

# Residential Building Code (IRC 2000)

## Requirements Frequently Misunderstood

(NOTE: Truss specifications from fabricator required before permit is issued)

### General Structural and Safety

- Footer projections must be 2" minimum, and maximum equal to thickness of footer; footer thickness must be at least 6.
- Footer step vertical connecting section - 6" thick minimum; step vertical rise max.  $\frac{3}{4}$  of adjacent horizontal footer run
- Excavation for low footings parallel with higher footings must not invade the higher footer under-space as defined by a line declining 30 degrees starting from a point 3' from bottom of top footing edge, unless adequate lateral support is provided for material underneath the higher footing
- Damp-proofing and a drainage system is required around all habitable space that is below grade
- Drainage system requires perforated pipe set lower than habitable space to be protected; stone surround with 2" under and 6 " over pipe, with stone extending to 12" beyond footer; stone covered with permeable membrane
- Unbalanced fill is the vertical distance from finished grade outside to concrete floor inside. This height of backfill is controlled by the size and strength of the foundation. Wall construction limits are described in IRC Tables R404.1.1(1), (2), (3) and (4); However, grade must be lower than the top of foundation by a minimum of 6" in all cases except with masonry, where it is 4". Anchor bolts must be placed within 12" from ends of plates and max. 6' on center; straps are spaced per mfg. direction (variably less than 6')
- Outside grade is required to slope away from foundation at the rate of 6" in 10' (5%), or a swale or drainage trench must be provided
- Crawl space foundations must have ventilation equal to 1 sq. ft. for each 150 sq. ft. of floor area; if 6 mil. poly vapor barrier is used the

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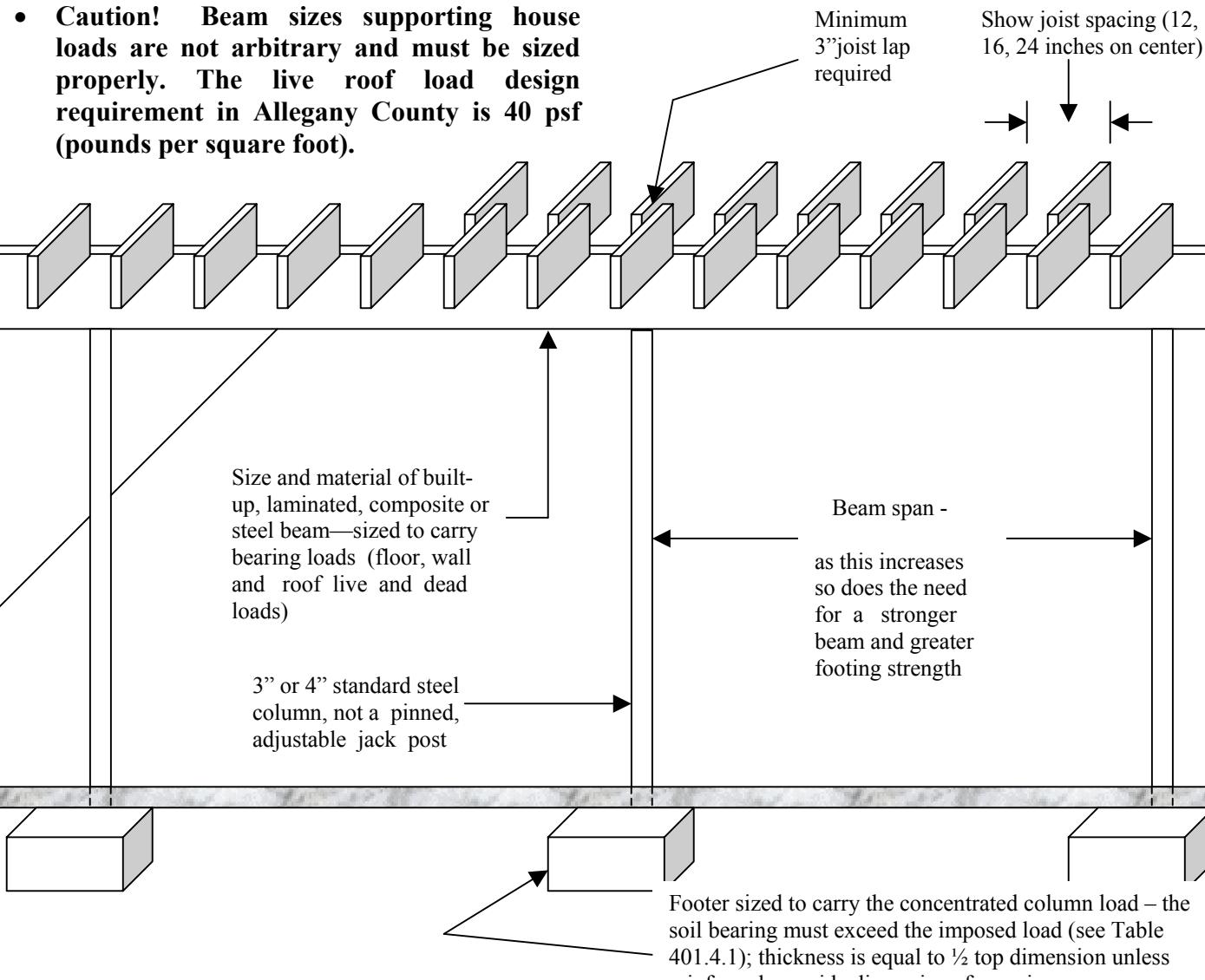
vent requirement is reduced to 1 sq. ft. for each 1500 sq. ft. of floor area (min. 1 vent at each corner). An 18" x 24" min. access hole must be provided. Crawl space min. clear ht. grade-to-floor is 18", grade-to-beam is 12"

- All buildings must comply with the International Energy Code, 2000edition; practical application: R-38 – ceiling, R-16 – walls, R-19 – floors; conditioned basements insulated also – R-11
- All roof systems must be designed to support a 40 p.s.f. live load condition; truss specifications must be submitted for review
- Guardrail is required where the platform or floor is more than 30" above the floor or grade below. It must be min. 36" in height and have intermediate rails or ornamental closures which do not allow passage of an object 4" or more in diameter and do not create a ladder effect; same requirements at open stairs except 34" min. height and 6" object in triangle at riser tread opening
- With its normal method of operation, one window in all sleeping rooms without an exterior door must provide 5.7 s.f. minimum clear egress opening – if 44" or less from grade it can be 5.0 s.f.; min. width – 20", min. ht. – 24"; max. sill height is 44" (**Note: the two min. dimensions do not provide the necessary clear opening!**)
- Habitable rooms must have glazing equal to 8% of floor area, with half openable
- All stair headroom clearances must be 6'8" minimum measured vertically from a plane described by the tread nosing
- Attics with over 30" clear space to rafter must have a min. 22" x 30" access scuttle hole
- Smoke detectors are required in all bedrooms, outside of each sleeping area and on each floor, electrically interconnected with battery back-up
- Garage: door cannot open into a sleeping room, should have a 4" floor height separation; must have a  $\frac{1}{2}$ " drywall firewall interface with residence and attic space; any door at interface must be 20-minute rated, 1-3/8" solid wood, or

a steel door with honeycomb fill; all garage receptacles must be GFCI rated; concrete floor must be 3500 psi and sloped to drain or to door

- **Caution! Beam sizes supporting house loads are not arbitrary and must be sized properly. The live roof load design requirement in Allegany County is 40 psf (pounds per square foot).**

door headers in these walls. Consult a design professional or experienced builder.



Design floor loads for non-bedroom areas are 40 psf live and 12 psf dead (partition and equipment loads must be added), and for bedroom areas are 30 psf live and 12 psf dead. These forces are cumulative by square foot area and by changing heights and floors. They bear upon the lower supporting beams as well as the headers over wall openings (for large windows, garage doors, etc.). When trusses are used the roof load is carried to the outer wall and is not added to center walls and beams. However, the roof load is fully supported at the outside bearing walls and affects window and

There are numerous types and strengths of beams. They vary in material and size and each should be considered for use for its strength, appearance and application. Most common is the built-up 2x beam, such as four 2x 10's nailed and glued together (sometimes just nailed). These beams are limited in the load they can support. If wood beams are still desirable, then stronger special composite and laminated beams (glu-lams, LVL's, Microlams, etc.) can be used. Often the strongest and least expensive beam is steel, most commonly a wide flange beam, such as a W 8x 18 (8" high, 18 lbs. per foot). Let a professional help you choose.