BCT 104 Construction Math

STAIR CODES
CALCULATIONS
STAIR TERMINOLOGY
STRINGER LAYOUT
RISE TO RUN RATIO
Stair Codes

• **Important Residential Stair Codes**

• 1. The maximum stair riser is 8". The minimum is 4".

• 2. The minimum tread depth is 9".

• 3. There is a 3/8" allowable tolerance between the largest and smallest distance for the rise, treads and nosings in a flight of stairs.

• 4. Nosings are required on treads less than 10". Nosings may project ¾ " to 1 1/4".

• 5. 6'- 8" minimum headroom is required measured vertically from a sloping plane along the stair nosings.
Procedure

• **Step by step procedure:**
  • 1. Determine the total rise in inches, *finish* floor to *finish* floor.
  • 2. Check floor for level. Adjust total rise distance if necessary.
  • 3. Divide the total rise by 7 to determine the number of risers needed.
  • 4. Divide the total rise by the number of risers needed to determine the unit rise of each step.
  • 5. Determine the unit run. If there are no limitations for total run use the formula 2 risers + 1 run = 23" to 24". There must be a minimum of 36" of landing by the width of the stairs at both the top and bottom of each stairway.
  • 6. The total run = the number of runs (treads) times the tread length. For most stairways the landing is the top rise and run. In this case the number of runs will be one less than the number of risers.
  • 7. Lay out the stringer with a framing square for the proper number of rises and runs.
  • 8. If the first finish floor height is installed after the stringers are installed, the floor thickness must be added to the bottom riser of the stringer or the sub-floor where the stringer rest must be built up to the first finish floor height.
  • 9. Determine the tread thickness. This must be cut off the bottom of the stair stringer.
BCT 223 Finished Stairs
Stair Parts Open Tread

- Equal Space
- Hand rail / Guard rail
- Equal space between all balusters
- Newel post
- Baluster
- Balcony 36" min.
- Landing
- Nosing
- Skirt board

34" to 38"
Stair stringer lay out with framing square

- calculated rise
- framing square
- run
- rise
- horizontal sub-floor
- shortened for tread thickness

- landing rise
- 2 x 12 stringer
- vertical landing wall
SHORTEN FIRST RISER

FINISH TREAD HEIGHT

STAIR STRINGER

FIRST RISER

TREAD HEIGHT - FINISH FLOOR

CUT LINE

cut off bottom of first riser

FINISH FLOOR

SUB-FLOOR
BCT 104 Construction Math
Stair Rake Wall

- Top plate
- Landing
- long point
- short point
- 1 1/2" stud
- " #4 stud
- first stud
- " #2 stud
- " #3 stud
- 48"
- 16, 16, 12"
- 44"
- 10"
- calculated rise
- stair rise and run

Not to Scale