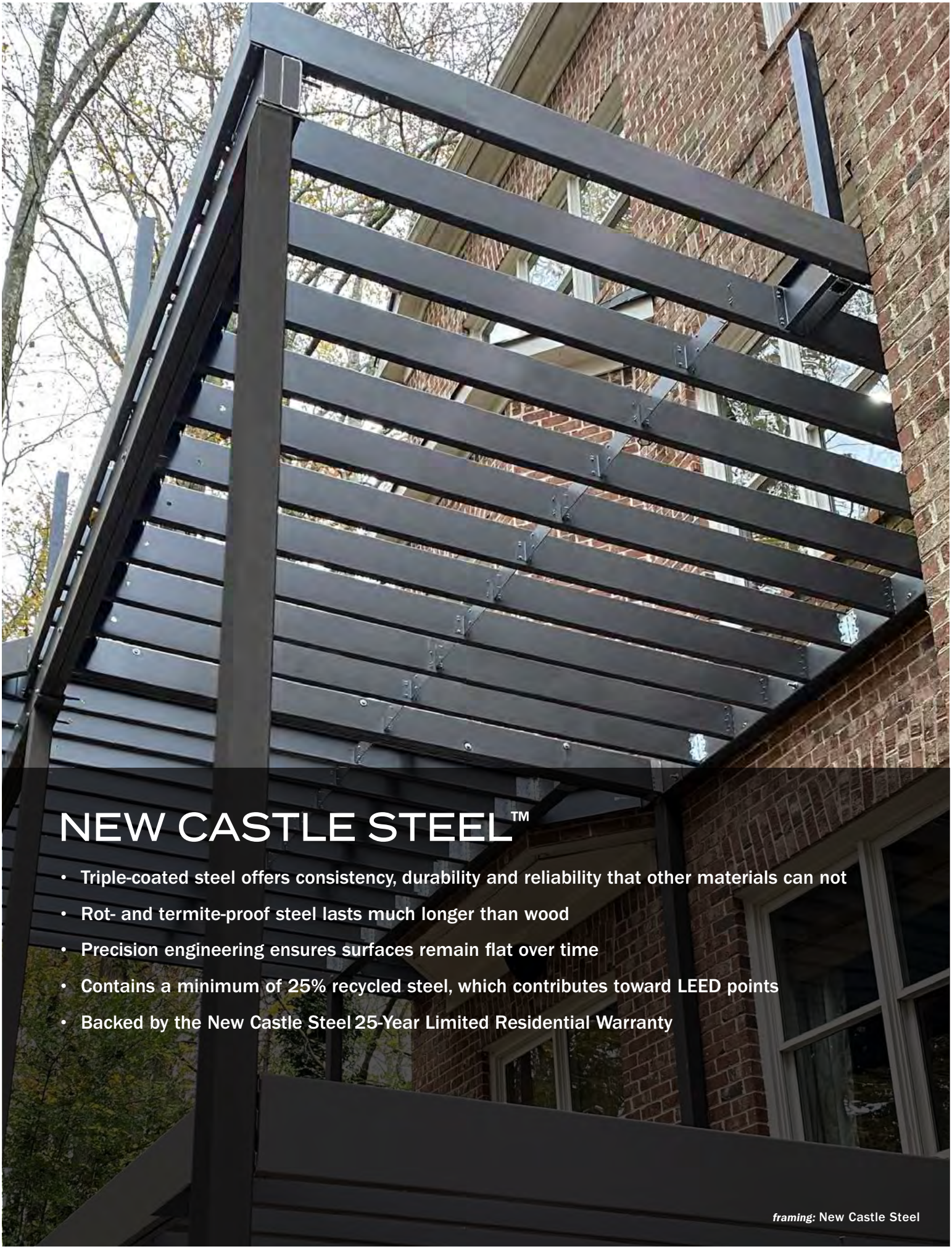
NEW CASTLE STEEL™

STEEL DECK FRAMING
INSTALLATION GUIDE



NEW CASTLE STEEL™

- Triple-coated steel offers consistency, durability and reliability that other materials can not
- Rot- and termite-proof steel lasts much longer than wood
- Precision engineering ensures surfaces remain flat over time
- Contains a minimum of 25% recycled steel, which contributes toward LEED points
- Backed by the New Castle Steel 25-Year Limited Residential Warranty

framing: New Castle Steel

NEW CASTLE STEEL™

STEEL DECK FRAMING
INSTALLATION GUIDE

In your hands, you hold everything you need to begin building with the New Castle Steel (NCS) deck framing system. This step-by-step guide will show you how to create a beautiful outdoor living space that fits perfectly into your or your client's lifestyle.

New Castle Steel has been proven in the field. After almost twenty years of unparalleled performance, it offers warm, natural beauty and inviting comfort that no other product can match. Maybe that's why New Castle Steel is asked for by more customers than any other brand in the business.

From time to time, New Castle Steel revises its installation instructions. To ensure you have the most up-to-date installation instructions, please visit ncsteel.com.

NEW CASTLE STEEL™ INSTALLATION GUIDE

CONTENTS

NOTE: Construction methods are always improving. Please ensure you have the most up-to-date installation instructions by visiting ***ncsteel.com****.*

This symbol indicates page information continues to next page.

GENERAL QUESTIONS AND ANSWERS

Why New Castle Steel?
- **Strong** – Our steel provides for a larger deck space with fewer posts and beams for less obstructed views.
- **Stable** – NCS won't twist, warp, or sag over time.
- **Long-lasting** – NCS lasts longer than pressure-treated lumber, saving you the cost of fixing or replacing your deck.
- **Non-combustible** – NCS is ideal for areas of high-density housing and frequent wildfires.
- **Eco-friendly** – NCS contains a minimum of 25% recycled steel and is 100% recyclable.

How easy is New Castle Steel to build with?
NCS lays out quickly and easily. There are only three components: (**1**) NCS Track (Ledger), (**2**) NCS Joist, and (**3**) NCS Beam
- Each piece can be cut to fit and assembled just like wood.
- Features premium 12' (3.66 m), 16' (4.88 m), and 20' (6.1 m) lengths for track, ledger, and joist.
- NCS is assembled using hex head self-drilling screws and common angle brackets.
- NCS requires fewer tools (a circular saw, drill, and ferrous metal blades) than to typical wood framing.

What tools are required?
Go to page 6 for a complete description of the tools, hardware, and connectors required for installing a NCS deck frame.

Are there color choices in New Castle Steel?
NCS deck framing is available in **ONE** unique color designed to provide a pleasing and subtle shadow effect under the deck, drawing visual attention to the detailed elements of your deck.

What type of maintenance is required with New Castle Steel?
NCS is low maintenance when installed properly. The dual-coated finish protects the steel, insulating it from outdoor elements.

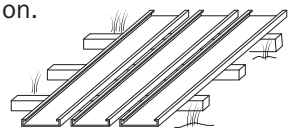
When the steel in New Castle Steel is exposed, in the case of an end cut or scratch, does it need to be painted?
Yes. Each steel component is galvanized and coated with a specially formulated exterior finish that is primed, painted, and baked on—exclusively engineered for the durability of NCS.
- If scratched and not painted, the galvanization process will restrict rust. Rust will be electro-magnetically restricted to only the area exposed. As a preventative, as well as an aesthetic measure, always paint exposed steel with NCS touch-up paint.

  Helpful Hint: Do this after you have cut many components to speed up the process.

Can scrap New Castle Steel cut-offs be recycled?
NCS components contain a minimum of 25% recycled steel and cut-offs are 100% recyclable.

Can New Castle Steel be used in high-fire danger areas?
NCS components are non-combustible and qualify for extreme wildfire building codes under the Wild Land Urban Interface (WUI) building material requirements.

What is the proper method to store New Castle Steel?
NCS should be supported at a sufficient height to avoid full ground contact if at all possible. Heat and cold transfer to any steel product can sometimes damage lawn and vegetation.



Can New Castle Steel components come into contact with soil or concrete when installed?
NCS is approved for contact with both soil and concrete.

What fasteners can I use to attach decking to New Castle Steel framing?
Only use NCS-approved fasteners when installing any decking product. Use of non-recommended decking fasteners could void the warranty. *Refer to NCS Required Fasteners on page 6 for details.*

⚠ WARNING

Due to increased risk of corrosion, New Castle Steel may not be installed (**1**) within 3000 ft. (914.4 m) of any body of salt water or (**2**) under the surface or within the splash zone of any body of fresh water. **Any such installations shall void the New Castle Steel Limited Warranty.**

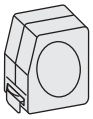
NOTE: Grounding New Castle Steel
When required by local code officials, properly ground New Castle Steel. Refer to page 73 for more details.

SAFETY

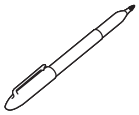
⚠ WARNING

When working on any construction project, you should wear protective clothing and safety equipment. Wear face shield, hearing protection, gloves, and long sleeves, particularly when cutting in confined spaces.

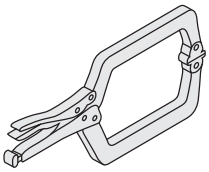
TOOLS



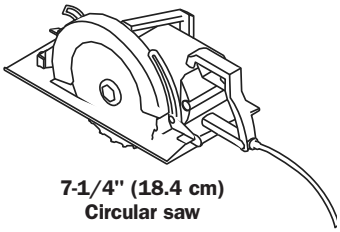
Tape measure



Permanent felt marker

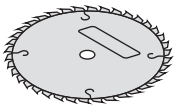


C-channel vice grips

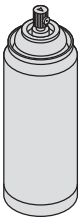


7-1/4" (18.4 cm) Circular saw

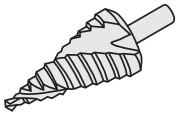
Drill with adjustable clutch and torque with speed range of 0-2,500 max.



7-1/4" (18.4 cm) Ferrous metal cutting blade



NCS touch-up paint

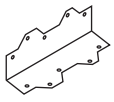


Step drill bit

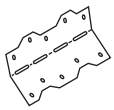
FASTENERS AND BRACKETS

» Dual Hardness Self-Drilling Steel Framing Screw – *refer to New Castle Steel Required Fasteners, column A (shown below).*

» Galvanized 16 Ga. "L" bracket (Simpson Strong-Tie® L70Z, LS70Z or IBC approved equivalent).

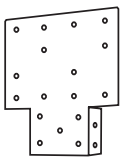


L70Z

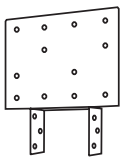


LS70Z

» New Castle Steel Galvanized 16 Ga. post to beam brackets.



NCS Front Post Bracket



NCS Back Post Bracket

NOTE: *For post to pier connections, refer to local building code official for proper installation methods.*

Simpson Strong-Tie® is a registered trademark of Simpson Strong-Tie Company, Inc. *Refer to www.strongtie.com for important installation and corrosion information.*

NEW CASTLE STEEL™ REQUIRED FASTENERS		
Column A	**Column B**	**Column C**
Metal-to-Metal	**Decking to Metal – Face Attachment**	**Decking to Metal – Hidden Fasteners**
Simpson Strong-Tie® XEQ34B1016	FastenMaster® Cortex Driller™*	Trex Elevations® Universal Hidden Fasteners
ITW Buildex Teks Select™ P/N 1076000 (10-16 x ¾" [1.9 cm] HWH Teks 3)	Starborn® DeckFast® Metal 410 SS w/ Epoxy Coating	Camo EdgeX Metal
	Simpson Strong-Tie® Quik Drive DCSD238 (xxxx) **xxxx denotes color code of product*	

***** *After installing FastenMaster® Cortex Driller™ screws, gently tap Cortex plugs into place to cover screws.*

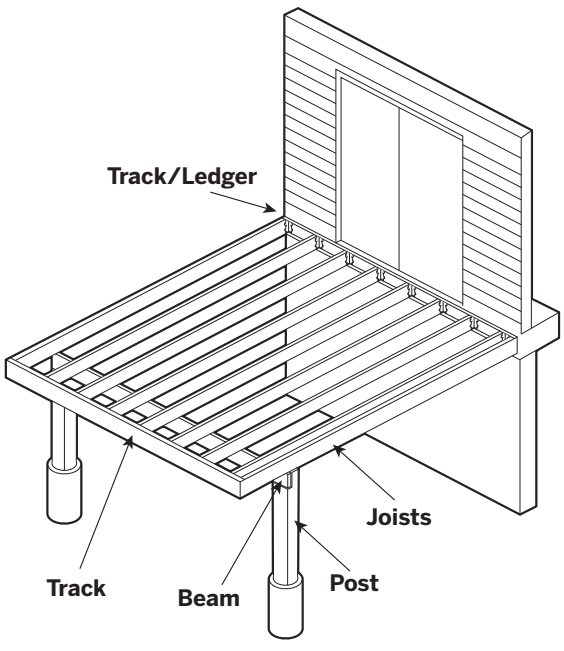
FastenMaster® Cortex Driller™ is a registered trademark of OMG, Inc.
DeckFast® is a registered trademark of Starborn Industries, Inc.
Teks Select™ are trademarks of ITW Buildex and Illinois Tool Works, Inc.

PARTS

Item Number	Product Description	Unit qty
NCS202204	NCS 1 5/8” X 8” X 12’ Joist 18 gauge	100
NCS202205	NCS 1 5/8” X 8” X 16’ Joist 18 gauge	100
NCS202206	NCS 1 5/8” X 8” X 20’ Joist 18 gauge	100
NCS202207	NCS 2” X 8” X 12’ Joist 14 gauge	50
NCS202208	NCS 2” X 8” X 16’ Joist 14 gauge	50
NCS202209	NCS 2” X 8” X 20’ Joist 14 gauge	50
NCS202201	NCS 1 1/4” X 8” X 12’ Track 14 gauge	80
NCS202202	NCS 1 1/4” X 8” X 16’ Track 14 gauge	80
NCS202203	NCS 1 1/4” X 8” X 20’ Track 14 gauge	80
NCS202213	NCS Midspan Blocking	10
NCS202214	NCS Beam Blocking	10
NCS202216	NCS Beam Endcap	40
NCS202217	NCS Touchup Paint	12
NCS202225	Post 6" x 6" x 6'	18
NCS202226	Post 6" x 6" x 12'	18
NCS202228	Front Post Bracket	10
NCS202229	Back Post Bracket	10

Custom lengths of 1 5/8" and 2" joist and track over 20' available upon request.

There may be new products available to the New Castle Steel lineup, please visit ncsteel.com for the most updated list.

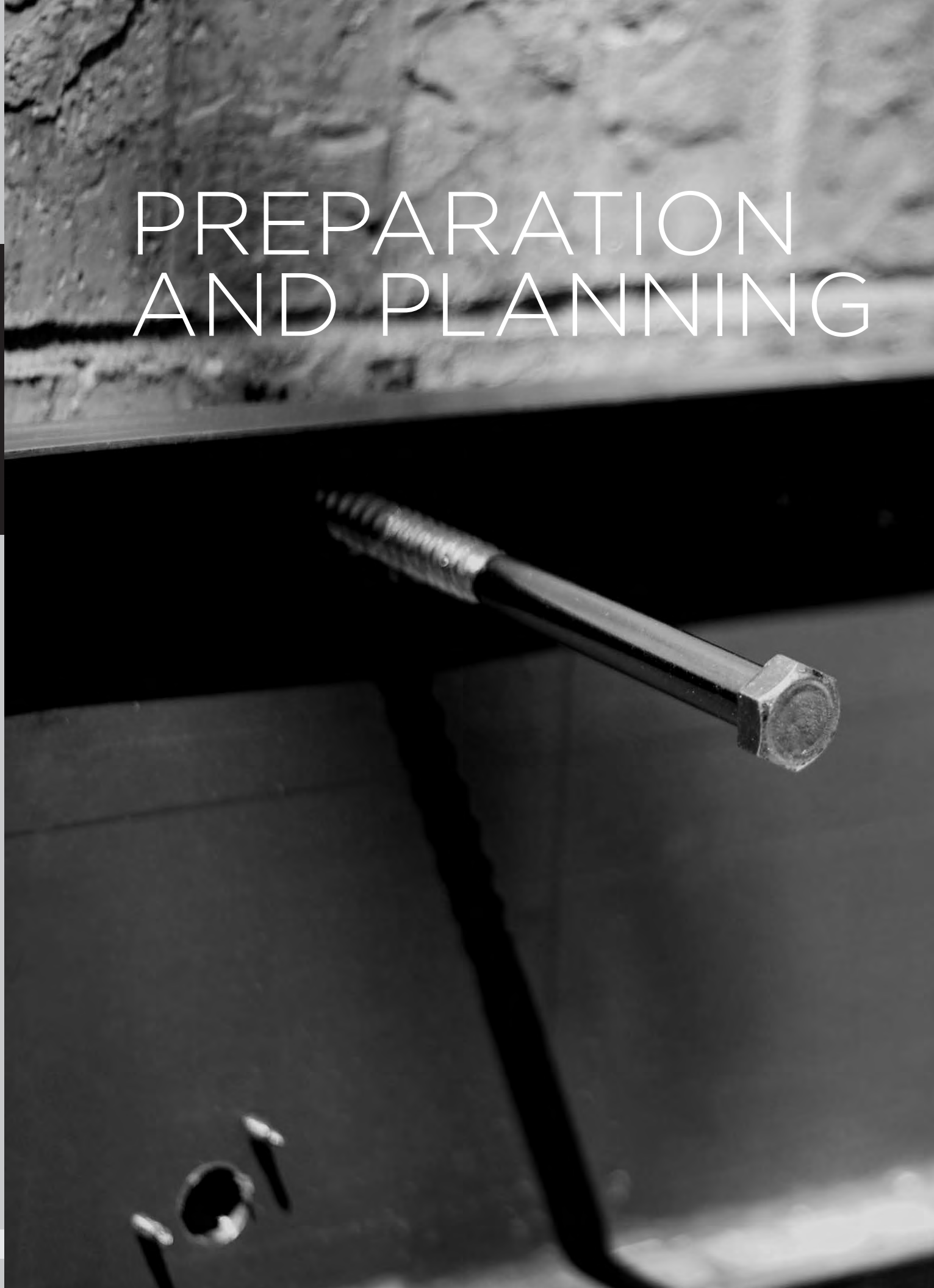


Deck Support Post for New Castle Steel

As part of the NCS deck framing system, support posts prevent buckling and maintain an even perfection from the day they’re installed. These galvanized and powder-coated posts can be painted or wrapped to complement the deck, rail, and home.

NEW CASTLE STEEL PRODUCT WEIGHTS				
Profile	lb/ft	lbs/piece		
		12'	16'	20'
Joist - 15/8"	1.81	21.6	28.8	36.0
Joist - 2"	3.37	40.44	53.92	67.4
Track	2.43	28.8	38.4	48.0
Beam	5.80	69.6	92.8	116.0

PREPARATION AND PLANNING



PLANNING

⚠ WARNING

New Castle Steel does not provide direction on making all types of connections. Specific details for critical connections not shown should be designed by a professional engineer and/or building code official.

⚠ WARNING

Build according to local building codes. *Refer to section R505 of the 2012, 2015 IRC and 2018 IRC for more information.*

⚠ WARNING

Reference all decking, railing, and deck accessory manufacturers for required attachment and installation procedures regarding their products.

⚠ WARNING

The consumer or contractor should take all necessary steps to ensure the safety of everyone involved in the project, including, but not limited to: wearing the appropriate safety equipment (i.e. eye, ear, and body protection).

⚠ WARNING

Due to increased risk of corrosion, New Castle Steel may not be installed (**1**) within 3000 ft. (914.4 m) of any body of salt water or (**2**) under the surface or within the splash zone of any body of fresh water. **Any such installations shall void the New Castle Steel Limited Warranty.**

To build a deck with New Castle Steel components, it is necessary to determine the adequate joist span and beam span of your deck from the illustrations shown on page 11. It is also necessary to determine if a cantilever (i.e. overhang) is desired (or required) to attain the desired deck depth. Determine whether a drop beam or flush beam scenario will be used and determine the required information for local building plan approval.

Choose the New Castle Steel span chart (*refer to pages 12-23*) that fits within the building code requirements by locating the live, dead, and total load in the Uniform Deck Loads chart. If you do not know the local code requirements, contact your local building code department for assistance.

NOTE: *Not all span charts are shown. For a full listing of span charts for NCS refer to www.ncsteel.com, which include spans for 125 PSF total load and 150 PSF total load.*

NEW CASTLE STEEL™ CODE COMPLIANCE

Architectural Testing Approved ®

CCRR-0449

WWW.NCSTEEL.COM **WWW.ATI-ES.COM**

PLANNING/CONTINUED

Parts of a Deck

Please refer to illustrations on page 11.

A. **Joist Spacing:** Refer to the decking manufacturers instructions to determine allowable joist spacing (i.e. 12″ [30.5 cm] or 16″ [40.6 cm] O.C.). Even if 16″ (40.6 cm) spacing is acceptable, 12″ (30.5 cm) spacing could be chosen to achieve a greater joist span.

B. **Maximum Joist Span:** The maximum distance the joist can span from track to support beam or support beam to support beam when joists are spaced on either 12″ (30.5 cm) or 16″ (40.6 cm).

C. **Overall Length:** The overall desired depth (feet) of the deck cannot exceed the distance determined in step (B) without a support beam & cantilever (D).

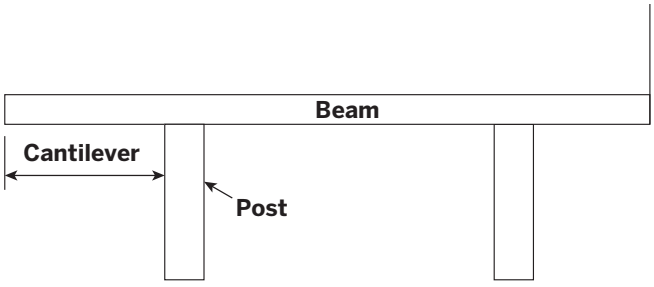
D. **Cantilever:** The overhanging of joists beyond the support beam and/or beams overhanging beyond the support post. If the desired depth of the deck is greater than the maximum joist span (B) a cantilever (D) is needed to obtain the overall size of the deck. The cantilever can be changed according to customer preference as long as it is less than the maximum cantilever noted on the New Castle Steel™ span charts.

Deck depth____ – maximum joist span (B)____ = cantilever (D)____.

E. **Beam Span (distance between support posts):** The distance between support posts. Based on the joist span (B) and the cantilever (D), determine the maximum beam span (E) between support posts (F).

F. **Support Posts:** Based on the maximum beam span (E) determine the number of support posts (F) by dividing the desired width of the deck by the beam span (E), round this number up and add 1.

Desired deck width____ / beam span (E)____= support posts (rounded up) + 1 = total # of posts.



Example: Desired deck is 16' D (4.88 m)x 20' W (6.1 m)

1. Local building code requires a minimum dead load of 10 psf, live load of 40 psf, and total load of 50 psf. *Refer to Table E-50 on page 12.*
2. The decking manufacturer requires a maximum 16″ (40.6 cm) O.C. spacing for joists.
3. Joist span cannot exceed 13′ (3.96 m).
4. Desired deck size is 16′ D (4.88 m) x 20′ W (6.1 m).
5. A minimum cantilever of 3′ (.91 m) is required because the overall depth (16′ [4.88 m]) is greater than 13′ (3.96 m).
   - Based on the above information, the . cantilever can be between 3′ (.91 m) and 4′ (1.22 m) depending on customer preference. For this example, a 3′ (.91 m) cantilever will be used.
   - **16′ (4.88 m) depth of deck – 3′ (.91 m) cantilever = 13′ (3.96 m) joist span**
6. Locate the 13′ (3.96 m) joist span and 3′ (.91 m) cantilever and trace over to 11′ 5″ (3.48 m) beam span.

   20′ (6.1 m) deck width/11′ 5″ (346.8 cm) max. . beam span = 1.73 support posts

   - 1.73 rounds up to 2
   - 2 + 1 = 3 support posts (spaced equally or as desired so as not to exceed 11′ 5″ [3.48 m])

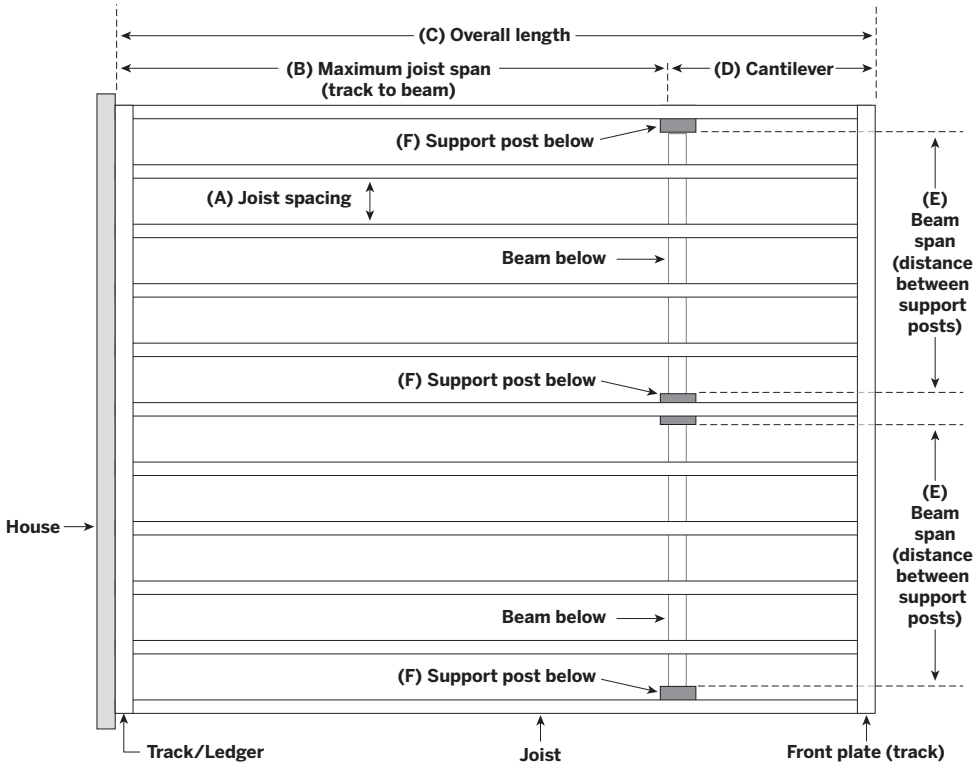
MAXIMUM ALLOWABLE BOX BEAM CANTILEVER

	SBB	Stiffeners	DBB	Stiffeners
E-50	2′ - 8″ (81.3 cm)	1	3′ - 11″ (119.4 cm)	0
E-75	2′ - 7″ (78.7 cm)	1	3′ - 9″ (114.3 cm)	0
E-100	2′ - 6″ (76.2 cm)	1	3′ - 7″ (109.2 cm)	0
E-125	2′ - 5″ (73.7 cm)	1	3′ - 7″ (109.2 cm)	0
E-150	2′ - 5″ (73.7 cm)	1	3′ - 7″ (109.2 cm)	0
E-200	2′ - 5″ (73.7 cm)	1	3′ - 6″ (106.7 cm)	0
MAX.	**2′ - 5″ (73.7 cm)**	**1**	**3′ - 6″ (106.7 cm)**	**0**

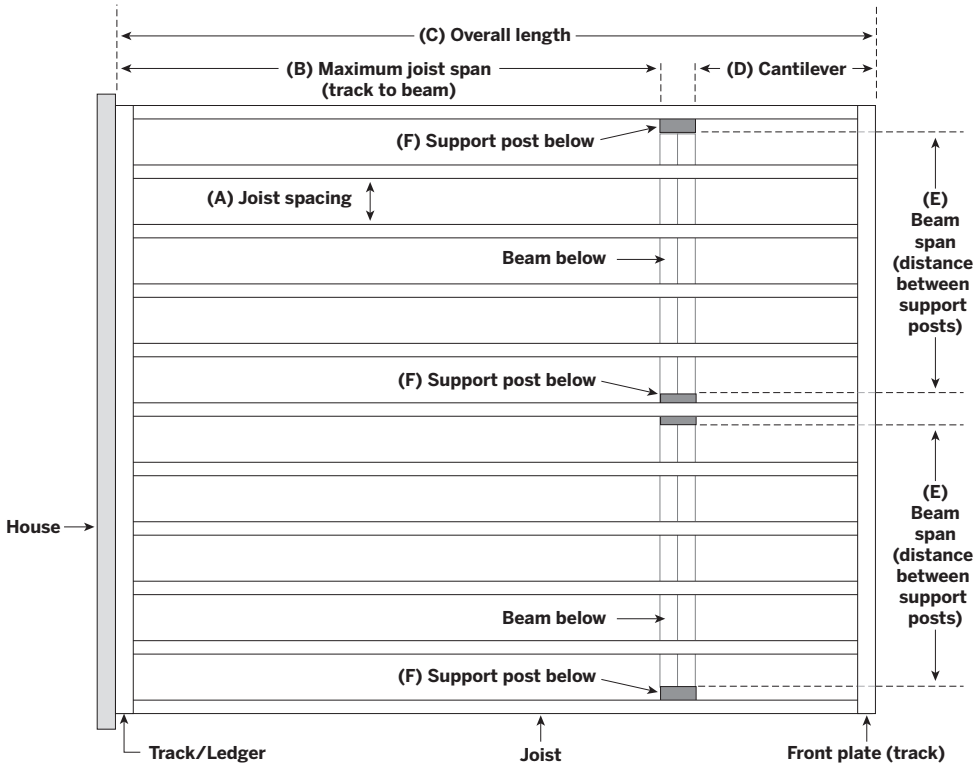
SBB *= Single Box Beam* ***DBB*** *= Double Box Beam*

Stiffeners *= Full depth web stiffeners, at least 0.067″ (0.2 cm) thick, must be through-fastened to the box beam web at each post to develop the full web crippling capacity.*

Single Beam



Double Beam



NEW CASTLE STEEL™

SPAN CHART
TABLE E-50 RESIDENTIAL

50 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**	
Joist Spacing O.C.	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"
Maximum Joist Span (Ledger To Box Beam)	15'	13'	17'	15'	18'	17'	18'	16'	20'	18'	22'	20'
Maximum Cantilever Length	4'	4'	6'	5'	6'	6'	6'	6'	6'	6'	6'	6'

MAXIMUM BOX BEAM SPAN (SINGLE BOX BEAM BETWEEN POSTS)

		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"	20' - 7"	18' - 9"	17' - 5"	16' - 4"	15' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"
	0' - 6"	18' - 9"	17' - 5"	16' - 4"	15' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"
	1' - 0"	17' - 5"	16' - 4"	15' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"
	1' - 6"	16' - 4"	15' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"
	2' - 0"	15' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"
	2' - 6"	14' - 10"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"
	3' - 0"	14' - 3"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"
	3' - 6"	13' - 9"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"
	4' - 0"	13' - 4"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 9"
	4' - 6"	13' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 9"	8' - 7"
	5' - 0"	12' - 8"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 9"	8' - 7"	8' - 5"
	5' - 6"	12' - 4"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 9"	8' - 7"	8' - 5"	8' - 4"
	6' - 0"	12' - 0"	11' - 9"	11' - 7"	11' - 3"	11' - 0"	10' - 8"	10' - 5"	10' - 2"	10' - 0"	9' - 9"	9' - 7"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 9"	8' - 7"	8' - 5"	8' - 4"	8' - 2"

MAXIMUM BOX BEAM SPAN (DOUBLE BOX BEAM BETWEEN POSTS)

		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"	26' - 0"	23' - 7"	21' - 11"	20' - 7"	19' - 7"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"
	0' - 6"	23' - 7"	21' - 11"	20' - 7"	19' - 7"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"
	1' - 0"	21' - 11"	20' - 7"	19' - 7"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"
	1' - 6"	20' - 7"	19' - 7"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"
	2' - 0"	19' - 7"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"
	2' - 6"	18' - 9"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"
	3' - 0"	18' - 0"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"
	3' - 6"	17' - 5"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"
	4' - 0"	16' - 10"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"	12' - 0"
	4' - 6"	16' - 4"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"	12' - 0"	11' - 11"
	5' - 0"	15' - 11"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"	12' - 0"	11' - 11"	11' - 9"
	5' - 6"	15' - 6"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"	12' - 0"	11' - 11"	11' - 9"	11' - 8"
	6' - 0"	15' - 2"	14' - 10"	14' - 7"	14' - 3"	14' - 0"	13' - 9"	13' - 7"	13' - 4"	13' - 2"	13' - 0"	12' - 10"	12' - 8"	12' - 6"	12' - 4"	12' - 2"	12' - 0"	11' - 11"	11' - 9"	11' - 8"	11' - 6"

NOTES:

1. 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.
2. Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
3. 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.
4. Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
5. Grey areas are established based on 12 in. O.C. joist capacity.
6. A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
9. Box beam yield stress is assumed as 50ksi.
10. 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.
11. 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.
12. 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).

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NEW CASTLE STEEL™

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**	
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)

		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)

		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:

1. 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.
2. Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
3. 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.
4. Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
5. Grey areas are established based on 12 in. O.C. joist capacity.
6. A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
9. Box beam yield stress is assumed as 50ksi.
10. 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.
11. 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.
12. 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).

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NEW CASTLE STEEL™

SPAN CHART
TABLE E-100 RESIDENTIAL

100 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**	
Joist Spacing O.C.	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"
Maximum Joist Span (Ledger To Box Beam)	12'	11'	14'	12'	16'	14'	16'	15'	19'	17'	21'	19'
Maximum Cantilever Length	4'	3'	4'	3'	5'	4'	5'	5'	6'	6'	6'	6'

MAXIMUM BOX BEAM SPAN (SINGLE BOX BEAM BETWEEN POSTS)

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

MAXIMUM BOX BEAM SPAN (DOUBLE BOX BEAM BETWEEN POSTS)

		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"	21'-11"	19'-11"	18'-6"	17'-5"	16'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"
	0'-6"	19'-11"	18'-6"	17'-5"	16'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"
	1'-0"	18'-6"	17'-5"	16'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"
	1'-6"	17'-5"	16'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"
	2'-0"	16'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"
	2'-6"	15'-9"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"
	3'-0"	15'-2"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"
	3'-6"	14'-8"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"
	4'-0"	14'-2"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"	10'-1"
	4'-6"	13'-9"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"	10'-1"	9'-11"
	5'-0"	13'-5"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"	10'-1"	9'-11"	9'-9"
	5'-6"	13'-1"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"	10'-1"	9'-11"	9'-9"	9'-8"
	6'-0"	12'-10"	12'-6"	12'-3"	12'-0"	11'-10"	11'-7"	11'-5"	11'-3"	11'-1"	10'-11"	10'-9"	10'-8"	10'-6"	10'-5"	10'-3"	10'-1"	9'-11"	9'-9"	9'-8"	9'-6"

NOTES:

1. 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.
2. Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
3. 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.
4. Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
5. Grey areas are established based on 12 in. O.C. joist capacity.
6. A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
9. Box beam yield stress is assumed as 50ksi.
10. 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.
11. 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.
12. 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).

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NEW CASTLE STEEL™

SPAN CHART
TABLE E-125 RESIDENTIAL

125 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**	
Joist Spacing O.C.	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"
Maximum Joist Span (Ledger To Box Beam)	10'	9'	12'	10'	14'	12'	15'	14'	17'	16'	19'	17'
Maximum Cantilever Length	3'	2'	3'	3'	4'	4'	5'	4'	6'	5'	6'	6'

MAXIMUM BOX BEAM SPAN (SINGLE BOX BEAM BETWEEN POSTS)

		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"	16' - 2"	14' - 8"	13' - 7"	12' - 10"	12' - 2"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"			
	0' - 6"	14' - 8"	13' - 7"	12' - 10"	12' - 2"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"			
	1' - 0"	13' - 7"	12' - 10"	12' - 2"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"			
	1' - 6"	12' - 10"	12' - 2"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"			
	2' - 0"	12' - 2"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"			
	2' - 6"	11' - 7"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"			
	3' - 0"	11' - 2"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"			
	3' - 6"	10' - 8"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"			
	4' - 0"	10' - 2"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"	6' - 6"			
	4' - 6"	9' - 9"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"	6' - 6"	6' - 4"			
	5' - 0"	9' - 4"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"	6' - 6"	6' - 4"	6' - 3"			
	5' - 6"	9' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"	6' - 6"	6' - 4"	6' - 3"	6' - 2"			
	6' - 0"	8' - 9"	8' - 5"	8' - 2"	7' - 11"	7' - 9"	7' - 7"	7' - 4"	7' - 2"	7' - 0"	6' - 11"	6' - 9"	6' - 7"	6' - 6"	6' - 4"	6' - 3"	6' - 2"	6' - 1"			

MAXIMUM BOX BEAM SPAN (DOUBLE BOX BEAM BETWEEN POSTS)

		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"	20' - 4"	18' - 6"	17' - 2"	16' - 2"	15' - 4"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"			
	0' - 6"	18' - 6"	17' - 2"	16' - 2"	15' - 4"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"			
	1' - 0"	17' - 2"	16' - 2"	15' - 4"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"			
	1' - 6"	16' - 2"	15' - 4"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"			
	2' - 0"	15' - 4"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"			
	2' - 6"	14' - 8"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"			
	3' - 0"	14' - 1"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"			
	3' - 6"	13' - 7"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"			
	4' - 0"	13' - 2"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"	9' - 2"			
	4' - 6"	12' - 10"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"	9' - 2"	9' - 0"			
	5' - 0"	12' - 5"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"	9' - 2"	9' - 0"	8' - 10"			
	5' - 6"	12' - 2"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 8"			
	6' - 0"	11' - 10"	11' - 7"	11' - 5"	11' - 2"	10' - 11"	10' - 8"	10' - 4"	10' - 2"	9' - 11"	9' - 8"	9' - 6"	9' - 4"	9' - 2"	9' - 0"	8' - 10"	8' - 8"	8' - 6"			

NOTES:

1. 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.
2. Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
3. 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.
4. Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
5. Grey areas are established based on 12 in. O.C. joist capacity.
6. A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
9. Box beam yield stress is assumed as 50ksi.
10. 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.
11. 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.
12. 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).

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NEW CASTLE STEEL™

SPAN CHART
TABLE E-150 RESIDENTIAL

150 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**	
Joist Spacing O.C.	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"
Maximum Joist Span (Ledger To Box Beam)	9'	8'	10'	9'	12'	10'	14'	13'	16'	14'	18'	16'
Maximum Cantilever Length	2.5'	1.5'	3'	3'	4'	4'	4'	4'	5'	5'	6'	5'

MAXIMUM BOX BEAM SPAN (SINGLE BOX BEAM BETWEEN POSTS)

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

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"
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'-4"	10'-11"	10'-7"	10'-3"	10'-0"				
0'-6"	17'-5"	16'-2"	15'-2"	14'-5"	13'-9"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"				
1'-0"	16'-2"	15'-2"	14'-5"	13'-9"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"				
1'-6"	15'-2"	14'-5"	13'-9"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"				
2'-0"	14'-5"	13'-9"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"				
2'-6"	13'-9"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"				
3'-0"	13'-3"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"				
3'-6"	12'-10"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"				
4'-0"	12'-5"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"	8'-3"				
4'-6"	12'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"	8'-3"	8'-2"				
5'-0"	11'-9"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"	8'-3"	8'-2"	8'-0"				
5'-6"	11'-4"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"	8'-3"	8'-2"	8'-0"	7'-10"				
6'-0"	10'-11"	10'-7"	10'-3"	10'-0"	9'-8"	9'-5"	9'-3"	9'-0"	8'-10"	8'-8"	8'-5"	8'-3"	8'-2"	8'-0"	7'-10"	7'-9"				

NOTES:

1. 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.
2. Loads used to produce the tables above are as follows: DL=10psf, LL=40psf, SL=50psf.
3. 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.
4. Grey areas in tables indicate instances where the joists do not backspan twice the cantilever distance or where the maximum joist span is exceeded.
5. Grey areas are established based on 12 in. O.C. joist capacity.
6. A partial list of section properties for each member is provided in the New Castle Steel Deck Framing / Inspection Details Table.
7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
9. Box beam yield stress is assumed as 50ksi.
10. 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.
11. 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.
12. 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).

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NEW CASTLE STEEL™

SPAN CHART
TABLE E-200 RESIDENTIAL

200 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**	
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)

		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"						
	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"						
	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"						
	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"						
	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"						
	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"						
	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"						
	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"						
	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"
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:

1. 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.
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5. Grey areas are established based on 12 in. O.C. joist capacity.
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7. Joist and box beam capacity are determined with AISI-S100-07 (LRFD).
8. 8. 1 5/8" joist and 2" joist yield stress is assumed as 33ksi and 50 ksi respectively.
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10. 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.
11. 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.
12. 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).

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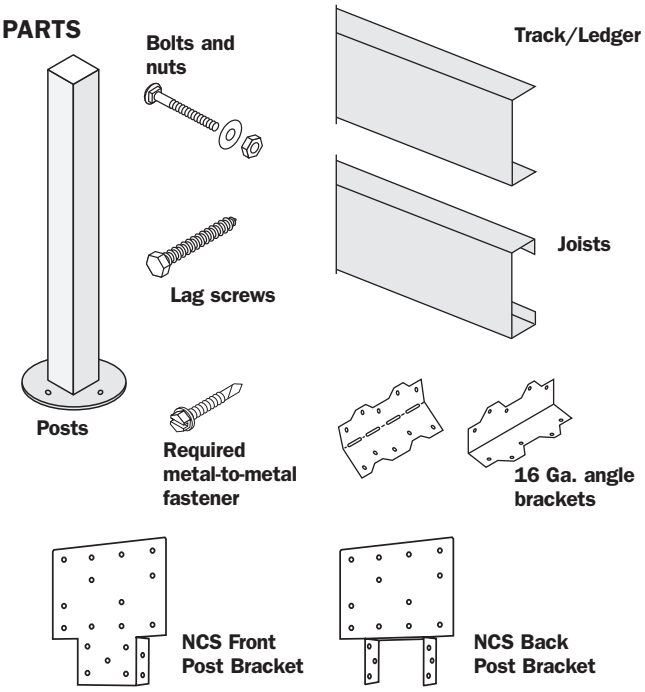
INSTALLATION

INSTALLING PIERS, POSTS, TRACK/LEDGER, AND BEAMS

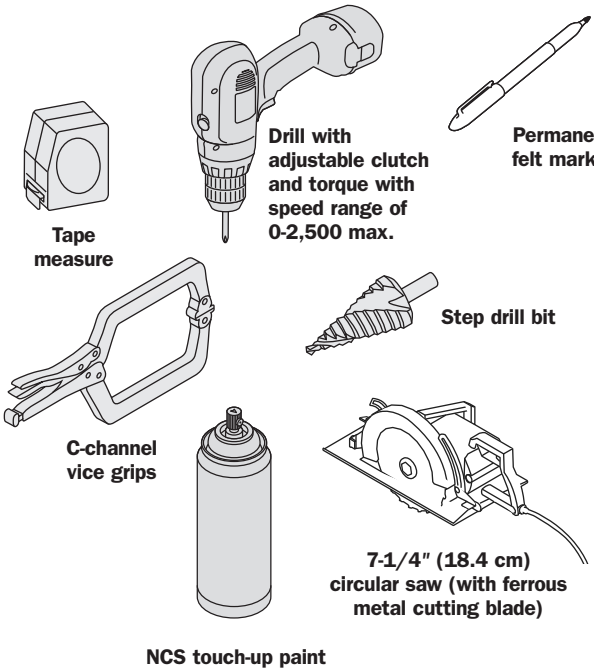
PARTS



NOTES:

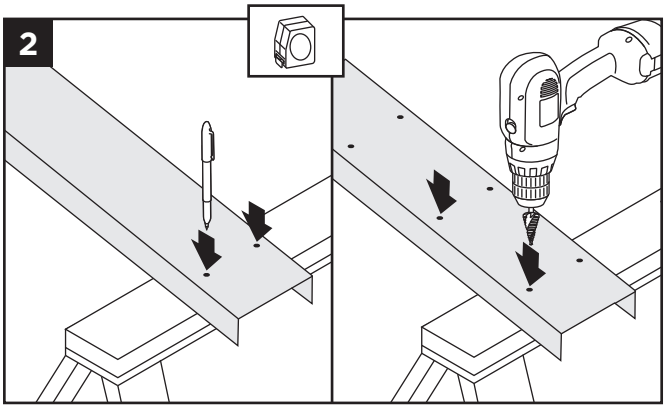
» See page 6 for detailed description of required fasteners and brackets.

TOOLS NEEDED



Installing Piers and Posts

1. Install the post as required by local code. Check with your local building code inspector for requirements.

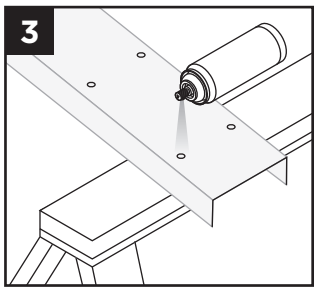


Installing Track/Ledger

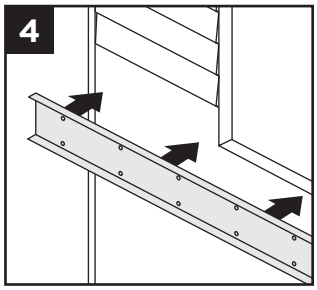
2. Before installing the track, mark the track where each joist will be positioned. Joist spacing requirements are determined by local building codes and decking manufacturer and are not to exceed 16″ (40.6 cm) on center. Pre-drill the holes for lag bolts using a step bit repetitively while the track is on sawhorses.

NOTE: *See pages 49-50 for fastener type and placement details.*

3. Spray each drilled hole and ends of track with NCS touch-up paint.

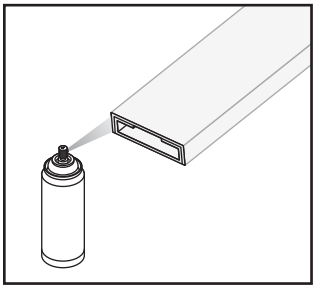


4. Secure track to the structure using approved methods of attachment. Consult a structural engineer or local building code official for proper water management details.

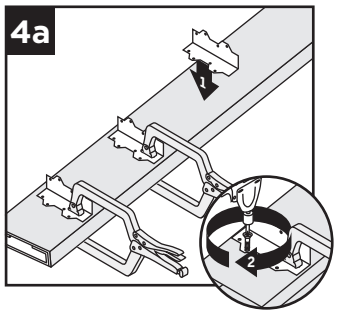


Installing Beams

NOTE: *Paint all ends of beams and track/ledger plates with NCS touch-up paint.*

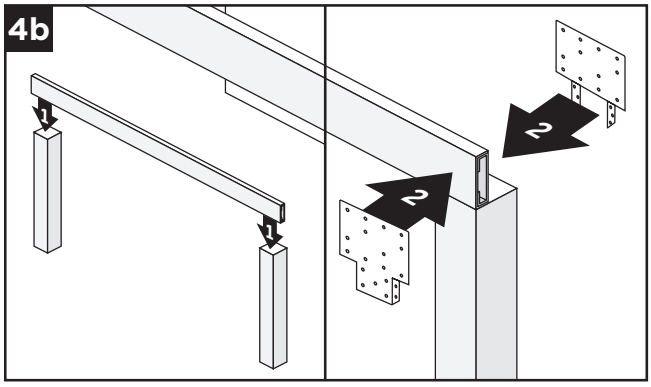


Option 1:
Flush Beam Scenario – 4x4 or 6x6



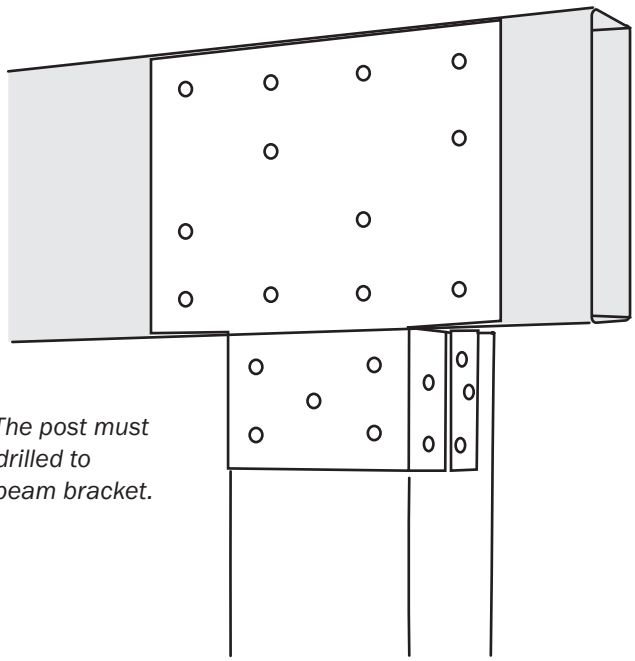
4a. Attach 16 Ga. angle brackets (L70Z or LS70Z) using required fasteners to beam where joists will be joined. Use C-channel vice grips to clamp brackets in place. *See Required Fasteners chart on page 6, column A, for approved metal-to-metal fasteners for attaching brackets to beam.*

NOTE: *Flush beam applications may be used in the design from 50 total PSF up to a total of 95 PSF. Greater loads will require beam to be dropped.*



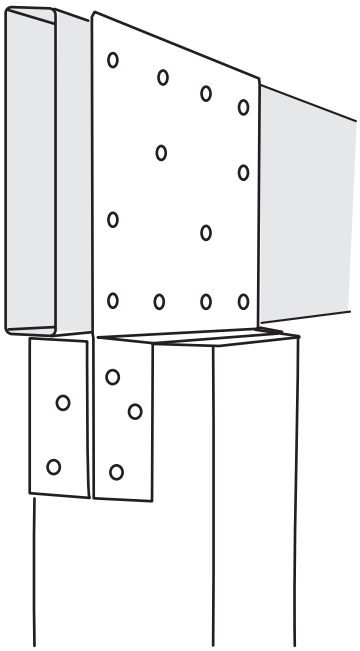
4b. Attach beam to post using NCS front and back beam brackets with required fasteners. *See Required Fasteners chart on page 6, column A, for approved metal-to-metal fasteners for attaching brackets to beam.*

NCS Front Beam Bracket

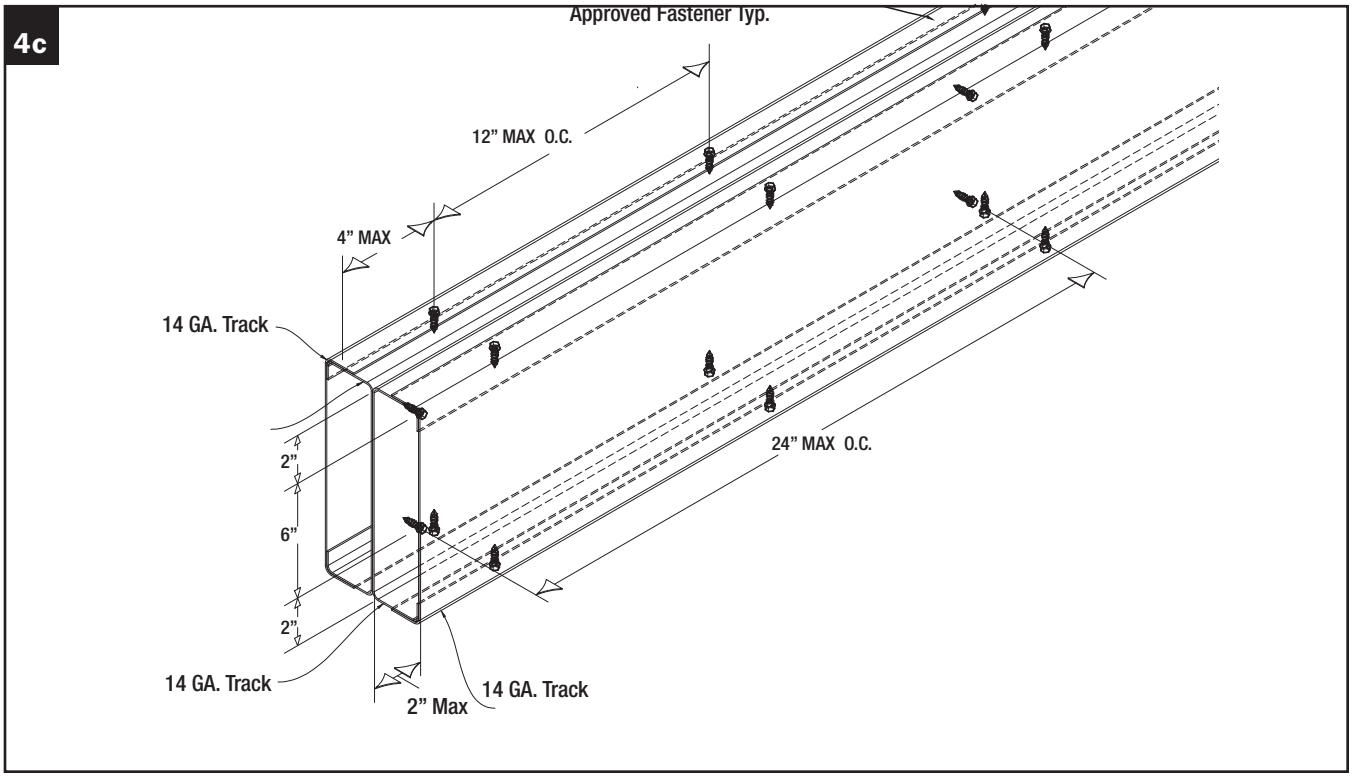


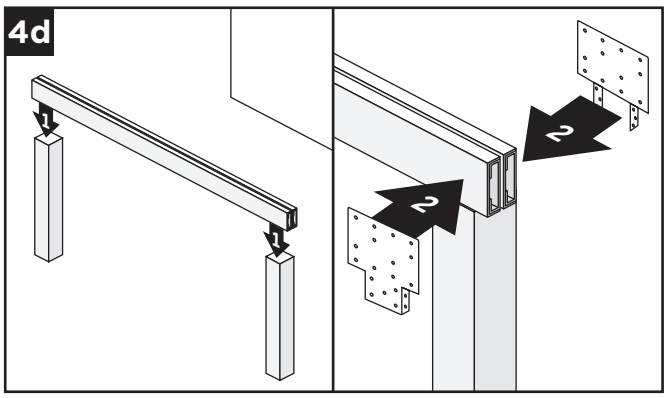
NOTE: *The post must be pre-drilled to attach beam bracket.*

NCS Back Beam Bracket



Option 4c: DOUBLE BEAM CONFIGURATION
2 - 2" X 8" X 14 GAUGE NCS JOIST
2 - 14 GAUGE NCS TRACK

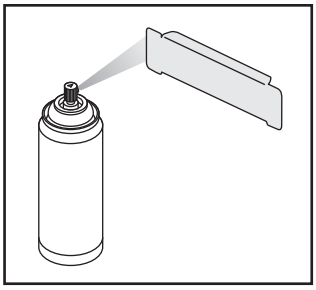


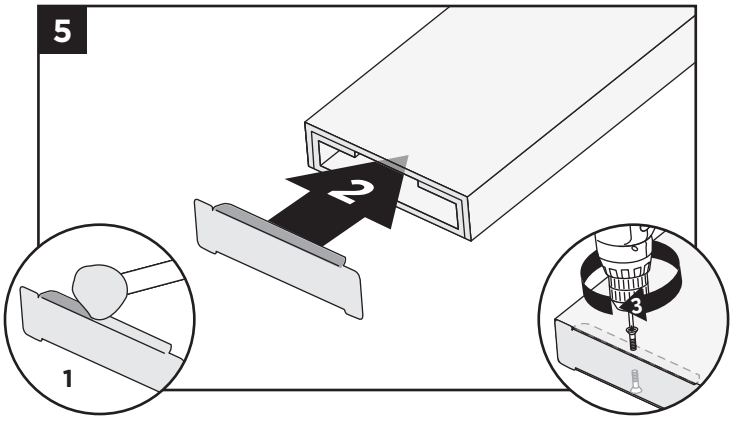


4d.Attach beam to post using NCS front and back beam brackets and required fasteners. *See Required Fasteners chart on page 6, column A, for approved metal-to-metal fasteners for attaching brackets to beam.*

(Optional)
End Cap Attachment

NOTE: *Paint end cap with NCS touch-up paint*

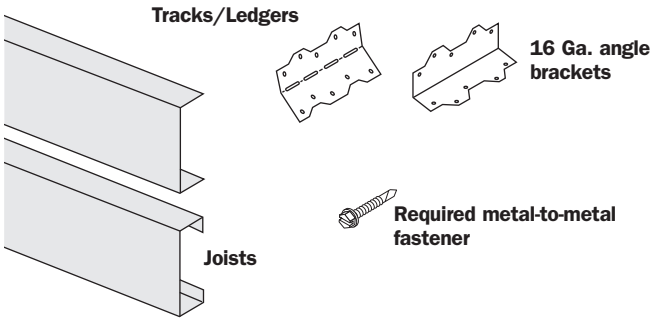




5. Secure cap with exterior grade metal adhesive and/or #10 x 3/4" (1.9 cm) self-tapping screws.

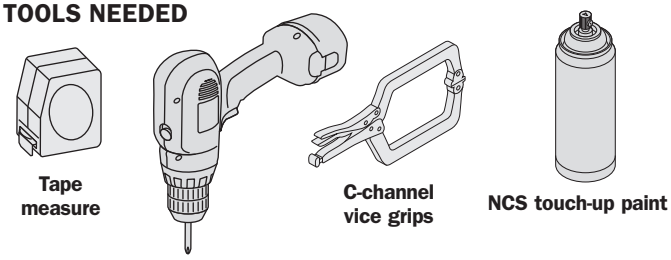
INSTALLING RIM JOISTS, JOISTS, RIM PLATES, AND JOIST BLOCKING

PARTS

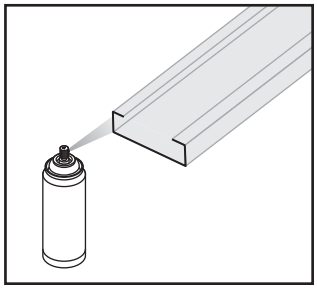


NOTE: *See page 6 for detailed description of required fasteners and brackets.*

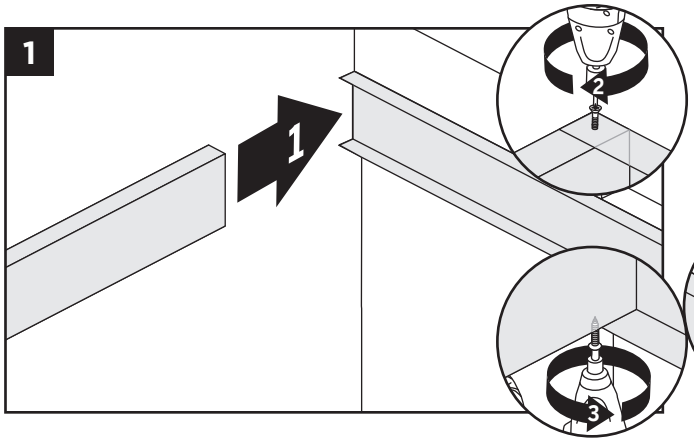
TOOLS NEEDED



NOTE: *Paint all ends of rim joists, joists, front plates, and blocking with NCS touch-up paint.*

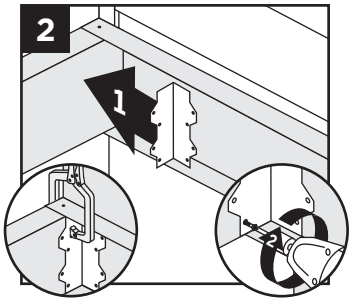


Installing Rim Joists Assembly

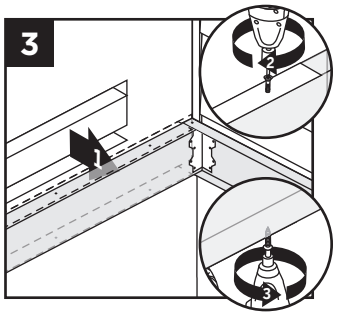


1. Slide the joist within the flanges of the track and rest the outer end on the support post or beam. Fasten joist to track using required fasteners. *See Required Fasteners chart on page 6, column A.* Fasten through the track flange into the joist on top and bottom.

2. Fasten joist to track with recommended 16 Ga. angle bracket (L70Z or LS70Z) using required fasteners. *See Required Fasteners chart on page 6, column A.* Use C-channel vice grips to help secure the angled bracket.

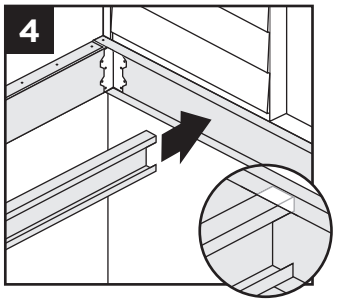


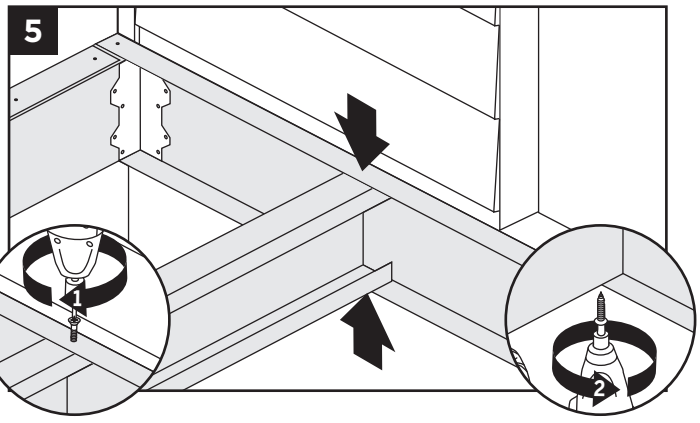
3. Notch outer rim track to allow for fit over end of ledger. Attach outer rim track with metal-to-metal screws (*see Required Fasteners chart on page 6, column A*) every 12″ (30.5 cm) top and bottom.



Installing Inner Joists

4. Position joist within track flange, spaced according to approved joist spacing.

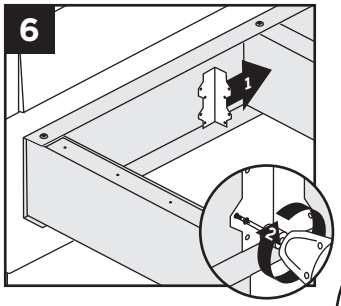




5. Fasten top and bottom of joist and track. Screw joist to track from above and below with required fasteners. *See Required Fasteners chart on page 6, column A.*

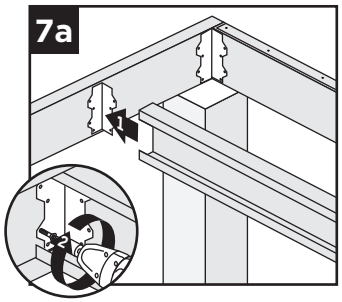
INSTALLING RIM JOISTS, JOISTS, RIM PLATES, AND JOIST BLOCKING/
CONTINUED

6. Attach joist to track with recommended 16 Ga. angle bracket (L70Z or LS70Z) using required fasteners. *See Required Fasteners chart on page 6, column A.* Repeat Steps 3-5 for remaining joists.



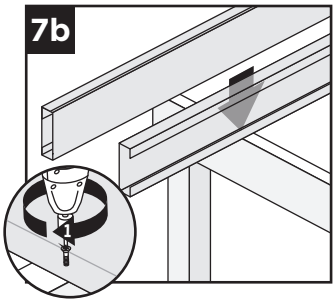
Option 1:
Flush Beam Scenario

7a. Fasten joist to beam using recommended 16 Ga. angle brackets already attached.

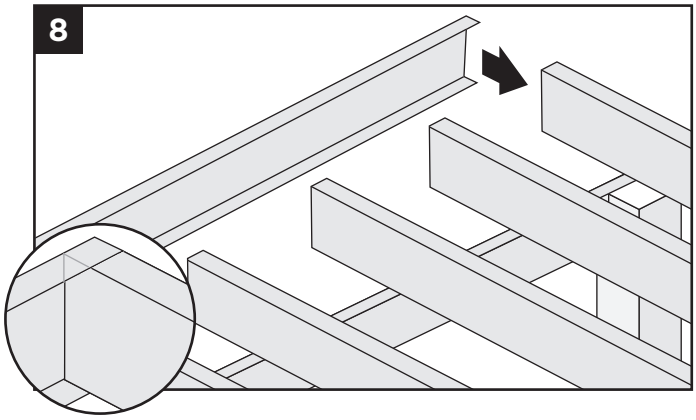


Option 2:
Drop Beam Scenario

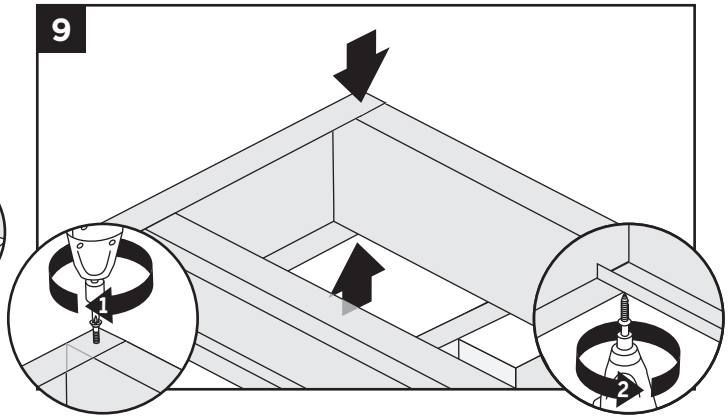
7b. Rest joist on dropped beam. Attach using required fasteners through bottom of joist and into top of beam. See Required Fasteners chart on page 6, column A.



Installing Rim Plate and Joist Blocking
(Drop Beam Scenario Only)

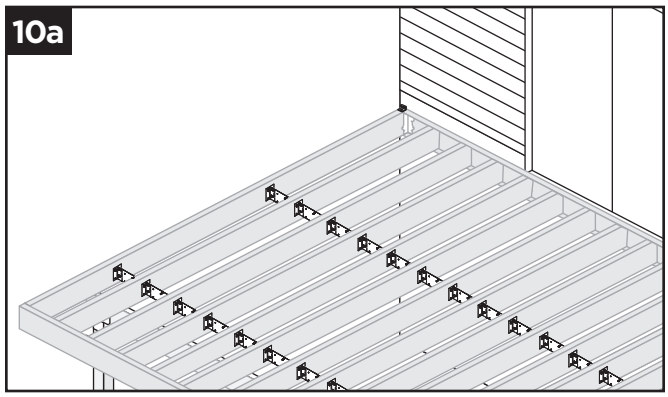


8. Position track as a rim plate. Fit existing joists within the flanges of the track.



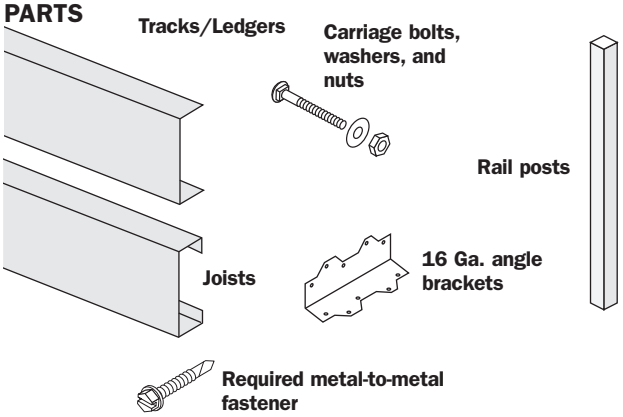
9. Attach track to joists by screwing track to joists in the corners on the top and bottom using required fasteners. *See Required Fasteners chart on page 6, column A.*

Installing Blocking



10a. For joist spans greater than 8′ (2.49 m), blocking is required midspan in every bay.

INSTALLING RAIL POSTS



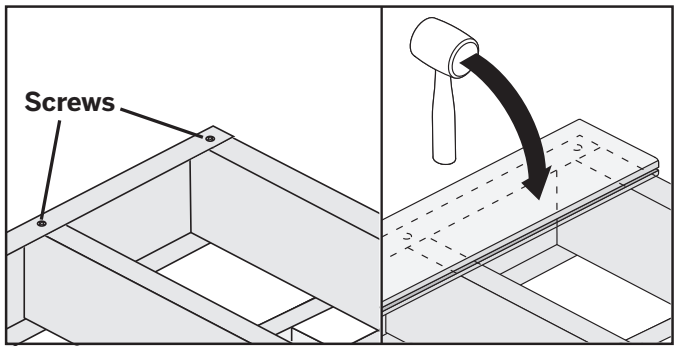
Installing Posts:

THERE ARE THREE CODE APPROVED METHODS FOR ATTACHMENT OF RAIL POSTS. YOU MUST REFER TO THE CRITICAL CONNECTIONS SECTION, RAIL POST INSTALLATION SCENARIOS FOR DETAILS ON HOW THIS IS DONE. *See pages 47-49.*

NOTE: *See page 6 for detailed description of required fasteners and brackets.*

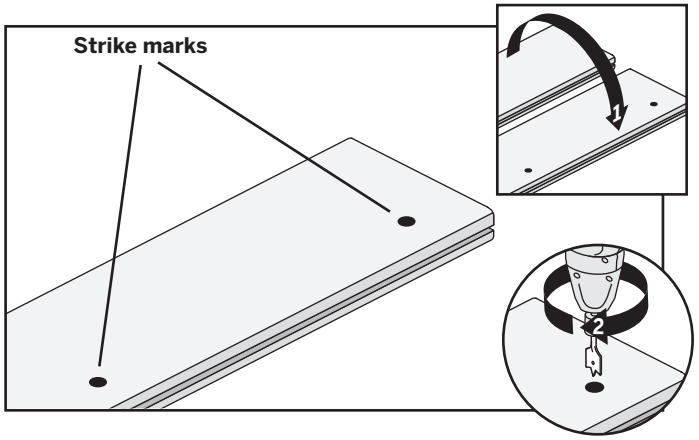
HOW TO INSTALL DECK BOARDS

Tips on Installing Deck Board over Screws on Ledger/Front Plate



Tip 1:

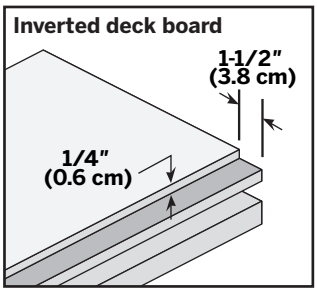
1. Place deck boards in proper location over end joist fasteners. Use a rubber mallet on top of deck board in order to mark underside of decking where screws may have caused the deck board to stick up.



2. Flip board over so that bottom of board faces up and shows strike marks from the screws. Using a paddle drill bit, carefully drill holes to the depth of the fastener heads in the joist. Flip board over so that drilled holes fit over joist fasteners, and fasten board per instructions.

Tip 2:

Cut out groove (1-1/2″ [3.8 cm] wide x 1/4″ [0.6 cm] height) on underside of decking to allow for clearance of screws.

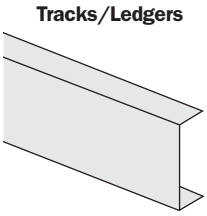


⚠ WARNING

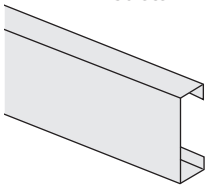
DO NOT *walk or stand on top of New Castle Steel joists prior to installing deck boards.*

NOTE: *Reference decking manufacturer installation instructions for more details in regards to proper gapping, etc.*

HOW TO INSTALL STAIRS

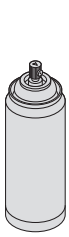


Tracks/Ledgers

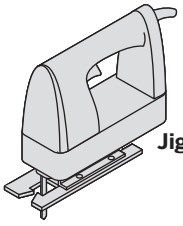


Joists

#10 x 3/4"
Frame screw

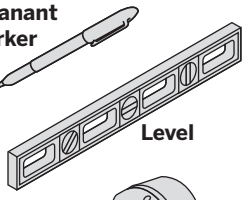


NCS touch-up paint

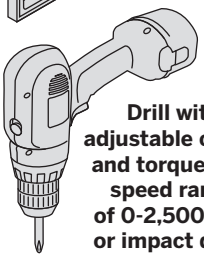


Jigsaw

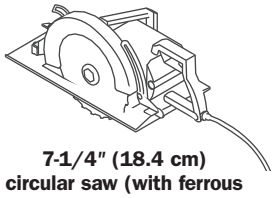
Permanant marker



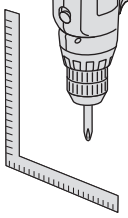
Level



Drill with adjustable clutch and torque with speed range of 0-2,500 max. or impact driver



7-1/4" (18.4 cm) circular saw (with ferrous metal cutting blade)

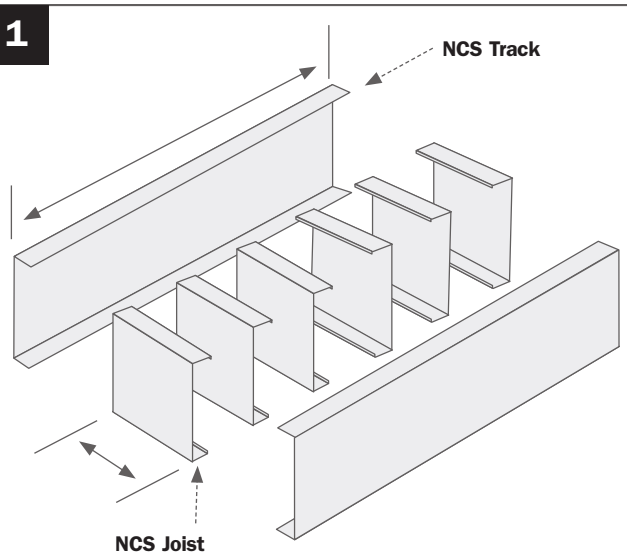


Carpenter square

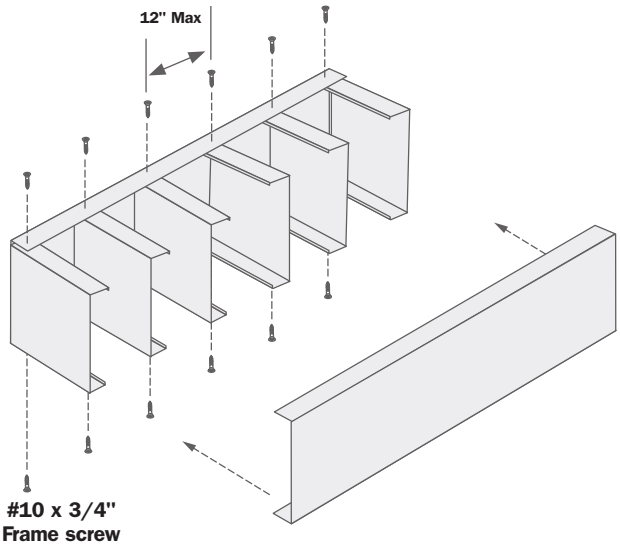
Tape measure

STEPS 1 – 4, BUILD A LADDER BOX STEP

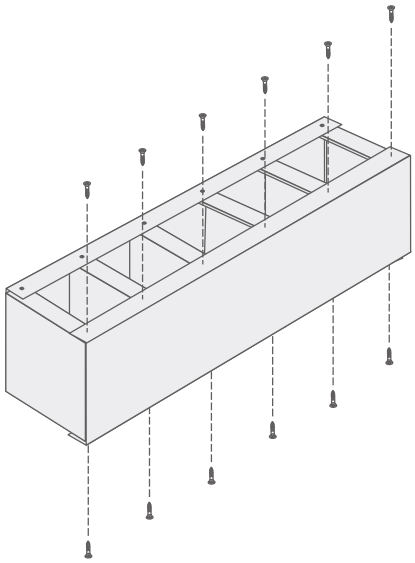
1



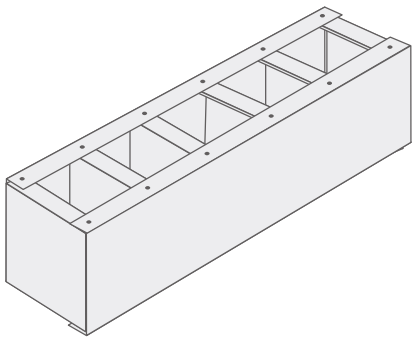
2



2



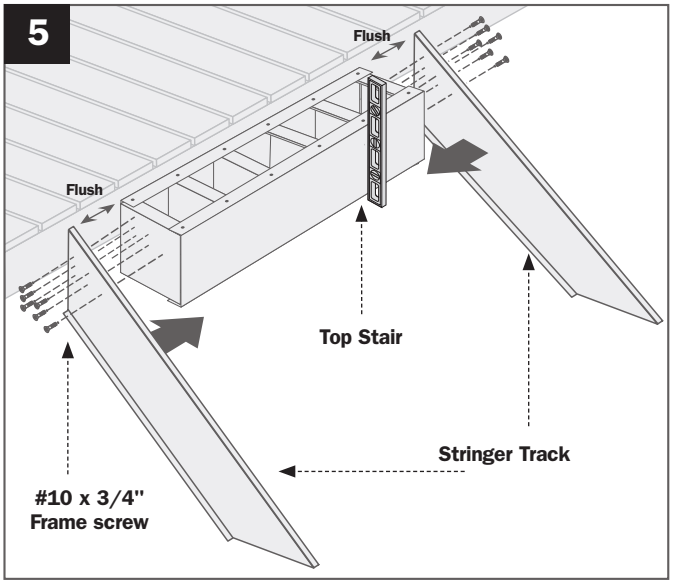
2



Repeat, for the number of steps you need.

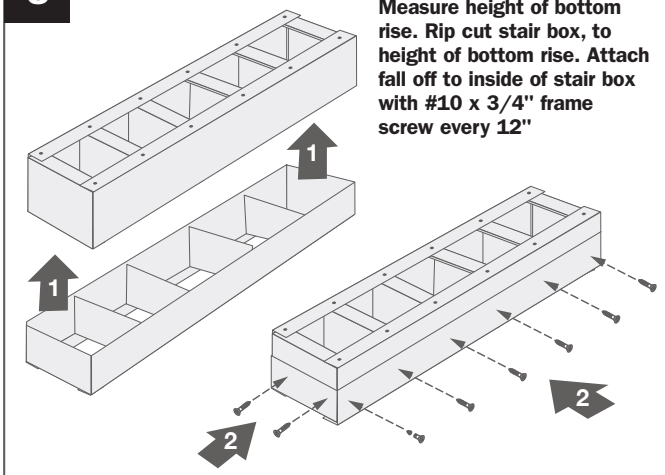
HOW TO INSTALL STAIRS/CONTINUED

5

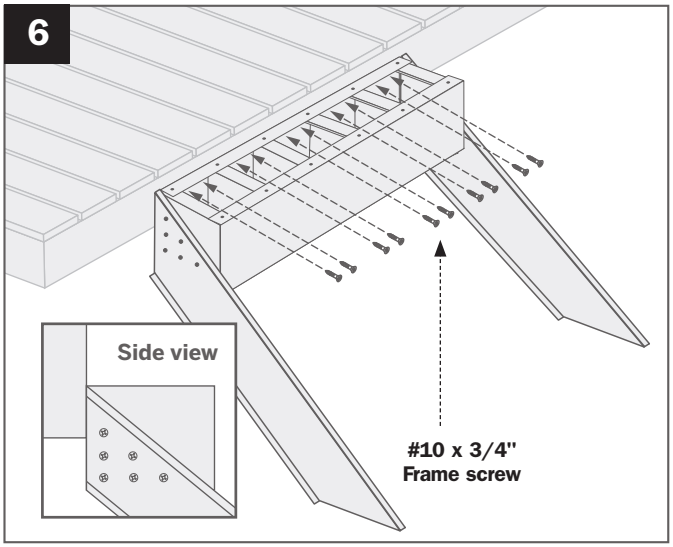


8

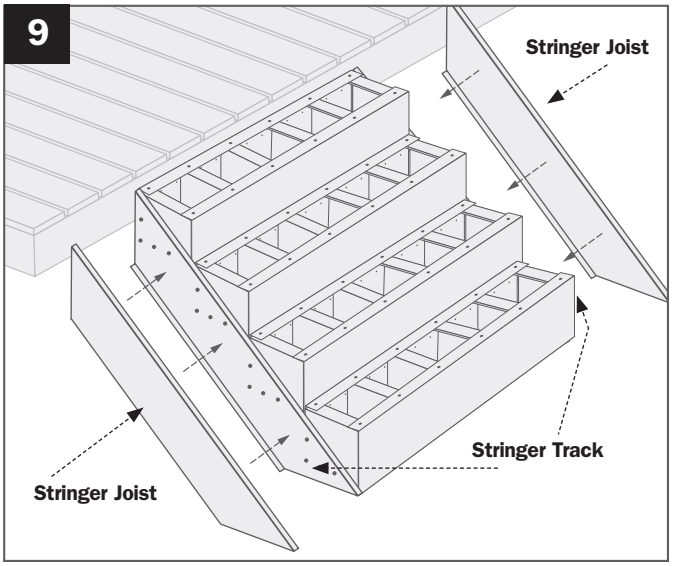
Measure height of bottom rise. Rip cut stair box, to height of bottom rise. Attach fall off to inside of stair box with #10 x 3/4" frame screw every 12"



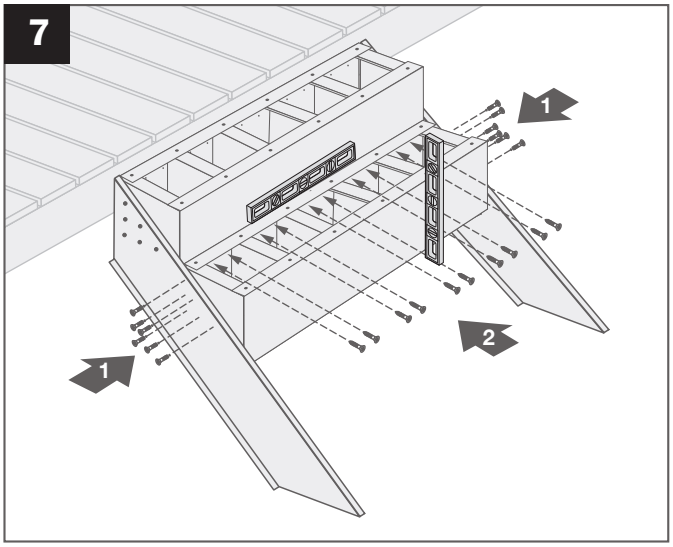
6



9



7



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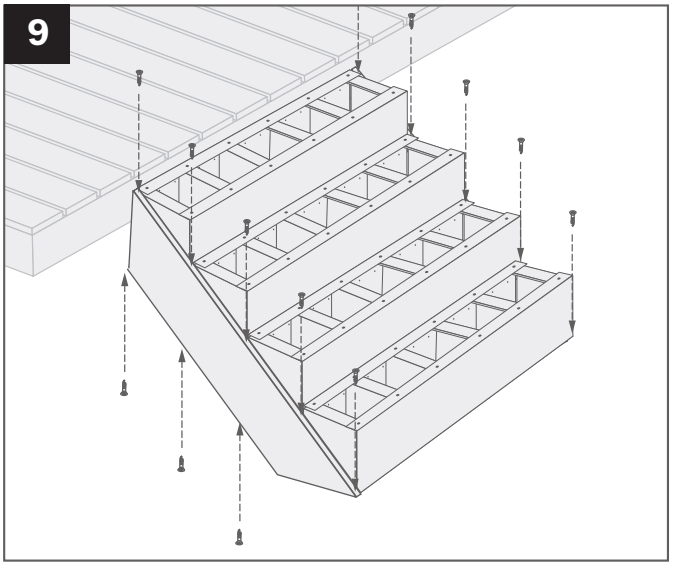
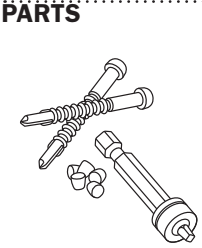
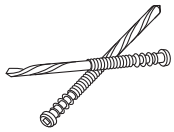


HOW TO INSTALL DECK BOARDS AND FASCIA ON STAIRS

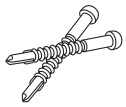
PARTS



Fastenmaster® Cortex Driller™



Simpson Strong-Tie® Quik Drive DCSD238



Starborn® DeckFast® metal screws

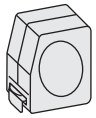
NOTES:

» *Use of hidden fasteners is not recommended for stair installations, thus use square edge boards for proper installation.*

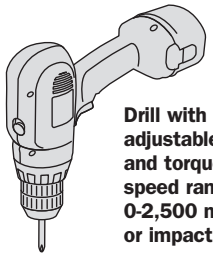
» *Stair treads built with NCS meet requirements by major building codes. Consult your local municipality for specific requirements and what your area will allow.*

TOOLS NEEDED

Paddle drill bit

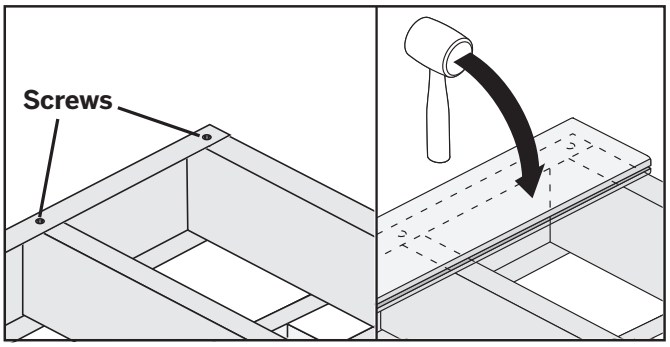


Tape measure



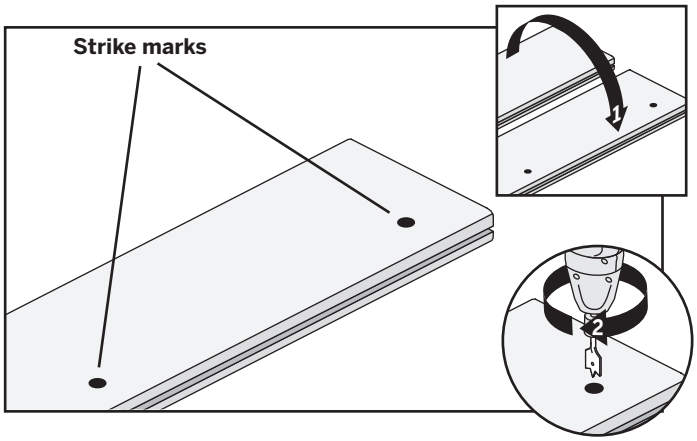
Drill with adjustable clutch and torque with speed range of 0-2,500 max. or impact driver

Tip on Installing Deck Board over Screws on Stair



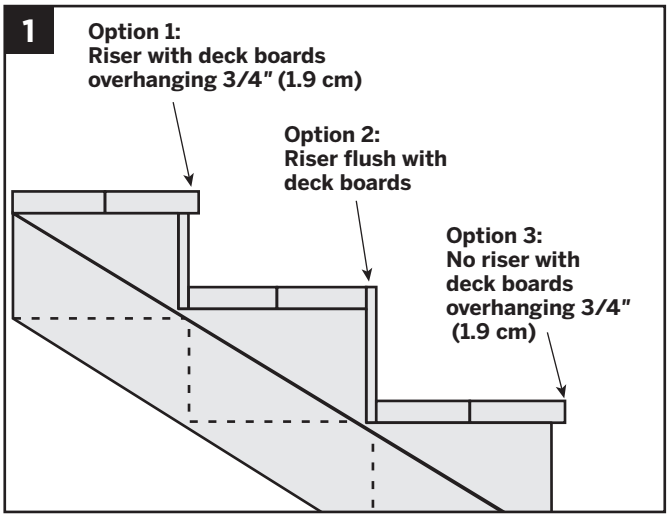
Sections

1. Place deck boards in proper location over end joist fasteners. Use a rubber mallet on top of deck board in order to mark underside of decking where screws may have caused the deck board to stick up.

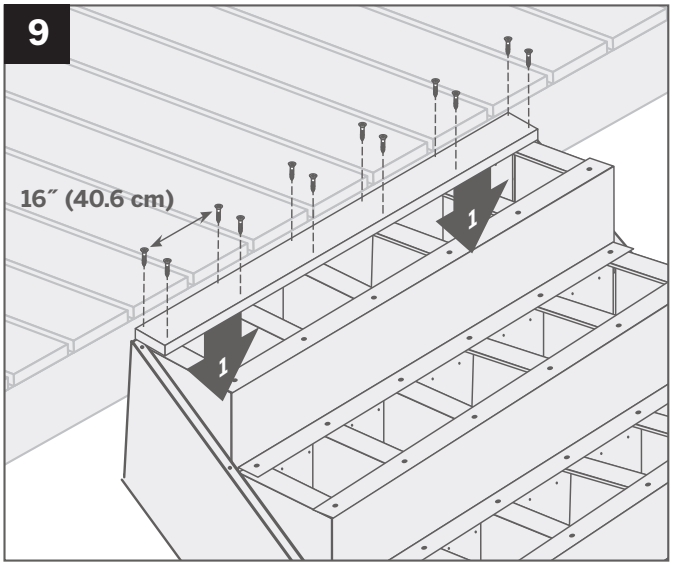


2. Flip board over so that bottom of board faces up and shows strike marks from the screws. Using a paddle drill bit, carefully drill holes to the depth of the fastener heads in the joist. Flip board over so that drilled holes fit over joist fasteners, and fasten board per instructions.

Deck Board Installation Options



1. Install the deck boards as required by local code. Check with your local building code inspector for requirements.

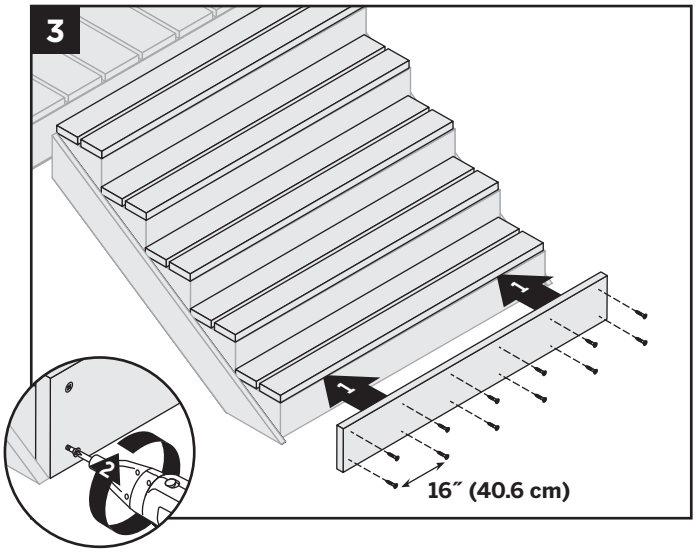


Installing Deck Boards

2. Fasten deck boards by screwing recommended decking with metal fasteners through the decking into the stair framing. Two fasteners are required every 16" (40.6 cm). *See Required Fasteners chart on page 6, column B.*

Installing Risers

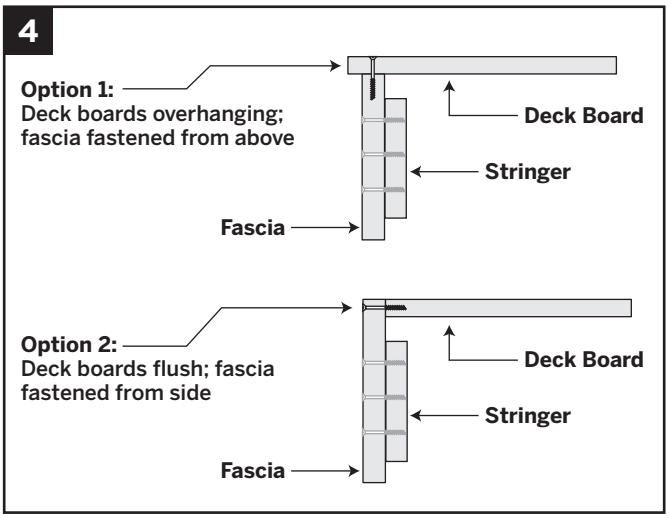
3. Fasten riser boards by screwing recommended decking with metal fasteners through the decking



into the stair framing. Two fasteners are required every 16" (40.6 cm). *See Required Fasteners chart on page 6, column B.*

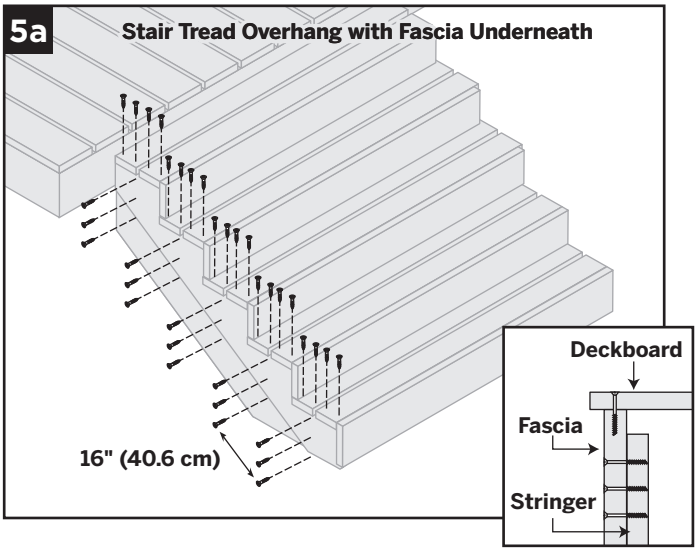
Fascia Installation Options

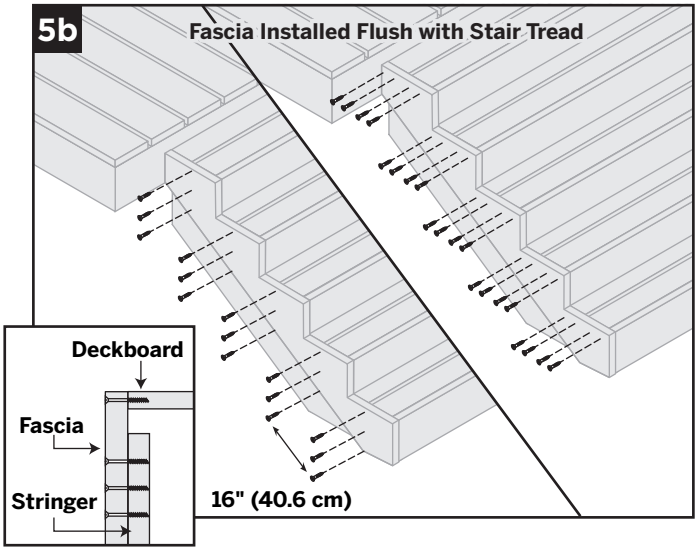
4. Install the fascia in one of two ways. If deck boards are overhanging, fasten fascia from above. If deck boards are flush with fascia, fasten fascia from the side.



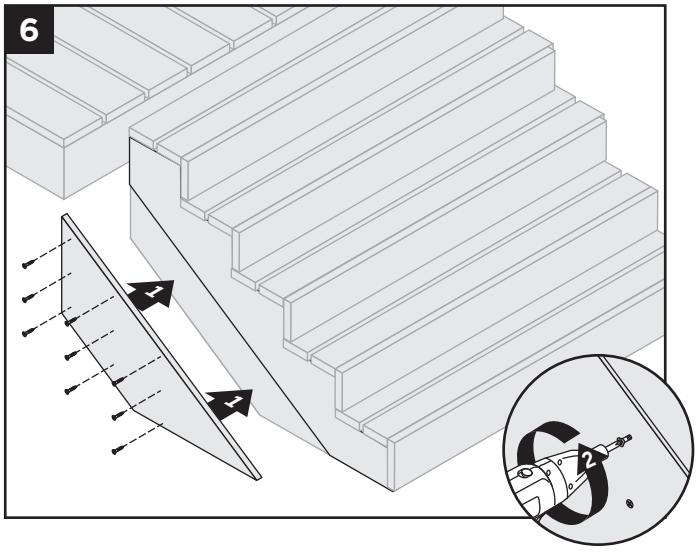
Installing Fascia

5a. Fasten fascia boards to deck boards from above and side as shown. Three fasteners are required every 16" (40.6 cm) for fascia into stringer and two are required per each deck board stair tread into fascia. *See Required Fasteners chart on page 6, column B.*





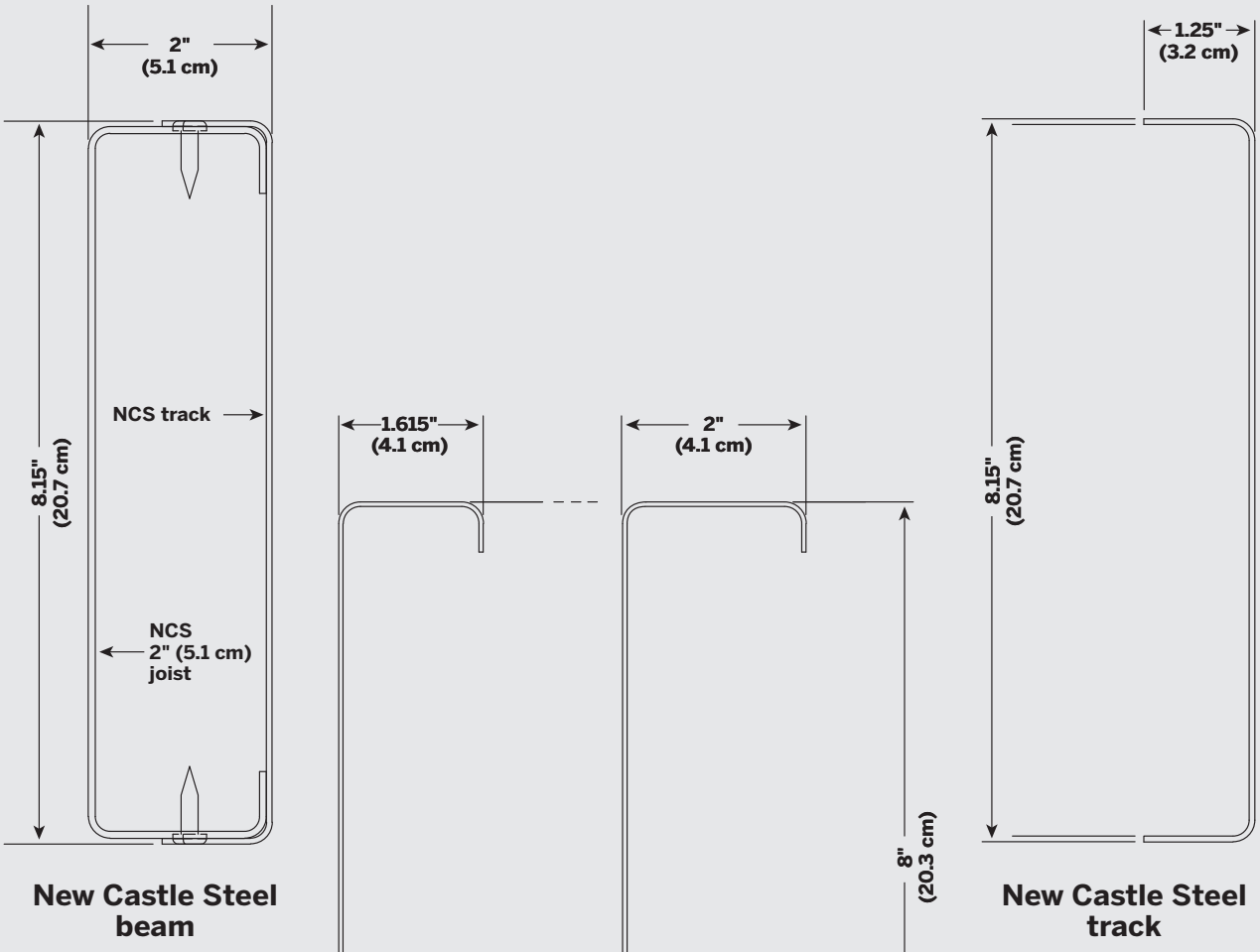
5b. Fasten fascia boards to deck boards from the side as shown. Three fasteners are required every 16" (40.6 cm) for fascia into stringer and two are required to attach fascia into each deck board. *See Required Fasteners chart on page 6, column B.*



6. Fasten second fascia board (two 1x8 fascia boards are needed in most cases, as one fascia board will not cover stringers) to stair framing by screwing recommended decking with metal fasteners into the stair framing. Number of screws used would depend on width of fascia, if full 1x8 is used, three screws would be required. *See Required Fasteners chart on page 6, column B.*

DETAILED DRAWINGS

GENERAL FRAMING DETAIL – NOMINAL



New Castle Steel beam

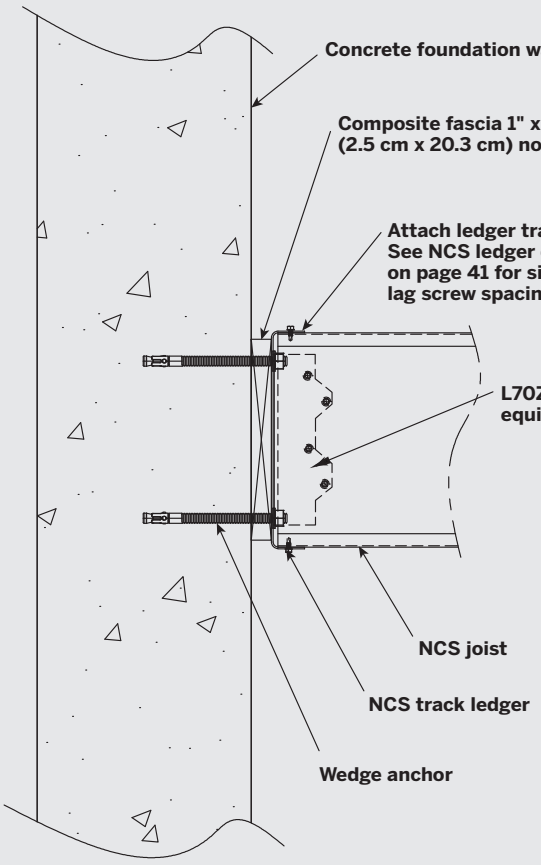
New Castle Steel joist

New Castle Steel track

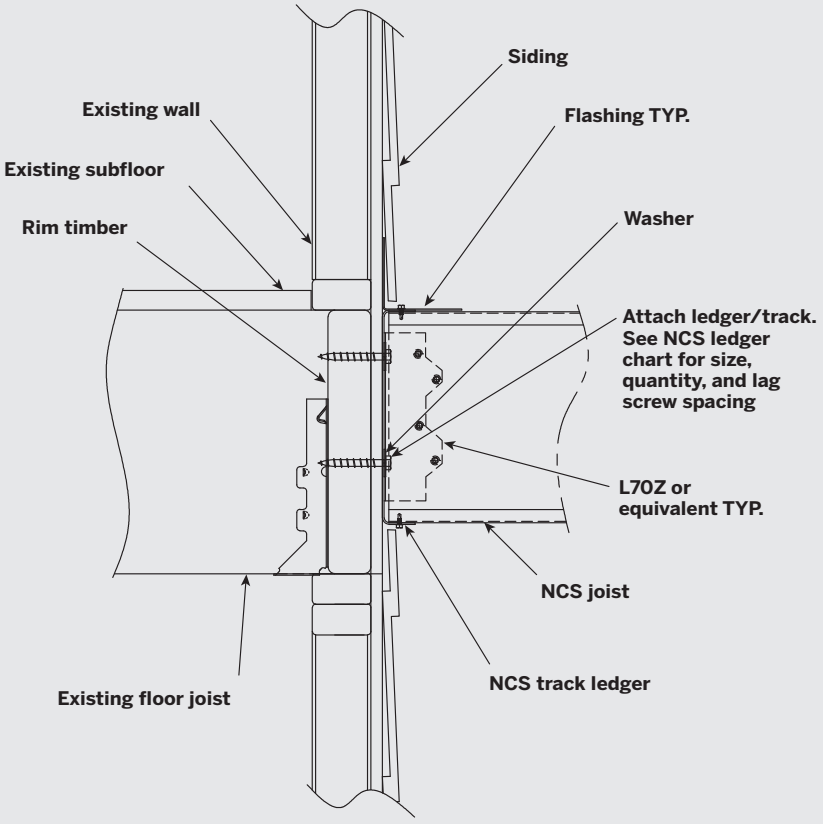
⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

TYP. LEDGER CONNECTIONS



LEDGER TRACK ATTACHMENT TO FOUNDATION WALL



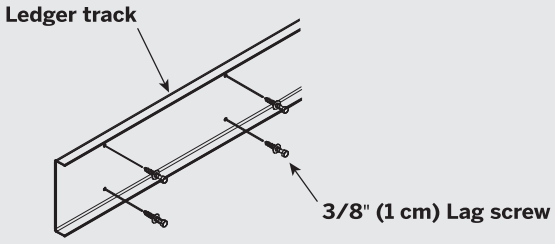
LEDGER TRACK ATTACHMENT TO STRUCTURAL FRAMING OR FLOOR BOX TIMBER

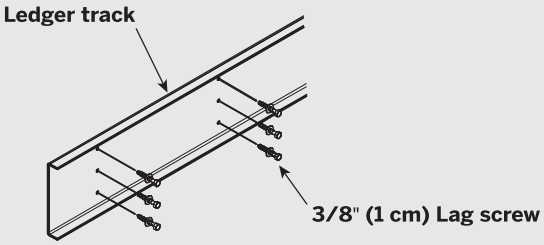
⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

TYP. LEDGER CONNECTIONS/CONTINUED

- 3/8″ (1 cm) lag screws are used to connect the steel ledger to the wood rim plate of the structure.
- Screws are long enough to penetrate through the entire thickness of the wood rim plate.
- The maximum length of unthreaded shank of the lag screw is 3/4″ (1.9 cm).
- The minimum length of unthreaded shank of the lag screw is 3/16″ (0.5 cm).
- Wood rim plate is assumed to be 1-1/2″ (3.8 cm) thick and from southern pine (specify gravity of 0.55)
- 5″ (12.7 cm) end spacing is required from two ends of the wood rim plate.
- Two or three rows of fasteners are considered.
- 1-1/2″ (3.8 cm) minimum edge distance from the top and bottom fasteners to the edge of the wood rim plate is required.
- When two rows of lag screws are used, minimum vertical distance of 4″ (10.2 cm) between the rows of fasteners is required.
- When three rows of lag screws are used, minimum vertical distance of 2″ (5.1 cm) between the rows of fasteners is required.





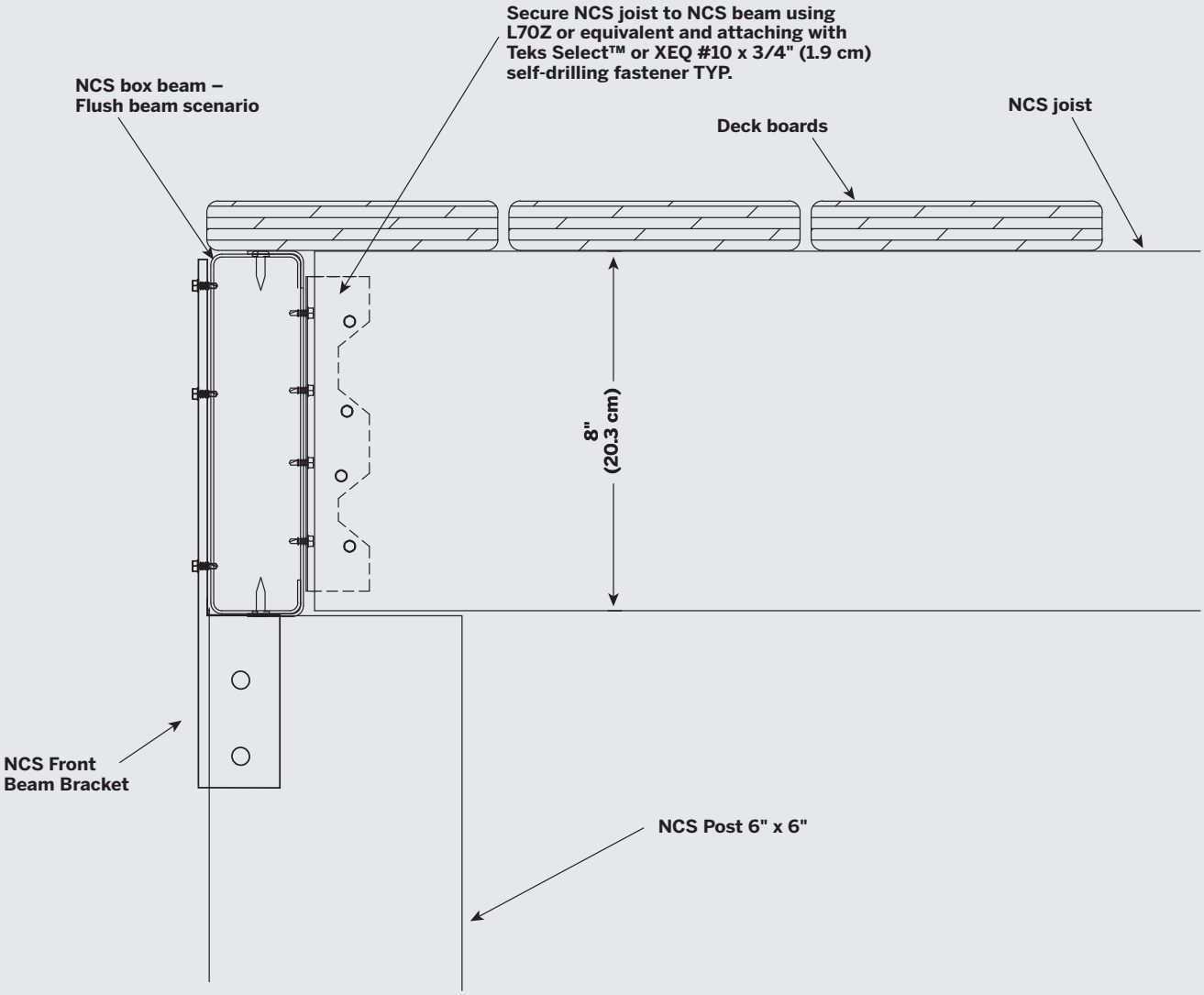
ON CENTER SPACING - 3/8″ X 2-1/2″ (1 cm x 6.4 cm) HOT DIPPED GALVANIZED LAG SCREWS															
2 SCREWS	JOIST SPAN														
Combined Load	1′ (30 cm)	2′ (60 cm)	3′ (91 cm)	4′ (121 cm)	5′ (152 cm)	6′ (182 cm)	7′ (213 cm)	8′ (243 cm)	9′ (274 cm)	10′ (304 cm)	11′ (335 cm)	12′ (365 cm)	13′ (396 cm)	14′ (426 cm)	15′ (457 cm)
50 psf	24″ (61.0 cm)							16″ (40.6 cm)				12″ (30.5 cm)			
75 psf	24″ (61.0 cm)						16″ (40.6 cm)			12″ (30.5 cm)			10″ (25.4 cm)		
100 psf	24″ (61.0 cm)					16″ (40.6 cm)		12″ (30.5 cm)			9″ (22.9 cm)				
Over 100 psf	CONSULT WITH YOUR ENGINEER OR LOCAL BUILDING CODE OFFICIAL														

ON CENTER SPACING - 3/8″ X 2-1/2″ (1 cm x 6.4 cm) HOT DIPPED GALVANIZED LAG SCREWS															
3 SCREWS	JOIST SPAN														
Combined Load	1′ (30 cm)	2′ (60 cm)	3′ (91 cm)	4′ (121 cm)	5′ (152 cm)	6′ (182 cm	7′ (213 cm	8′ (243 cm)	9′ (274 cm)	10′ (304 cm)	11′ (335 cm)	12′ (365 cm)	13′ (396 cm)	14′ (426 cm)	15′ (457 cm)
50 psf	24″ (61.0 cm)											16″ (40.6 cm)			
75 psf	24″ (61.0 cm)									16″ (40.6 cm)					
100 psf	24″ (61.0 cm)							16″ (40.6 cm)				14″ (35.6 cm)			
Over 100 psf	CONSULT WITH YOUR ENGINEER OR LOCAL BUILDING CODE OFFICIAL														

⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

FLUSH BEAM ATTACHMENT SCENARIO



⚠ WARNING

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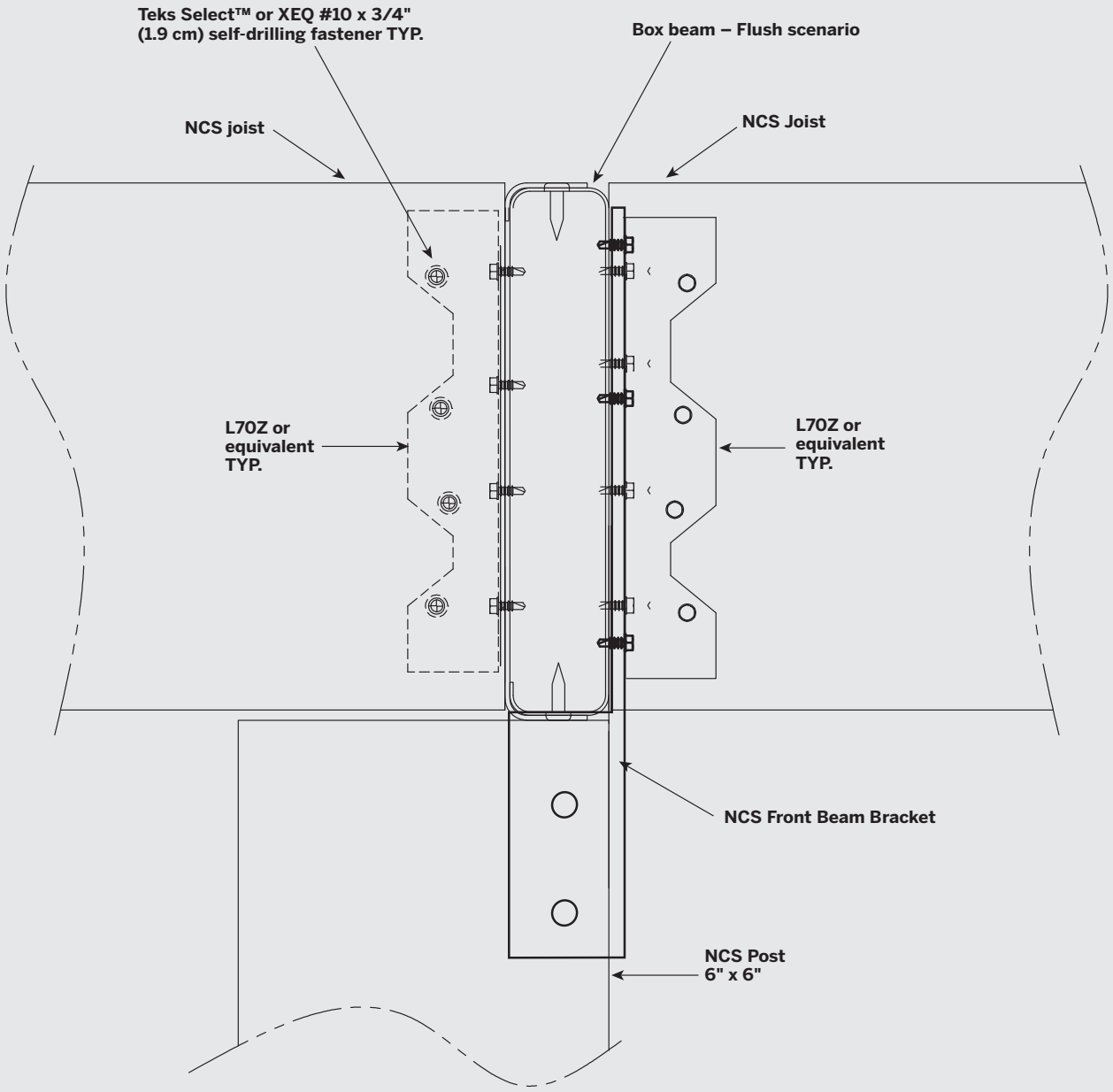
JOIST ATTACHMENT – SHARING FLUSH BEAM SCENARIO



⚠ WARNING

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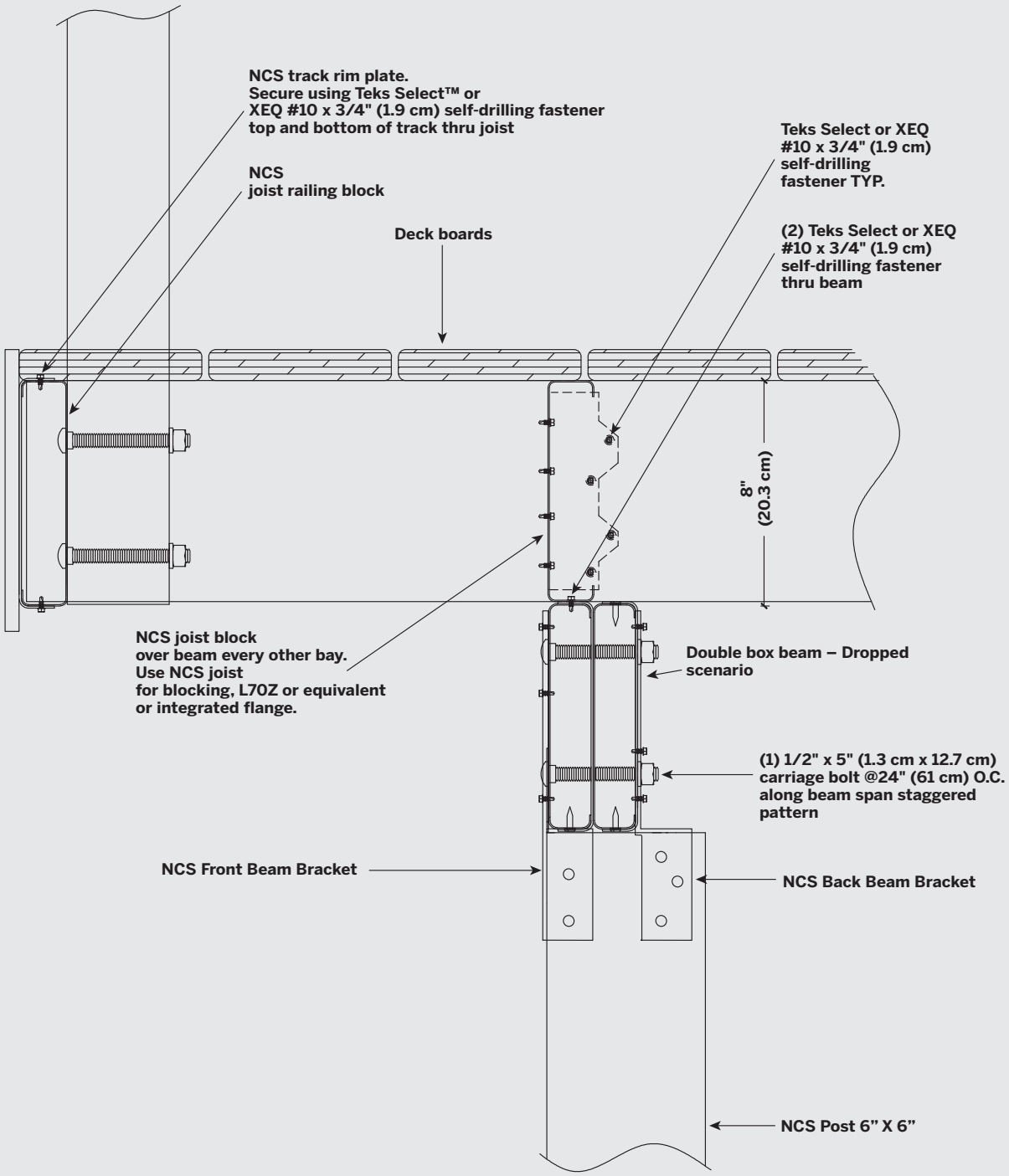
DOUBLE DROPPED BOX BEAM ATOP POST ATTACHMENT



⚠ WARNING

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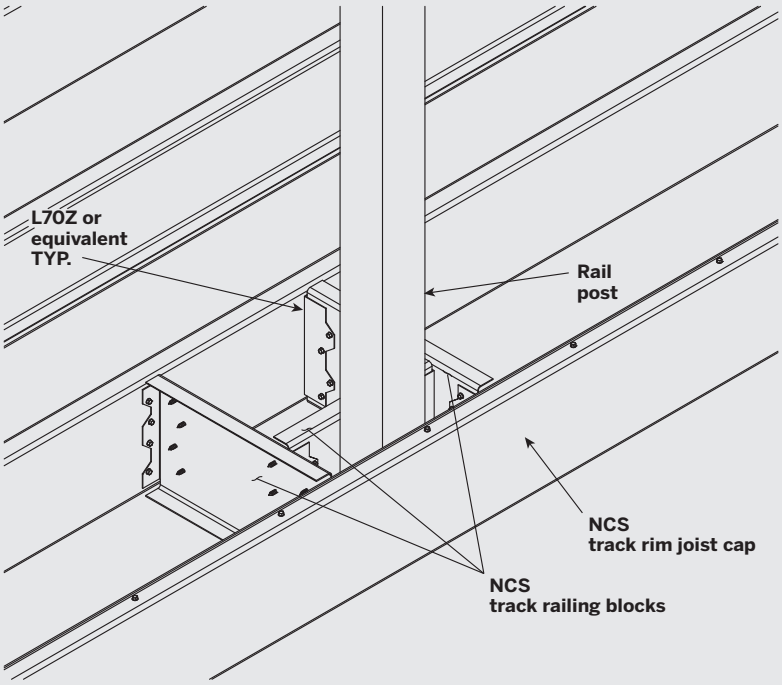
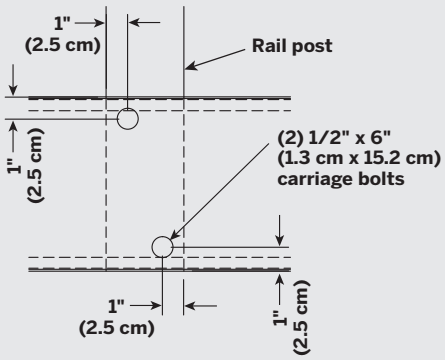
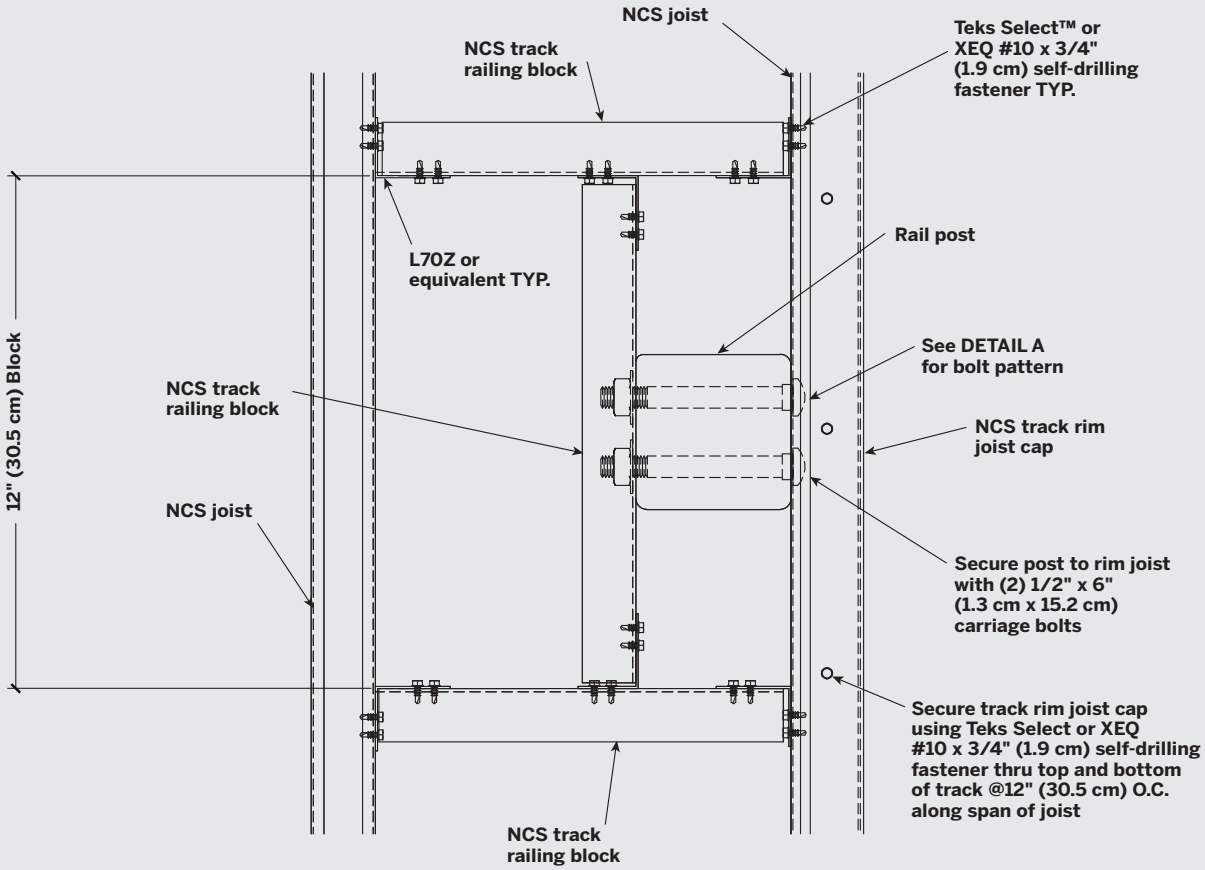
INSIDE RAIL POST ATTACHMENT AT RIM JOIST





DETAIL A

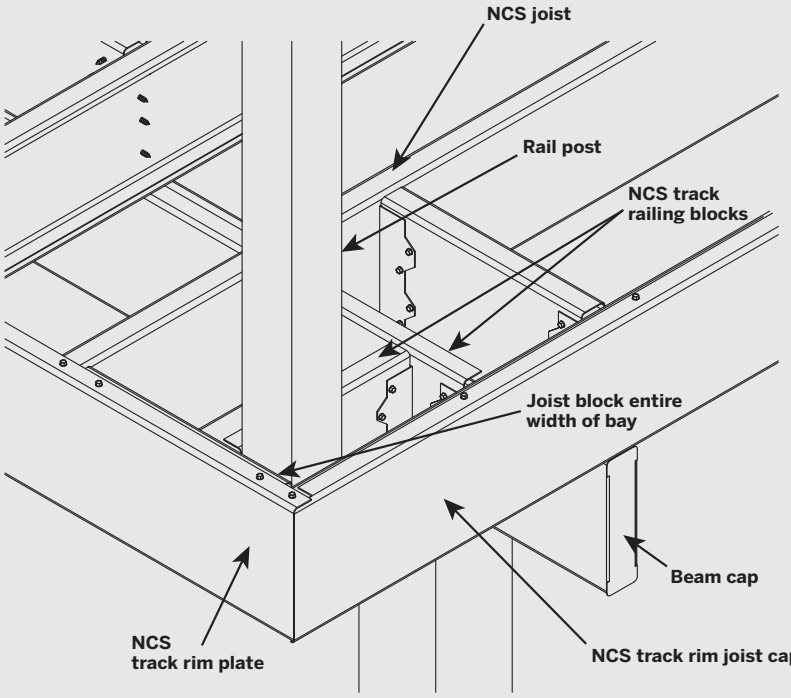
Rail post mounting bolt pattern

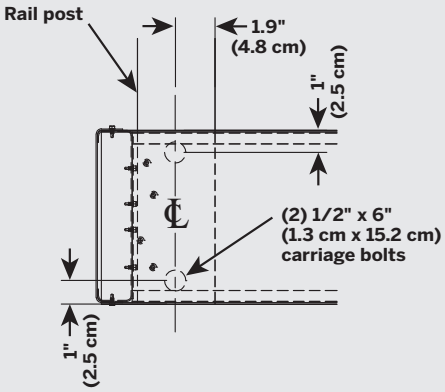


⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

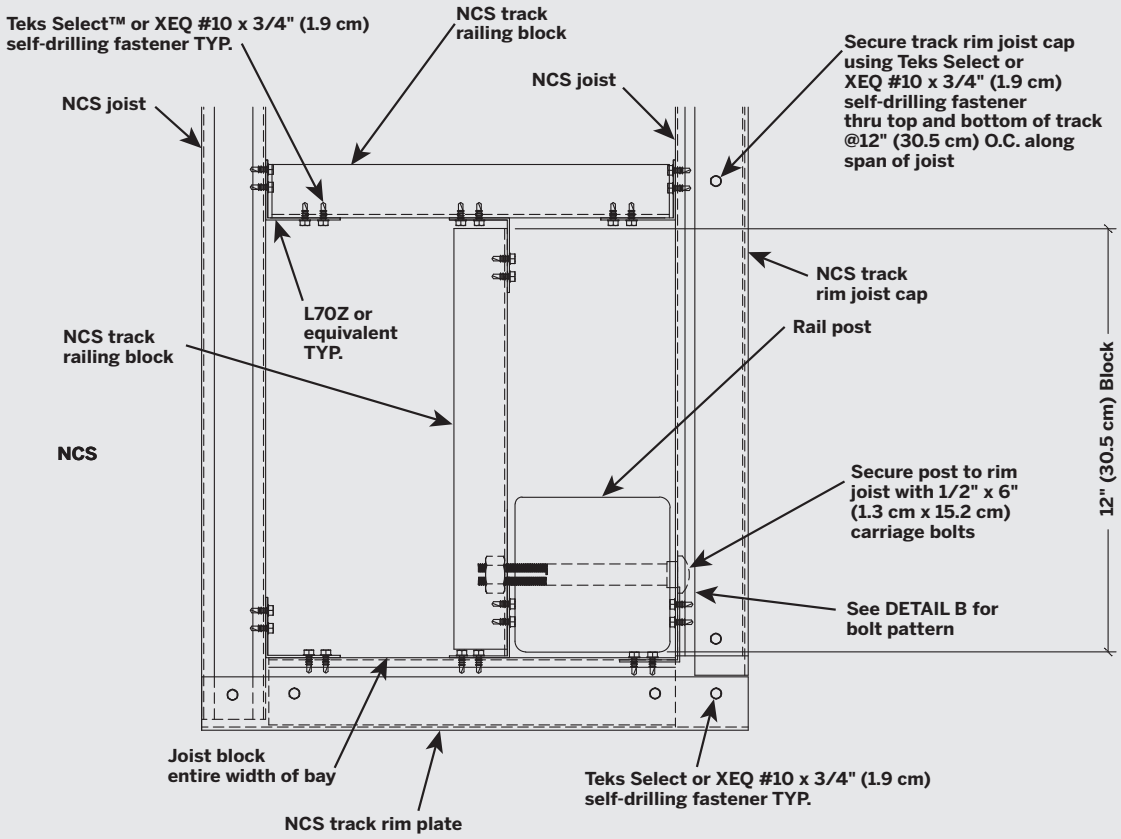
INSIDE RAIL POST ATTACHMENT AT CORNER





DETAIL B

Rail post mounting bolt pattern



⚠ WARNING

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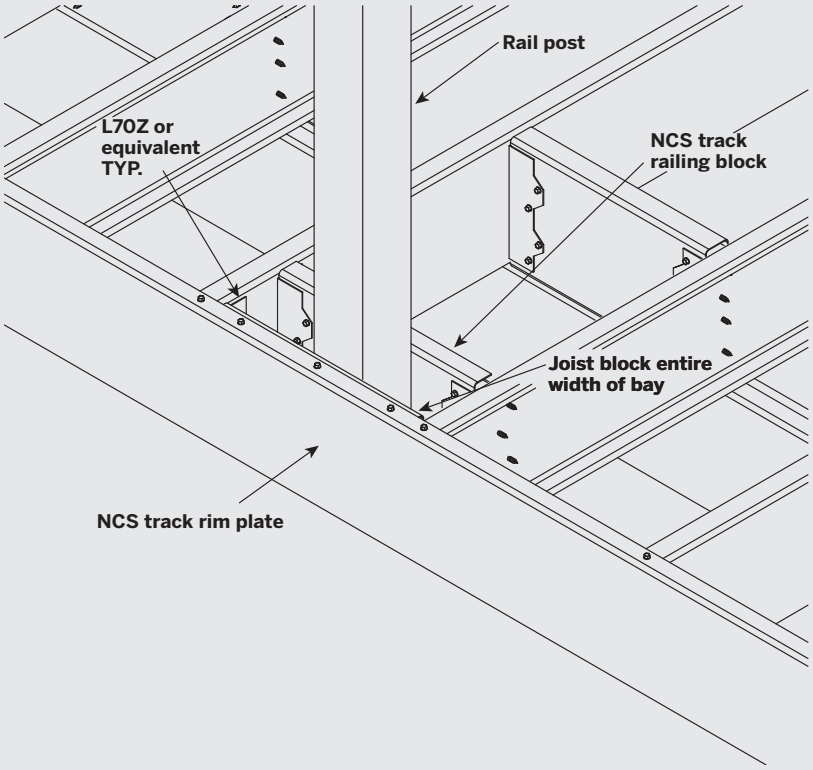
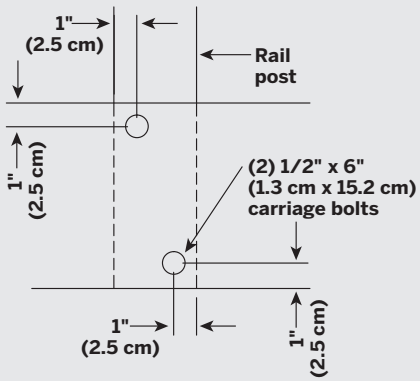
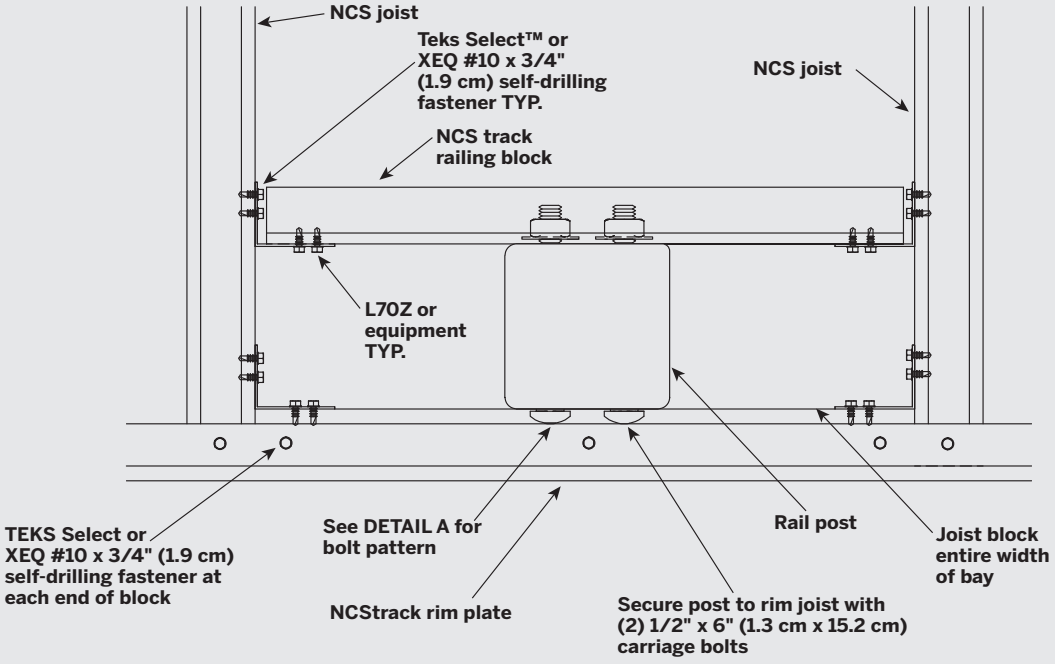
INSIDE RAIL POST ATTACHMENT AT RIM PLATE





DETAIL A

Rail post mounting bolt pattern



⚠ WARNING

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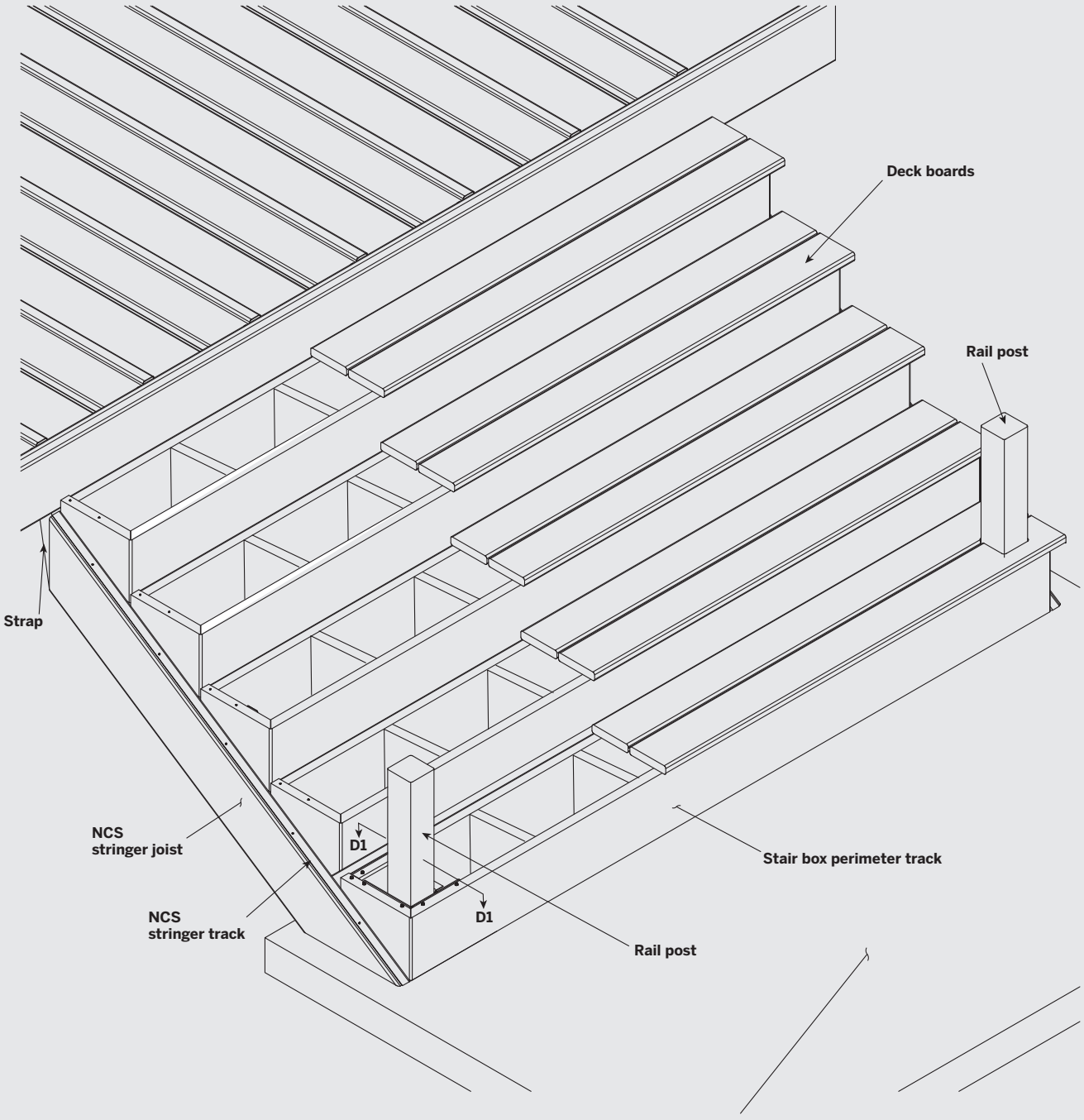
STAIR OVERVIEW DIAGRAM



⚠ WARNING

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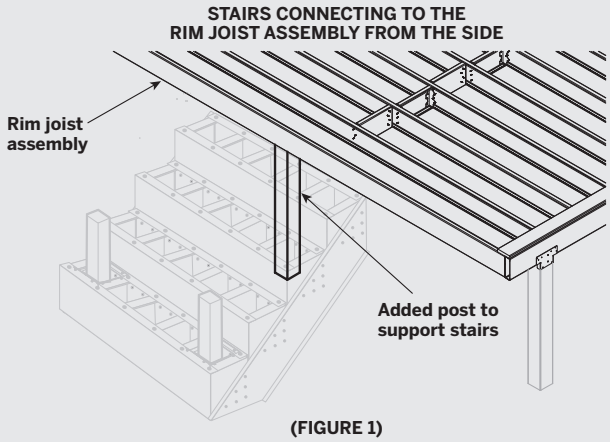
STAIR SUPPORT POSTS

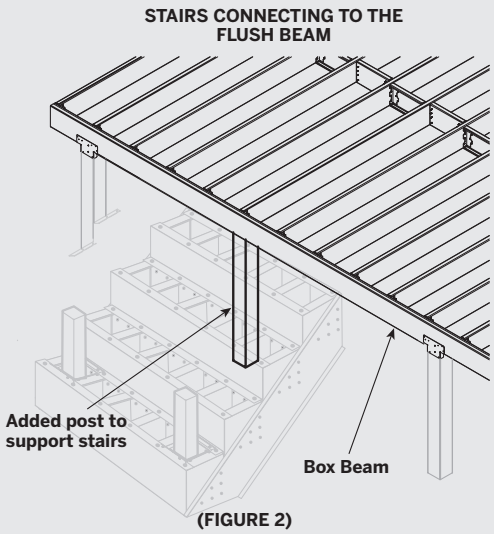
Width	3 - 6 ft (91 - 182 cm)	6 - 8 ft (182 - 243 cm)	8 - 18 ft (243 - 549 cm)
Max height	9 ft (274 cm) (16 rises)*	7 ft (213 cm) (12 rises)*	5 ft (152 cm) (9 rises)*
Mid stringer required	No	No	Yes
Stairs connected to rim joist assembly at the side	One post needed at the mid-span of the stairs load. (Figure 1)		
Stairs connected to the flush box beam	One post needed at the middle of each span taking the stairs load. (Figure 2)		
Stairs connected to the cantilever track of the deck	One post needed under the end of each stringer including mid stringer if used. (Figure 3)		

** Fastener spacing along the width of the stairs is 12 in. If the stairs are 7 ft (12 rises) or taller, 8 in. fastener spacing is required.*

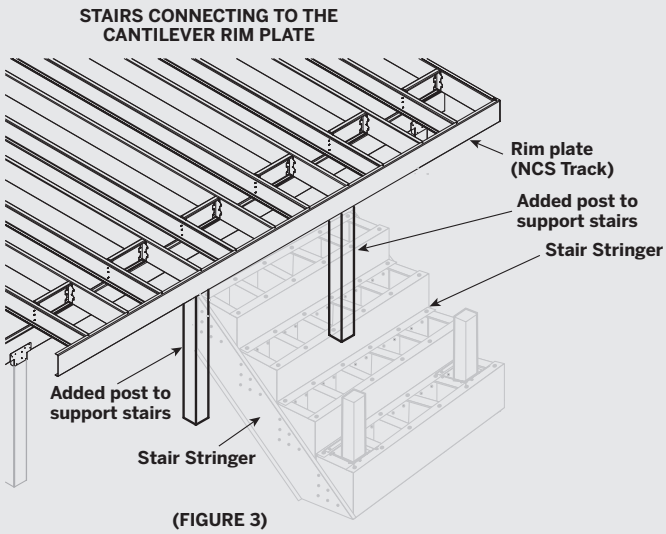
** Applies to wood stair system as well.*



(FIGURE 1)



(FIGURE 2)



(FIGURE 3)

⚠ WARNING

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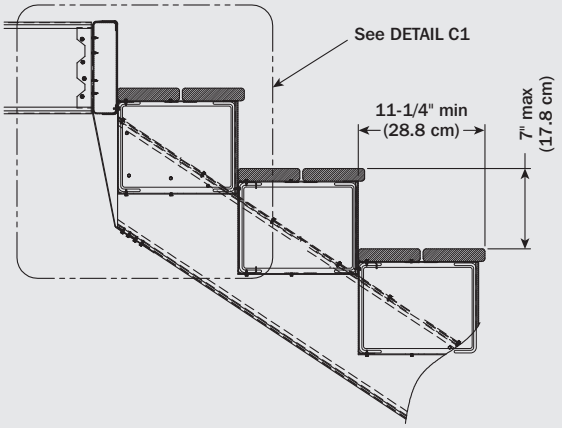
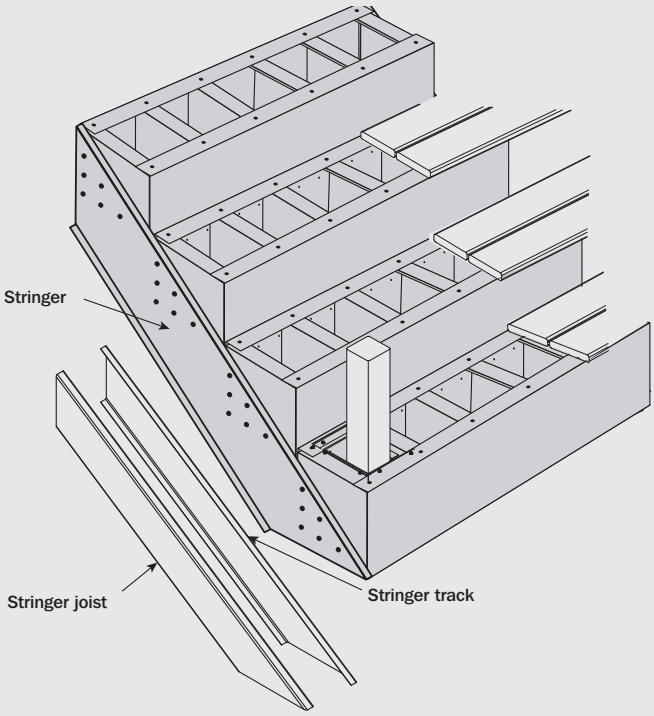
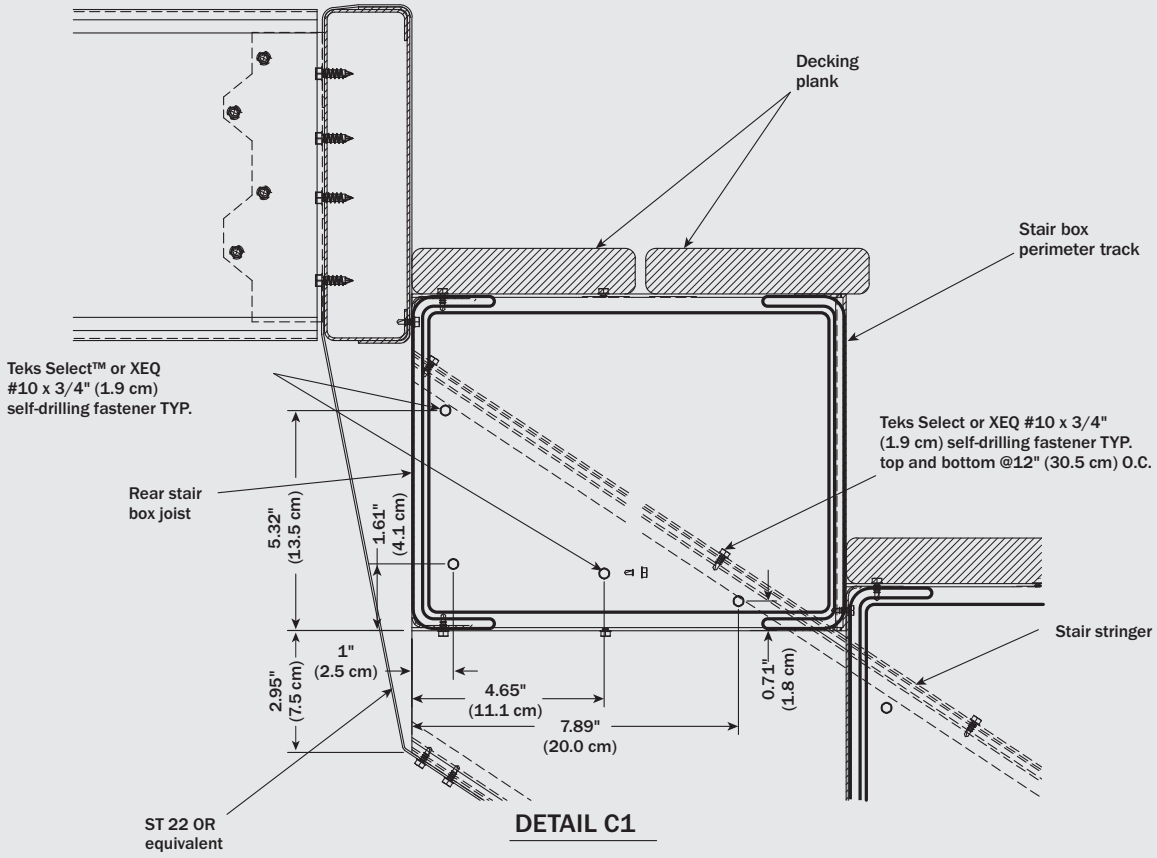
STAIR STRINGER ASSEMBLY







DETAIL C1

⚠ WARNING

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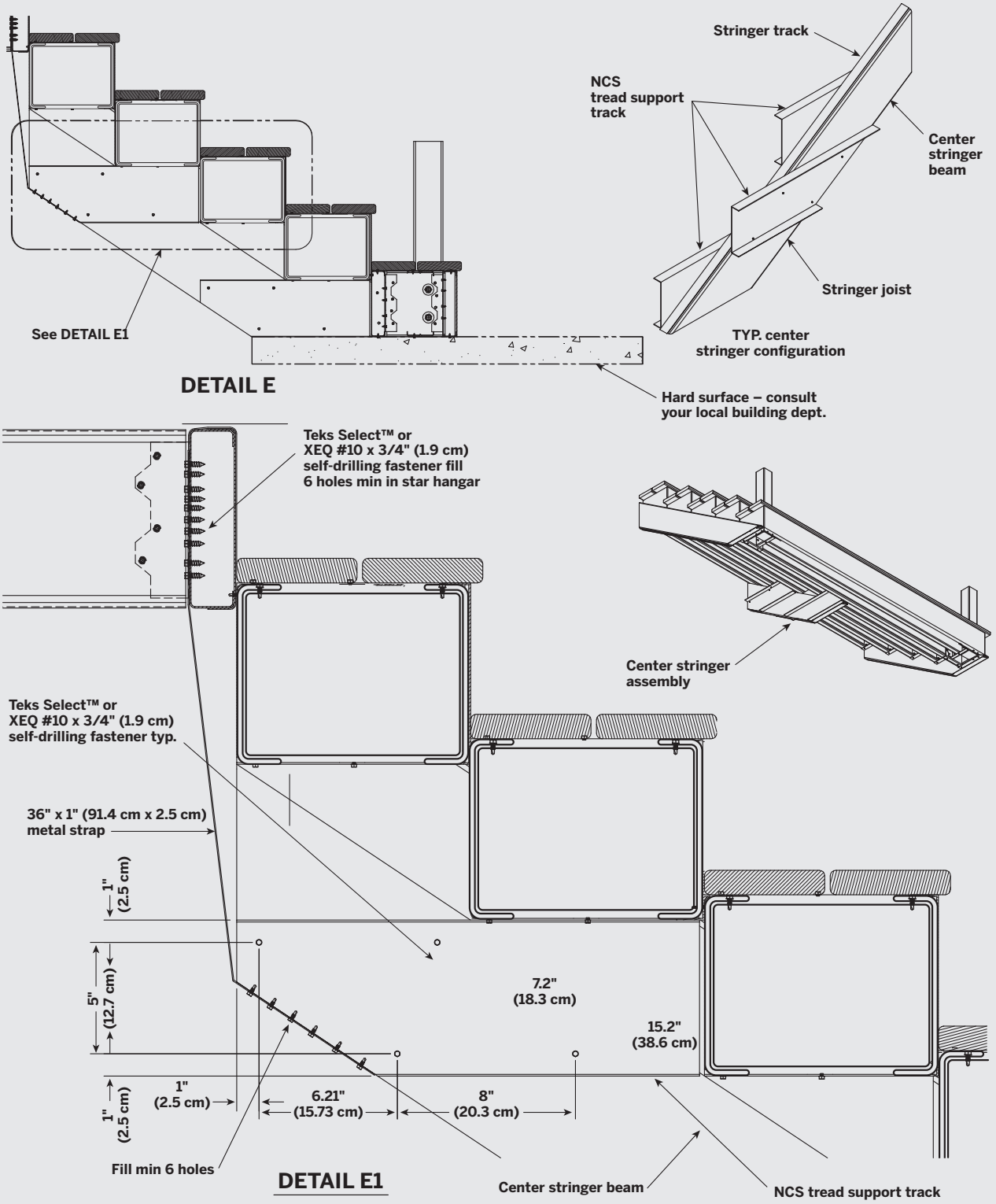
STAIR CENTER STRINGER ASSEMBLY



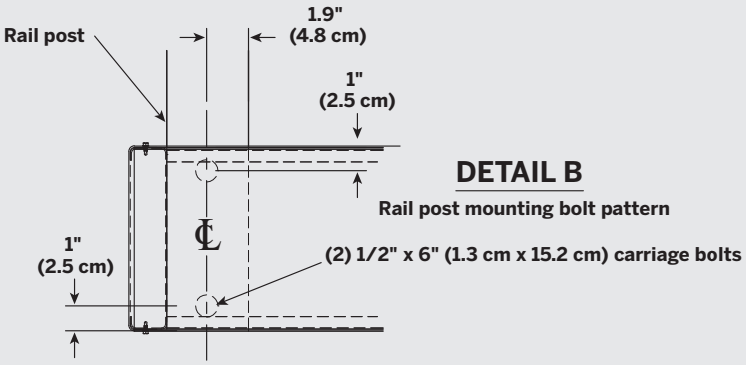
DETAIL E

DETAIL E1

⚠ WARNING

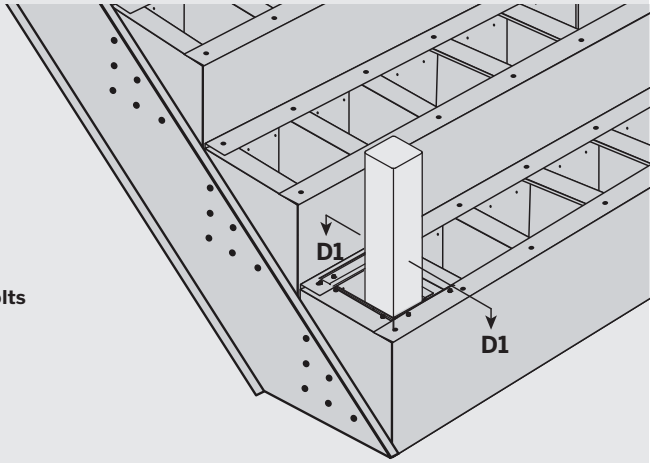
When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

STAIR RAILING POST ATTACHMENT

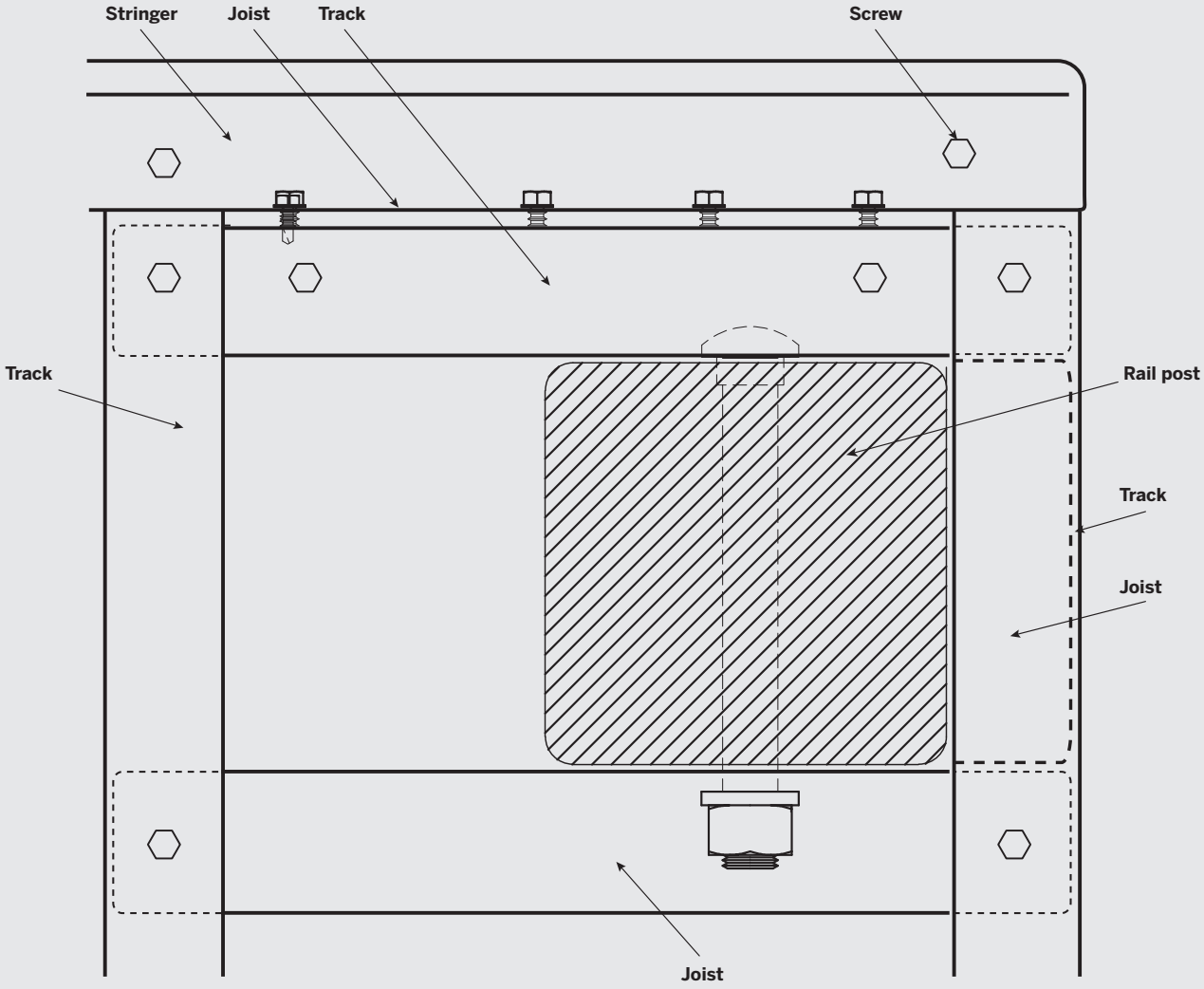


DETAIL B

Rail post mounting bolt pattern



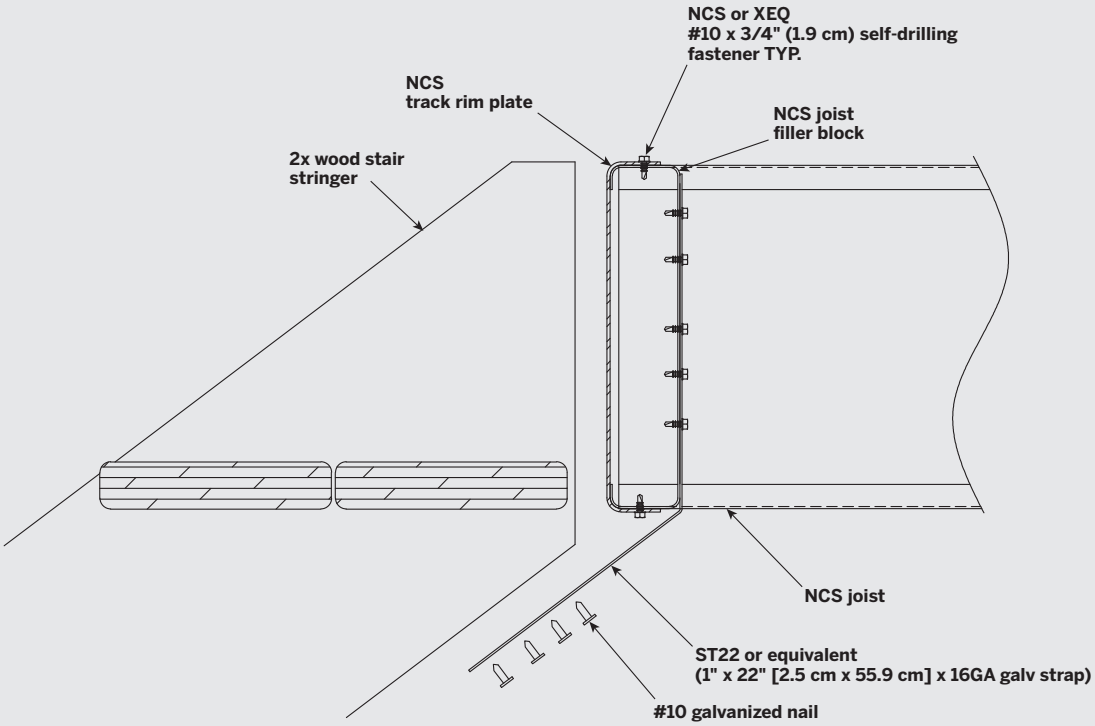
DETAIL D



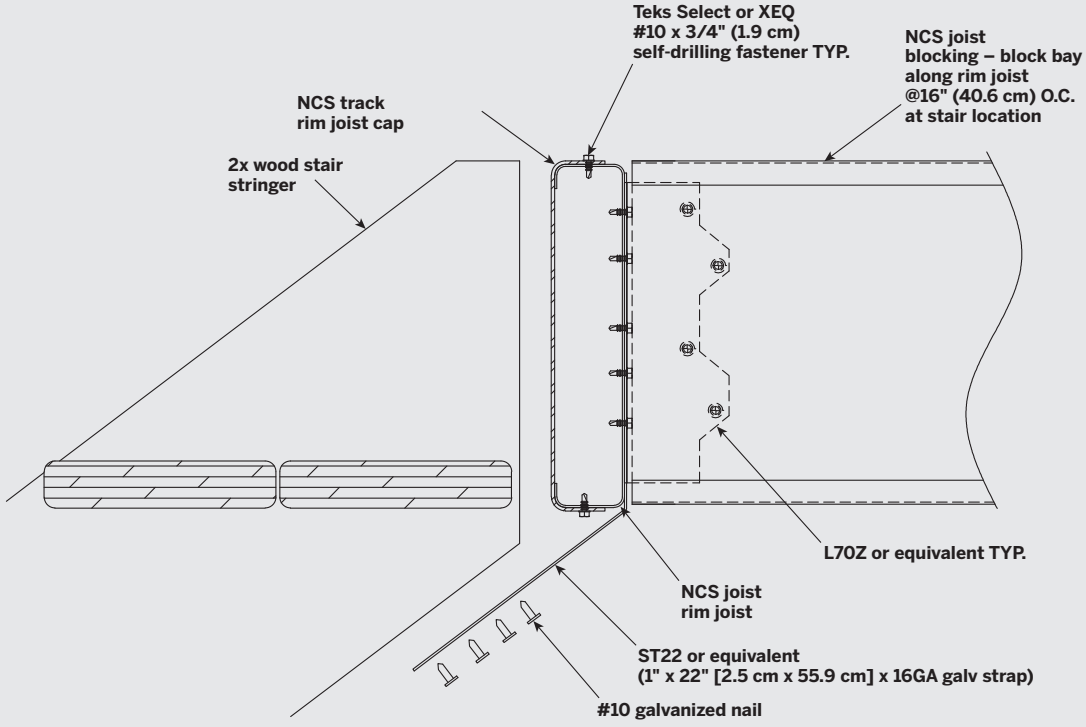
⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

WOOD STAIR ATTACHMENT TO RIM PLATE OR RIM JOIST CAP



WOOD STAIR ATTACHMENT TO RIM PLATE



WOOD STAIR ATTACHMENT TO RIM JOIST CAP

⚠ WARNING

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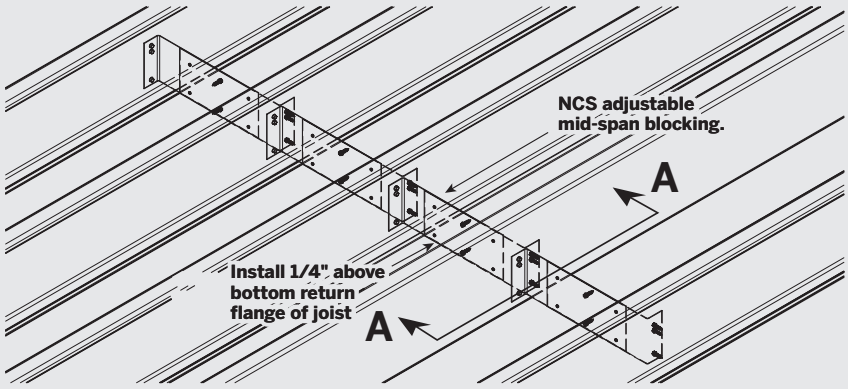
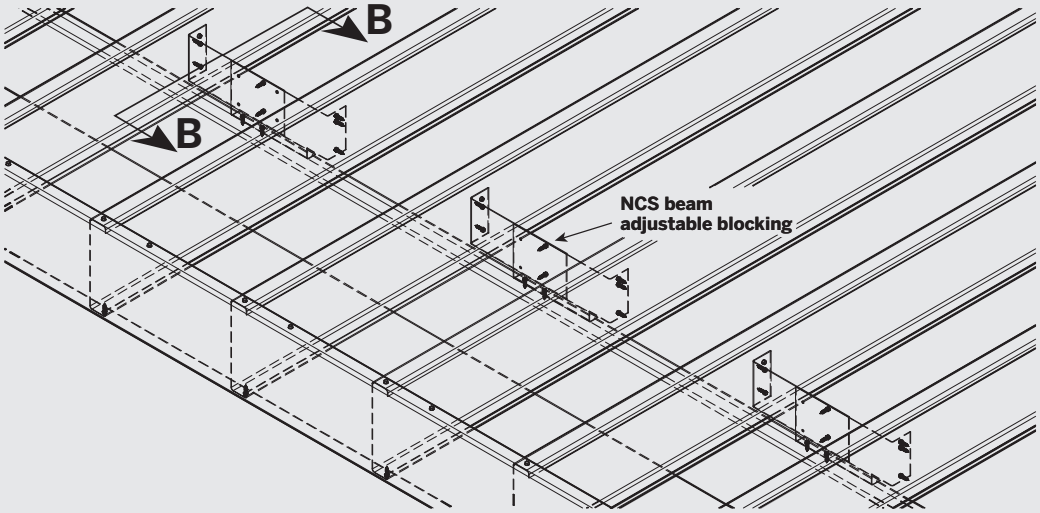
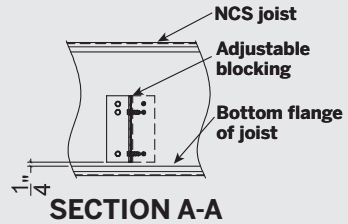
ADJUSTABLE BLOCKING OPTION



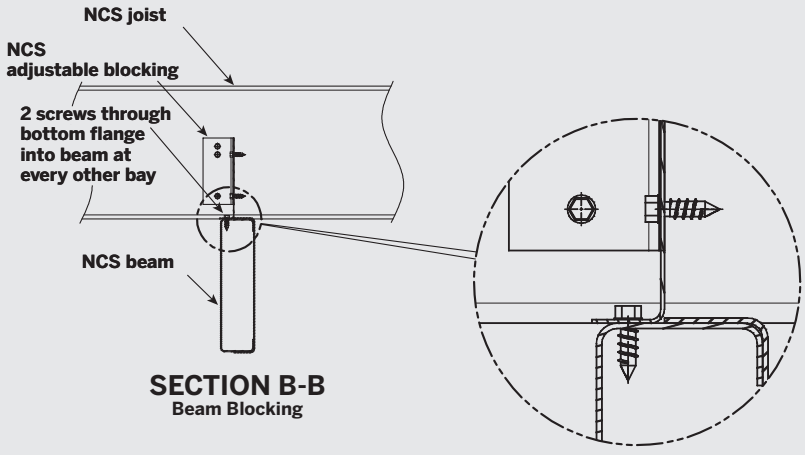
MID-SPAN BLOCKING
Mid-span blocking required on joist spans greater than 8' in every bay.



ABOVE BEAM BLOCKING



SECTION A-A
Adjustable Mid-Span Blocking

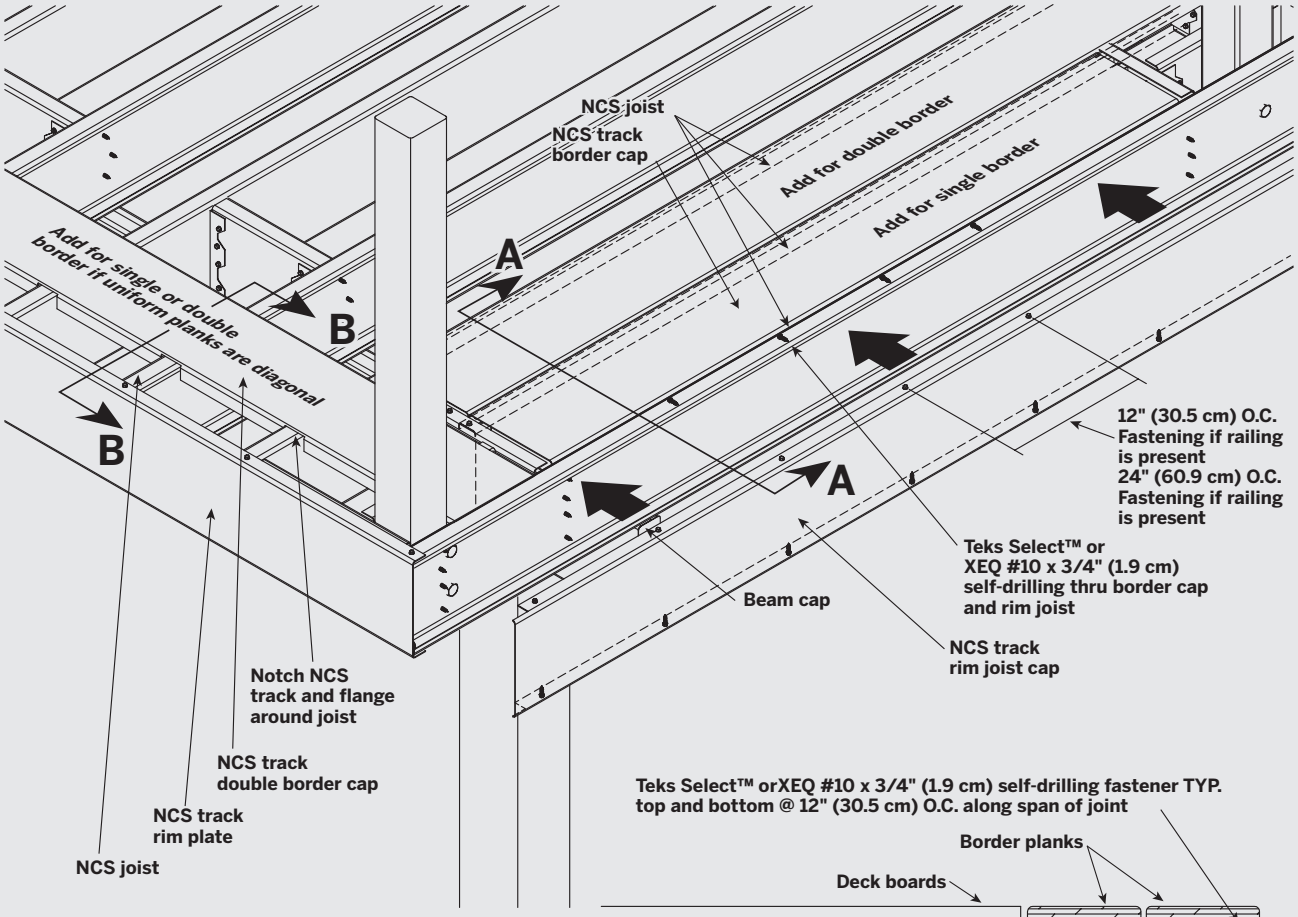


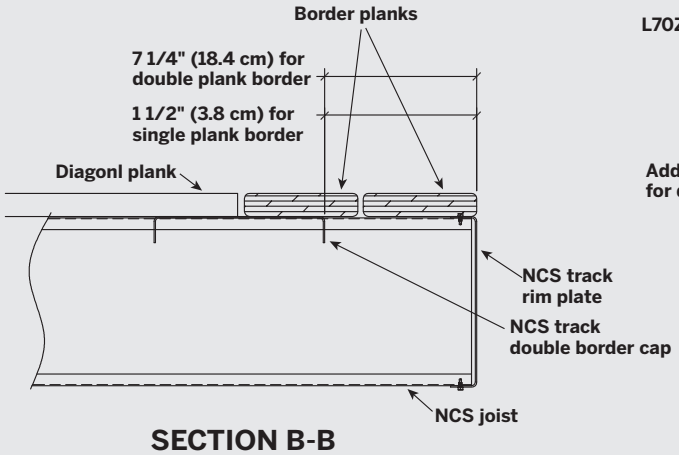
SECTION B-B
Beam Blocking

⚠ WARNING

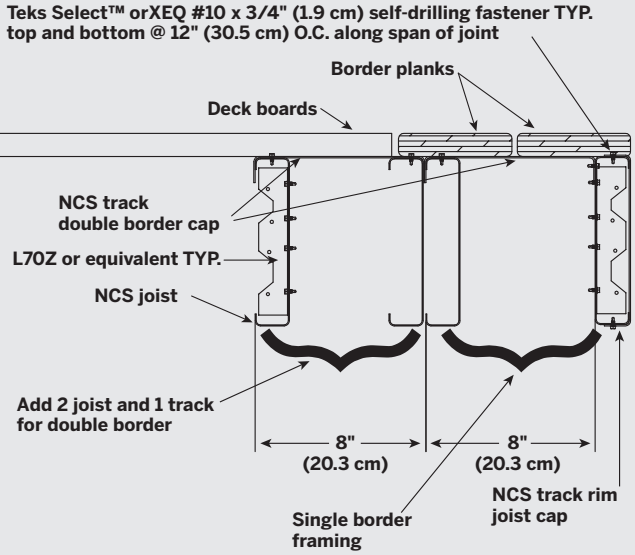
When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

BORDER PLANK FRAMING





SECTION B-B



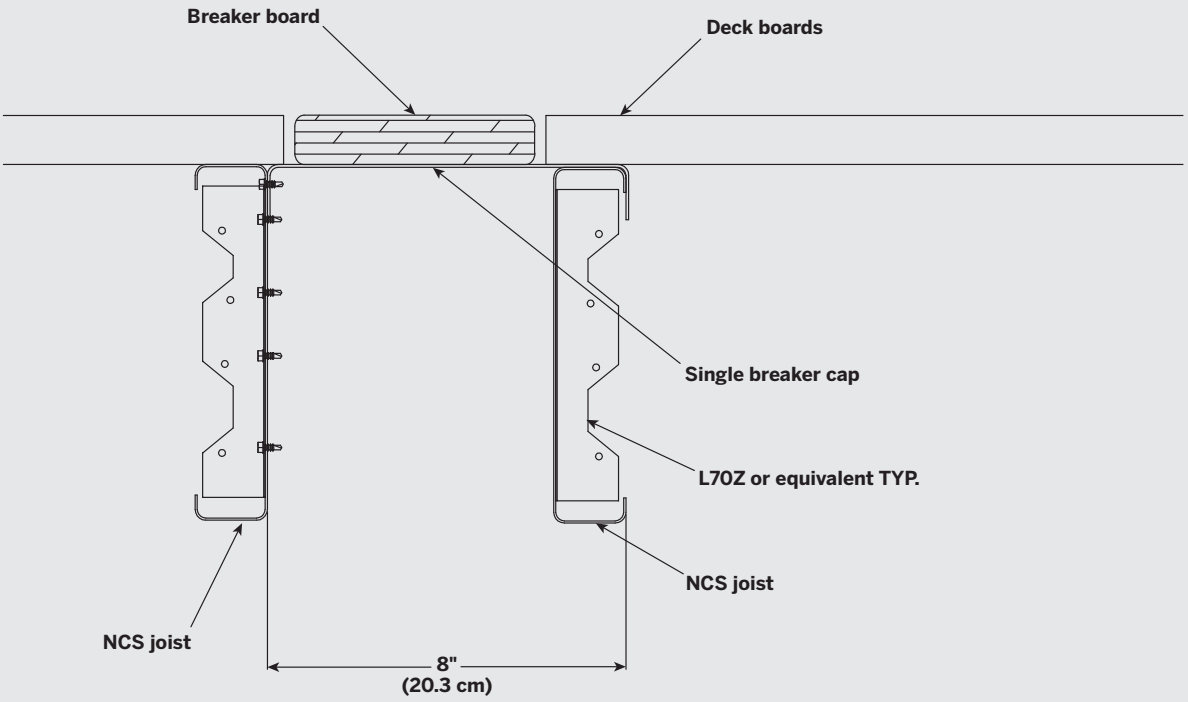
SECTION A-A

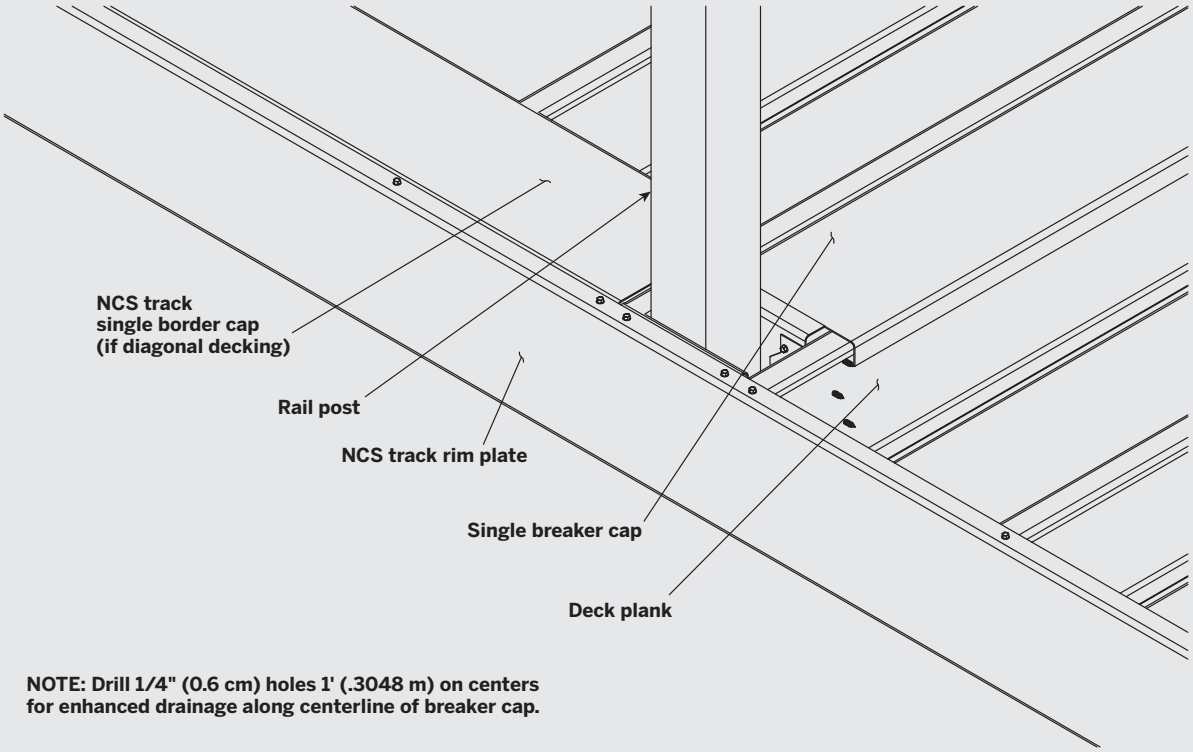
FRAME FOR SINGLE AND DOUBLE BORDERS

⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

BREAKER BOARD FRAMING TYP. SINGLE BREAK



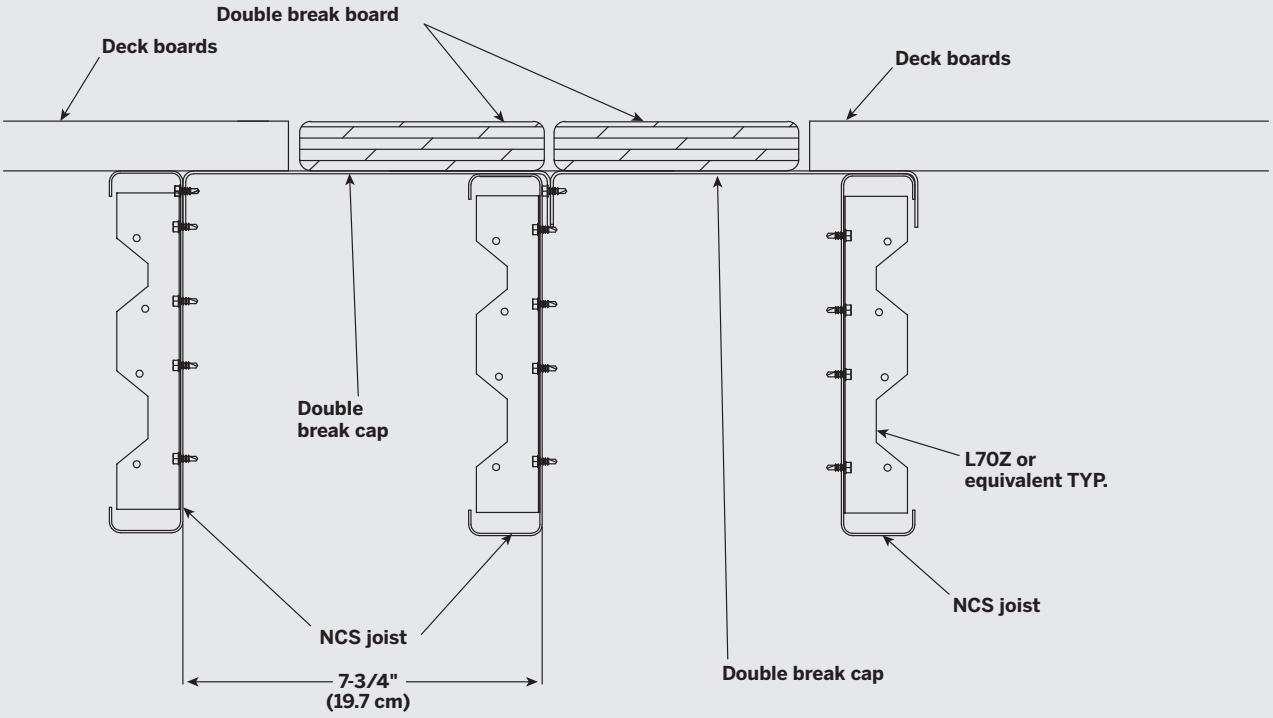


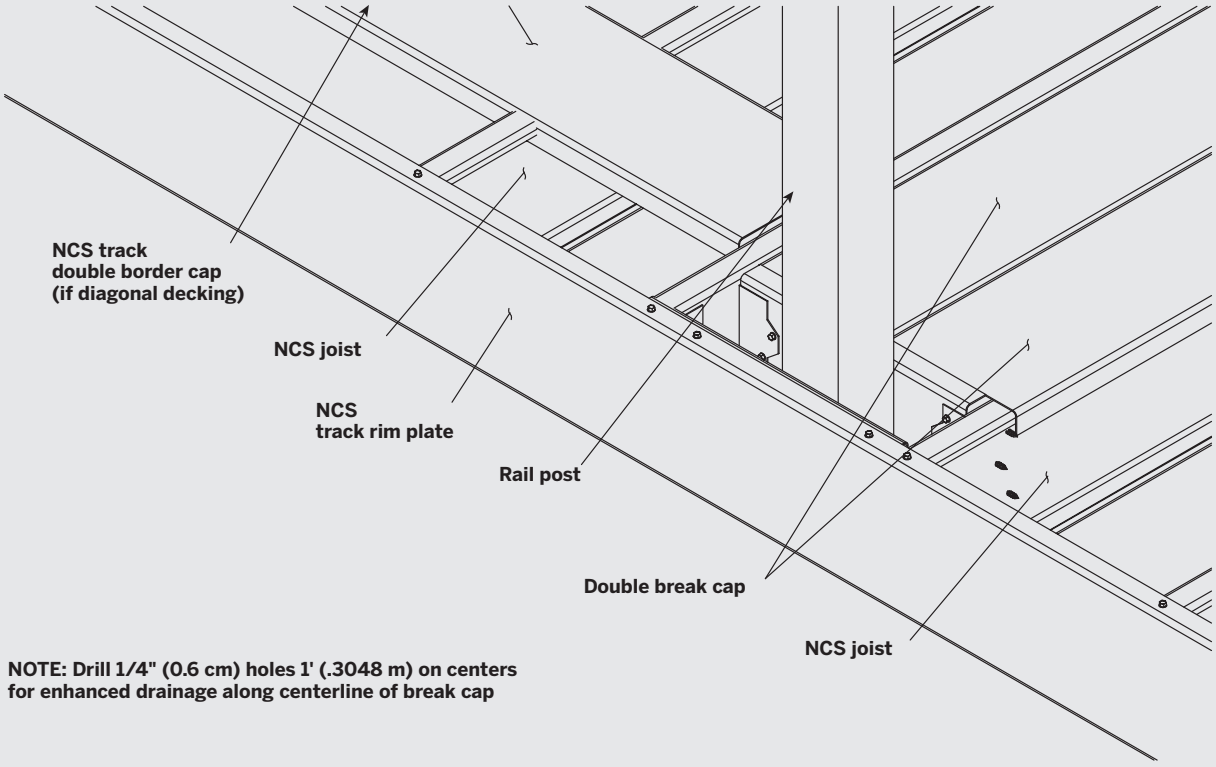
NOTE: Drill 1/4" (0.6 cm) holes 1' (.3048 m) on centers for enhanced drainage along centerline of breaker cap.

⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

BREAKER BOARD FRAMING TYP. DOUBLE BREAK



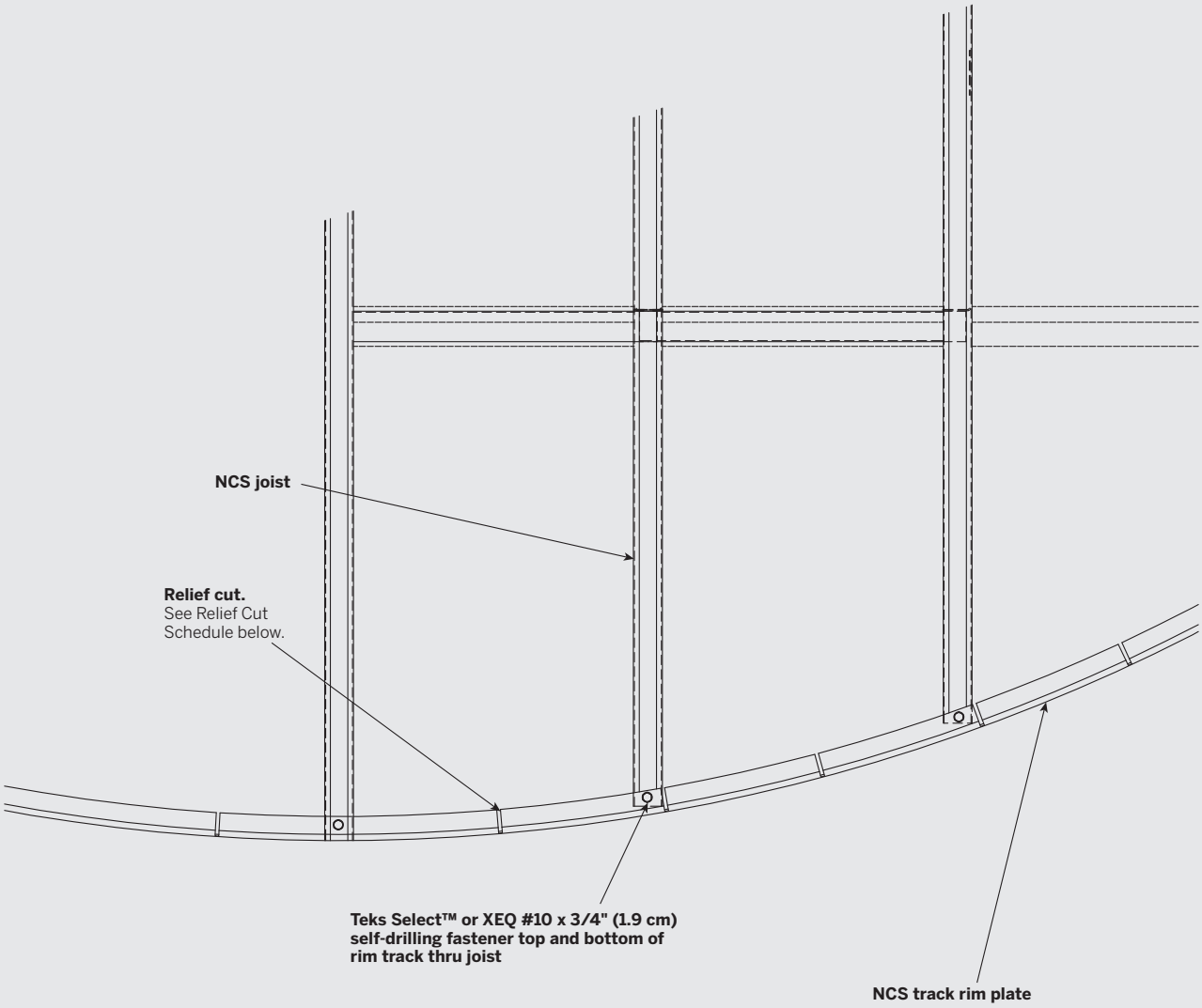


NOTE: Drill 1/4" (0.6 cm) holes 1' (.3048 m) on centers for enhanced drainage along centerline of break cap

⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

GENERAL FRAMING DETAIL – CURVED FRONT TRACK RIM PLATE



RELIEF CUT SCHEDULE	
NEW CASTLE STEEL TRACK TOP AND BOTTOM FLANGE	
RADIUS	RADIUS
3′ - 0″ to 5′ - 11″ (91.4 cm to 180.3 cm)	2″ (5.1 cm)
5′ - 11″ to 8′ - 11″ (180.3 cm to 271.8 cm)	4″ (10.2 cm)
8′ - 11″ to 11′ - 11″ (271.8 cm to 363.2 cm)	6″ (15.2 cm)
11′ - 11″ to 14′ - 11″ (363.2 cm to 454.0 cm)	8″ (20.3 cm)
14′ - 11″ and above (454.0 cm and above)	10″ (25.4 cm)

⚠ WARNING

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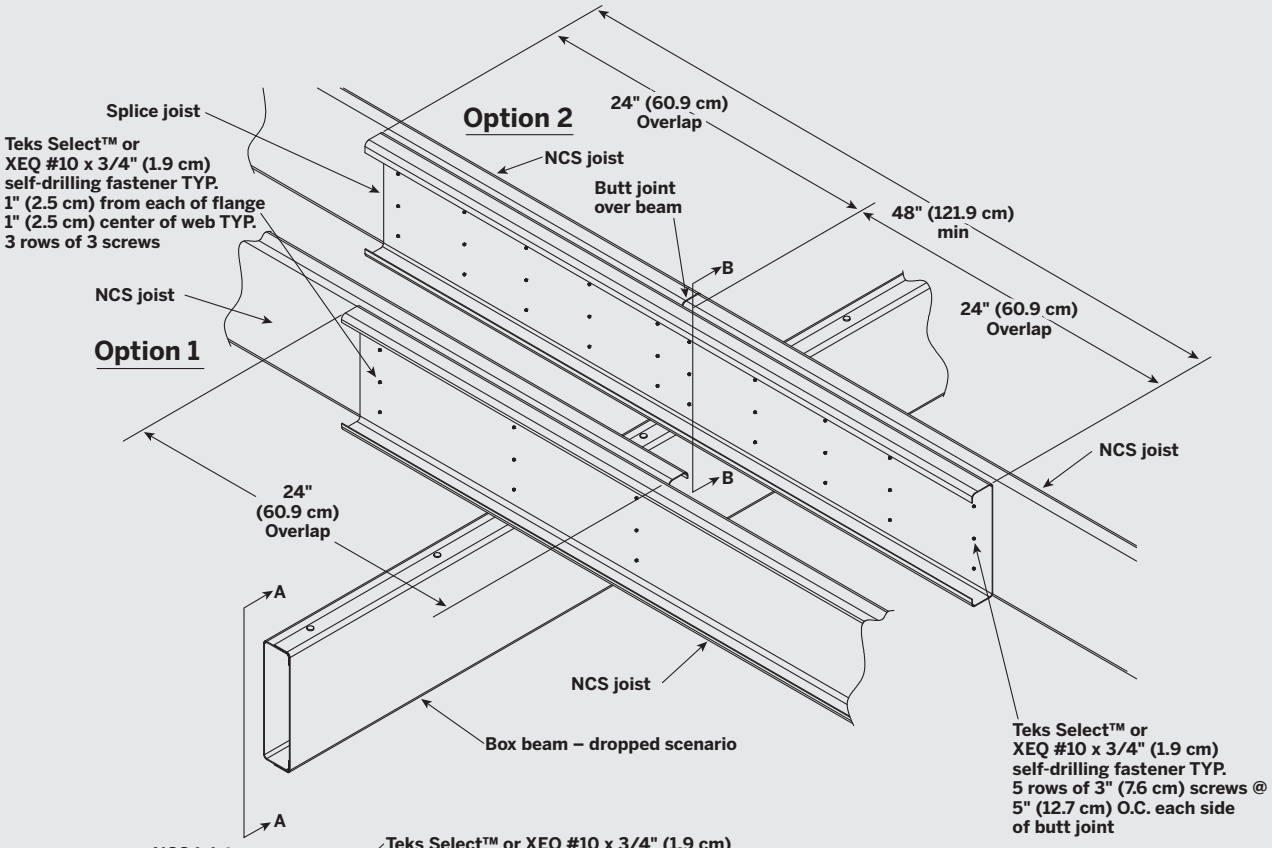
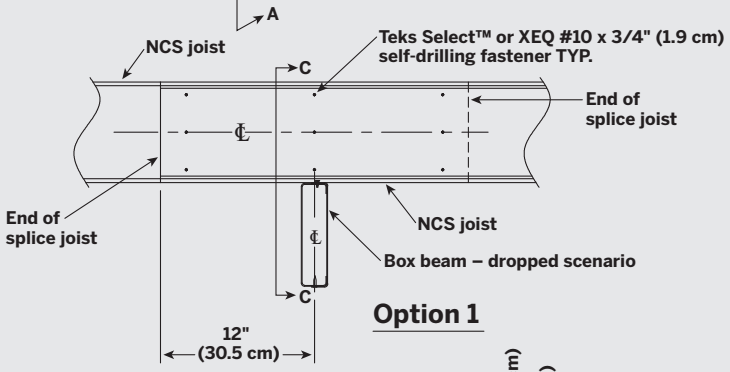
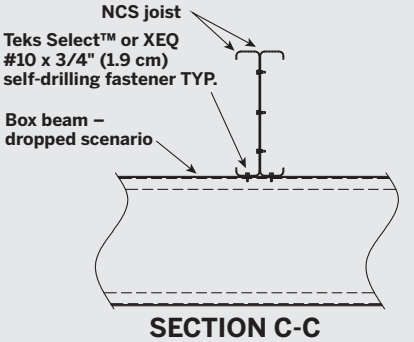
JOIST SPLICE OVER DROPPED BEAM

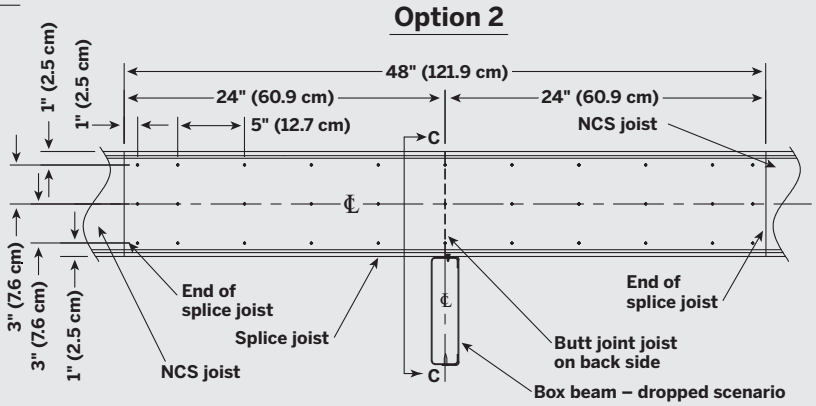




SECTION A-A



SECTION C-C

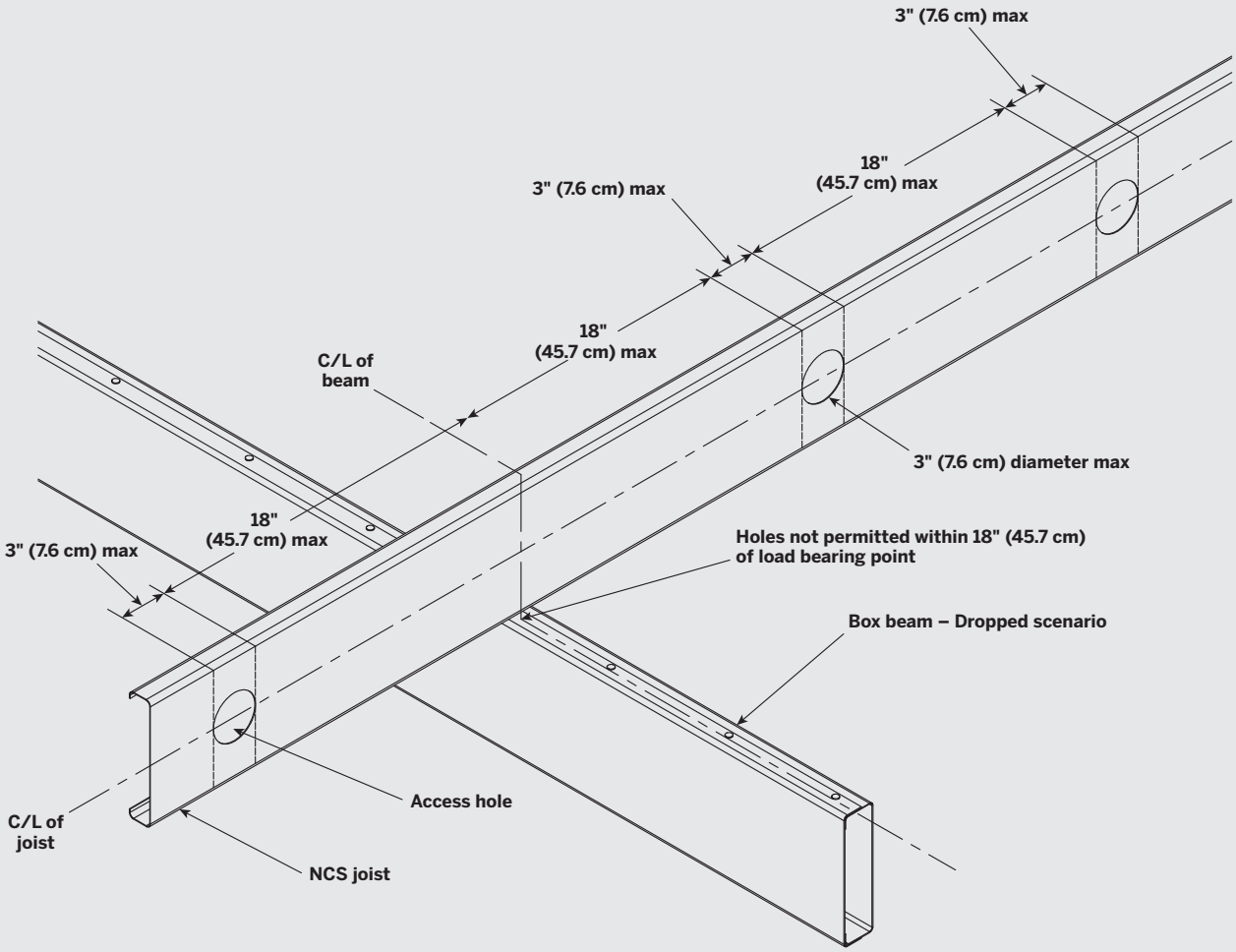


SECTION B-B

⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

GENERAL FRAMING DETAIL – JOIST PERFORATIONS



⚠ WARNING

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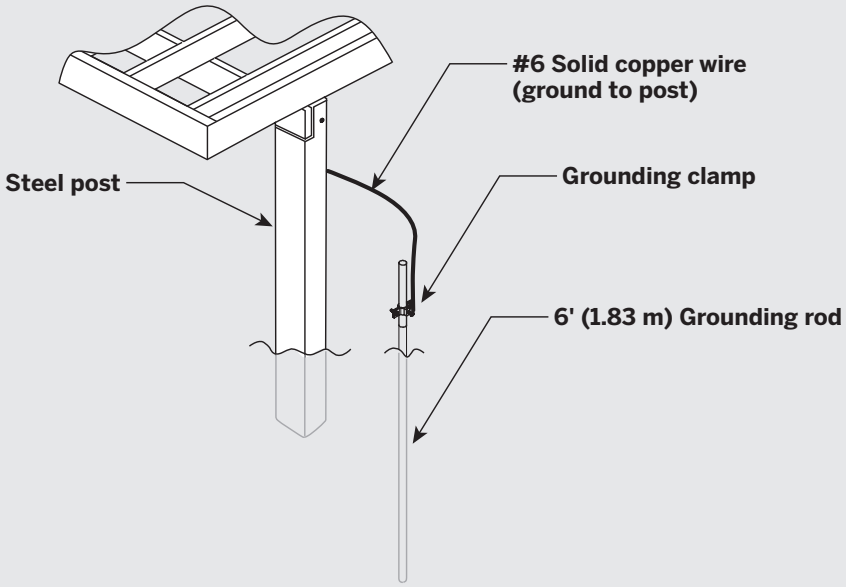
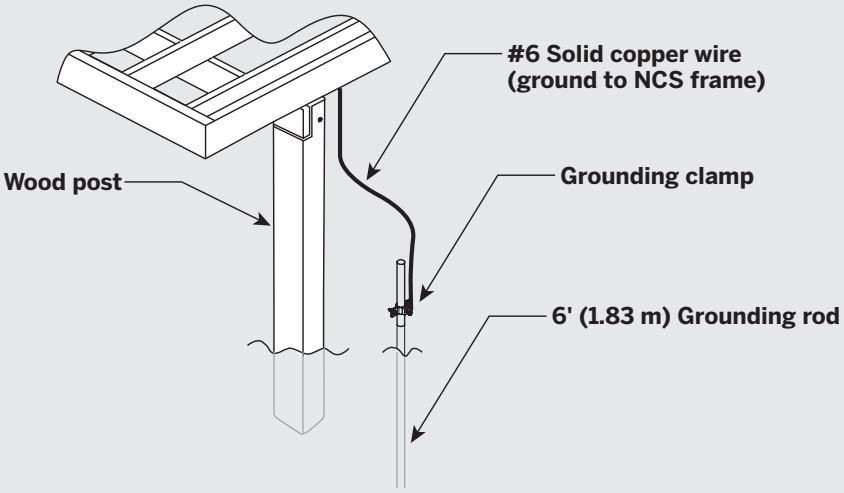
DECK FRAMING DETAIL (OPTIONAL GROUNDING)

Deck with Steel Post



Deck with Wood Post



⚠ WARNING

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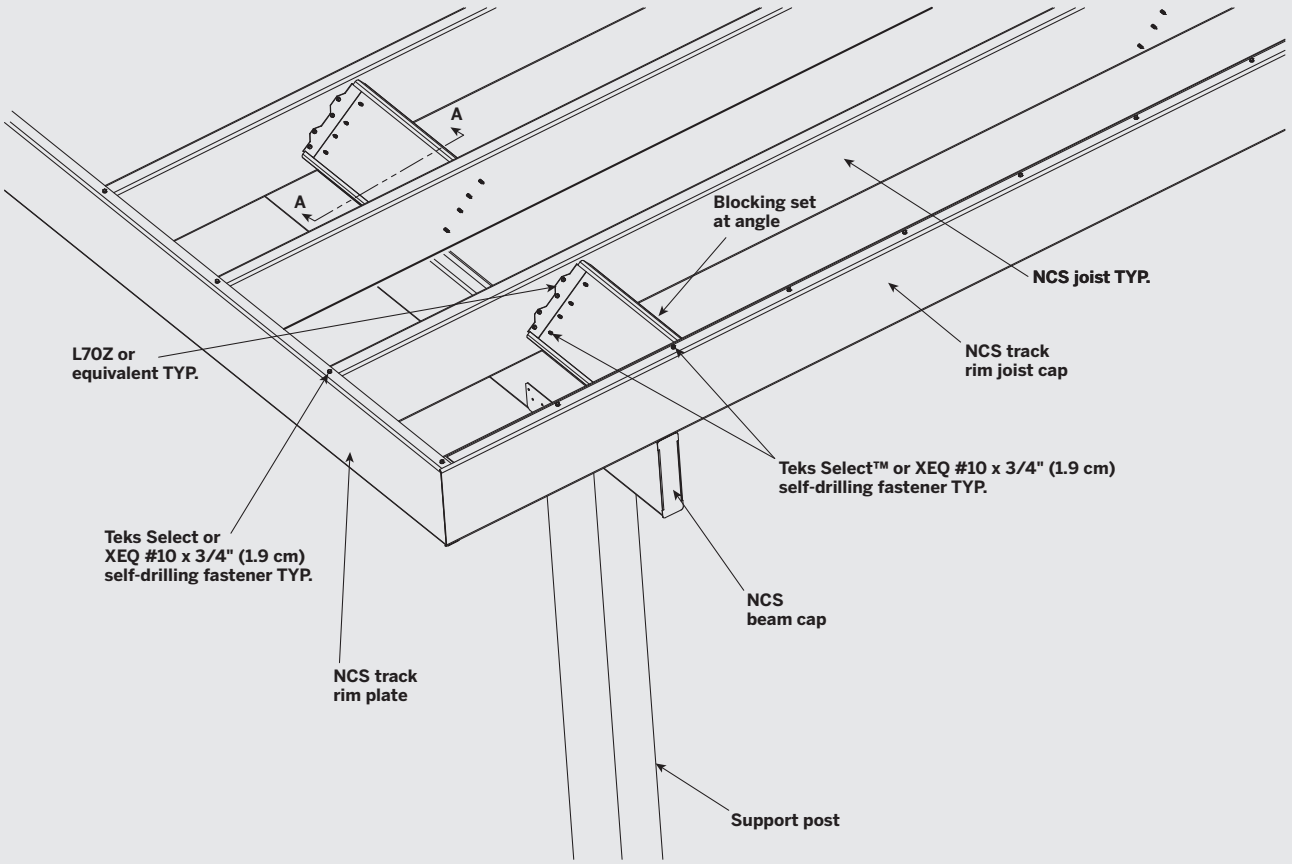
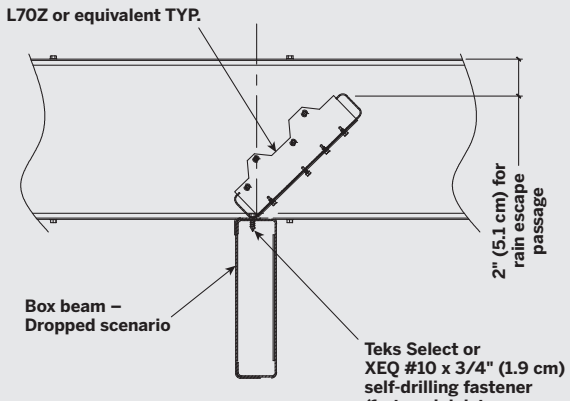
GENERAL FRAMING DETAIL – TREX RAIN ESCAPES® BLOCKING ATOP BM





SECTION A-A

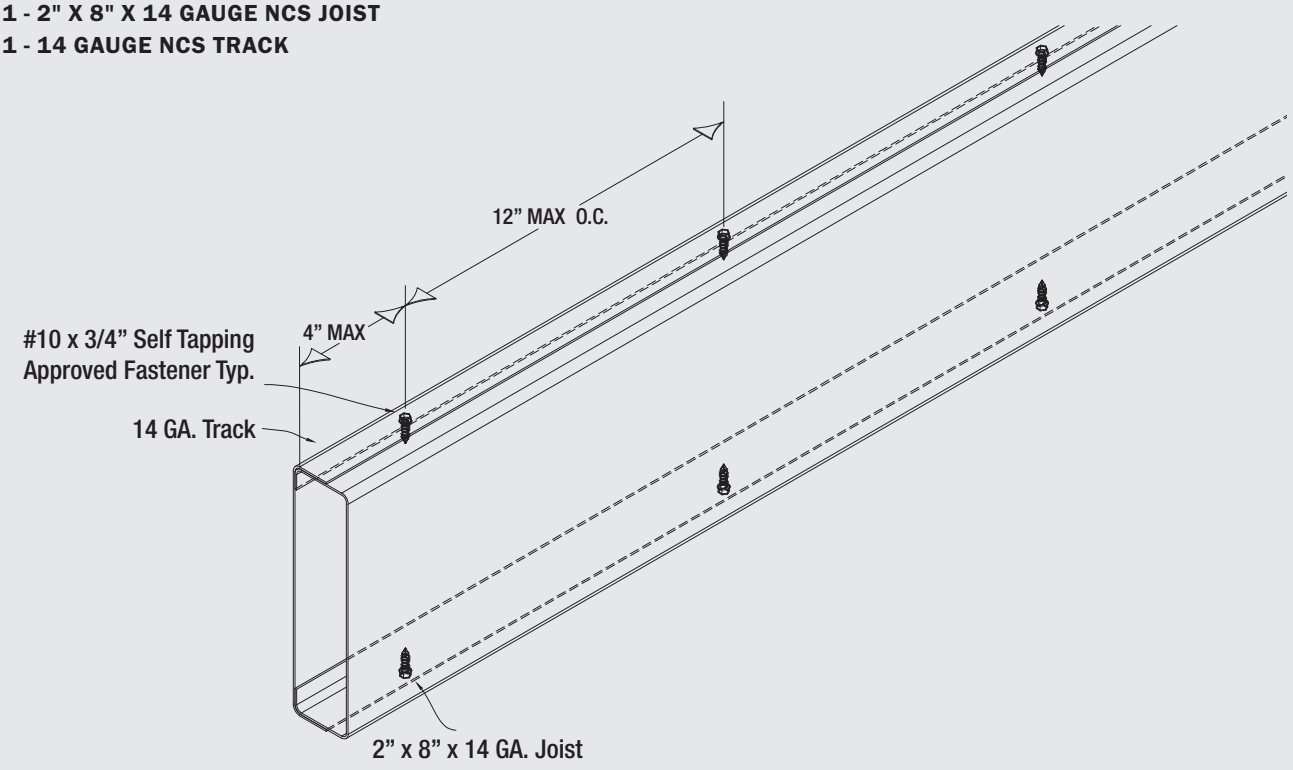
⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

BEAM CONFIGURATIONS

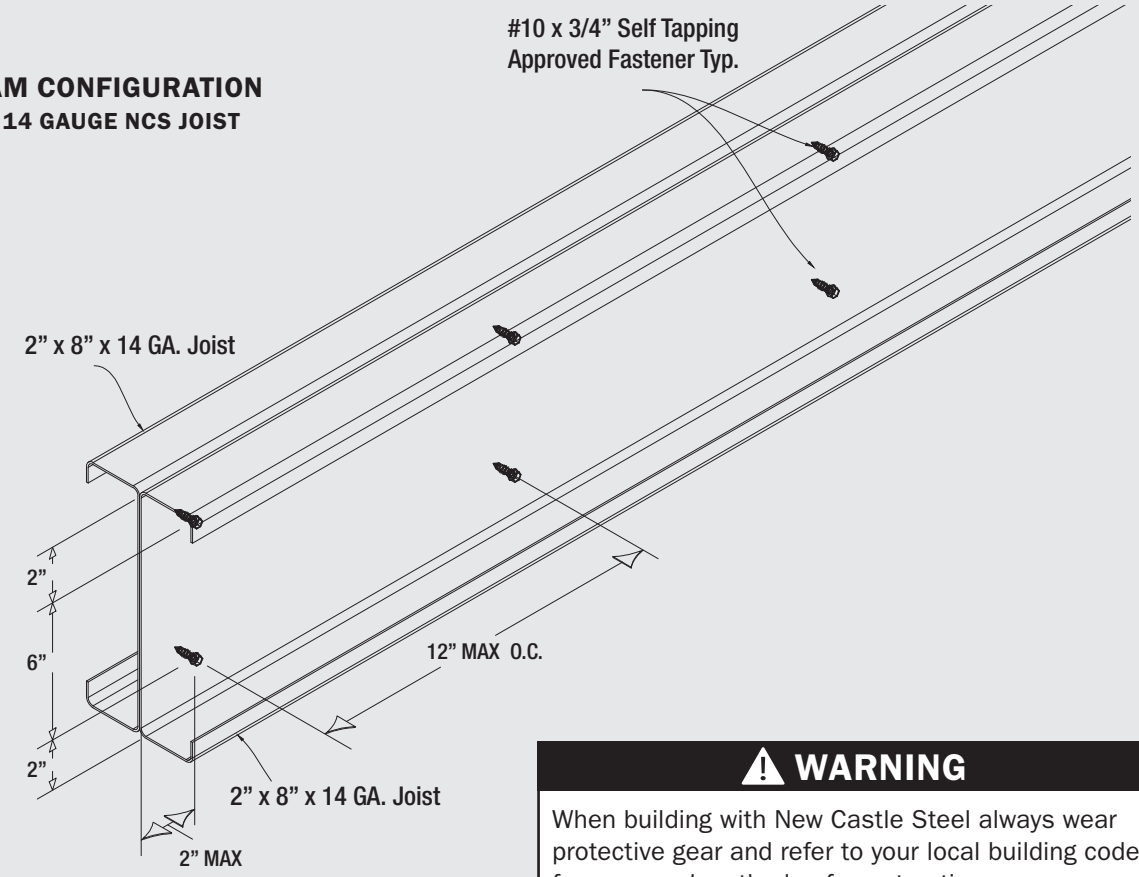
SINGLE BEAM CONFIGURATION

1 - 2" X 8" X 14 GAUGE NCS JOIST
1 - 14 GAUGE NCS TRACK



OPEN BEAM CONFIGURATION

2 - 2" X 8" X 14 GAUGE NCS JOIST



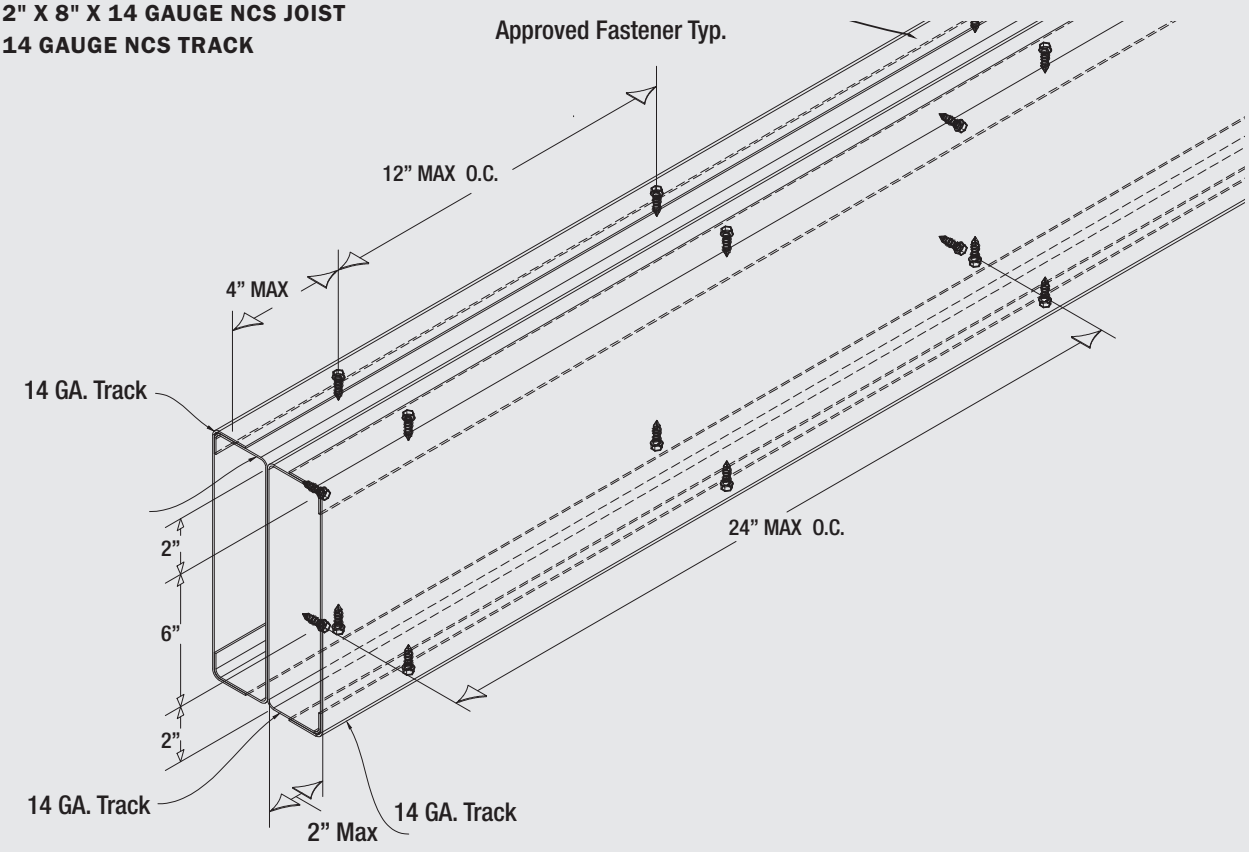
⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

BEAM CONFIGURATIONS

DOUBLE BEAM CONFIGURATION

2 - 2" X 8" X 14 GAUGE NCS JOIST
2 - 14 GAUGE NCS TRACK



⚠ WARNING

When building with New Castle Steel always wear protective gear and refer to your local building codes for approved methods of construction.

NEW CASTLE STEEL MAINTENANCE

Corrosion is a naturally occurring phenomenon. However, with proper corrosion management, the life of New Castle Steel components can be extended well beyond the warranty period.

Observation
During construction, inspect all components for exposed steel, and cover the exposed area with New Castle Steel approved touch-up paint in accordance with the *New Castle Steel Product and Installation Guide*. Covering exposed area with New Castle Steel approved touch-up paint, such as NCS approved touch-up paint, blends the blemishes into the same unique color of the components.

First Maintenance
First maintenance is defined as the physical inspection of components in search of corrosion. Atmospheric and environmental conditions can affect the longevity of New Castle Steel™. Densities of air borne pollutants in certain atmospheres require adjustments in the maintenance and inspection schedules.

You should conduct first maintenance within 6 years (for residential) or 4 years (for commercial) after installation. If corrosion is identified, immediately begin corrosion management practices.

Inspection Schedule
After first maintenance, New Castle Steel components must be inspected for structural integrity every 2 to 5 years (residential) or 2 years (commercial). Integrity is inspected by tapping along the surface area of the components with a metal tool such as a screwdriver. If flaking of the exterior coat occurs or discrepancies of sound are heard, immediately begin corrosion management practices.

Corrosion Management
Sand any affected areas to twice the size of the corroded area with 80 grit sand paper. Reapply New Castle Steel approved touch-up paint to the sanded area.

Cleaning Deck
Using cleaning recommendation per *www.ncsteel.com* will not harm New Castle Steel. Be sure to rinse thoroughly on decking and framing.

De-icing
Use a non-saline based de-icing agent. Rinse off when first practical.

NEW CASTLE STEEL™ LIMITED WARRANTY

New Castle Steel Inc. warrants to the original purchaser ("Purchaser") that, for the period of time set forth in the following sentence, under normal use and service conditions, New Castle Steel deck framing components shall be free from material defects in workmanship and materials and will not become structurally unfit, which is defined as corrosion causing a perforation of the component. The term of such warranty shall be twenty-five (25) years from the date of original purchase for a residential application, and ten (10) years from the date of original purchase for a commercial application. If a defect occurs within the warranty period, Purchaser shall notify New Castle Steel in writing and, upon confirmation by an authorized New Castle Steel representative of the defect, New Castle Steel's sole responsibility shall be, at its option, to either replace the defective item or refund the portion of the purchase price paid by Purchaser for such defective item (not including the cost of its initial installation).

For purposes of this warranty, a "residential application" shall refer to an installation of the Product on an individual residence, and a "commercial application" shall refer to any installation of the Product other than on an individual residence.

Salt Water Applications: New Castle Steel may not be installed within 3,000 feet of any body of salt water due to increased risk of corrosion. Any such installation shall void this limited warranty.

Other Water Applications: New Castle Steel may not be installed under the surface or within the splash zone of any body of fresh water due to increased risk of corrosion. Any such installation shall void this limited warranty.

New Castle Steel does not accept damage to the product occasioned by moisture or other contamination detrimental to the product attributable to improper storage prior to installation, damage to the product occasioned be condensation
attributable to improper packaging, handling, shipping, processing and or installation, and does not cover paint film due to the failure of the substrate.

This warranty excludes failures caused by standing water, and direct exposure to
corrosive and aggressive atmospheres including animals waste products. This warranty does not cover failure due to salt spray corrosion or plant fertilizer.

**THIS LIMITED WARRANTY SHALL NOT COVER AND NEW CASTLE STEEL SHALL NOT BE RESPONSIBLE FOR COSTS AND EXPENSES INCURRED WITH RESPECT TO THE REMOVAL OF DEFECTIVE NEW CASTLE STEEL PRODUCTS OR THE
INSTALLATION OF REPLACEMENT MATERIALS, INCLUDING BUT NOT LIMITED
TO LABOR AND FREIGHT.**

With respect to a residential application, this warranty may be transferred one (1) time, within the five (5) year period beginning from the date of original purchase by the Purchaser, to a subsequent buyer of the property upon which the New Castle Steel products were originally installed. With respect to a commercial application, this warranty is freely transferable to subsequent buyers of the property upon which the New Castle Steel products were originally installed.

To make a claim under this limited warranty, Purchaser, or the transferee, shall send to New Castle Steel, within the warranty period referred to above, a description of the claimed defect and proof of purchase, to the following address:

New Castle Steel Inc.
Customer Relations
1000 Pine Mill Drive, Marietta GA 30066

New Castle Steel does not warrant against and is not responsible for any condition attributable to: (1) defects caused by improper installation or decay caused by fasteners; (2) use of New Castle Steel products beyond normal use or service conditions, or in an application not recommended by New Castle Steel's guidelines and local building codes; (3) corrosion caused by factors other than
environmental or atmospheric processes; (4) failure to strictly abide by New Castle Steel standard maintenance practices, as described below; (5) movement, distortion, collapse or settling of the ground; (6) any act of God (such as flooding, hurricane, earthquake, lightning, etc.); (7) improper handling, storage, abuse or neglect of New Castle Steel products by Purchaser, the transferee or third parties; or (8) ordinary wear and tear.

No person or entity is authorized by New Castle Steel to make and New Castle Steel shall not be bound by any statement or representation as to the quality or performance of New Castle Steel products other than as contained in this warranty. This warranty may not be altered or amended except in a written instrument signed by New Castle Steel and Purchaser.

UNDER NO CIRCUMSTANCES WILL NEW CASTLE STEEL BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER SUCH DAMAGES ARE SOUGHT IN CONTRACT, IN TORT (INCLUDING BUT NOT LIMITED TO NEGLIGENCE AND STRICT LIABILITY) OR OTHERWISE, AND NEW CASTLE STEEL'S LIABILITY WITH RESPECT TO DEFECTIVE NEW CASTLE STEEL PRODUCTS SHALL IN NO EVENT EXCEED THE REPLACEMENT OF SUCH PRODUCTS OR REFUND OF THE PURCHASE PRICE, AS DESCRIBED ABOVE.

Some States or Provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from State to State or Province to Province.

New Castle Steel Maintenance Requirements:

1. **Observation:** During construction, inspect all components for exposed steel, and cover the exposed area with New Castle Steel approved touch up paint in accordance with the New Castle Steel Product and Installation Guide. (New Castle Steel does not warrant touch up paint due to application variability.) Covering exposed areas with New Castle Steel approved touch up paint blends the blemishes into the same unique color of the components.
2. **First Maintenance:** Defined as the physical inspection of components in search of corrosion. Atmospheric and environmental conditions can affect the longevity of New Castle Steel. Densities of air borne pollutants in certain atmospheres require adjustments in the maintenance and inspection schedules. You should conduct first maintenance within six (6) years after installation for a residential application and four (4) years after installation for a commercial application. If corrosion is identified, immediately begin corrosion management practices.
3. **Inspection Schedule:** After first maintenance, New Castle Steel components must be inspected for structural integrity every two (2) to five (5) years for a residential application and every two (2) years for a commercial application. Integrity is inspected by tapping along the surface area of the components with a metal tool such as a screwdriver. If flaking of the exterior coat occurs or discrepancies
of sound are heard, immediately begin corrosion management practices.
4. **Corrosion Management:** Sand any affected areas to twice the size of the corroded area with 80 grit sand paper. Reapply New Castle Steel approved touch up paint to the sanded area.

This warranty shall only be applicable and enforceable in the United States of America, Canada and Mexico.

DON'T SETTLE FOR A SUBSTANDARD SUBSTRUCTURE

When planning any outdoor structure, it's important to ensure that its substructure can guarantee safety and continued beauty through decades of outdoor conditions. Where other deck framing systems may seem sturdy and supportive, only New Castle Steel can stand the test of time without shifting, splitting, warping, rotting or rusting. Review the following comparisons and see how New Castle Steel rises above the competition.

	NEW CASTLE STEEL™	Interior-Grade Steel Framing	Pressure-Treated Lumber Framing
Durability			
Warranty	25-Year		
Designed for exterior use	●		●
Triple-coated steel	●		
Non-combustible	●	●	
Termite proof	●	●	
Value			
Material cost	$	$	$
Installation manual	●		
National code listing for exterior use	●		●
Aesthetics			
No rotting, warping, splitting	●	●	
Superior flatness	●	●	

Due to increased risk of corrosion, New Castle Steel may not be installed (1) within 3,000 ft. (914.4 m) of any body of salt water or (2) under the surface or within the splash zone of any body of fresh water. Any such installations shall void the New Castle Steel Limited Warranty.

NEW CASTLE STEEL

Visit **NCSteel.com** or call **1-888-960-0808**

V3 03/2023