

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)	8'	7'	9'	7'	10'	8'	13'	11'	15'	13'	16'	15'
Maximum Cantilever Length	1'	0.5'	3'	2'	4'	3'	4'	3'	5'	4'	5'	5'

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"	13' - 9"	12' - 6"	11' - 4"	10' - 4"	9' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"								
	0' - 6"	12' - 6"	11' - 4"	10' - 4"	9' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"								
	1' - 0"	11' - 4"	10' - 4"	9' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"								
	1' - 6"	10' - 4"	9' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"							
	2' - 0"	9' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"							
	2' - 6"	8' - 11"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"							
	3' - 0"	8' - 5"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"	5' - 2"							
	3' - 6"	8' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"	5' - 3"	5' - 1"							
	4' - 0"	7' - 7"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"	5' - 3"	5' - 2"	5' - 0"							
	4' - 6"	7' - 3"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"	5' - 3"	5' - 2"	5' - 0"	4' - 11"							
	5' - 0"	7' - 0"	6' - 9"	6' - 6"	6' - 4"	6' - 1"	5' - 11"	5' - 9"	5' - 8"	5' - 6"	5' - 4"	5' - 3"	5' - 2"	5' - 0"	4' - 11"	4' - 7"							
	5' - 6"																						
	6' - 0"																						

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"	17' - 5"	15' - 9"	14' - 8"	13' - 9"	13' - 1"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"								
	0' - 6"	15' - 9"	14' - 8"	13' - 9"	13' - 1"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"								
	1' - 0"	14' - 8"	13' - 9"	13' - 1"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"								
	1' - 6"	13' - 9"	13' - 1"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"								
	2' - 0"	13' - 1"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"								
	2' - 6"	12' - 6"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"								
	3' - 0"	11' - 10"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"	7' - 7"								
	3' - 6"	11' - 3"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 5"								
	4' - 0"	10' - 9"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 5"	7' - 3"								
	4' - 6"	10' - 3"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 5"	7' - 3"	7' - 1"								
	5' - 0"	9' - 10"	9' - 6"	9' - 2"	8' - 11"	8' - 7"	8' - 4"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 5"	7' - 3"	7' - 1"	6' - 11"								
	5' - 6"																						
	6' - 0"																						

NOTES:

- All loads and load combinations are determined using ASCE 7-16. 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=150psf.
- Deflection limits for joists are determined using 2021 IBC 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 S100-16 (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.
- Refer to table on page 9 in New Castle Installation Guide for max joist span before a drop beam is required.