



# SPAN CHART

## TABLE E-75 RESIDENTIAL

### 75 PSF TOTAL LOAD

**Table Instructions:** Enter the table with a joist span and cantilever length within the joist span limits based on the joist option, then read the maximum allowable box beam span.

#### JOIST SPAN LIMITS

| Joist option                            | 1 5/8" |     | 1 5/8", every other joist doubled |     | 1 5/8", all doubled |     | 2"  |     | 2", every other joist doubled |     | 2", all doubled |     |
|-----------------------------------------|--------|-----|-----------------------------------|-----|---------------------|-----|-----|-----|-------------------------------|-----|-----------------|-----|
|                                         | 12"    | 16" | 12"                               | 16" | 12"                 | 16" | 12" | 16" | 12"                           | 16" | 12"             | 16" |
| Joist Spacing O.C.                      | 12"    | 16" | 12"                               | 16" | 12"                 | 16" | 12" | 16" | 12"                           | 16" | 12"             | 16" |
| Maximum Joist Span (Ledger To Box Beam) | 14'    | 12' | 16'                               | 14' | 18'                 | 16' | 18' | 16' | 20'                           | 18' | 22'             | 20' |
| Maximum Cantilever Length               | 4'     | 4'  | 5'                                | 4'  | 6'                  | 5'  | 6'  | 5'  | 6'                            | 6'  | 6'              | 6'  |

#### MAXIMUM BOX BEAM SPAN (SINGLE BOX BEAM BETWEEN POSTS)

| CANTILEVER LENGTH (FEET) |       | JOIST SPAN (LEDGER TO BOX BEAM) (FEET) |         |         |         |         |         |         |         |         |         |         |         |         |         |        |        |        |        |        |        |
|--------------------------|-------|----------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|
|                          |       | 3'-0"                                  | 4'-0"   | 5'-0"   | 6'-0"   | 7'-0"   | 8'-0"   | 9'-0"   | 10'-0"  | 11'-0"  | 12'-0"  | 13'-0"  | 14'-0"  | 15'-0"  | 16'-0"  | 17'-0" | 18'-0" | 19'-0" | 20'-0" | 21'-0" | 22'-0" |
| CANTILEVER LENGTH (FEET) | 0'-0" | 19'-2"                                 | 17'-5"  | 16'-2"  | 15'-2"  | 14'-5"  | 13'-9"  | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9" | 10'-5" | 10'-2" | 9'-11" | 9'-8"  | 9'-5"  |
|                          | 0'-6" | 17'-5"                                 | 16'-2"  | 15'-2"  | 14'-5"  | 13'-9"  | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5" | 10'-2" | 9'-11" | 9'-8"  | 9'-5"  | 9'-3"  |
|                          | 1'-0" | 16'-2"                                 | 15'-2"  | 14'-5"  | 13'-9"  | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2" | 9'-11" | 9'-8"  | 9'-5"  | 9'-3"  | 9'-0"  |
|                          | 1'-6" | 15'-2"                                 | 14'-5"  | 13'-9"  | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11" | 9'-8"  | 9'-5"  | 9'-3"  | 9'-0"  | 8'-10" |
|                          | 2'-0" | 14'-5"                                 | 13'-9"  | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"  | 9'-5"  | 9'-3"  | 9'-0"  | 8'-10" | 8'-8"  |
|                          | 2'-6" | 13'-9"                                 | 13'-3"  | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"  | 9'-3"  | 9'-0"  | 8'-10" | 8'-8"  | 8'-6"  |
|                          | 3'-0" | 13'-3"                                 | 12'-10" | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"  | 9'-0"  | 8'-10" | 8'-8"  | 8'-6"  | 8'-4"  |
|                          | 3'-6" | 12'-10"                                | 12'-5"  | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"  | 8'-10" | 8'-8"  | 8'-6"  | 8'-4"  | 8'-3"  |
|                          | 4'-0" | 12'-5"                                 | 12'-0"  | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"   | 8'-10" | 8'-8"  | 8'-6"  | 8'-4"  | 8'-3"  | 8'-1"  |
|                          | 4'-6" | 12'-0"                                 | 11'-9"  | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"   | 8'-10"  | 8'-8"  | 8'-6"  | 8'-4"  | 8'-3"  | 8'-1"  | 7'-11" |
|                          | 5'-0" | 11'-9"                                 | 11'-5"  | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"   | 8'-10"  | 8'-8"   | 8'-6"  | 8'-4"  | 8'-3"  | 8'-1"  | 7'-11" | 7'-10" |
|                          | 5'-6" | 11'-5"                                 | 11'-2"  | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"   | 8'-10"  | 8'-8"   | 8'-6"   | 8'-4"  | 8'-3"  | 8'-1"  | 7'-11" | 7'-10" | 7'-8"  |
|                          | 6'-0" | 11'-2"                                 | 10'-11" | 10'-9"  | 10'-5"  | 10'-2"  | 9'-11"  | 9'-8"   | 9'-5"   | 9'-3"   | 9'-0"   | 8'-10"  | 8'-8"   | 8'-6"   | 8'-4"   | 8'-3"  | 8'-1"  | 7'-11" | 7'-10" | 7'-8"  | 7'-7"  |

#### MAXIMUM BOX BEAM SPAN (DOUBLE BOX BEAM BETWEEN POSTS)

| CANTILEVER LENGTH (FEET) |       | JOIST SPAN (LEDGER TO BOX BEAM) (FEET) |         |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--------------------------|-------|----------------------------------------|---------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                          |       | 3'-0"                                  | 4'-0"   | 5'-0"  | 6'-0"  | 7'-0"  | 8'-0"   | 9'-0"   | 10'-0"  | 11'-0"  | 12'-0"  | 13'-0"  | 14'-0"  | 15'-0"  | 16'-0"  | 17'-0"  | 18'-0"  | 19'-0"  | 20'-0"  | 21'-0"  | 22'-0"  |
| CANTILEVER LENGTH (FEET) | 0'-0" | 24'-1"                                 | 21'-11" | 20'-4" | 19'-2" | 18'-2" | 17'-5"  | 16'-9"  | 16'-2"  | 15'-8"  | 15'-2"  | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  |
|                          | 0'-6" | 21'-11"                                | 20'-4"  | 19'-2" | 18'-2" | 17'-5" | 16'-9"  | 16'-2"  | 15'-8"  | 15'-2"  | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  |
|                          | 1'-0" | 20'-4"                                 | 19'-2"  | 18'-2" | 17'-5" | 16'-9" | 16'-2"  | 15'-8"  | 15'-2"  | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  |
|                          | 1'-6" | 19'-2"                                 | 18'-2"  | 17'-5" | 16'-9" | 16'-2" | 15'-8"  | 15'-2"  | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" |
|                          | 2'-0" | 18'-2"                                 | 17'-5"  | 16'-9" | 16'-2" | 15'-8" | 15'-2"  | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  |
|                          | 2'-6" | 17'-5"                                 | 16'-9"  | 16'-2" | 15'-8" | 15'-2" | 14'-9"  | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  |
|                          | 3'-0" | 16'-9"                                 | 16'-2"  | 15'-8" | 15'-2" | 14'-9" | 14'-5"  | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  |
|                          | 3'-6" | 16'-2"                                 | 15'-8"  | 15'-2" | 14'-9" | 14'-5" | 14'-1"  | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  |
|                          | 4'-0" | 15'-8"                                 | 15'-2"  | 14'-9" | 14'-5" | 14'-1" | 13'-9"  | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  | 11'-2"  |
|                          | 4'-6" | 15'-2"                                 | 14'-9"  | 14'-5" | 14'-1" | 13'-9" | 13'-6"  | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  | 11'-2"  | 11'-1"  |
|                          | 5'-0" | 14'-9"                                 | 14'-5"  | 14'-1" | 13'-9" | 13'-6" | 13'-3"  | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  | 11'-2"  | 11'-1"  | 10'-11" |
|                          | 5'-6" | 14'-5"                                 | 14'-1"  | 13'-9" | 13'-6" | 13'-3" | 13'-0"  | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  | 11'-2"  | 11'-1"  | 10'-11" | 10'-10" |
|                          | 6'-0" | 14'-1"                                 | 13'-9"  | 13'-6" | 13'-3" | 13'-0" | 12'-10" | 12'-7"  | 12'-5"  | 12'-3"  | 12'-0"  | 11'-10" | 11'-9"  | 11'-7"  | 11'-5"  | 11'-4"  | 11'-2"  | 11'-1"  | 10'-11" | 10'-10" | 10'-8"  |

#### NOTES:

- All loads and load combinations are determined using ASCE 7-05. DL=Dead Load, LL=Live Load, SL=Snow Load. When  $LL < SL$ , the total load (TL) is  $1.2DL + 1.6SL + 0.5LL$ , otherwise  $TL = 1.2DL + 1.6LL + 0.5SL$ .
- Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
- Deflection limits for joists are determined using IBC-2009 Section R505, Steel Floor Framing. Joists - Live load deflection is limited to  $L/480$ , total deflection is limited to  $L/240$ , where L is the span length. Box Beams - Live load deflection is limited to  $L/360$ , total deflection is limited to  $L/240$ , where L is the span length.
- Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
- Grey areas are established based on 12 in. O.C. joist capacity.
- A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
- Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
- 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
- Box beam yield stress is assumed as 50ksi.
- If a box beam is supported by more than two posts, then its span selected above should be multiplied by 0.85 for a single box beam and 0.90 for a double box beam.
- If a box beam is provided as an intermediate joist support, then its span selected above or modified by Note 10 should be multiplied by 0.60 for a "dropped" box beam and 0.70 for a "flush" box beam.
- This span chart should not be used for decks located in a hurricane zone (in hurricane zones table E125, E150, or E200 should be used).