roof covering and siding that meets class III flame spread requirements to satisfy Wildfire Hazard requirements. Call 498-7700 for clarification.

D. The permanent foundation may be a perimeter foundation of concrete, masonry, or all-weather wood foundation (AWWF) with dirt backfill against it. A permanent insulated perimeter skirting may be used when home is attached by rebar welded to each side of each chassis of manufactured home and embedded in 30 inch piers into the ground.

E. Any manufactured home placed on a basement must have foundation designed and wet stamped by a Colorado Registered Engineer.

F. Manufactured and modular homes need to comply with the State of Colorado’s Manufactured Home Installation Program (MHIP). The manufactured home set-up crew needs to be registered as a state-certified installer or be inspected by a state-certified inspector. For more information on state requirements, contact MHIP at (303) 864-7837.
ACCESS PERMIT INFORMATION

NOTE: An access permit is separate from the Building Permit and requires separate submittals. The Engineering Department will be able to provide you with the Access Permit form. (To view the form visit the Larimer County Engineering Department website at www.larimer.org/forms/access_permit.pdf). On the permit, please provide as much information as possible. Clearly mark the proposed access location in the field and note on your plan the type of marking material used. The easier it is to find your proposed location, the quicker your permit can be processed. If your proposed access location is not properly marked, issuance of your Access and Building permits may be delayed.

County Road Access assessments apply to all new structures on vacant parcels and in any case where new access from a county road is being added or changed. Once application is made, review of your permit for applicable county road requirements will take place. Those permits that have county road access requirements, will be assessed a $50.00 fee that is due at issuance of the building permit.

Attach a sketch or plan showing the proposed location of the access and it’s relationship to any landmarks on the property. The following shall be included on the sketch plan for access requirements:

1. The property owner’s name(s).
2. Identify the County Road number & supply any other name the road is commonly known by.
3. Give the property address as assigned by the Building Department. If no address has been assigned, provide an approximate distance from the nearest intersection, addressed property, or major easily identified landmark.
   Again, the easier it is to locate your proposed access point the more quickly your permit can be processed.
4. Provide the name of the nearest town or city to your property.
5. If applicable, give the name and filing of the subdivision in which your property is located.
6. Give the name of the closest intersecting street or county road.
7. Provide the section, township, and range where your property is located. You can get this information from the Larimer County road map, from your legal description, from the Building Department (498-7683) or the Engineering Department (498-5700).
8. Note which side of the road your access will be located on. Also note what type of access this will be: Residential (one single family residence), Multi- family (more than 1 single family residence, subdivision, apartments, etc.), Commercial, Other (field access, temporary, etc.).
9. Provide the name of the contractor who will be doing the work. Make sure your contractor has submitted their insurance information to the Risk Management Department and that the insurance has been approved. If you are doing the work yourself, you will be required to provide proof of insurance. You can get specific information regarding Larimer County’s insurance requirements for work within the County road right-of-way by contacting the Risk Management Department at 498-5961.
10. Your estimated time frame for starting and completing the work. Extensions to your permit maybe requested by calling 498-5709.
Building Permit #______________________________

INDIVIDUALS WHO MUST APPLY FOR A SEPTIC PERMIT SHOULD BE AWARE OF THE FOLLOWING:

1. Application for an Onsite Wastewater Treatment Systems (OWTS) permit should be made IMMEDIATELY at the Health Department, 1525 Blue Spruce Drive, Fort Collins, CO or the Estes Park office, 1601 Brodie Avenue, Estes Park, CO.

2. Prior to visiting the Health Department, the applicant must obtain a site and soil evaluation from a licensed Professional Engineer or Geologist which includes a percolation test and an eight foot test pit excavation in the area of the proposed septic absorption field. Also included with this information should be a site plan showing locations of the building site, driveways, septic system, well and neighboring wells, property lines, etc.

3. A fee is collected at the time application is made. 2018 Fees are $1023.00.

4. Upon receipt of the above requested documentation and fee, a preliminary site inspection will be conducted by the Health Department within five business days in order to evaluate suitability for the proposed Onsite Waste Treatment System (OWTS)

5. Health Department phone numbers are: 498-6775 Fort Collins or 577-2050 Estes Park.

DIRECTIONS TO THE HEALTH DEPARTMENT IN FORT COLLINS
EXAMPLE

PLEASE EMAIL TO: BUILDING@LARIMER.ORG

To: LARIMER COUNTY BUILDING DEPARTMENT

Subject: Water and Sewer Approval

Date:
Permit Number: 19-RES
Parcel Number:

This is to verify that Owner(s): Mary, met the requirements and/or paid the applicable fees for:

Address of Building Site:
Subdivision Name:
Lot Number: Block Number:

All requirements have been satisfied for this property and a building permit may be issued at this time. The owner/contractor has been informed that it is necessary to call the appropriate district for inspections. By my signature and acting as an Authorized Approver for the identified water or sewer jurisdiction, I authorize the owner to commence construction:

Water District
Full Structure
Print Name _______________________________
Signature _______________________________

Sewer District: NA
Full Structure
Print Name _______________________________
Signature _______________________________

Residential - Single Family Home

OWNER: PLEASE EMAIL THIS SIGNED FORM TO LARIMER COUNTY BUILDING DEPARTMENT BEFORE PICKING UP YOUR BUILDING PERMIT. ISSUANCE OF THE BUILDING PERMIT REFUSED WITHOUT WATER/SEWER AUTHORIZATION HEREIN.

*The Water and Sewer Districts are based upon our records and according to your Tax District as listed with the Larimer County Assessor’s Office. If the information is inaccurate as listed, please advise the Larimer County Building Department. Thank you for your assistance.
Larimer County Wildfire Hazard Area and Roofing Classification Map

ENGINEERED FOOTING
AND FOUNDATIONS MAP
ELECTRICAL PERMIT APPLICATION

☐ Original permit # ________________________  ☐ Trim for original permit # ________________________
☐ Add Fee for permit # ________________________  Associated Solar Permit # ________________________

Work Performed by:
☐ Electrical Contractor (reg. #) ________________
☐ Homeowner * (see clause below)  ☐ Non-licensed contractor (well pump installer, fire alarm installer, etc.)

Complete this form. Incomplete applications will be returned for missing information.

Permit applicant mailing address:
Name ____________________________
Company / contractor OR Homeowner *
Address ____________________________
City __ State __ Zip Code __________
Phone # (_______________)
Cell # (_______________)
Fax # (_______________)
Must have a separate (dedicated) phone line for fax
Email: ____________________________

Job Site / Property address: If a designated numbered address is not available use lot, block, filing, subdivision or GPS coordinates. Attach a map.

Property Owner ________________________
Job Address ____________________________
City (that mail is postmarked from) __________ County __________
Job site contact phone number (required) __________
Directions: ____________________________

Power Supplier ________________________

Check mark (✓) ALL boxes that best describe the electrical installation. Describe work below:
☐ New  ☐ Residential  ☐ New Service or service remodel
☐ Remodel  ☐ Commercial  ☐ Temporary construction service only
☐ Addition  ☐ Solar A/C only  ☐ Manufactured/Modular/Mobile Home
☐ Requesting Extended Permit – Installation will take longer than 12 months, attach explanation.
☐ Other (describe installation) ____________________________

Briefly describe work being performed: ____________________________

* HOMEOWNER CLAUSE: The Colorado Revised Statutes provide a homeowner the opportunity to perform the electrical installation provided the following conditions are true:

I. You are the property owner and this property is not for sale, resale, or is not rental property.
II. You reside or intend to reside at this property as your sole place of residence.
III. You are doing the permitted work yourself and have a reasonable enough knowledge of electrical codes for a proper installation.

By my signature below I attest the above statements are true.
I understand that my homeowners insurance may not cover damages to my home due to construction accidents.

SIGNATURE: ____________________________ Date __________ Fee enclosed $ __________

By Contractor or authorized representative; Homeowner *

MAKE CHECKS PAYABLE TO: STATE OF COLORADO – Do not staple the check to the application.

Note: Mailed or hand-delivered permits may take 5-7 working days to process after receipt and will be mailed, emailed, or faxed according to the information provided. Please ensure that the fee is correct. Permits expire one year from the date issued.

No Refunds will be processed after six months of permit issue date.

The content of this application must not be changed under penalty of Colorado Law.
ELECTRICAL PERMIT FEES

Fee Schedule effective: May 15, 2019
(Solar Permits are on a Separate Form)

Fees are computed according to the appropriate chart below

Fees are based on A, B, C, or D below. Do not use more than one table to determine your fee.
If a permit is not filed in advance of the commencement of an installation, the inspection fee will be double, as prescribed by CRS 12-23-117(3).
Temporary construction meters require a separate permit application from any other activity.
Trim permit. If a permit expires after the rough-in inspection has been completed, inspected, and approved by the electrical inspector, but before the final inspection is approved, a TRIM permit must be obtained. The fee is based on the valuation of the electrical remaining work to be inspected. Minimum fee is $135

A. Residential Electrical Only Installation: (new, remodel, addition) (round sq. ft. up to next 100 for calculation)

<table>
<thead>
<tr>
<th>Living Area:</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal to or less than 1000 square feet</td>
<td>$90</td>
</tr>
<tr>
<td>1,001 square feet but equal to or less than 1,500 square feet</td>
<td>$136</td>
</tr>
<tr>
<td>1,501 square feet but equal to or less than 2,000 square feet</td>
<td>$182</td>
</tr>
<tr>
<td>Greater than 2001 square feet ($135 + ($6.00 x each additional 100 sq. ft.))</td>
<td></td>
</tr>
</tbody>
</table>

Example: (2235 sq. ft.) first 2000 sq. ft. = $182 + 300 (235 rounded up to next 100) x $8.00 = $206.00

B. Commercial and other fees: Including some residential installations that are not based on square footage (not living area, i.e. garage, shop, etc.). Fees in this section are calculated from the total cost to customer (contract price), including electrical materials, items and labor - whether provided by the contractor or the property owner.

<table>
<thead>
<tr>
<th>Valuation of Installation – (Based on cost to customer of labor, material and items)</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal to or less than $2000 = $90 (base fee)</td>
<td>$90</td>
</tr>
<tr>
<td>Greater than $2001 add $6.00 per thousand of job valuation (always round up the next $1,000) to the Base Fee ($67)</td>
<td></td>
</tr>
</tbody>
</table>

EXAMPLE: The cost of the installation is $5,150 (round up to $6,000) (6 x $8 = $48)
The base fee (shown above): $90 + (6 x $8.00) $48 = $138 total fee

C. Mobile/Modular/Manufactured Home set (per unit) | $90 |
D. Temporary heat release | $45 |

RE-INSPECTION FEE ($68): A re-inspection fee may be assessed when additional inspections are required when the job is not ready for inspection (if 5 or more correction items are cited), access is not provided, violations from the last inspection are not completed, etc.

Permit fees are reviewed occasionally and may be adjusted as necessary.

PLEASE NOTE: Applicants should be prepared to do the following:
- Use the online permit system to request an inspection when the job is ready.
- Ensure that the work is completed within the time limitation of the permit.
- Install electrical according to the currently adopted edition of the Colorado Electrical Code (NEC).
- Request an electrical inspection prior to covering and a final inspection prior to occupancy.

Square footage: ___ OR Cost of electrical work: $ ___ OR C or D Above: $ ___

(Round to next highest $1,000.00) Total fee enclosed $ ___

Fees are based on operating expenses from the previous year and are subject to change each year
SAMPLE ONLY
ENGINEERED FOUNDATION REQUIRED

FOUNDATION PLAN

SCALE: 1/8" = 1'-0"
FRONT WALL DETAIL

SCALE: 1" = 1'-0"

M

SAMPLE ONLY
STAIRWAYS (RESIDENTIAL)

February 2012

STAIRS AND LANDINGS

Stairways must be at least 36” clear width above the handrail height. Handrails cannot project more than 4.5” into each side.

There must be at least 80” of headroom measured vertically from the sloped line of the nosing including landings throughout the stairway.

The maximum height of a riser is 7.75”. Treads have to be at least 10” deep measured from nosing to nosing, and need to be a minimum of 4” tall. Treads and risers can vary 3/8” from smallest to largest as long as the maximum riser height and minimum tread depth are maintained.

If using winders, the treads cannot be shallower than 6” and need to be at least 10” deep when you are 12” into the winder at the walk line. The winder treads must also maintain uniform treads at the walk line with no tread depths varying more than 3/8” from largest to smallest.

The landings must be at least the width of the stairway and extend 36” in the direction of travel. Stairs cannot go up more than 12’ without a landing.

Landings are not required at the top of interior stairways, including garage stairs, as long as the door does not swing over the stairs.

GUARDRAILS

Guardrails are required when the walking surface is greater than 30” from the grade below and must be greater than 36” in height. When the top of the guardrail serves as the required handrail, the height can be reduced to 34” but no greater than 38”.

Openings in guardrails shall not allow passage of a sphere 4” in diameter with a couple of exceptions. Openings in guardrails on the open side of stairs cannot allow the passage of a sphere greater than 4 3/8”. The triangular opening created by a tread, riser, and guardrail cannot allow the passage of a sphere greater than 6”. Open riser design in stairs also requires the opening to be no greater than 4” when 30” or higher to the grade below.

See Stair and Handrail Specifications on page 2 for more details.
HANDRAILS

Handrails must be mounted between 34” and 38” above the tread nosing and must run the full length of the stairs. The handrails have to be at least 1.5” off the wall and where circular, need to be 1.25” to 2” in diameter. If the handrail is not circular, it must have a perimeter between 4” and 6.25” with a maximum cross section of 2.25”. Other handrails may be acceptable as long as they are able to be grasped.

Handrails need to run continuously for the full flight of the stairs and return to the wall at the top and bottom. They can also stop and start at a newel post at landings. The use of a turnout, starting easing or volute, can also be used at the bottom tread.
PASSIVE SUB-SUB BASE PRESSURIZATION RADON CONTROL SYSTEM FOR NEW CONSTRUCTION

1. CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHOULD BE LAID OVER A GAS PERMEABLE MATERIAL OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF UNAFFECTED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.

2. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REF'S: AMERICAN CONCRETE INSTITUTE PUBLICATIONS, "ACI 302.1R", "ACI 312R", OR THE POST TENSIONING INSTITUTE MANUAL, "DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND".

3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR, WALL ASSEMBLIES IN CONTACT SOL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRYWALL PENTRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-87.

4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE CRAWL SPACE BENEATH THE SLAB OR SOIL-GAS RETARDER MEMBRANE.

5. CIRCUITS SHALL BE A MINIMUM 15 NIP, 115 VOLT.
PASSIVE RADON CONTROL SYSTEM IN CRAWL SPACE FOR NEW CONSTRUCTION

NOTES:
1. INSTALL A LENGTH OF 4" OR 4" DIAMETER PERFORATED DRAIN TILE HORIZONTALLY BENEATH THE SHEETING AND CONNECT TO THE "T" FITTING WITH THE VERTICAL STACK PIPE THROUGH THE SOIL-GAS-RETENTION MEMBRANE. THIS HORIZONTAL PIPE SHOULD NORMALLY BE PLACED PARALLEL TO THE LONG DIMENSION OF THE HOUSE. IT SHOULD EXTEND NO CLOSER THAN 6 FEET TO THE FOUNDATION.

2. VENTILATE CRAWLSPACES IN CONFORMANCE WITH LOCAL CODES. VENTS SHALL BE OPEN TO THE EXTERIOR BE OR NONCLOSEABLE DESIGN.

3. CIRCUITS SHOULD BE A MINIMUM 15 NIP, 115 VOLT.

EXHAUST FROM OPENINGS INTO CONDITIONED SPACES OF BUILDING
12" MIN. ABOVE ROOF