



CANAM

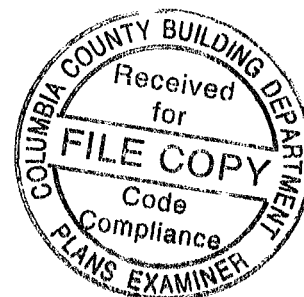
Joists and Steel Deck

Steel Joist Design Calculations

For

**Belmont Academy
Columbia County, FL**

Canam project: P01168

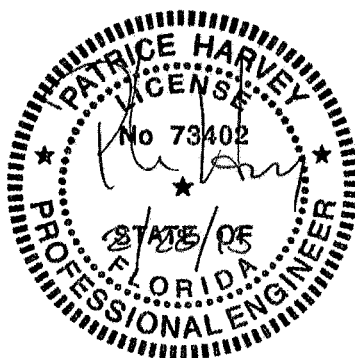


FOR RECORD

February 28, 2013

Joist Marks: J1, J2, J3, J4, J5, J6, J7, J8.

The Professional Engineer's Seal affixed hereto is not intended to certify or imply that this building does or does not conform to any national or local building codes. The seal indicates that the above listed and attached joist design calculations have been prepared under my supervision in accordance with the Steel Joist Institute's Specifications. The joists have been designed to support the loads associated with the joist designations and any loads whose magnitude and locations are indicated on the Structural contract drawings dated 9/26/2012.



140 South Ellis Road
Jacksonville, FL 32254

Phone 904-781-0898
Fax 904-781-2004

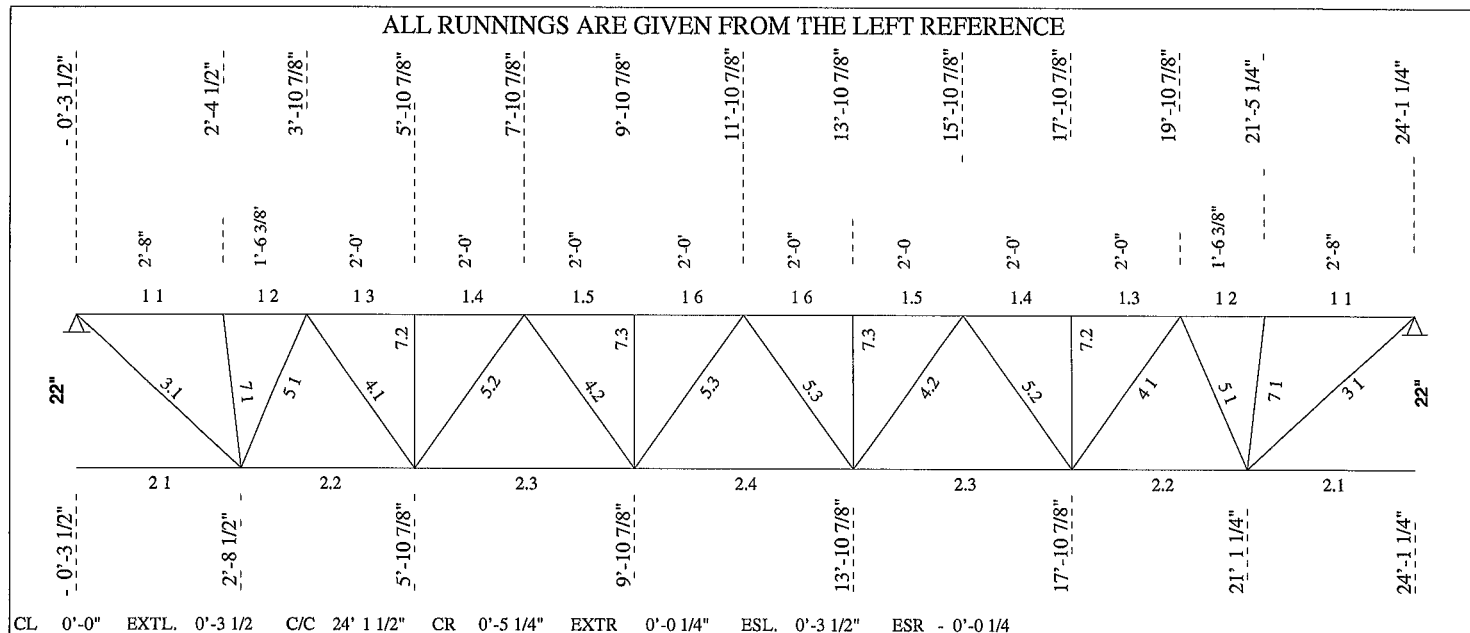
www.canam.ws



Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J1 (MS1, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 481.81 lb/ft

22H8

LIVE LOAD...: 481.81 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.80 in (L/ 360)
Calculated deflection under service live load..... = 0.57 in (L/ 504)
Joist inertia..... = 251.45 in⁴
Required camber..... = 0.30 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)

Gap.....: 1"

(Fy = 50 Ksi U/N)

(Eff. depth = 20.94 in)

Left Reaction = 5.80/ 0.00 kips

Right Reaction = 5.80/ 0.00 kips

REQUIRED MATERIAL

x = tied at mid-length

Slend. Util.

Length

REQUIRED WELD

Weld-Ea.Side

Remarks

No	Tension	Compres.				
Top Chord						
1.1	0.00	-13.16	LL 2 x .166	z 76	0.75	2'-8"
1.2	0.00	-12.87	do	z 47	0.74	1'-6 3/8"
1.3	0.00	-23.42	do	z 61	0.84	2'-0"
1.4	0.00	-23.42	do	z 61	0.84	do
1.5	0.00	-30.31 x	do	xx 39	0.95	do
1.6	0.00	-30.31 x	LL 2 x .166	xx 39	0.95	2'-0"



Mark : J1

Project: BELMONT ACADEMY

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F O R C E S I N M E M B E R S (Cont.) [kips]

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
Bottom Chord							
2.1	0.00	0.00	LL 1.75 x .155	z 99 0.52	3'-0"		
2.2	17.39	0.00	do	z 111 0.82	3'-2 3/8"		
2.3	27.73	0.00	do	z 139 0.92	4'-0"		
2.4	31.17	0.00	LL 1.75 x .155	z 139 1.00	4'-0"		
End Diagonal							
3.1	9.90	0.00	RD 15/16 (60)	z 166 0.53	3'-4 1/2"	.223 - 1 1/8"	
Diagonal Towards End							
4.1	5.13	0.00	U 1 x .8 x .090	z 129 0.85	2'-8 1/2"	.091 - 1 7/8"	
4.2	4.41	0.00	U 1 x .8 x .090	z 129 0.73	2'-8 1/2"	.091 - 1 5/8"	
Diagonal Towards Center							
5.1	0.00	-5.12	U 1 x 1.1 x 0.118	z 71 0.75	2'-2 1/4"	.118 - 1 1/2"	
5.2	0.00	-4.41	do	z 90 0.79	2'-8 1/2"	do	
5.3	0.00	-4.41	U 1 x 1.1 x 0.118	z 90 0.79	2'-8 1/2"	.118 - 1 1/2"	
Secondary Web Member							
7.1	0.00	-1.06	U 1 x .8 x .090	z 85 0.29	1'-10 3/8"	.091 - 1"	
7.2	0.00	-1.09	do	z 83 0.29	1'-10"	do	
7.3	0.00	-1.12	U 1 x .8 x .090	z 83 0.30	1'-10"	.091 - 1"	

BRIDGING

Maximum spacing between rows of bridging
 @ Top Chord: 14'-2 7/8" ==> 2 Row(s) Minimum Lateral Supports Deck (36")
 @ Bottom Chord: 22'-2 5/8" ==> 2 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord
 7'-10 1/8" 7'-10 1/8"
 15'-11 5/8" 15'-11 5/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

Project no.: P01168

Designer: Josh Brunson

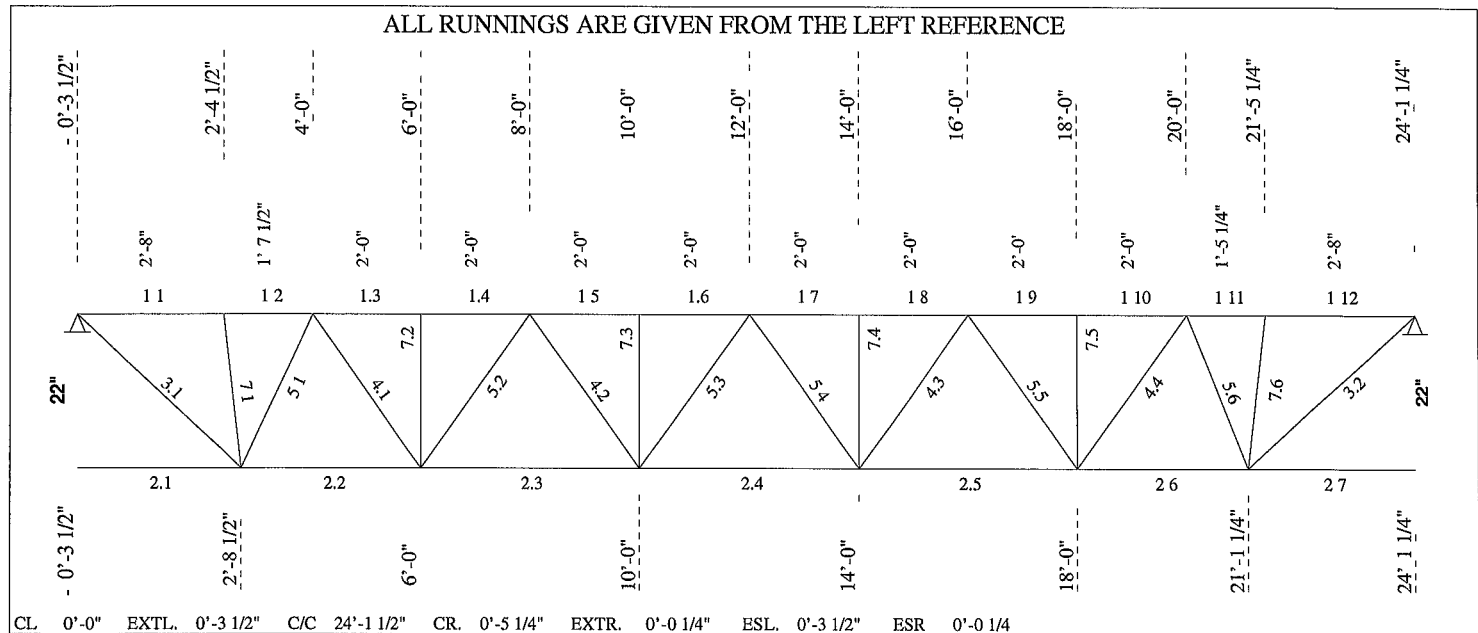
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J2 (MS1, Asymmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 481.81 lb/ft 22H8 LIVE LOAD...: 481.81 lb/ft

----- CONCENTRATED LOADS (From Axis)-----

No	Sp	Side Hole	Total Load [kips]	Live load [kips]	Net uplift [kips]	Position [ft]	Spacing [ft]	Cat.	Chord	Incl. Cmp [deg]
1	1	Both No	6.60	4.62	0.00	20'-0"	20'-0"	1	1	90 0

----- DEFLECTION -----

Allowed deflection under live load.....	=	0.80 in (L/ 360)
Calculated deflection under service live load.....	=	0.69 in (L/ 420)
Joist inertia.....	=	270.19 in ⁴
Required camber.....	=	0.30 in

----- F O R C E S I N M E M B E R S [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)

Gap.....: 1"

(Fy = 50 Ksi U/N)

(Eff. depth = 20.88 in)

Left Reaction = 6.88/ 0.00 kips

Right Reaction = 11.32/ 0.00 kips

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
Top Chord							
1.1	0.00	-13.20	LL 2 x .166	z 76 0.75	2'-8"		
1.2	0.00	-12.90	do	z 49 0.74	1'-7 1/2"		
1.3	0.00	-23.73	do	z 61 0.85	2'-0"		
1.4	0.00	-23.73	do	z 61 0.85	do		
1.5	0.00	-30.48 x	do	xx 39 0.96	do		
1.6	0.00	-30.48 x	do	xx 39 0.96	do		
1.7	0.00	-30.32 x	do	xx 39 0.95	do		
1.8	0.00	-30.32 x	do	xx 39 0.95	do		
1.9	0.00	-26.15	do	z 61 0.94	do		
1.10	0.00	-26.15	do	z 61 0.94	2'-0"		
1.11	0.00	-17.26	do	z 44 0.87	1'-5 1/4"		
1.12	0.00	-17.44	LL 2 x .166	z 76 0.95	2'-8"		
Bottom Chord							
2.1	0.00	0.00	LL 2 x .156	z 86 0.46	3'-0"		
2.2	17.76	0.00	do	z 100 0.72	3'-3 1/2"		
2.3	27.97	0.00	do	z 121 0.80	4'-0"		
2.4	31.26	0.00	do	z 121 0.87	do		
2.5	27.73	0.00	do	z 121 0.80	4'-0"		
2.6	23.46	0.00	do	z 94 0.71	3'-1 1/4"		
2.7	0.00	0.00	LL 2 x .156	z 86 0.60	3'-0"		
End Diagonal							
3.1	11.99	0.00	RD 1' (64)	z 156 0.57	3'-4 1/2"	.230 - 1 1/4"	
3.2	20.47	0.00	RD 1' (64)	z 156 0.97	3'-4 1/2"	.230 - 2 1/8"	
Diagonal Towards End							
4.1	8.62	0.00	U 1 x 1.1 x 0.118	z 90 0.87	2'-8 1/2"	.118 - 2 1/2"	
4.2	8.62	0.00	do	z 90 0.87	do	do	
4.3	8.62	-0.49	do	z 90 0.87	do	do	
4.4	8.62	-0.49	U 1 x 1.1 x 0.118	z 90 0.87	2'-8 1/2"	.118 - 2 1/2"	
Diagonal Towards Center							
5.1	0.00	-7.05	U 1 x 1.2 x 0.136	z 67 0.82	2'-2 7/8"	.136 - 1 3/4"	
5.2	0.00	-8.62 d	U 1 3/8 x 0.136	z 71 0.83	2'-8 1/2"	.136 - 2 1/8"	
5.3	0.00	-8.62 d	do	z 71 0.83	do	do	
5.4	8.62	-8.62 d	do	z 71 0.83	do	do	
5.5	0.49	-8.62 d	U 1 3/8 x 0.136	z 71 0.83	2'-8 1/2"	.136 - 2 1/8"	
5.6	0.00	-11.57 d	U 1 3/8 x 0.176	z 54 0.76	2'-1 5/8"	.176 - 2 1/4"	
Secondary Web Member							
7.1	0.00	-1.08	U 1 x .8 x .090	z 85 0.30	1'-10 3/8"	.091 - 1"	
7.2	0.00	-1.09	do	z 83 0.29	1'-10"	do	
7.3	0.00	-1.12	do	z 83 0.30	do	do	
7.4	0.00	-1.12	do	z 83 0.30	do	do	
7.5	0.00	-1.10	do	z 83 0.30	1'-10"	do	
7.6	0.00	-1.06	U 1 x .8 x .090	z 85 0.29	1'-10 3/8"	.091 - 1"	



Mark : J2

Project: BELMONT ACADEMY

(P01168)

02/22/13

17:33:29

----- BRIDGING -----

Maximum spacing between rows of bridging
@ Top Chord: 14'-5 3/4" ==> 2 Row(s) Minimum Lateral Supports
@ Bottom Chord: 24'-3" ==> 2 Row(s) Minimum Deck (36")
Acc. to the code

POSITION @ Top Chord @ Bottom Chord
7'-10 1/8" 7'-10 1/8"
15'-11 5/8" 15'-11 5/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

CONCENTRATED LOADS (* indicates that the conc. load is not directly on the panel point.)

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Side: Both Sides, Near Side, Far Side

Hole: Top Chord with Holes at Conc. Loads

Definition of the categories (Cat.):

1 = within a panel with no reinforcement

Chord: 1 = Top, 2 = Bottom

Inclination (Incl.): 90 = Vertical, 0 = Horizontal Composite (Cmp): 0 = standard, 1 = non-composite

Project no.: P01168

Designer: Josh Brunson

Shop: Jacksonville [Production]

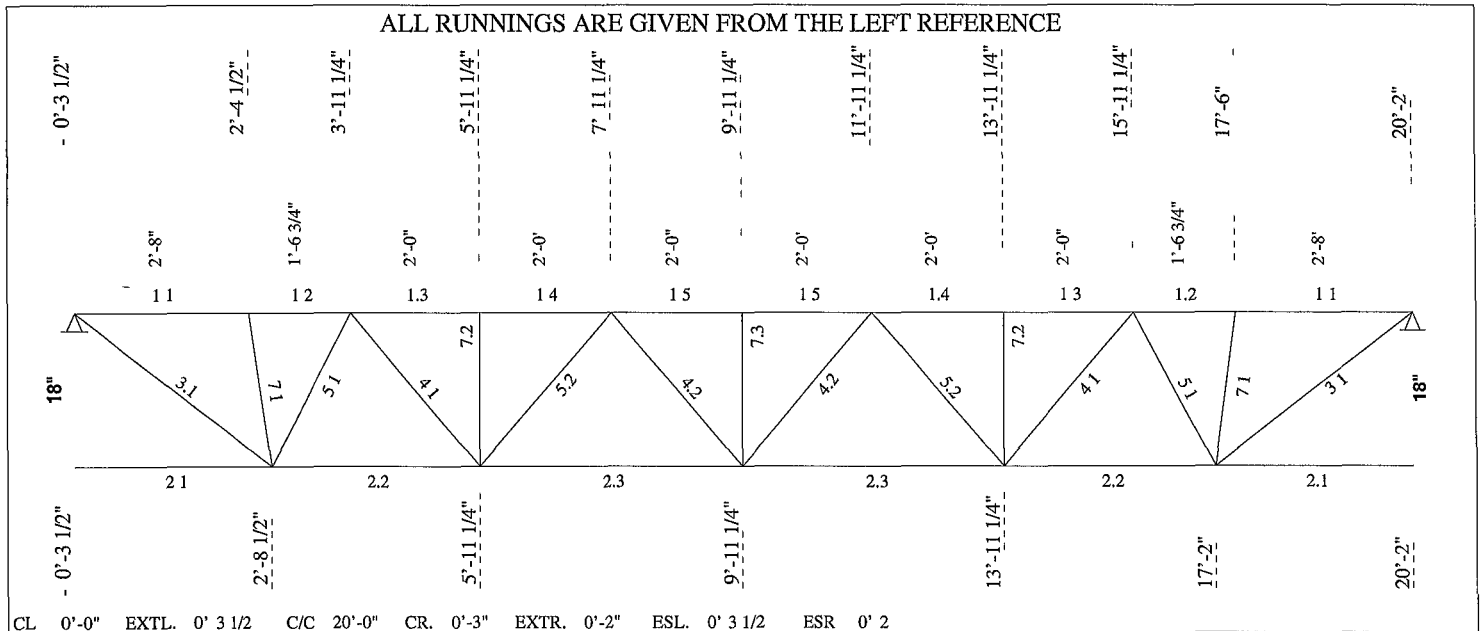
Material Sort : Cost

Bottom chord has been increased due to shear at node

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J3 (MS1, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 516.88 lb/ft 18H7 LIVE LOAD...: 516.88 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.67 in (L/ 360)
 Calculated deflection under service live load..... = 0.51 in (L/ 472)
 Joist inertia..... = 147.70 in⁴
 Required camber..... = 0.26 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)

Gap.....: 1" (Fy = 50 Ksi U/N) (Eff. depth = 17.01 in)

Left Reaction = 5.20/ 0.00 kips Right Reaction = 5.20/ 0.00 kips

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
Top Chord							
1.1	0.00	-13.51	LL 2 x .156	z 76 0.84	2'-8"		
1.2	0.00	-13.14	do	z 47 0.82	1'-6 3/4"		
1.3	0.00	-23.06	do	z 61 0.90	2'-0"		
1.4	0.00	-23.06	do	z 61 0.90	do		
1.5	0.00	-27.39 x	LL 2 x .156	xx 39 0.93	2'-0"		

FORCES IN MEMBERS (Cont.) [kips]

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
Bottom Chord							
2.1	0.00	0.00	LL 1.5 x .155	z 115 0.62	3'-0"		
2.2	17.65	0.00	do	z 132 0.92	3'-2 3/4"		
2.3	26.30	0.00	LL 1.5 x .155	z 163 0.99	4'-0"		
End Diagonal							
3.1	10.18	0.00	RD 15/16 (60)	z 158 0.55	3'-2 1/2"	223 - 1 1/8"	
Diagonal Towards End							
4.1	4.50	0.00	U 1 x .8 x .090	z 119 0.75	2'-6"	.091 - 1 3/4"	
4.2	4.50	0.00	U 1 x .8 x .090	z 119 0.75	2'-6"	.091 - 1 3/4"	
Diagonal Towards Center							
5.1	0.00	-4.64	U 1 x 1.05 x 0.090	z 65 0.86	1'-11 1/4"	.090 - 1 3/4"	
5.2	0.00	-4.50	U 1 x 1.1 x 0.118	z 83 0.74	2'-6"	.118 - 1 1/2"	
Secondary Web Member							
7.1	0.00	-1.15	U 1 x .8 x .090	z 69 0.27	1'-6 1/2"	.091 - 1"	
7.2	0.00	-1.15	do	z 67 0.27	1'-6"	do	
7.3	0.00	-1.18	U 1 x .8 x .090	z 67 0.27	1'-6"	.091 - 1"	

BRIDGING

Maximum spacing between rows of bridging
@ Top Chord: 14'-2 1/2" ==> 2 Row(s) Minimum Lateral Supports Deck (36")
@ Bottom Chord: 20'-4 3/8" ==> 2 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord
6'-6 3/8" 6'-6 3/8"
13'-4 1/8" 13'-4 1/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

Project no.: P01168

Designer: Josh Brunson

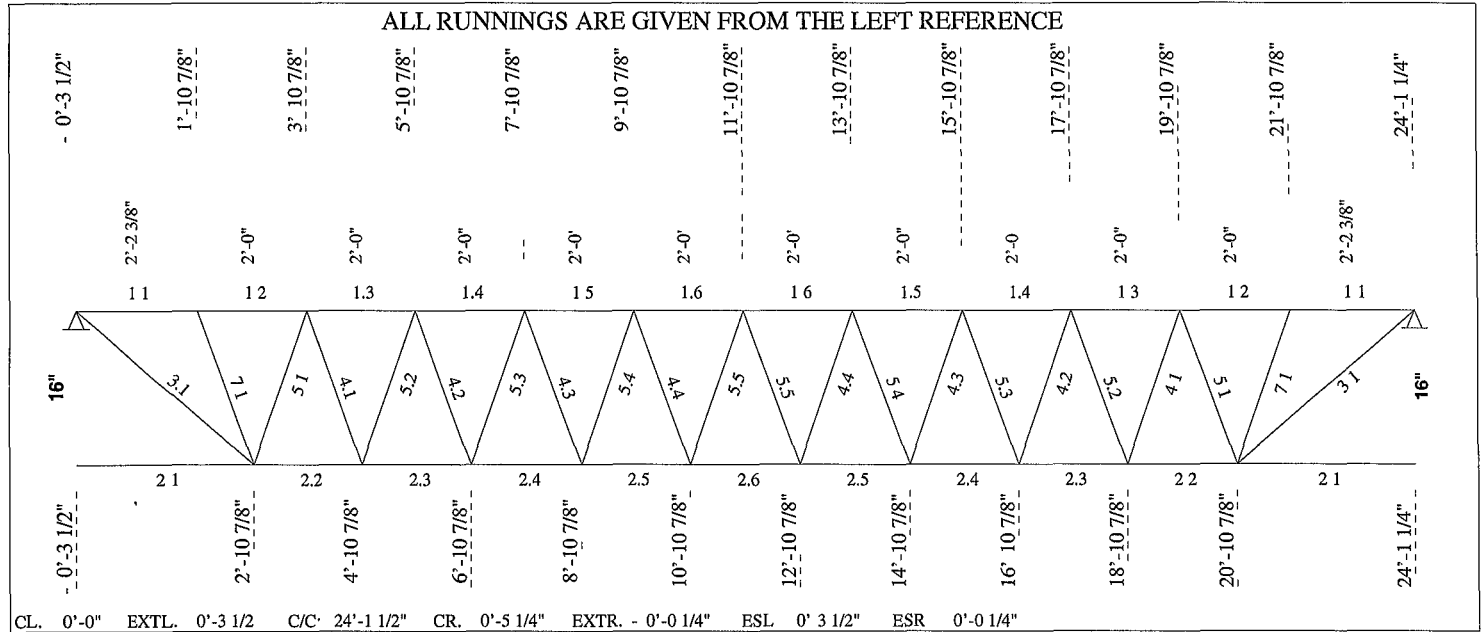
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J4 (SS2, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 332.37 lb/ft 16H5 LIVE LOAD...: 212.50 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.80 in (L/ 360)
 Calculated deflection under service live load..... = 0.79 in (L/ 367)
 Joist inertia..... = 80.61 in⁴
 Required camber..... = 0.30 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)
 (Fy = 50 Ksi U/N) (Eff. depth = 15.16 in)

Left Reaction = 4.30/ 0.00 kips Right Reaction = 4.30/ 0.00 kips

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Eff.Throat-Ea.Side	Remarks
Top Chord							
1.1	0.00	-8.80	LL 1.5 x .137	z 82 0 82	2'-2 3/8"		
1.2	0.00	-8.27	do	z 81 0.82	2'-0"		
1.3	0.00	-12.49	do	z 81 0.85	do		
1.4	0.00	-15.65 x	do	xx 52 0.83	do		
1.5	0.00	-17.76 x	do	xx 52 0.95	do		
1.6	0.00	-18.82 x	LL 1.5 x .137	xx 52 1.00	2'-0"		

FORCES IN MEMBERS (Cont.) [kips]

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Eff. Throat-Ea. Side	Remarks
Bottom Chord							
2.1	0.00	0.00	LL 1.5 x .109	z 122 0.52	3'-2 3/8"		
2.2	10.64	0.00	do	z 81 0.70	2'-0"		
2.3	14.34	0.00	do	YY 85 0.83	do		
2.4	16.97	0.00	do	YY 85 0.91	do		
2.5	18.55	0.00	do	YY 85 0.98	do		
2.6	19.08	0.00	LL 1.5 x .109	YY 85 1.01	2'-0"		
End Diagonal							
3.1	9.77	0.00	RD 11/16 (44)	z 225 0 97	3'-3 3/4"	.193 - 1 1/4"	
Diagonal Towards End							
4.1	3.12	0.00	RD 11/16 (44)	z 111 0.28	1'-8"	.193 - 0 3/4"	
4.2	2.68	0.00	RD 5/8 (40)	z 122 0.29	do	.185 - 0 3/4"	
4.3	2.68	0.00	do	z 122 0.29	do	do	
4.4	2.68	0.00	RD 5/8 (40)	z 122 0.29	1'-8"	.185 - 0 3/4"	
Diagonal Towards Center							
5.1	0.00	-4.02	RD 11/16 (44)	z 111 0.89	1'-8"	.193 - 0 3/4"	
5.2	0.00	-3.12	RD 11/16 (44)	z 111 0.69	do	.193 - 0 3/4"	
5.3	0.00	-2.68	RD 5/8 (40)	z 122 0.87	do	.185 - 0 3/4"	
5.4	0.00	-2.68	do	z 122 0.87	do	do	
5.5	0 00	-2.68	RD 5/8 (40)	z 122 0.87	1'-8"	.185 - 0 3/4"	
Secondary Web Member							
7.1	0.00	-0.95	RD 11/16 (44)	z 111 0.21	1'-8"	.193 - 0 3/4"	

BRIDGING

Maximum spacing between rows of bridging

@ Top Chord:	10'-2 7/8" ==>	3 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	17'-0 1/8" ==>	3 Row(s) Minimum	Deck (36")
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	5'-9 5/8"	5'-9 5/8"
	11'-10 7/8"	11'-10 7/8"
	18'-0 1/8"	18'-0 1/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

The welding length of web members is calculated according to non continuous joints.
It is shorter for continuous joints.

Project no.: P01168

Designer: Josh Brunson

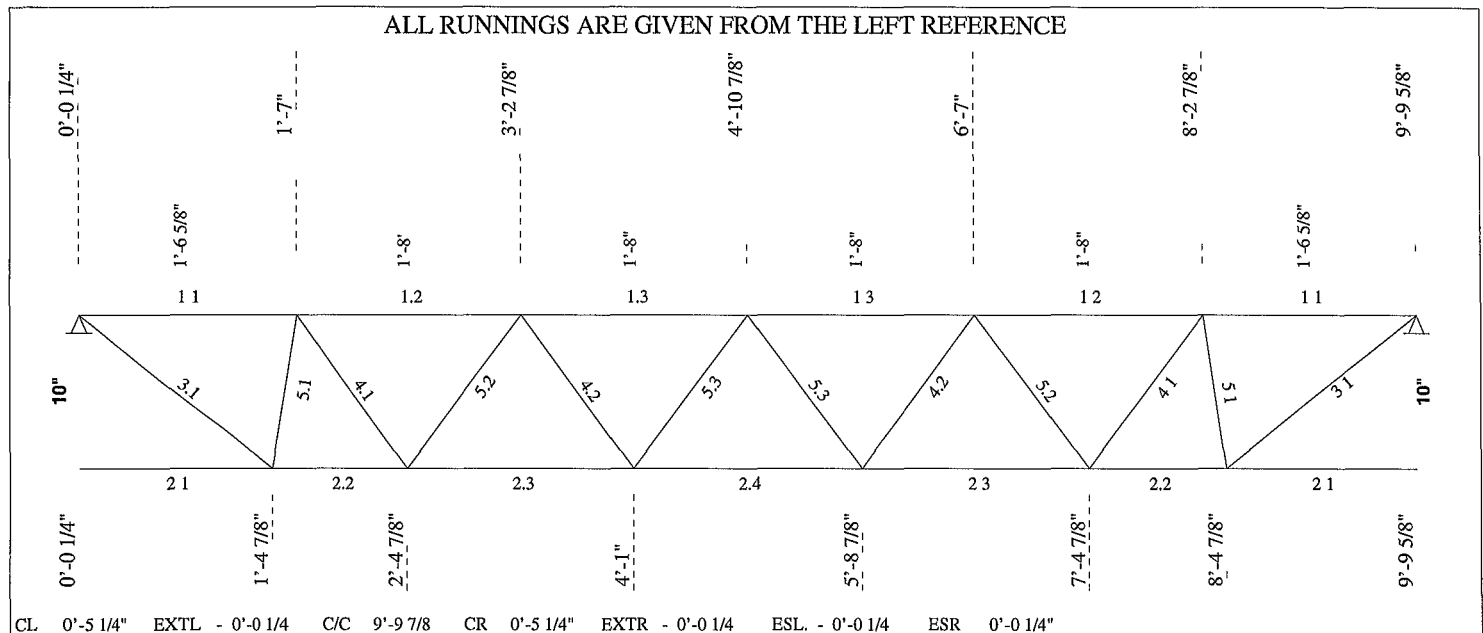
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J5 (SS1, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 500.00 lb/ft 10H3 LIVE LOAD...: 500.00 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.31 in (L/ 360)
Calculated deflection under service live load..... = 0.16 in (L/ 693)
Joist inertia..... = 21.71 in⁴
Required camber..... = 0.12 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)
(F_y = 50 Ksi U/N) (Eff. depth = 9.29 in)

Left Reaction = 2.50/ 0.00 kips Right Reaction = 2.50/ 0.00 kips

No	Tension	Compres.	REQUIRED MATERIAL	Slend.	Util.	Length	REQUIRED WELD	Remarks
			x = tied at mid-length				Eff.Throat-Ea.Side	
Top Chord								
1.1	0.00	-5.51	LL 1.5 x .109	z	56	0.71	1'-6 5/8"	
1.2	0.00	-8.59	do	z	67	0.68	1'-8"	
1.3	0.00	-11.70	LL 1.5 x .109	z	67	0.93	1'-8"	
Bottom Chord								
2.1	0.00	0.00	LL 1 x .109	yy	91	0.47	1'-4 3/4"	
2.2	6.26	0.00	do	yy	91	0.82	1'-0"	
2.3	10.92	0.00	do	z	102	0.93	1'-8"	



Mark : J5

Project: BELMONT ACADEMY

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F O R C E S I N M E M B E R S (Cont.) [kips]

No	Tension	Compres.	REQUIRED MATERIAL		Slend. Util.	Length	REQUIRED WELD		Remarks
			x = tied at mid-length				Eff.Throat-Ea.Side		
2.4	12.48	0.00	LL 1 x .109		z 102 1.01	1'-8"			
End Diagonal									
3.1	3.79	0.00	RD 1/2"		z 134 0.71	1'-5 3/4"	.170 -	0 5/8"	
Diagonal Towards End									
4.1	1.87	0.00	RD 1/2"		z 105 0.32	1'-2 1/8"	.170 -	0 5/8"	
4.2	1.77	0.00	RD 1/2"		z 105 0.30	1'-2 1/8"	.170 -	0 5/8"	
Diagonal Towards Center									
5.1	0.00	-2.17	RD 1/2"		z 74 0.61	0'-10 1/4"	.170 -	0 5/8"	
5.2	0.00	-1.87	do		z 105 0.71	1'-2 1/8"	do		
5.3	0.00	-1.77	RD 1/2"		z 105 0.67	1'-2 1/8"	.170 -	0 5/8"	

----- BRIDGING -----

Maximum spacing between rows of bridging

@ Top Chord:	9'-10 1/8" ==>	1 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	12'-5 1/4" ==>	1 Row(s) Minimum	Deck (36")
			Acc. to the code

POSITION @ Top Chord @ Bottom Chord

4'-10 7/8" 4'-10 7/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

The welding length of web members is calculated according to non continuous joints.
 It is shorter for continuous joints.

Project no.: P01168

Designer: Josh Brunson

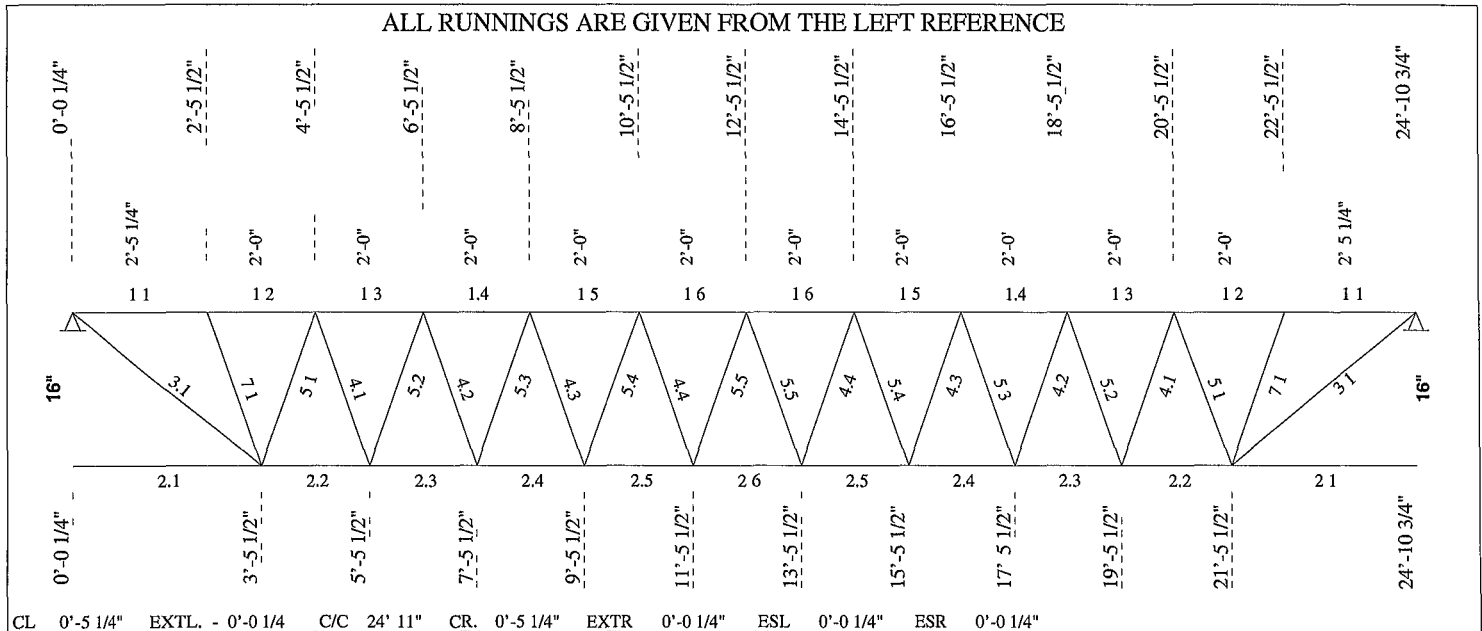
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J6 (SS2, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 319.92 lb/ft 16H5 LIVE LOAD...: 201.00 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.82 in (L/ 360)
Calculated deflection under service live load..... = 0.81 in (L/ 365)
Joist inertia..... = 80.61 in⁴
Required camber..... = 0.31 in

----- F O R C E S I N M E M B E R S [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)
(Fy = 50 Ksi U/N) (Eff. depth = 15.16 in)

Left Reaction = 4.30/ 0.00 kips Right Reaction = 4.30/ 0.00 kips

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Eff. Throat-Ea. Side	Remarks
Top Chord							
1.1	0.00	-9.23	LL 1.5 x .137	z 92 0.98	2'-5 1/4"		
1.2	0.00	-8.69	do	z 81 0.90	2'-0"		
1.3	0.00	-12.74	do	z 81 0.87	do		
1.4	0.00	-15.78 x	do	xx 52 0.84	do		
1.5	0.00	-17.81 x	do	xx 52 0.95	do		
1.6	0.00	-18.82 x	LL 1.5 x .137	xx 52 1.00	2'-0"		



Mark : J6

Project: BELMONT ACADEMY

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F O R C E S I N M E M B E R S (Cont.) [kips]

			REQUIRED MATERIAL				REQUIRED WELD		
No	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Eff.Throat-Ea.Side	Remarks	
Bottom Chord									
2.1	0.00	0.00	LL 1.5 x .109	z 132	0.54	3'-5 1/4"			
2.2	10.97	0.00	do	yy 81	0.71	2'-0"			
2.3	14.51	0.00	do	yy 86	0.83	do			
2.4	17.05	0.00	do	yy 86	0.91	do			
2.5	18.57	0.00	do	yy 86	0.98	do			
2.6	19.07	0.00	LL 1.5 x .109	yy 86	1.01	2'-0"			
End Diagonal									
3.1	10.33	0.00	RD 3/4 (48)	z 221	0.87	3'-6 3/8"	.200 - 1 1/4"		
Diagonal Towards End									
4.1	3.06	0.00	RD 11/16 (44)	z 111	0.28	1'-8"	.193 - 0 3/4"		
4.2	2.69	0.00	RD 5/8 (40)	z 122	0.29	do	.185 - 0 3/4"		
4.3	2.69	0.00	do	z 122	0.29	do	do		
4.4	2.69	0.00	RD 5/8 (40)	z 122	0.29	1'-8"	.185 - 0 3/4"		
Diagonal Towards Center									
5.1	0.00	-3.94	RD 11/16 (44)	z 111	0.87	1'-8"	.193 - 0 3/4"		
5.2	0.00	-3.06	RD 11/16 (44)	z 111	0.68	do	.193 - 0 3/4"		
5.3	0.00	-2.69	RD 5/8 (40)	z 122	0.87	do	.185 - 0 3/4"		
5.4	0.00	-2.69	do	z 122	0.87	do	do		
5.5	0.00	-2.69	RD 5/8 (40)	z 122	0.87	1'-8"	.185 - 0 3/4"		
Secondary Web Member									
7.1	0.00	-0.98	RD 11/16 (44)	z 111	0.22	1'-8"	.193 - 0 3/4"		

BRIDGING

Maximum spacing between rows of bridging
 @ Top Chord: 10'-6 5/8" ==> 3 Row(s) Minimum
 @ Bottom Chord: 17'-3 7/8" ==> 3 Row(s) Minimum
 Lateral Supports
 Deck (36")
 Acc. to the code

POSITION @ Top Chord @ Bottom Chord
 6'-2 7/8" 6'-2 7/8"
 12'-5 1/2" 12'-5 1/2"
 18'-8 1/8" 18'-8 1/8"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

The welding length of web members is calculated according to non continuous joints.
 It is shorter for continuous joints.

Project no.: P01168

Designer: Josh Brunson

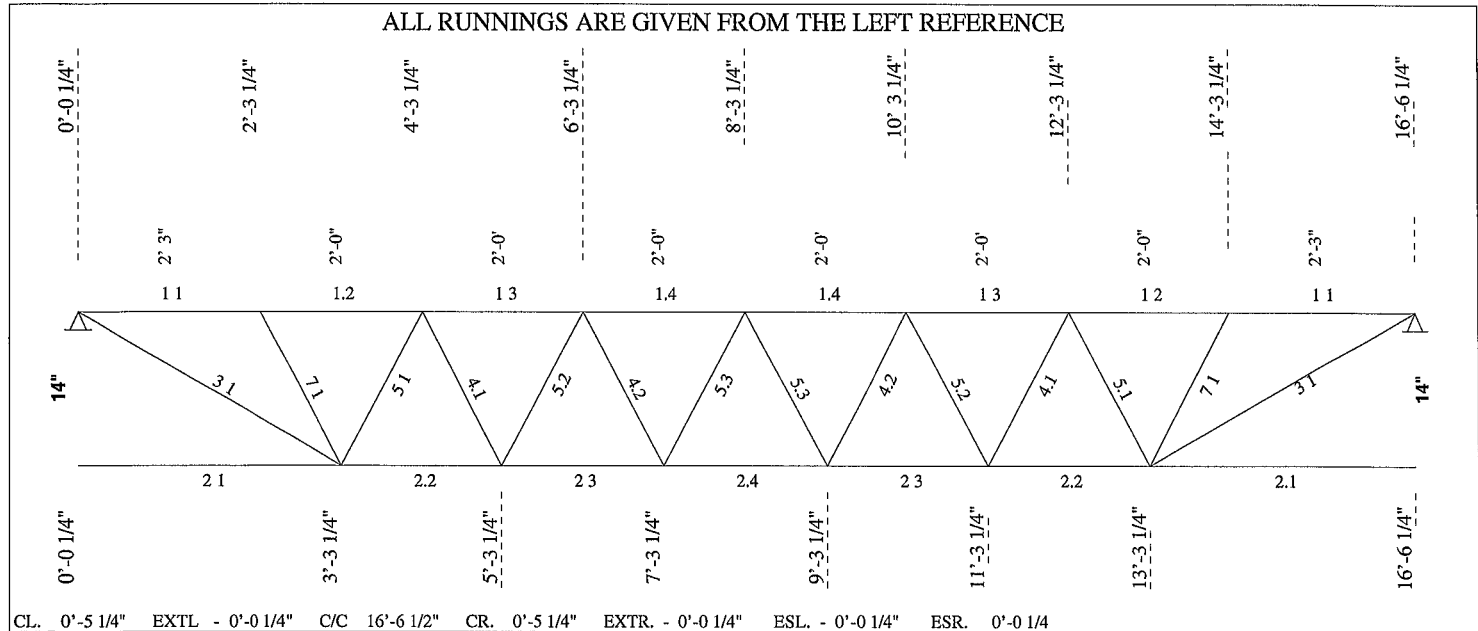
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J7 (SS2, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 519.83 lb/ft 14H6 LIVE LOAD...: 519.83 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.54 in (L/ 360)
Calculated deflection under service live load..... = 0.41 in (L/ 471)
Joist inertia..... = 76.88 in⁴
Required camber..... = 0.21 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)
(Fy = 50 Ksi U/N) (Eff. depth = 13.08 in)

Left Reaction = 4.20/ 0.00 kips Right Reaction = 4.20/ 0.00 kips

No	Tension	Compres.	REQUIRED MATERIAL				REQUIRED WELD		Remarks
			x = tied at mid-length	Slend	Util	Length	Eff.Throat-Ea.Side		
Top Chord									
1.1	0.00	-15.60	LL 1.75 x .155	z	72	0.98	2'-3"		
1.2	0.00	-14.13	do	z	70	0.98	2'-0"		
1.3	0.00	-19.88	do	z	70	0.92	do		
1.4	0.00	-22.76 x	LL 1.75 x .155	xx	44	0.88	2'-0"		



Mark : J7

Project: BELMONT ACADEMY

(P01168) 02/22/13 17:33:29

F O R C E S I N M E M B E R S (Cont.) [kips]

No	Tension	Compres.	REQUIRED MATERIAL	Slend. Util.	Length	REQUIRED WELD	Remarks
			x = tied at mid-length			Eff.Throat-Ea.Side	
Bottom Chord							
2.1	0.00	0.00	LL 1.5 x .137	z 125 0.70	3'-3"		
2.2	17.73	0.00	do	yy111 0.86	2'-0"		
2.3	22.04	0.00	do	yy111 0.94	do		
2.4	23.48	0.00	LL 1.5 x .137	yy111 1.00	2'-0"		
End Diagonal							
3.1	10.34	0.00	RD 3/4 (48)	z 206 0.87	3'-3 1/2"	200 - 1 1/4"	
Diagonal Towards End							
4.1	2.77	0.00	RD 5/8 (40)	z 112 0.30	1'-6 1/2"	.185 - 0 3/4"	
4.2	2.77	0.00	RD 5/8 (40)	z 112 0.30	1'-6 1/2"	.185 - 0 3/4"	
Diagonal Towards Center							
5.1	0.00	-3.42	RD 5/8 (40)	z 112 0.93	1'-6 1/2"	.185 - 0 3/4"	
5.2	0.00	-2.77	do	z 112 0.75	do	do	
5.3	0.00	-2.77	RD 5/8 (40)	z 112 0.75	1'-6 1/2"	.185 - 0 3/4"	
Secondary Web Member							
7.1	0.00	-1.48	RD 5/8 (40)	z 112 0.40	1'-6 1/2"	.185 - 0 3/4"	

----- BRIDGING -----

Maximum spacing between rows of bridging
@ Top Chord: 11'-9 1/8" ==> 1 Row(s) Minimum Lateral Supports
@ Bottom Chord: 17'-5 3/8" ==> 1 Row(s) Minimum Deck (36")
Acc. to the code

POSITION @ Top Chord @ Bottom Chord
8'-3 1/4" 8'-3 1/4"

Equally Spaced Bridging between Uplift Rows : No

----- v1.16.0 -----

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

The welding length of web members is calculated according to non continuous joints.
It is shorter for continuous joints.

Project no.: P01168

Designer: Josh Brunson

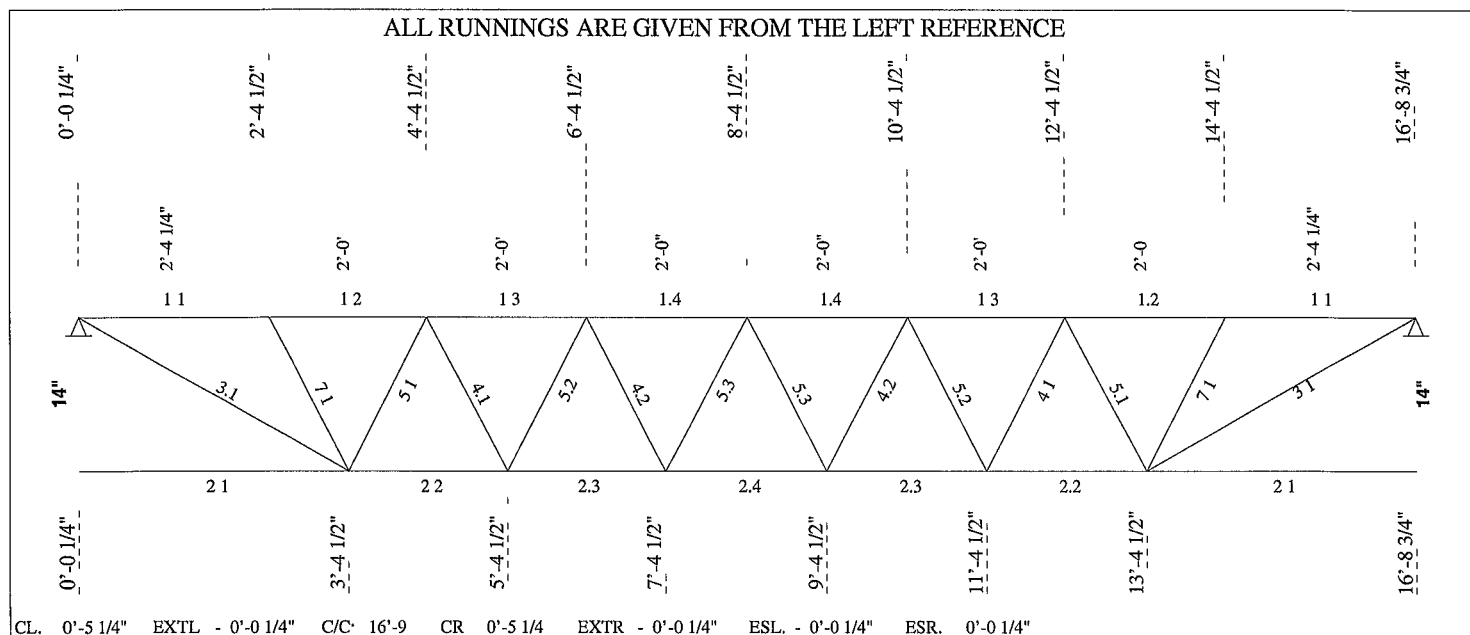
Shop: Jacksonville [Production]

Material Sort : Cost

Project: BELMONT ACADEMY

JOIST CALCULATION ACCORDING TO SJI CODE

Mark : J8 (SS2, Symmetrical, Parallel, Free ends)



----- LOADING CONDITIONS -----
(THE SHOWN VALUES ARE UN-FACTORED)

TOTAL LOAD...: 513.38 lb/ft 14H6 LIVE LOAD...: 513.38 lb/ft

----- DEFLECTION -----

Allowed deflection under live load..... = 0.55 in (L/ 360)
Calculated deflection under service live load.... = 0.42 in (L/ 470)
Joist inertia..... = 78.76 in⁴
Required camber..... = 0.21 in

----- FORCES IN MEMBERS [kips] -----

(THE SHOWN FORCES ARE UN-FACTORED)
(Fy = 50 Ksi U/N) (Eff. depth = 13.02 in)

Left Reaction = 4.20/ 0.00 kips Right Reaction = 4.20/ 0.00 kips

No	Tension	Compres.	REQUIRED MATERIAL		Slend. Util.	Length	REQUIRED WELD		Remarks
			x = tied at mid-length				Eff.Throat-Ea.Side		
Top Chord									
1.1	0.00	-15.91	LL 2 x .145		z 66 0.93	2' -4 1/4"			
1.2	0.00	-14.43	do		z 61 0.89	2' -0"			
1.3	0.00	-20.06	do		z 61 0.86	do			
1.4	0.00	-22.88	LL 2 x .145		z 61 0.98	2' -0"			

FORCES IN MEMBERS (Cont.) [kips]

No	Tension	Compres	REQUIRED MATERIAL		Slend. Util.	Length	REQUIRED WELD		Remarks
			x = tied at mid-length				Eff.Throat-Ea.Side		
Bottom Chord									
2.1	0.00	0.00	LL 1.5 x .137		z 129 0.70	3'-4 1/4"			
2.2	17.95	0.00	do		yy113 0.87	2'-0"			
2.3	22.17	0.00	do		yy113 0.94	do			
2.4	23.58	0.00	LL 1.5 x .137		yy113 1.00	2'-0"			
End Diagonal									
3.1	10.59	0.00	RD 3/4 (48)		z 212 0.89	3'-4 3/4"	200 -	1 1/4"	
Diagonal Towards End									
4.1	2.77	0.00	RD 5/8 (40)		z 112 0.30	1'-6 1/2"	.185 -	0 3/4"	
4.2	2.77	0.00	RD 5/8 (40)		z 112 0.30	1'-6 1/2"	.185 -	0 3/4"	
Diagonal Towards Center									
5.1	0.00	-3.38	RD 5/8 (40)		z 112 0.92	1'-6 1/2"	.185 -	0 3/4"	
5.2	0.00	-2.77	do		z 112 0.75	do	do		
5.3	0.00	-2.77	RD 5/8 (40)		z 112 0.75	1'-6 1/2"	.185 -	0 3/4"	
Secondary Web Member									
7.1	0.00	-1.49	RD 5/8 (40)		z 112 0.41	1'-6 1/2"	.185 -	0 3/4"	

BRIDGING

Maximum spacing between rows of bridging
@ Top Chord: 12'-11" ==> 1 Row(s) Minimum Lateral Supports
@ Bottom Chord: 17'-5 3/8" ==> 1 Row(s) Minimum Deck (36")
Acc. to the code

POSITION @ Top Chord @ Bottom Chord
8'-4 1/2" 8'-4 1/2"

Equally Spaced Bridging between Uplift Rows : No

v1.16.0

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

The welding length of web members is calculated according to non continuous joints.
It is shorter for continuous joints.

Project no.: P01168

Designer: Josh Brunson

Shop: Jacksonville [Production]

Material Sort : Cost

Jim Zuber

From: Z. Cliff Singleton [zcliff501@aol.com]
Sent: Tuesday, January 15, 2013 3:32 PM
To: jim@allseasonsplaning.com
Subject: FW: metal studs
Attachments: 2-600S137-68.pdf; 2-35S162-43-18ga.pdf; 1-600S137-33-20ga.pdf; 2-35S125-33-20ga.pdf; 1-600S137-33-20 ga wall.pdf; 1-35S162-33-20ga-wall.pdf; 1-600S137-33-20ga.pdf; 1-35S162-33-20ga.pdf

From: Z. Cliff Singleton [mailto:zcliff501@aol.com]
Sent: Tuesday, January 15, 2013 3:16 PM
To: 'jim@allseasonsplaning.com'; 'russ.rocco@canam.ws'
Subject: FW: metal studs

This is report from our engineer. Let me know if you need additional information.
There will also be two other e-mails to follow.

Thanks,

Cliff
(321) 431-6536

From: Mike King [mailto:m45Zking@gmail.com]
Sent: Tuesday, January 15, 2013 10:28 AM
To: Christian Troll; Cliff Singleton
Subject: metal studs



Cliff here is the information on the studs

I have printed out the information on each of the stud and columns/studs under the joist
I used a program that has metal stud sections which you can select and see the max capacity of the studs
I used the 6" studs specified and found the maximum vertical load on that stud then found the equivalent 18 and 20ga 3.5" stud

I then printed out the results for 16 ft tall studs

1. 2-600S-137-68-14ga 10.9 kips equivalent column under joist 2-35S137-43-18ga 5.7 (2 rows)= 11.4 kips

2. 2-600S127-33-20 ga 5.2 kips equivalent column under joist 2-35S137-33-20ga 5.3 kips (2 rows)= 10.6 kips
3. wall studs @ 16" on Center single studs
1-600S-137-33-20ga-wall 1850 lbs equivalent wall 1-35S137-33-20ga-wall 1900 lbs
4. single stud column
1-600S-137-33-20ga 2.6 kips equivalent column under joist 1-35S137-33-20ga 2.6 kips

Note: the nuframe 3NF1 50 18 and 20 ga section properties is slightly less but the increased strength by using two rows of nuframe studs to make a 7" wall will be more than a single 6" stud

Mike King, P.E.

ATEG

Jamb/Column Design Based on AISI 2001 & ICBO ER-4943P

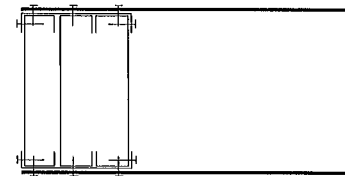
INPUT DATA & DESIGN SUMMARY

VERT. MEMBERS 2 x 600S137-68 (50 ksi)
(TOTAL SECTION 6 x 3, INSIDE 6 in THK. WALL)

HEIGHT h = 16 ft

SERVICE GRAVITY LOAD P = 10.9 kips
SERVICE LATERAL LOAD w = 0 kips / ft

DEFLECTION LIMITATION ? 0 No limit
(0=No, 1= h /240, 2= h /360, 3= h /180, 4= h /120)



JAMB / WALL COLUMN SECTION

THE DESIGN IS ADEQUATE.

ANALYSIS

SECTION PROPERTIES OF EACH VERTICAL STUD (SSMA page 7 & 8)

thk = 0.0713 in	$F_y = 50$ ksi	$I_{xx} = 3.094$ in ⁴	$M_n/\Omega_b = 35.6$ in-kips
t = 6 in	$W_t = 2.18$ lb/ft	$S_{xx} = 1.029$ in ³	$V_n/\Omega_v = 5468$ lbs
A = 0.64 in ²	$r_x = 2.2$ in	$r_y = 0.443$ in	$x_o = -0.793$ in
J = 0.001084 in ⁴	$C_w = 0.911$ in ⁶		

CHECK MAX WEB DEPTH-TO-THICKNESS RATIO (AISI B1.2)
 $t / (thk) = 84.15 < 200$ [Satisfactory]

CHECK FLEXURAL CAPACITY (AISI C3.1)

$M_n/\Omega_b = 5.93$ ft-kips $> M$ [Satisfactory]
Where $M = 0.75 w h^2 / 8 = 0.00$ ft-kips, (0.75 for wind/seismic, from AISI App A4.1.2, typical)

CHECK SHEAR CAPACITY (AISI C3.2)

$V_n/\Omega_v = 10.94$ kips $> V$ [Satisfactory]
Where $V = 0.75 w L / 2 = 0.00$ kips

CHECK COMPRESSION CAPACITY WITH, AT LEAST, ONE FLANGE THROUGH-FASTENED TO SHEATHING (AISI C4.6)

$P_n/\Omega_c = 11.04$ kips $> P$ [Satisfactory]
Where $\Omega_c = 1.8$
 $P_n = C_1 C_2 C_3 A E / 29500 = 19.88$ kips
 $C_1 = (0.79 x + 0.54) = 0.949$
 $C_2 = (1.17 \alpha t + 0.93) = 1.013$
 $C_3 = \alpha (2.5b - 1.63d) + 22.8 = 16.145$
 $E = 29500$ ksi (AISI pg 18)
 $P = 10.97$ kips (included studs weight.)

CHECK CAPACITY COMBINED BENDING & SHEAR AT ANY SAME SECTION (AISI C3.3.1)

$\left(\frac{\Omega_b M}{M_n} \right)^2 + \left(\frac{\Omega_v V}{V_n} \right)^2 = 0 < 1.0$ [Satisfactory]
Where $M = 0.00$ ft-kips, (0.75 included)
 $V = 0.00$ kips, (0.75 included)
 $V_n/\Omega_v = 10.94$ kips

(cont'd)

CHECK CAPACITY COMBINED AXIAL LOAD & BENDING (AISI C5 2.1)

$$\frac{\Omega_c P}{P_n} + \frac{\Omega_b C_m M}{M_n \alpha} = 0.99 < 1.0 \quad \text{[Satisfactory]}$$

Where M = 0.00 ft-kips, (0.75 included)

P = 10.97 kips

 $P_n/\Omega_c = 11.04$ kips $M_n/\Omega_b = 5.93$ in-kips $C_m = 1.0$

$$P_{Ex} = \frac{\pi^2 E I_x}{(K_x L_x)^2} = 48.87 \text{ kips}$$

$$\alpha = 1 - \frac{\Omega_c P}{P_{Ex}} = 0.596$$

CHECK DEFLECTION

$$\Delta = \frac{5wL^4}{384EI} = 0.00 \text{ in} < \text{No limit.} \quad \text{[Satisfactory]}$$

NOTE : 1 STUD FLANGES SHALL BE FASTENED TO SHEATHING AT EACH SIDE OF WALL BEFORE VERTICAL LOAD ADDED

Technical References

1 AISI STANDARD, 2001 Edition American Iron and Steel Institute

2 SSMA, Product Technical Information, ICBO ER-4943P, Steel Stud Manufacturers Association, 2001

Jamb/Column Design Based on AISI 2001 & ICBO ER-4943P

INPUT DATA & DESIGN SUMMARY

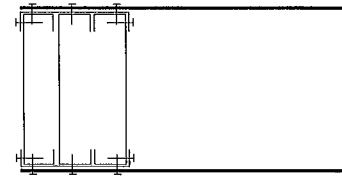
VERT MEMBERS 2 x 350S125-43
(TOTAL SECTION 3 5 x 3 , INSIDE 3 5 in THK. WALL)

HEIGHT h = 16 ft

SERVICE GRAVITY LOAD P = 5.7 kips

SERVICE LATERAL LOAD w = 0 kips / ft

DEFLECTION LIMITATION ? 0 No limit.
(0=No , 1= h /240, 2= h /360, 3= h /180, 4= h /120)



JAMB / WALL COLUMN SECTION

THE DESIGN IS ADEQUATE.

ANALYSIS

SECTION PROPERTIES OF EACH VERTICAL STUD (SSMA page 7 & 8)

thk = 0.0451 in	$F_y = 33$ ksi	$I_{xx} = 0.493$ in ⁴	$M_n/\Omega_b = 5.37$ in-kips
t = 3.5 in	$W_t = 0.93$ lb/ft	$S_{xx} = 0.272$ in ³	$V_n/\Omega_v = 1777$ lbs
A = 0.272 in ²	$r_x = 1.352$ in	$r_y = 0.41$ in	$x_o = -0.79$ in
J = 0.000184 in ⁴	$C_w = 0.106$ in ⁶		

CHECK MAX WEB DEPTH-TO-THICKNESS RATIO (AISI B1 2)

$t / (thk) = 77.61 < 200$ [Satisfactory]

CHECK FLEXURAL CAPACITY (AISI C3 1)

$M_n/\Omega_b = 0.90$ ft-kips $> M$ [Satisfactory]
Where $M = 0.75 w h^2 / 8 = 0.00$ ft-kips, (0.75 for wind/seismic, from AISI App A4 1 2, typical)

CHECK SHEAR CAPACITY (AISI C3 2)

$V_n/\Omega_v = 3.55$ kips $> V$ [Satisfactory]
Where $V = 0.75 w L / 2 = 0.00$ kips

CHECK COMPRESSION CAPACITY WITH, AT LEAST, ONE FLANGE THROUGH-FASTENED TO SHEATHING (AISI C4 6)

$P_n/\Omega_c = 5.76$ kips $> P$ [Satisfactory]
Where $\Omega_c = 1.8$
 $P_n = C_1 C_2 C_3 A E / 29500 = 10.37$ kips
 $C_1 = (0.79 x + 0.54) = 0.959$
 $C_2 = (1.17 \alpha t + 0.93) = 0.983$
 $C_3 = \alpha (2.5b - 1.63d) + 22.8 = 20.220$
 $E = 29500$ ksi (AISI pg 18)
 $P = 5.73$ kips (included studs weight.)

CHECK CAPACITY COMBINED BENDING & SHEAR AT ANY SAME SECTION (AISI C3 3 1)

$\left(\frac{\Omega_b M}{M_n} \right)^2 + \left(\frac{\Omega_v V}{V_n} \right)^2 = 0 < 1.0$ [Satisfactory]

Where $M = 0.00$ ft-kips, (0.75 included)
 $V = 0.00$ kips, (0.75 included)
 $V_n/\Omega_v = 3.55$ kips

(cont'd)

CHECK CAPACITY COMBINED AXIAL LOAD & BENDING (AISI C5 2.1)

$$\frac{\Omega_c P}{P_n} + \frac{\Omega_b C_m M}{M_r \alpha} = 0.99 < 1.0 \quad \text{[Satisfactory]}$$

Where M = 0.00 ft-kips, (0.75 included)

P = 5.73 kips

 $P_n/\Omega_c = 5.76$ kips $M_r/\Omega_b = 0.90$ in-kips $C_m = 1.0$

$$P_{Ex} = \frac{\pi^2 E I_x}{(K_x L_x)^2} = 7.79 \text{ kips}$$

$$\alpha = 1 - \frac{\Omega_c P}{P_{Ex}} = -0.324$$

CHECK DEFLECTION

$$\Delta = \frac{5 w L^4}{384 E I} = 0.00 \text{ in} < \text{No limit.} \quad \text{[Satisfactory]}$$

NOTE : 1 STUD FLANGES SHALL BE FASTENED TO SHEATHING AT EACH SIDE OF WALL BEFORE VERTICAL LOAD ADDED

Technical References

1 AISI STANDARD, 2001 Edition American Iron and Steel Institute

2 SSMA, Product Technical Information, ICBO ER-4943P, Steel Stud Manufacturers Association, 2001

Jamb/Column Design Based on AISI 2001 & ICBO ER-4943P

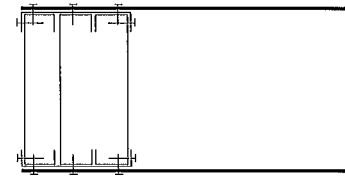
INPUT DATA & DESIGN SUMMARY

VERT MEMBERS 1 x 600S137-33
(TOTAL SECTION 6 x 2, INSIDE 6 in THK. WALL)

HEIGHT h = 16 ft

SERVICE GRAVITY LOAD P = 2.6 kips
SERVICE LATERAL LOAD w = 0 kips / ft

DEFLECTION LIMITATION ? 0 No limit.
(0=No, 1= h /240, 2= h /360, 3= h /180, 4= h /120)



JAMB / WALL COLUMN SECTION

THE DESIGN IS ADEQUATE.

ANALYSIS

SECTION PROPERTIES OF EACH VERTICAL STUD (SSMA page 7 & 8)

thk = 0.0346 in	$F_y = 33$ ksi	$I_{xx} = 1.582$ in ⁴	$M_n/\Omega_b = 10.07$ in-kips
t = 6 in	$W/t = 1.08$ lb/ft	$S_{xx} = 0.51$ in ³	$V_n/\Omega_v = 612$ lbs
A = 0.318 in ²	$r_x = 2.229$ in	$r_y = 0.464$ in	$x_o = -0.823$ in
J = 0.000127 in ⁴	$C_w = 0.493$ in ⁶		

CHECK MAX WEB DEPTH-TO-THICKNESS RATIO (AISI B1.2)

$t / (thk) = 173.41 < 200$ [Satisfactory]

CHECK FLEXURAL CAPACITY (AISI C3.1)

$M_n/\Omega_b = 0.84$ ft-kips $> M$ [Satisfactory]
Where $M = 0.75 w h^2 / 8 = 0.00$ ft-kips, (0.75 for wind/seismic, from AISI App A4.1.2, typical)

CHECK SHEAR CAPACITY (AISI C3.2)

$V_n/\Omega_v = 0.61$ kips $> V$ [Satisfactory]
Where $V = 0.75 w L / 2 = 0.00$ kips

CHECK COMPRESSION CAPACITY WITH, AT LEAST, ONE FLANGE THROUGH-FASTENED TO SHEATHING (AISI C4.6)

$P_n/\Omega_c = 2.63$ kips $> P$ [Satisfactory]
Where $\Omega_c = 1.8$
 $P_n = C_1 C_2 C_3 A E / 29500 = 4.73$ kips
 $C_1 = (0.79 x + 0.54) = 0.949$
 $C_2 = (1.17 \alpha t + 0.93) = 0.970$
 $C_3 = \alpha (2.5b - 1.63d) + 22.8 = 16.145$
 $E = 29500$ ksi (AISI pg 18)
 $P = 2.62$ kips (included studs weight.)

CHECK CAPACITY COMBINED BENDING & SHEAR AT ANY SAME SECTION (AISI C3.3.1)

$\left(\frac{\Omega_b M}{M_n} \right)^2 + \left(\frac{\Omega_v V}{V_n} \right)^2 = 0 < 1.0$ [Satisfactory]

Where $M = 0.00$ ft-kips, (0.75 included)
 $V = 0.00$ kips, (0.75 included)
 $V_n/\Omega_v = 0.61$ kips

(cont'd)

CHECK CAPACITY COMBINED AXIAL LOAD & BENDING (AISI C5 2.1)

$$\frac{\Omega_c P}{P_n} + \frac{\Omega_b C_m M}{M_n \alpha} = 1.00 < 1.0 \quad \text{[Satisfactory]}$$

Where M = 0.00 ft-kips, (0.75 included)

P = 2.62 kips

 $P_n/\Omega_c = 2.63$ kips $M_n/\Omega_b = 0.84$ in-kips $C_m = 1.0$

$$P_{Ex} = \frac{\pi^2 E I_x}{(K_x L_x)^2} = 12.49 \text{ kips}$$

$$\alpha = 1 - \frac{\Omega_c P}{P_{Ex}} = 0.623$$

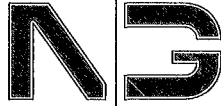
CHECK DEFLECTION

$$\Delta = \frac{5 w L^4}{384 E I} = 0.00 \text{ in} < \text{No limit.} \quad \text{[Satisfactory]}$$

NOTE : 1 STUD FLANGES SHALL BE FASTENED TO SHEATHING AT EACH SIDE OF WALL BEFORE VERTICAL LOAD ADDED

Technical References

- 1 AISI STANDARD, 2001 Edition American Iron and Steel Institute
- 2 SSMA, Product Technical Information, ICBO ER-4943P, Steel Stud Manufacturers Association, 2001



**NICHOLAS
PAUL
GEISLER
ARCHITECT**
N C A R B Certified

■ 1758 NW Brown Road
■ Lake City, FL 32055
■ 386/365-4355

03 APRIL 2013

BUILDING OFFICIAL
COLUMBIA COUNTY, BUILDING DEPT
COLUMBIA COUNTY COURTHOUSE ANNEX
LAKE CITY, FLORIDA 32055

RE. BELMONT ACADEMY
PERMIT Nr. _____

DEAR SIR:

PLEASE BE ADVISED OF THE FOLLOWING CHANGES AND CLEARIFICATIONS
FOR THE ABOVE REFERENCED PROJECT.

1. THE 2nd FLOOR AREA BEYOND THE IT AREA AND THE MECHANICAL
EQUIPMENT AREA SHALL BE UN-OCCUPIED AND FOR FUTURE DEVELOPMENT
AND OCCUPANCY UNDER SEPERATE BUILDING PERMIT ONLY
2. ALL DOORS CONNECTING THE IT LOFT AREA AND THE MECHANICAL
EQUIPMENT AREA TO THE UN-OCCUPIED 2nd FLOOR AREA SHALL BE
EQUIPTED WITH PANIC BAR DOOR HARDWARE FROM THE UN-OCCUPIED SIDE
TO THE IT/ME SIDE. ALL SUCH DOORS SHALL HAVE A SIGN PERMANENTLY
AFFIXED READING " RESTRICTED ACCESS - AUTHORIZED PERSONNEL ONLY"

SHOULD YOU HAVE ANY FURTHER QUESTIONS WITH THIS, PLEASE CALL FOR
ASSISTANCE

YOURS TRULY,
NICHOLAS PAUL GEISLER, ARCHITECT AR0007005

Troy Crews

From: David Boozer
Sent: Tuesday, April 02, 2013 8:44 AM
To: Troy Crews
Subject: RE: Belmont

Good morning,

Finally have gotten with WW Gay. We are good to go. Plans will be the same. No major changes for them.

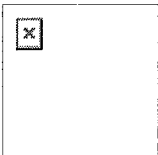
Thanks,

David L. Boozer

Fire Chief
Columbia County Fire Rescue
Office (386) 754-7071
Cell (386) 867-2979
david_boozer@columbiacountyfla.com
<http://www.columbiacountyfire.com>

From: Troy Crews
Sent: Monday, April 01, 2013 2:35 PM
To: David Boozer
Cc: Randy Jones
Subject: Belmont

Any word from Gay on sprinklers are we ok to permit second floor unoccupied?



M. Troy Crews
Assistant Building & Zoning Coordinator (C.B.O.)
Columbia County
Fax 386-758-2160
Phone 386-758-1040
troy_crews@columbiacountyfla.com