

Barrette Structural Distribution is proud to announce its new version of TRIFORCE[®] Analyzer plugin. This update contains small bug fixes and improvements:

- 1. New Building Codes
- 2. How to change regular joist to special grade
- 3. New reinforcement method for hanger fixed to the side of a joist girder
 - 3.1 Point Load With Less Reinforcement using Top Mount Hangers
 - 3.2 Point Load With Reinforcement using Face Mount Hangers
- 4. Cantilevers and perpendicular line load without reinforcement
 - 4.1 Cantilevers without reinforcement
 - 4.2 Line loads or Top Point load without reinforcement
- 5. Usage of strongback in TRIFORCE® floor system
 - 5.1 Usage of Strongback in iStruct®
 - 5.2 Strongbacks bug fix
- 6. Technical advice for drawing TRIFORCE[®] joists in isPlan[®]

1. New Building Codes:

For iStruct[®] users designing TRIFORCE[®] in isPlan[®], you will have to select your **Building Code** in the *Info* tab:

Info	Info		÷			
Gra	Company Name		^			
aphic	Address					
is Lib	City					
irary	State/Province					
CA	Zip/Postal					
D Lib	Phone					
rary	Fax					
	Store Number					
	Company Numb	er				
	Location					
	^ Engineering		-	∧ Engineering		
	Design Method	ASD (USA)	~	Design Method	ASD (USA)	~
	Building Code	IBC/IRC 2015	~	Building Code	IRC 2018	×
	Location: Aus	tralia North or Queensland North		I continue Auro	IRC/IRC 2000	3
	Hanger Supplier	Simpson	-	Location. Ausi	IDC/11C 2005	
	Mount Type		_	Hanger Supplier	IDC 2012	1
	Joist	Top Mount	-		IRC 2012	
	LVL/Glulam	Top Mount	-	Mount Type	IRC 2018	
	Detect Bracin	g From Lavout		Joist	IBC 2018	
	Material Style	Default	ot	LVL/Glulam	IBC/IRC 2015	100
	Length Unit	Metric Metric Dimensions	cı			. Land
	Weight Unit	Metric Using Ib. weight	~	Detect Bracing	g From Layout	~

If you need to analyze **one joist in particular** in another Building Code once your layout has been analyzed in isPlan[®], you can select a joist and right click on it in order to select "Open Triforce UI". You will then have access to a Standalone version of Analyzer.



TRIFORCE[®] Analyzer Plugin for iStruct[®] What's New in Version 2.2.749



You can now change the code or other values:

File Preference Use: Floor Building Code: ICC 2015-IBC/IRC (USA) Units: Imperial [in]] Anah	Building Code: ICC 2015-IBC/IRC (USA) Units
∧ Inputs 3		2005 NBC (Canada)
Joist Description Loading Floor/Roof Composition WebHoles Job Info		2010 NBC (Canada)
(A lob Information	<	2015 NBC (Canada)
Job Number: JobNumber	1	2012 OBC 2010 NBC (Ontario, Canada)
Member ID: 11		2012 OBC 2015 NBC (Ontario, Canada)
Overall Length: 11' 10"		ICC 2012-IBC/IRC (USA)
		Y ICC 2015-IBC/IRC (USA)
		ICC 2018-IBC/IRC (USA)

New Building codes available in Analyzer are:

- For Canada: 2012 OBC 2010 NBC and 2012 OBC 2015 NBC For USA: ICC 2018 IBC/IRC code
- <u>NOTE</u>: Everything you change must be saved in a separate file or in a PDF file as the new values won't be transferred into isPlan[®].



2. How to change regular joist to special grade

Once your layout is analyzed, you can select one or multiple joists (with a cross window) and just check the "Special" box:







You can refer to our standard Joist Sizes chart:

Dooth	Sorior							Stock	Lengths	(feet)					
Depth	Jerres	lbs/ft	6	8	10	12	14	16	18	20	22	24	26	28	30
	OJ314		~	~	~	~	~	~							
11 74"	OJ315								× .						
11 24	OJ415									~					
	OJ418	3.35							S	S	~				
	OJ314	2.85	~	~	~	~	~	~							
14"	OJ315								× .	V					
14	OJ415	3.45									~				
	OJ418	3.45								S		× .	× .		
	OJ314	2.95	~	~	~	~	~	~							
16"	OJ315								× .	× .					
10	OJ418									S	× .	× .	× .		
	OJ420													× .	~

🖌 = In stock

S = Limited inventory. Please contact your representative to determine quantities.

3. New reinforcement method for hanger fixed to the side of a joist girder:

3.1) Point Load with less reinforcement using Top Mount Hanger

Part of the plugin updates is an important improvement in the reinforcement required for a Top Mount hanger on a TRIFORCE® girder. This new feature will save up to 2 plies of reinforcement. TRIFORCE® Analyzer will specify the reinforcement required according to the intensity of the load applied in the Top Mount hanger, and so, without systematically adding the 3 thicknesses of reinforcement [which are required for the nailing of a Face Mount hanger].

EXAMPLE WITH A TOP MOUNT HANGER

In this example, a single ply girder 2x3 OJ314 11 7/8" with a point load of 300 lbs (using Top Mount Hanger) at 4'-0" from the left only needs 1 ply of reinforcement installed *between* the top and the bottom chord:



Triforce Analyzer 2 File Preference	Use: Floor Bu	uilding Code	: ICC 2018-IBC,	/IRC (USA)	Units: Imperial	(in) /	Analyze (F5)					-	o x
∧ Inputs	the state of state												
Joist Description Load	ding Floor/Roof Co	mposition W	ebHoles Job Info	Analysis Results	5								
Label: P1	Flood Zone:	NON flood					Type / Magnitu	ıde					Add
Type: 🖲 Static	Location: Width	in) Center				-	Type			MagnitudeStart (lbs)		200.000	
C Moving C Self-Weigl	3 1/2"	4'	Fro	m: 🖲 Left 🤇	ិ Right		Dead					100.000	Modify
Applied to	Distribution	Lo	ad Cause			- *	•						Remove
С тор	C Area Load	То	pMount Hanger	*									Clear All
Bottom Front	C Uniform Load												
C Back	Concentrated	Load											
Loads List													
W1: TArea, 0" to 16	from Left(psf): L=4	0, D=10											
P1: FConc, W=3 1/2	", At 4' from Left(lb)	: L=200(z), D	=100(z)										
W=Load Width, Wp=F	Perpendicular Load V	Vidth, Tp = Ti	ibutary, Op=Perpend	dicular Offset cei	nter of Load to cent	ter of eler	ment , θ = Angle	9					
∧ Viewer													
												50 %	
0]314			W2	2 D=5.0 psf									
1			X*	0" to 16" : Bottom				l					
1	:	"1 L=200.0 lb D=100. #4" : Front	x= 0	0" to 16" : Top									
		Vidth= 3 1/2"											
384	and and a second s	24" +	FRONT	10 M	2 ⁴ 2 2	/		11 7/8"					
X					~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		R	+					
•			Overal	ll length = 16'			•						
Manufactured le	ength: 16		Perimeter Mat	erials			Ch	aracteristics(l	Jse, Depth, Top-Bottom, Plies, Spacing)		1		
Trim Left: 0", R	light O"		Left: None, R	ight None			Tri	iforœ OJ314	(Floor - Joist, 11 7/8", 3 X 2, 1 ply, gird	er)			
											4		
						W2							
	t t		Ν			W1			+				
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	÷		P1						+				
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Тор	Roll	(Φ)=o°	Pitch(O)=o	°									
Lbl Nb @	c/c Type	X1	X2	Y	Z	Θ	L	Lp	Loads		4		
W1 1	- Area	0"	16'	-	-	-	16'	1' 4"	(pst): L=40, D=10		4		
Front	Roll	(Φ)=90°	Pitch(O)=o	°	_								
Lbi Nb @	c/c Type	X1	X2	Y	Z	Θ	L	Lp	Loads		4		
P1 1	- Conc	4'	-	-	-	-	3 1/2"	11 7/8"	(Ib): L=200(z), D=100(z)		4		
Bottom	Roll	(Φ)=180 ⁶	Pitch(O)=0	°]		
Lbl Nb @	c/c Type	X1	X2	Y	Z	Θ	L	Lp	Loads		4		
W2 1	- Area	o"	16'	-	•	-	16'	1'4"	(psf): D=5		1		
							TATA DO	THE OWNER WATCHING TO AN ADDRESS OF ADDRESS OF ADDRESS					





New reinforcement details are available to go along with your placement guides. Here are some examples:



<u>NOTE</u>: Using a top mount hanger for a header is not considered as a load applied to the top. It should be applied to the front or back.

3.2) Point Load with reinforcement using Face Mount Hanger

SAME EXAMPLE, BUT WITH A FACE MOUNT HANGER THIS TIME

If you select **Face Mount Hanger**, using the same example as above (a single ply girder 2x3 OJ314 11 7/8" with a point load of 300 lbs. at 4'-0" from the left), it will need 1 ply of reinforcement installed **between** the top and the bottom chords and 2 plies to be installed **over**, meaning covering both the top and bottom chords for a total of 3 plies:



orce Analyzer ((Rev. 3327_b59488a242	(te)			
Preference	Building Code: ICC 201	L8-IBC/IRC (USA) Units: Imperial [in] Invento	ry Threshold: Available Language Help Databa	e Analyze (FS)	
uts					
Description Los	oading Floor/Roof Compos	ition WebHoles Job Info Analysis Results			
	Mand Terrar		Tune (Manibula		
et P1	FROM SUPEL NON B	ood	Turne	Manniture(Start (Bar)	Ad
an a finite	Location: (in)	Cardan	1 Live	Paginadusant (doy	200,000
O Moving	3 1/2"	f From: Eleft Right	Dead		100.000 Mod
 Self-Weight 	pht				
Applied to	Distribution	Load Cause			Rem
) Top	O Area Load	FaceMount Hanger •			(Chan
Bottom	O Uniform Load				Cas
) Front	Uine Load				
) Back	Concentrated Load				
1: TAres, 0° to 16 2: BtmArea, 0° to 1 1 FConc, W=3 1/7	i' from Left(psf): L=40, D=10 16' from Left(psf): D=5 7, At 4 from Left(p): L=300	(r), 0+100(r)			
1: TAres, 0° to 16 2: BimAres, 0° to 1 16 force, Web 1 (27	5 from Left(psf): L=40, D=10 16 from Left(psf): D=5 7, ALC from Left(psf): L=200) (4). G=19880)			
1: TArea, 0° to 16 2: BitnArea, 0° to 1 1: Forme W-21 (re- Load Width, Wp=P	From Left(pol): L=40, D=10 16 from Left(pol): D=5 A f from Left(pol): D=5 Perpendicular Load Width, Tp) (4) 0-1000)) > Thoutary, Op-Perpendicular Officet center of Load to co	enter of element , 0 = Angle		
1: Tares, 0" to 16 2: Bhukes, 0" to 1 1: Control to 1 4.0ed Width, Wp=P	From Left(pat): L=40, D=10 15 from Left(pat): D=5 25 ALC Intern Left(pat): D=5 Perpendicular Load Welth, Tp) (Alto 2000) = "Rebutery, Op-Respondedier Offset conter of Load to a	enter of lanest , 8 = knjit 		98
1: TAres, 0' to 16' 2: BinAres, 0' to 1 2: BinAres, 0' to 1 Cood Width, Wp=P even	r from Left(pol): L=40, D=10 20 from Left(pol): D=5 20 from Left(pol): D=5 20 from Left(pol): D=5 Perpendicular Load Width, Tp) (CR-C21000) = = Thudary, Op-Hespendouler Offset center of Laad to o	enter of demost , 8 = Augle		25
11 TAres, 0" to 16" 2: Bendres, 0" to 1 2: Bendres, 0" to 1 2: Bendres, 0" to 1 2: Bendres, 0" to 1 2: Bendres, 0" to 10" 4: Bendres	P Fon Lefford) L ==0, D =10 SF from Lefford) D =5 and Af d Rem Lefford L == 500 Af d Rem Lefford L = 500 Perpendicular Load Width, Tp) () (1) (2) (2) () = Tibbary, Qu-Huspenduale Offert anter el Land to or managed	anter of densert, 8 = Angle		50 %
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VI: These, 0' to 36 22 Brokes, 0' to 36 24 Condense, 0' to 30 24 Condense, 0' to 30 24 Condense, 1' to 30 25 Condense, 1' to 30 26 Condense, 1' to 30 27 Condense, 1' to 30 20 C	Perpendicular Load Wells, Tp) (A D D D D D D D D D D D D D D D D D D D	enter of denset, 8 = Augo		2%
12 These Of to all of the second seco	from a refuging Law, Dash the second secon	a = Toblary, Qu-Huspendiale Offers anter efficiant to or = Toblary, Qu-Huspendiale Of	enter of determent, 40 = Angle		20%





REINFORCEMENTS
- Add WOOD FILLER: 0.5" of thickness Plywood or OSB x 8 7/8" of height x 24" of length, STARTING at 36" from LEFT end, fixed on FRONT side to webs with PL PREMIUM glue and nails.
 Add REINFORCEMENT: OSB 20oc (19/32") x 11 7/8" of height x 32" of length, starting at 32" from left end, fixed on FRONT side in VERTICAL position to top and bottom chord with PL PREMIUM glue and 3" nails at 5" o.c.
 Add WOOD FILLER: OSB 20oc (19/32") x 11 7/8" of height x 16" of length, STARTING at 40" from LEFT end, fixed on FRONT side over previously installed reinforcement parts, fixed with PL PREMIUM glue and 3" nails at 5" o.c. to joist top and bottom chord.
ENGINEERING NOTES
Left Bearing Unspecified material (not verified)
Right Bearing Unspecified material (not verified)
The reinforcements indicated are only valid if: P1 from Front FaceMount Hanger When a concentrated load comes from a hanger, the capacity of this hanger must be verified.
Lateral Supports : For Joists, lateral support at a minimum of 16" o.c is always required on top chord, as well as on bottom if there are more than two bearings or a cantilever condition.
Subfloor: OSB 20oc (19/32") Glued and Nailed/Screwed
Quotation -The Span of calculation is center to center of the real bearings. -The position of Shear and Bending in the analysis is from the left end of the Span of calculation.

Reinforcement details are available to go along with your placement guides. Here are some examples:



You can select your default hangers **Mount Type** in the info tab:



	Graphics Library	CAD Library		
Info	Info		-	-
	Address			^
	City		_	
	State/Province		_	
	Zip/Postal		_	
	Phone		_	
	Fax		_	
	Store Number			
	Company Numb	er		
	Location			
	^ Engineering			
	Design Method	ASD (USA)	\checkmark	
	Building Code	IBC/IRC 2015	\checkmark	
	Location: Aus	tralia North or Queensland North		
	Hanger Supplier	Simpson	~	
	Mount Type			
	Joist	Top Mount	\checkmark	
	LVL/Glulam		~	
	Deter Bracin	g From Layout		
	Mate al Style	Default	Set	
	Length Unit	Metric Metric Dimensions		
	Weight Unit	Metric Using Ib. weight		~

To select only one hanger in particular, you click on the hanger icon:



Then, to select the desired hanger, click on Select Hanger for Analysis.

i	sPlan	Graphics	Label	Report	Roof	Hanger
0	Auto S	elect by Analy	sis			1 L
C	Select I	Hanger for Ar	alysis			
C) Hangei	r By Others				
		Properties				

You will have access to select the Supplier (manufacturer), Mount Type and then the model:

C Auto Select by Analysis	Supplier	Mount Type	Hangers	Brg length:2"	Custom Label
 Select Hanger for Analysis Hanger By Others 	Simpson	V Top Mount V	ITS3.56/11.88 Header Face Nail:2-10d Header Top Nail:4-10d 💟	Uplift DF:120 Uplift SPF:103 Resi DF:1470 Resi SPF:1150 Resi LVL:1550	0
			Properties		



After selecting the model, you can select the hanger you would like to change. Simply drag from left to right (or right to left) to **select** all **hangers** that are entirely enclosed in the **selection** rectangle or lasso (window **selection**):



It will apply the new model that you have previously selected.

4. Cantilevers and perpendicular line load without reinforcement

4.1) Cantilevers without reinforcement

Another update: reinforcement is **not** required on certain conditions for cantilevered joists. When bearing the joist on the junctions of diagonals and the bottom chord, depending on the size of the loads (width), reinforcement may not be required.

EXAMPLE WITH A BEARING AT JUNCTION:

In this example, a single ply joist 2x3 OJ315 14" space at 16" o.c. with a line load of 300 plf from the left with a 2 feet cantilever:





Triforce Analyzer 2.2.384 File Preference Use: Floor Building Code: ICC 2018-IBC/IRC (USA) Units: Imperial [in]	Analyze (F5)					- 0 ×
∧ Inputs	, , ,					
Joist Description Loading Floor/Roof Composition WebHoles Job Info						
< A Job Information	< 🗠 Joist					
Job Number:	Joist				✓ Use Any Size/Grade	
Member ID: J1	Туре	Depth	Top-Bottom	Grade	Trim	
Overall Length: 19' 9 3/16"	✓ Triforce	✓ 11 7/8"	✓ 4 X 2	✓ G15	Left	
Service condition: Dry *	OpenJoist2000	14"		✓ G18	✓ Right	
		10				
∧ Bearings			Diec			
Type S Width Center From						
Bottom v Spec 4 3/8" 19' 7" L v			2			A COMPANY AND A COMPANY
						Barrette
✓ Joist/Beam Spacing						
✓ Ireatment						
V Deflection Limits						
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∧ Viewer						
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x= 0" to 19" 9 3116" tributary=8" : Top						
A 1 (=40.0 port 0=16.0 port x= 0" to 19" 9 3/16" tributary=6" : Top						
x+2&422::1cp Width+4 & dt16"	•					
	•					
	✓ ↓ 11 7/8°					
Cveral lenath = 19' 9 3/16"	R					

In this example reinforcement won't be needed:

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	manufacture	n or Lisenbus			Refe	er emoes	1			
	Barrette Sta	ructural Distr	ribution Inc.		Dra	wing by:	Jes			
	545, rang S	St-Malo			Job	number:				
RIFURGE	Trois-Riviè	res, QC			ld:		J1			
	G8V 0A8				Pro	ject:	Chalet 20 x	10		
	800-263-72	265			Cut	stomer:				
name of the state	Designation Mar	toniale			Buil	iaing Adare	ISS:	Dias Cas	eleat	
im Left: 0". Right: 2.813"	Left: None B	licht: None			Trife	prce QJ415	(Floor Joist 11 7/8	. 4 X 2. 1	ply, 16" e.c.)	
				A2						
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+P1									+	
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			Overall	leng	ath = 19	r 9 3/16)")"		₩ 1′ R ►	1 <mark>7/8</mark> "
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Top Nb @ c/c Type Xi 1 - Conc 2 18 1 - Area 0 or	X2 - 19' 9 3/16''	Y -	Overall z		th = 19 DING L 45/16"	1' 9 3/10 Lp 5 1/2" 8"	Loads ((b): L= 267, D= ((csf): L=40, D=1	133	₩ 1′ R →	1 7/8"
Top Nbb @ c/c Type Xi 1 - Area 0" 1 - Area 0"	X2 - 19' 9 3/16'' 10' 9 3/16''	Y -	Overall Z -		th = 19 DING L 4 5/16" 19' 9 3/16"	Lp 5 1/2" 8"	Loads (lb): L= 267, D= (psf): L=40, D=1 (osf): L=40, D=1	133	₹ 1′ R	1 7/8"
Top (NB) @ c(c Type Ni 1 - Conc 2 1/8 1 - Area o" 1 - Area o"	X2 19' 9 3/16" 19' 9 3/16"	Y - -	Overall Z - STRENG		L 4 5/16" 19' 9 3/16" 19' 9 3/16" 19' 9 3/16"	¹ 9 3/10 Lp 5 1/2" 8" 8" SES	Loads (b): L= 267, D= (psf): L=40, D=1 (psf): L=40, D=1	133 5 5	₹ 1′ R	1 7/8"
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Image: bit with the second s	X2 19 ¹ 9 3/16"	Y - - - - -	Z - - STRENG UNFACTO Max 11	Ienc LOAI	gth = 19 DING L 4 5/16" 19' 9 3/16" 19' 9 3/16" LOAD CA D REACT	* 9 3/16 Lp 5 1/2" 8" SES	" Loads ((b): L= 267, D= (psf): L=40, D=1 (psf): L=40, D=1	133	Nlin 10	R Max 01
Image: Constraint of the second sec	X2 - 19' 9 3/16"	Y	Overall Z STRENG UNFACT(L Max 11 11 366	Ienc LOAI	th = 19 DING L 4 5/16" 19' 9 3/16" 19' 9 3/16" 19' 9 3/16" LOAD CA	1' 9 3/16 Lp 5 1/2" 8" 8" SES IONS	1 (b): L= 167, D= (ps?): L=40, D=1 (ps?): L=40, D=1	133 5 5	Min 10 162	R Max 01 162
Top Image: Constraint of the sector sec	X2 	Y 	Overali 2 - STRENC UNFACT/ L Max 11 - - - - - - - - - - - - -	Ienç LOA	gth = 19 DING L 4 5/16" 19' 9 3/16" 19' 9 3/16" LOAD CA	* 9 3/10 Lp 5 1/2" 8" 8" SES IONS	19 (b): L= 267, D= (p5): L=40, D=((p5): L=40, D=1	133	₩in 10 162 -35	R R 01 162 477
Image: Constraint of the second se	X2 - 19 [°] 9 3/16 [°]	Y	Z - STRENC - UNFACT0 - Max - 11 - 3866 879 LOAD CR 879	Ienç LOA	th = 19 Ding L 4 5/16" 19' 9 3/16" 19' 9 3/16" 19' 9 3/16" 10' 9 3/16" LOAD CA D REACT	2 3/10 2 9 3/10 2 1/2" 8" 8" SES IONS	* (b): 1= 167, D= (g): Laqo, D= (g): Laqo, Det	133 5 5	Min 112 162 -35	R Max 01 162 477
Top I bb 0 c/c Type Xi 1 - Conc 2 xii 1 - Area 0" 2 xi 0 - L 2: 0 - L - EGEND: L: Live D: Dead. - Bearing Partial - Dad - Live D. Dead -	X2 	Y	Cverall	Ience LOAI	th = 19 DING L 4 5/16" 19' 9 3/16" 19' 9 3/16" LOAD CA D REACT	* 9 3/10 Lp 5 4/2* 8* SES IONS	14 10 10 10 10 10 10 10 10 10 10	133 5 5	Min 10 162 -35	R Max 01 162 477

_	Тор		40	0	1	594	-		0.25		2-11				
				В	EARIN	IG AN	ALYSIS	3							
		Real Bearing		Min Calc. B	earing				Norm	al			Upli	R	
Label	Contac	Area, Centroid	CB			CB	R (*)	Ra(inc.	CD	R/ R (inc	Critical	R	CD	Critical L C-Par	
	Potamiusi,	(in)		(in)			(15)	(b)		Co)	Lorun	(1b)		LOTION	
-	19.25	5 in? 24 624*	NA	NA		NA	1245	2380	NA	0.52	2.11	NA	NA	NA	
-	5.5".	24.624". 3.5"		NA		1.0	1240	2000	1.00	0.02	L	1 100		1903	
R	15.3	13 in ² , 235"	NA	NA		NA	640	1250	1.00	0.51	2-01	NA	NA	NA	
	4.375	5", 235", 3.5"													
					SHEAF	ANA	LYSIS								
	Max At	V	V.	(inc. Cp)	CD	V	/ Va(inc.	Co)	0	ritical					
AXIS	(in)	(lb)		(lb)					LC	- Part					
Z	25"	692		1100	1.00		0.63			2-11					
		В	ENDIN	IG AN	ALYSIS	5									
Avie	At	м	Ma(inc. Co)	Co	M	/ Ma(inc	Co)	0	ritical						
70013	(in)	(lb.ft)		(lb.ft)					LC	- Part	_				
Z	133"	2674	1.00	5231	1.00		0.51			2-01					
	_			DEF	LECT	10N									
Axis						Calcu	lated		Cri	teria	Calc				
			AD CASE		Part	4	Can	nber 2	 Camb (m) 	D					
-		Care D	0.4		_	04	(11	1) (II	n)	(in)	1.704	(in)	1.000		
7	ΔL	Cantilever				01	0.2	1" N		NA	1/245	0.435	1/40	7 0.0	
7	ΔL Δ =	Soon L.P.	LOLI:L			01	-0.	. N		NA	L/240	0.125	1/2/	0 0.3	
7	Δ	Cantilever	LCT2 : D+L		-	01	-0.1	22" N	A	NA	1/201	0.205*	1/12	0 0.6	
Z	Δ creep	Span L-R	LCC2 : K-D	FL.	-	01	0.3	35" N	IA	NA	L/546	0.877*	L/24	0 0.4	
Z	Δ creep	Cantilever	LCC2 : KerD	-	-	01	-0.1	33" N	A	NA	L/185	0.205*	L/12	0 0.6	
			STR	SS CAPACIT		ND M	ODIFIC	ATION	FACT	ORS					
(2): P (4): R	P = P⊺ _{otal} – Mi R = R⊺ _{otal} – M	in(Pastud + Pattin in(Rastud(inc. Ci	n , P⊺otal) p) + Ratem(inc	CD), RTetal)											
Left I	Bearing Un	specified mate	rial (not verifie	ed)											
Right	t Bearing U	Inspecified mat	erial (not veri	fied)											
Later than t	al Supports	s : For Joists, la s or a cantileve	ateral support r condition.	at a minimum o	of 24" o	.c is al	ways re	quired or	n top c	hord, as	well as on	bottom if	there	are more	
Subf	loor : Plywo	od 20oc 5+Ply	(19/32") Glue	d and Nailed/S	crewed	and S	upporte	d at edge	85						
Quot	ation														
-The	Span of calc	culation is cent	er to center of	the real bearin	gs.										
-The	position of S	onear and Bend	ing in the ana	arysis is from th	e left e	nd of th	ie Span	of calcu	iation.						
Analy speci buildi	sis and de fications and ing compone	sign are in a d restrictions of ent only and is	cordance wi fuse. Buildin based on inf	th ICC2018 ar g designer is re formation provid	nd NDS sponsil ded by	2018. ble for the cli	Refer verifying ent. The	to manu j building compor	ufactur g syste nent d	er techr em as a esigner	nical docur whole. Thi is responsi	mentation s analysi: ible only	for in is for for the	nstallation individur structur	
adeq faulty	uacy of the or incorrect	component ba t information pr	sed on desig ovided by the	n criteria and k client.	oadings	show	n here a	ind discl	aims a	any resp	onsibility fo	or damag	es as	a result	
Date: 1	000 07 15 St	tructuredDosign.Sh	all 20.40.119.0				MOES		LIEA					Dense 2	

Since no reinforcement is required, simply send the joist design report without any particular framing detail.

Please take note that all line loads in isPlan® are transfer in point loads to Analyzer



4.2) Line Load or Top Point Load without reinforcement

Another update is that reinforcement is **not** required on certain conditions for Top applied Line Loads. When applying line loads to the top of the joist (ex: perpendicular bearing wall setting on top of the floor like in attic rooms or column on top), depending on the size of the load (width) and on its location, you may no longer need reinforcement if the line load sits on the junction of the diagonals and the top chord.

EXAMPLE WITH A TOP LINE LOAD

In this example, a single ply joist 2x3 OJ314 14" space at 16" o.c. with a line load of 300 plf. add to the top at 5'-2" from the left:



With this update, TRIFORCE[®] Analyzer optimizes the load transfer trough the webs going downward to the bottom chord more efficiently than ever. Take note that iStruct[®] will convert your line loads to a point loads applied to the top.



TRIFORCE[®] Analyzer Plugin for iStruct[®] What's New in Version 2.2.749

C Triforce Analyzer 2.2.384										- 0	×		
File Preference Use: Floor Building Code: IC	C 2015-IBC/IRC (USA)	Units: Imperial [in]	Analyze (F5)										
Joist Description Loading Floor/Roof Composition WebHol	les Job Info												
< ^ Job Information			< ^ Joist										
Job Number: Member ID: 13			Joist		Depth		Top-Bottom	Grade	Iny Size/Grade				
Overall Length: 237.749999999995			✓ Trifo	rce	11 7/8"		✓ 3×2	✓ G15	Left				
Service condition: Dry		* 🐺	Open	Joist2000	14"		✓ 4 × 2	G18	. ✓ Right				
∧ Bearings											_		
Type Bottom	S Width	Center From 2 3/16" L •					Plies				CE		
Bottom	 Spec 6 7/8" 	19' 6 5/ L •					2						
	<u> </u>									Barrette	3		
✓ Joist/Beam Spacing													
~ Treatment													
Deflection Limits Perform Consider vibration check													
∧ Viewer										50.95			
0J315										30 %			
	A2 L=40.0 pef D=10.0 pef x= 0" to 19" 9 314" tributery=6"	: Top		1									
2 P1 L=133.0 to D=247.0 to	A1 L=40.0 psf D=10.0 psf x= 0" to 19" 9 3/4" tributery=8"	: Top		•									
x+# 2 11132" Top Width= 6 12"													
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				u-									
×			×	3 ' •									
	Overall length = 19 9 34												
Manufacturer or Dis	tributor	References		file	name: J3.ola	τ	op P11	400	2122 -	0.19	2-1		
800-263-7265		Drawing by:	TEST_CART				Real Bearing	Bi Min Calc. Be	ARING ANALYSIS	Normal	Uplift		
		Job number: Id:	J3			Label	ContactArea, Centroid AxialWidth, Center, Perp.Width	C8	Ca R ⁽⁴⁾ Ra(inc. Cp)	Co R / Cri Ra(inc. LC-	ical R C _D Critical Part LC-Part		
		Project: Customer:	TEST_CART			L	(in) 10.938 in², 2.188*	(in) NA NA	(lb) (lb) NA 953 2456	C _D)	(lb) -1 NA NA NA		
Manufactured length: 20' Perimeter Materials		Building Address: Characteristics(Use, De	epth, Top-Bottom, Plie	is, Spacing)		R	4.375", 2.188", 2.5" 17.188 in², 234.313"	NA NA	NA 768 1420	1.00 0.54 2	-1 NA NA NA		
Trim Left: 0", Right: 2.25" Left: None, Right: No	ine	Triforce OJ315 (Floo	r - Jolst, 14", 3 X 2	, 1 ply, 16" o.c.)			6.875", 234.312", 2.5"	S					
						Axis	Max At V (in) (lb)	Va(inc. Co) (Ib)	Co V / Va(inc. Co)	Critical LC - Part			
						Z 14.188* 874 1240 1.00 0.71 2-1 BENDING ANALYSIS							
						Axis At M CL Ma(inc. Co) Co M / Ma(inc. Co) Critical (in) (lb.ft) (lb.ft) (lb.ft) LC - Part							
	A2					Z 99.188* 4201 1.00 4420 1.00 0.95 2-1 DEFLECTION							
	A1					Axis	-	Critical	D. Δ Cam	Calculated	Criteria Calc.		
						ZA	L Span L-R LC	L1:L	(in) (in 1 0.437" N	i) (in) A NA L/	(in) Crt. 532 0.484" L/480 0.90		
- P1						ZA	creep Span L-R LC	T2 : D+L C2 : KgD+L	1 0.644" N/ 1 0.748" N/	A NA L/ A NA L/	360 0.967" L/240 0.67 310 0.967" L/240 0.77		
12 2 2 2 2 2	Q 12 0 12 0	2/2 2/		1		STRESS CAPACITIES AND MODIFICATION FACTORS K =4816000lb E'=1500000psi El'=442E8lb'in ² Eloomp'=511E8lb'in ² CMb=1.00 CMv=1.00 CMcp=1.00 CMe=1.00 Crb=1 Kcr=1.50							
				R '''		(2): P =	PTotal - Min (PaStud + PaRim , P	EN(SINEERING NOTES				
	Overall length	= 19' 9 3/4"		÷		(4): R =	RTotal - Min(RaStud(inc. CD) +	RaRim(inc. CD) , RTotal)					
Top	LOADING	6				Left Be	aring Unspecified material	(not verified)					
Lbl Nb @ c/c Type X1 X2 Y	r Z 0 I	L Lp Lo	ads			Right E	earing Unspecified materia	I (not verified)	101	ter sheed as well			
P1 1 - Conc 5' 2 5/16"	90 51	/2" 5 1/2" (ID 3/4" 8" (ps): L= 133, D= 267 sf): L=40, D=10			than two	bearings or a cantilever co	ndition.	to o.c is always required on	top chord, as well.	as on bottom in there are more		
Az 1 - Area 0" 19'93/4" -	19'9 STRENGTH LOA	3/4" 8" (ps	if): L=40, D=10	_		Subfloo	or : OSB 20oc (19/32*) Glue	d and Nailed/Screwed and	Supported at edges				
LC1:D LC2:D+L						Quotati -The Sp	on an of calculation is center to	o center of the real bearing	5.				
LEGEND: L: Live. D: Dead.	UNFACTORED RE	ACTIONS	_	_		-The po	sition of Shear and Bending	in the analysis is from the	left end of the Span of calcul ENERAL NOTES	ation.			
Bearing	L in Max			Min	Max	Analysi specific	s and design are in accor ations and restrictions of us	dance with ICC2015 and e. Building designer is res	NDS2015. Refer to manu consible for verifying building	facturer technical (system as a whole	documentation for installation, . This analysis is for individual		
Partial 0 Is Uplift	0 1			0	1	building adequa	component only and is bas cy of the component based	sed on information provide on design criteria and loa	d by the client. The compon dings shown here and discla	ent designer is res ims any responsibi	ponsible only for the structural lity for damages as a result of		
Dead 32	29 329			202	202	radity of	inconect mornation provid	ed by the client.					
Eace Label	LOAD CRUSHING	ANALYSIS	P/P-	Critical									
Laver	(lb) (l	b)		LC - Part									
Date: 2020-07-13 StructuredDesign.Shell 20.40.119.0		IMPERIAL USA			Page: 1 of 2	Date: 202	0-07-13 StructuredDesign.Shell 20	0.40.119.0	IMPERIAL	USA	Page: 2 of 2		

No specific detail is needed, simply send the joist design report to costumers.

Please take note that all line load in isPlan® is transfer in point load to Analyzer



<u>NOTE</u>: Using top mount hanger for a header fixed to the side of the joist must not be applied as Top Concentrated load but front or back as per example 5.1 or 5.2

5. Usage of Stongbacks in TRIFORCE[®] floor system:

5.1) You can add strongbacks in your placement guide using these simple steps:

First, you need to click on the Stongback icon:



Select your strongback properties:

Filter	Lumber	 Ply Count 	1	\sim
Material	S-P-F #2	\sim		
Size	2 X 6	~		
		Properties		

Click on your placement guide and drag up to where you want your strongback:



They will be identified after running an analysis.





These strongbacks can be added in your material list in total linear footage:

Label	Description	Width	Depth	Otv	Plies	Pcs	Length		
R1	Common Rim Board 1.125 X 11.875	1.125	11.875	July	. 100	5	12-0-0		
eam B	y Others								
Label	Description	Width	Depth	Qty	Plies	Pcs	Length		
B1	0	3.5	11.875			1	20-0-0		
Imper	le tri								
Label	Description	Width	Depth	Qty	Plies	Pcs	Length		
H1	D FIR-L#1	1.5	3.5			2	8-0-0		
112	D FIR-L#1	1.5	3.5			1	400		
trongb	ack		0.0						
Label	Description	Width	Depth	Qtv	Plies	Pcs	Length		
	D FIR-L#1	1.5	5.5	LinFt		Varies	26-0-0		
loor Tru	JSS								
Label	Description	Width	Depth	Qty	Plies	Pcs	Length		
J1	OJ415	3.5	11.875			19	20-0-0		
	Second	Floor							
	-							40'	~1
									7
								26'	\sim
									7
								R1	1
									- 11
									N
									N
	N								N
	2								M
	-								N.
	5								N
	Ξ								M
									M
									N
	2								N
									M
	N							Cont Strongback 1 ply 2 X 6 bottom	N
									-11
	a N						2		M
	- 1						÷		M
	24						Ē		N.
	-						-		N
									M
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	N 1								M
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	i ⊊ N								W
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	5 N								1
	Ξ N							19 J1 @ 16"	3
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	8								
	8						_		N

5.2) Strongbacks bug fix:

On last floor, strongbacks were appearing outside the floor in the previous version, but now appear correctly inside the floor:





6. Technical advice for drawing TRIFORCE[®] joists in isPlan[®]

When designing the foundation, be careful with the assumption of the bearing. Using an 8" concrete wall could send the wrong information to Analyzer:

Ho	me	Chalet 20 x 40 🗙										
в	8	숙 • 🎓 • 🕲 🤘	I 🛛 🖉	🗟 🌮 🛛 🔂 »	Properties							
is	Plan	Graphics Lab	el Report	Roof	Wall							
Pa	rtitior	Foundation	Material	Concrete 🗸	Finish None	✓ Align	Left 🗸	Height 8-0-0	Custom	Top 0-0-0		
Ext	terior	\checkmark	Thickness 8		Thickness 0	Name	\sim	Overhang 0-0-0		Bottom Full Wall	₽	
Int	erior		Top Droppe	d under joist 🔽	Cavity 0			Weight PSF 10			Delete	Default
		Usage		Wall		Se	ttings	Height	Label	Adjust Elevation	Delete	Defaults
Info												
G	Off											
raph	لم											
No.	2											
ibrai	2		_			19-2-5			_			
V O	A		E C				~					
AD	1						13					
Libra	I A											
YII	 											
	%			_								
	Ŧ											
	-											





isPlan[®] will send the information to Analyzer that there is 8" of bearing minus the rimboard, so $8" - 1^{1/8"} = 6^{7/8"}$ of bearing for the joist. This will add you some reinforcement on the side of the vertical 2x3.



In the case of a 2x6 sill plate, you would need to draw a 5 ½" wood wall to send the right information for the bearing size.



