STRUCTURAL CALCULATIONS FOR:

Nolan Cannon Building
434 NW Corwin Glen Dr
lake city, FL 32055

Job # VLIT98733405

**(32' WIDE X 40' LONG BUILDING
WITH 8' EAVE HEIGHT
AND 3:12 ROOF PITCH)**

INDEX TO CALCULATIONS

Governing Code -- 8th Ed. (2023) Florida Building Code (Load Combinations per 8th Ed. (2023) FBC Section 1605.3.1)

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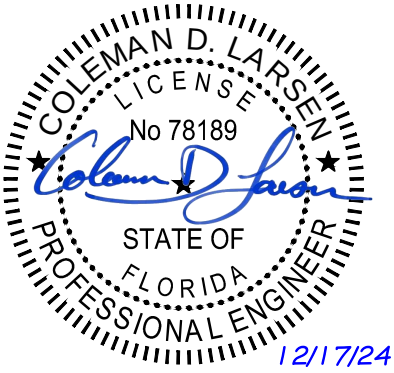


12/17/24

Distributor:
General Steel

Structural Engineering by:

Centerline Structural Engineering
284 N 110 W
Vineyard, UT 84059
engsupport@actbuildingsystems.com

JOB INFORMATION:

JOB NAME: Nolan Cannon
JOB ADDRESS: 434 NW Corwin Glen Dr
lake city, FL 32055
JOB NUMBER: VLIT98733405

MAIN BUILDING FRAME WIDTH (ft.):	32.00
OVERALL ENCLOSED BUILDING WIDTH (ft.):	32.00
BUILDING LENGTH (ft.):	40.00
BUILDING FRAME EAVE HEIGHT (ft.):	8.00
BUILDING FRAME ROOF SLOPE (?/12):	3.00
Corner Wall Zones (ft):	6.40
Sidewall Interior Zone (ft):	27.20

MATERIAL SPECIFICATIONS:

CONCRETE: 2500 psi (28-day Strength)
CONCRETE REINFORCING: ASTM A615, Grade 60 (Fy = 60,000 psi)
STRUCTURAL BOLTS: ASTM A325
METAL ROOF PANELS: ASTM A653, Grade 80 (Fy = 80,000 psi min.)
METAL WALL PANELS: ASTM A653, Grade 80 (Fy = 80,000 psi min.)
CEE AND ZEE COLD-FORMED STEEL: ASTM A1011, Grade 55 (Fy = 55,000 psi min.)

PROJECT PARAMETERS:

SITE CLASS:	D
RISK CATEGORY:	II

GOVERNING CODES: -- 8th Ed. (2023) Florida Building Code (Load Combinations per 8th Ed. (2023) FBC Section 1605.3.1)
-- AISI S100 (North American Specification for the Design of Cold-Formed Steel Structural Members)

VERTICAL LOADS:

DEAD LOADS:

METAL ROOF PANEL:	1.0	psf
PURLINS:	1.0	psf
MISC.:	3.0	psf
STEEL FRAMES:	1.0	psf
TOTAL ROOF DEAD LOAD:	6.0	psf
WALL DEAD LOAD:	3.0	psf

ROOF LIVE LOADS:

ROOF LIVE LOAD REDUCTION FACTORS (R1 x R2):	0.77	
DESIGN LIVE LOAD FOR CLEARSPAN FRAMES:	15.5	psf
DESIGN LIVE LOAD FOR PURLINS AND OTHER ELEMENTS:	20.0	psf

ROOF SNOW LOADS:

GROUND SNOW LOAD:	0.0	psf
SNOW LOAD IMPORTANCE FACTOR, Is:	1.00	
Ce, Exposure Factor:	1.00	
Ct, Thermal Factor:	1.00	
Cs, Slope Factor:	1.00	
DESIGN SLOPED ROOF SNOW LOAD:	0.0	psf

LATERAL LOADS:

SEISMIC LOADS:

(Based on ASCE 7-16, Chapter 12, using Site Class "D" and Risk Category "II")

	'Short' Period			1-sec. Period	
	PERP. TO SIDEWALL (TRANSVERSE)	PERP. TO ENDWALL (LONGITUDINAL)		PERP. TO SIDEWALL	PERP. TO ENDWALL
Ss:	0.088	0.088	S1:	0.052	0.052
Fa:	1.600	1.600	Fv:	2.400	2.400
$S_{MS} = (F_a \times S_s) =$	0.141	0.141	$S_{M1} =$	0.125	0.125
$S_{DS} = (2/3) \times S_{MS} =$	0.094	0.094	$S_{D1} =$	0.083	0.083
R =	3.0	3.0		3.0	3.0
REDUNDANCY FACTOR, rho =	1.00	1.00		1.00	1.00
SEISMIC IMPORTANCE FACTOR, Ie =	1.00	1.00		1.00	1.00
Cs =	0.031	0.031		0.027	0.027
Eh = Cs x W x rho=	0.031 W	0.031 W		0.027 W	0.027 W
Eh (ASD) = Eh * .7 =	0.021 W	0.021 W		0.018 W	0.018 W
W =TOTAL SEISMIC DESIGN DEAD LOAD (lbs.) =	10176	10176		10176	10176
LATERAL SYSTEM SEISMIC SHEAR EFFECT, Eh (lbs.) =	**214**	**214**		**183**	**183**
SEISMIC DESIGN CATEGORY (FOR BOTH PERIODS PER SEC. 1613.5.6.1):	A				
.8 x Ts =	0.71		(ASCE 11.4.6)		
Ta (sec.) =	0.20	0.13	(ASCE 12.8.2.1)		

WIND LOADS:

ULTIMATE WIND SPEED (mph) = 120
EXPOSURE = C
BUILDING ENCLOSURE TYPE: ENCLOSED

MEAN ROOF HEIGHT (ft.): 10.00

VELOCITY EXPOSURE COEFFICIENT, Kz = 0.850
WIND TOPOGRAPHICAL FACTOR, Kt = 1.000
WIND DIRECTIONALITY FACTOR, Kd = 0.850
GROUND ELEVATION FACTOR, Ke = 0.995

ULTIMATE WIND PRESSURE (psf): 26.49

MAIN FORCE RESISTING SYSTEM (MFRS) DESIGN WIND PRESSURES (Perp. to Sidewall):

	G * Cp ± Gcpi	ULTIMATE WIND PRESSURE (psf):	
Coefficient for Windward Wall Ballooning:	0.500	13.25	(pressure)
Coefficient for Leeward Wall Ballooning:	-0.605	-16.03	(suction)
Coefficient for Windward Roof Upward Ballooning:	-0.680	-18.02	(suction)
Coefficient for Leeward Roof Upward Ballooning:	-0.580	-15.38	(suction)
Coefficient for Windward Roof Downward Ballooning:	0.000	0.00	
Coefficient for Leeward Roof Downward Ballooning:	-0.580	-15.38	(suction)
Coefficient for Windward Wall Deflation:	0.860	22.78	(pressure)
Coefficient for Leeward Wall Deflation:	-0.245	-6.49	(suction)
Coefficient for Windward Roof Upward Deflation:	-0.320	-8.48	(suction)
Coefficient for Leeward Roof Upward Deflation:	-0.220	-5.84	(suction)
Coefficient for Windward Roof Downward Deflation:	0.120	3.17	(pressure)
Coefficient for Leeward Roof Downward Deflation:	-0.220	-5.84	(suction)

ALLOWABLE STRESS LATERAL SYSTEM WIND FORCE PERP. TO SIDEWALLS, W (lbs.) = 3168

MAIN FORCE RESISTING SYSTEM (MFRS) DESIGN WIND PRESSURES (Perp. to Endwall):

Int. Zone Wall Pressure Horiz. Coefficient: 1.105
Int. Zone Endwall Ultimate Wind Pressure (psf): 29.27

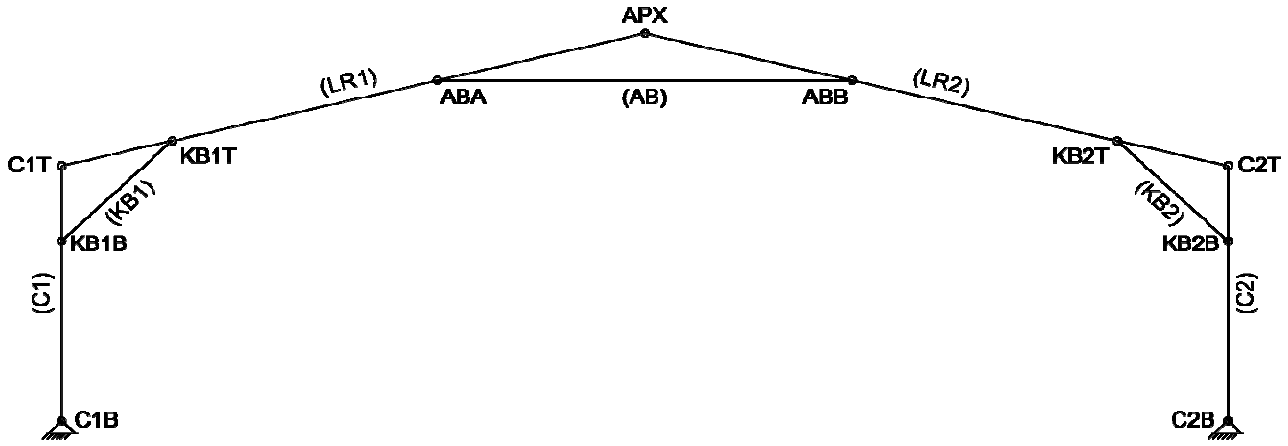
ALLOWABLE STRESS LATERAL SYSTEM WIND FORCE PERP. TO ENDWALLS, W (lbs.) = 2706

CLADDING AND COMPONENT ALLOWABLE STRESS DESIGN WIND PRESSURES:

	GCp ± Gcpi (FIELD)		Pressures (psf)	
Element	**INWARD**	**OUTWARD**	**INWARD**	**OUTWARD**
Roof Purlins:	0.549	-1.305	8.72	20.74
Sidewall Girts:	1.052	-1.152	16.71	18.30
Endwall Girts:	1.007	-1.107	16.00	17.59
Endwall Columns:	0.957	-1.057	15.21	16.80

CLEARSPAN FRAME ANALYSIS:

Analysis & Design Software:	ACT Dimensions version 2.28.2.1 by ACT Building Systems
Applicable Frame Numbers:	2, 3
Overall Nominal Frame Width:	32' - 0"
Nominal Eave Height:	8' - 0"
Roof Pitch:	3:12
Tributary Width:	13' - 4"
Design Roof Snow Load:	0.00 psf
Roof Live Load:	20.00 psf
Wind Speed AndAlso Exposure:	120 mph, C



X - JOINT LABEL (SEE RISA ANALYSIS NEXT PAGE)
(X) - MEMBER LABEL (SEE RISA ANALYSIS NEXT PAGE)

FRAME NODE AND MEMBER DIAGRAM

Cold Formed Steel Properties

	Label	E[psi]	G[psi]	Nu	Therm(/1E5 F)	Density[lb/ft^3]	Yield[psi]	Fu[psi]
1	CF_STL	29500000	11300000	0.3	0.65	490	55000	70000

Joint Coordinates

	Label	X[ft]	Y[ft]
1	C1B	1.000	0.000
2	C1T	1.000	7.220
3	C2B	31.002	0.000
4	C2T	31.002	7.220
5	APX	16.001	10.970
6	KB1B	1.000	5.090
7	KB1T	3.840	7.930
8	KB2B	31.002	5.090
9	KB2T	28.161	7.930
10	ABA	10.668	9.636
11	ABB	21.334	9.636

Member Primary Data

	Label	I Joint	J Joint	Shape	Type	DesignList	Material	DesignRules
1	C1	C1B	C1T	12in x 3.5in 12G CEE	Beam	CS	CF_STL	Typical
2	C2	C2B	C2T	12in x 3.5in 12G CEE	Beam	CS	CF_STL	Typical
3	KB1	KB1B	KB1T	4in x 2.5in 14G CEE	Beam	CS	CF_STL	Typical
4	KB2	KB2B	KB2T	4in x 2.5in 14G CEE	Beam	CS	CF_STL	Typical
5	AB	ABA	ABB	4in x 2.5in 14G CEE	Beam	CS	CF_STL	Typical
6	LR1	C1T	APX	12in x 3.5in 12G CEE	Beam	CS	CF_STL	Typical
7	LR2	C2T	APX	12in x 3.5in 12G CEE	Beam	CS	CF_STL	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[ft]	J Offset[ft]	Physical
1	C1		PIN	0.000	0.000	Yes
2	C2		PIN	0.000	0.000	Yes
3	KB1	PIN	PIN	0.000	0.000	
4	KB2	PIN	PIN	0.000	0.000	
5	AB	PIN	PIN	0.000	0.000	
6	LR1		PIN	0.499	0.000	Yes
7	LR2		PIN	0.499	0.000	Yes

Cold Formed Steel Design Parameters

	Label	Shape	Length[ft]	Lb y-y [ft]	Lcomp top[ft]	Lcomp bottom[ft]	L-Torque [ft]	K-in
1	C1	12in x 3.5in 12G CEE	7.220	4.000	7.220	4.000	4.000	0.8
2	C2	12in x 3.5in 12G CEE	7.220	4.000	4.000	7.220	4.000	0.8
3	KB1	4in x 2.5in 14G CEE	4.016	4.016	4.016	4.016	4.016	
4	KB2	4in x 2.5in 14G CEE	4.016	4.016	4.016	4.016	4.016	
5	AB	4in x 2.5in 14G CEE	10.666	10.666	10.666	10.666	10.666	
6	LR1	12in x 3.5in 12G CEE	15.462	3.837	7.750	3.837	3.837	0.8
7	LR2	12in x 3.5in 12G CEE	15.462	3.837	3.837	7.750	3.837	0.8

Basic Load Cases

	BLC Description	Category	Joint	Point	Distributed
1	Roof Dead	DL	0	0	2
2	Roof Snow	SL	0	0	0
3	Roof Live	RLL	0	0	2
4	Wall Dead	DL	0	0	0
5	Floor Dead	DL	0	0	0
6	Floor Live	LL	0	0	0
7	Wind To Right - Upward Balooning	OL1	0	0	6
8	Wind To Right - Upward Deflation	OL2	0	0	6
9	Wind To Right - Downward Balooning	OL3	0	0	4
10	Wind To Right - Downward Deflation	OL4	0	0	6
11	Wind To Left - Upward Balooning	OL5	0	0	6
12	Wind To Left - Upward Deflation	OL6	0	0	6
13	Wind To Left - Downward Balooning	OL7	0	0	4
14	Wind To Left - Downward Deflation	OL8	0	0	6
15	Earthquake+	None	0	0	4
16	Earthquake-	None	0	0	4

Member Distributor Loads (BLC 1 : Roof Dead)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	LR1	Y	-80.000	-80.000	-0.000	15.462
2	LR2	Y	-80.000	-80.000	-0.000	15.462

Member Distributor Loads (BLC 3 : Roof Live)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	LR1	Y	-200.065	-200.065	-0.000	15.462
2	LR2	Y	-200.065	-200.065	-0.000	15.462

Member Distributor Loads (BLC 7 : Wind To Right - Upward Balooning)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	176.835	176.835	0.000	7.220
2	C2	X	213.970	213.970	0.000	7.220
3	LR1	X	-58.352	-58.352	-0.000	15.462
4	LR1	Y	233.407	233.407	-0.000	15.462
5	LR2	X	49.787	49.787	-0.000	15.462
6	LR2	Y	199.149	199.149	-0.000	15.462

Member Distributor Loads (BLC 8 : Wind To Right - Upward Deflation)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	304.156	304.156	0.000	7.220
2	C2	X	86.649	86.649	0.000	7.220
3	LR1	X	-27.472	-27.472	-0.000	15.462
4	LR1	Y	109.887	109.887	-0.000	15.462
5	LR2	X	18.907	18.907	-0.000	15.462
6	LR2	Y	75.630	75.630	-0.000	15.462

Member Distributor Loads (BLC 9 : Wind To Right - Downward Balooning)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	176.835	176.835	0.000	7.220
2	C2	X	213.970	213.970	0.000	7.220
3	LR2	X	49.787	49.787	-0.000	15.462
4	LR2	Y	199.149	199.149	-0.000	15.462

Member Distributor Loads (BLC 10 : Wind To Right - Downward Deflation)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	304.156	304.156	0.000	7.220
2	C2	X	86.649	86.649	0.000	7.220
3	LR1	X	10.262	10.262	-0.000	15.462
4	LR1	Y	-41.047	-41.047	-0.000	15.462
5	LR2	X	18.907	18.907	-0.000	15.462
6	LR2	Y	75.630	75.630	-0.000	15.462

Member Distributor Loads (BLC 11 : Wind To Left - Upward Balooning)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	-213.970	-213.970	0.000	7.220
2	C2	X	-176.835	-176.835	0.000	7.220
3	LR1	X	-49.787	-49.787	-0.000	15.462
4	LR1	Y	199.149	199.149	-0.000	15.462
5	LR2	X	58.352	58.352	-0.000	15.462
6	LR2	Y	233.407	233.407	-0.000	15.462

Member Distributor Loads (BLC 12 : Wind To Left - Upward Deflation)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	-86.649	-86.649	0.000	7.220
2	C2	X	-304.156	-304.156	0.000	7.220
3	LR1	X	-18.907	-18.907	-0.000	15.462
4	LR1	Y	75.630	75.630	-0.000	15.462
5	LR2	X	27.472	27.472	-0.000	15.462
6	LR2	Y	109.887	109.887	-0.000	15.462

Member Distributor Loads (BLC 13 : Wind To Left - Downward Balooning)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	-213.970	-213.970	0.000	7.220
2	C2	X	-176.835	-176.835	0.000	7.220
3	LR1	X	-49.787	-49.787	-0.000	15.462
4	LR1	Y	199.149	199.149	-0.000	15.462

Member Distributor Loads (BLC 14 : Wind To Left - Downward Deflation)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	-86.649	-86.649	0.000	7.220
2	C2	X	-304.156	-304.156	0.000	7.220
3	LR1	X	-18.907	-18.907	-0.000	15.462
4	LR1	Y	75.630	75.630	-0.000	15.462
5	LR2	X	-10.262	-10.262	-0.000	15.462
6	LR2	Y	-41.047	-41.047	-0.000	15.462

Member Distributor Loads (BLC 15 : Earthquake+)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	1.252	1.252	0.000	7.220
2	C2	X	1.252	1.252	0.000	7.220
3	LR1	X	2.504	2.504	-0.000	15.462
4	LR2	X	2.504	2.504	-0.000	15.462

Member Distributor Loads (BLC 16 : Earthquake-)

	Member Label	Direction	Start Mag[lb/ft]	End Mag[lb/ft]	Start Loc[ft/%]	End Loc[ft/%]
1	C1	X	-1.252	-1.252	0.000	7.220
2	C2	X	-1.252	-1.252	0.000	7.220
3	LR1	X	-2.504	-2.504	-0.000	15.462
4	LR2	X	-2.504	-2.504	-0.000	15.462

Load Combinations

	Description	PDelta	SRSS	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL ONLY			DL	1						
2	FLL ONLY			LL	1						
3	IBC 16-9			DL	1	LL	1				
4	IBC 16-10 (a)			DL	1	RLL	1				
5	IBC 16-10 (b)			DL	1	SL	1				
6	IBC 16-11 (a)			DL	1	LL	0.75	RLL	0.75		
7	IBC 16-11 (b)			DL	1	LL	0.75	SL	0.75		
8	IBC 16-12 (a) 1			DL	1	OL1	0.6				
9	IBC 16-12 (a) 2			DL	1	OL2	0.6				
10	IBC 16-12 (a) 3			DL	1	OL3	0.6				
11	IBC 16-12 (a) 4			DL	1	OL4	0.6				
12	IBC 16-12 (a) 5			DL	1	OL5	0.6				
13	IBC 16-12 (a) 6			DL	1	OL6	0.6				
14	IBC 16-12 (a) 7			DL	1	OL7	0.6				
15	IBC 16-12 (a) 8			DL	1	OL8	0.6				
16	IBC 16-12 (b) 1			DL	1	15	0.7				
17	IBC 16-12 (b) 2			DL	1	16	0.7				
18	IBC 16-13 (a) 1			DL	1	LL	0.75	RLL	0.75	OL1	0.45
19	IBC 16-13 (a) 2			DL	1	LL	0.75	RLL	0.75	OL2	0.45
20	IBC 16-13 (a) 3			DL	1	LL	0.75	RLL	0.75	OL3	0.45
21	IBC 16-13 (a) 4			DL	1	LL	0.75	RLL	0.75	OL4	0.45
22	IBC 16-13 (a) 5			DL	1	LL	0.75	RLL	0.75	OL5	0.45
23	IBC 16-13 (a) 6			DL	1	LL	0.75	RLL	0.75	OL6	0.45
24	IBC 16-13 (a) 7			DL	1	LL	0.75	RLL	0.75	OL7	0.45
25	IBC 16-13 (a) 8			DL	1	LL	0.75	RLL	0.75	OL8	0.45
26	IBC 16-13 (b) 1			DL	1	LL	0.75	SL	0.75	OL1	0.45
27	IBC 16-13 (b) 2			DL	1	LL	0.75	SL	0.75	OL2	0.45
28	IBC 16-13 (b) 3			DL	1	LL	0.75	SL	0.75	OL3	0.45
29	IBC 16-13 (b) 4			DL	1	LL	0.75	SL	0.75	OL4	0.45
30	IBC 16-13 (b) 5			DL	1	LL	0.75	SL	0.75	OL5	0.45
31	IBC 16-13 (b) 6			DL	1	LL	0.75	SL	0.75	OL6	0.45
32	IBC 16-13 (b) 7			DL	1	LL	0.75	SL	0.75	OL7	0.45
33	IBC 16-13 (b) 8			DL	1	LL	0.75	SL	0.75	OL8	0.45
34	IBC 16-14 (a) 1			DL	1	LL	0.75	SL	0.75	15	0.525
35	IBC 16-14 (a) 2			DL	1	LL	0.75	SL	0.75	16	0.525
36	IBC 16-15 (a) 1			DL	0.6	OL1	0.6				
37	IBC 16-15 (a) 2			DL	0.6	OL2	0.6				

Load Combinations (continued)

	Description	PDelta	SRSS	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
38	IBC 16-15 (a) 3			DL	0.6	OL3	0.6				
39	IBC 16-15 (a) 4			DL	0.6	OL4	0.6				
40	IBC 16-15 (a) 5			DL	0.6	OL5	0.6				
41	IBC 16-15 (a) 6			DL	0.6	OL6	0.6				
42	IBC 16-15 (a) 7			DL	0.6	OL7	0.6				
43	IBC 16-15 (a) 8			DL	0.6	OL8	0.6				
44	IBC 16-16 (a) 1			DL	0.6	15	0.7				
45	IBC 16-16 (a) 2			DL	0.6	16	0.7				

Envelope Joint Reactions

	Joint		X[lb]	LC	Y[lb]	LC	Moment[ft-lb]	LC
1	C1B	max	2383	24	4191	4	0	36
2	C1B	min	-1411	36	-1478	36	-0	23
3	C2B	max	1411	40	4191	4	0	42
4	C2B	min	-2383	20	-1478	40	-0	25
5	Total	max	2140	42	8381	4	0	38
6	Total	min	-2140	10	-2447	36	-0	25

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	Shear[lb]	LC	Moment[ft-lb]	LC
1	C1	1	max	4191	4	2383	24	0	36
2		1	min	-1478	36	-1411	36	-0	23
3	C1	2	max	2372	38	2840	36	0	15
4		2	min	-4212	25	-5550	4	-0	38
5	C2	1	max	4191	4	1411	40	0	42
6		1	min	-1478	40	-2383	20	-0	25
7	C2	2	max	2372	42	5550	4	0	39
8		2	min	-4212	21	-2840	40	-0	15
9	KB1	1	max	11133	4	0	45	0	1
10		1	min	-4929	36	0	1	0	1
11	KB1	2	max	11133	4	0	45	0	1
12		2	min	-4929	36	0	1	0	1
13	KB2	1	max	11133	4	0	45	0	1
14		1	min	-4929	40	0	1	0	1
15	KB2	2	max	11133	4	0	45	0	1
16		2	min	-4929	40	0	1	0	1
17	AB	1	max	1036	40	0	45	0	1
18		1	min	-5227	4	0	1	0	1
19	AB	2	max	1036	40	0	45	0	1
20		2	min	-5227	4	0	1	0	1
21	LR1	1	max	3242	36	2808	24	0	14
22		1	min	-6329	25	-1789	38	-0	21
23	LR1	2	max	7324	4	1831	4	0	36
24		2	min	-2164	36	-851	42	-0	4
25	LR2	1	max	3242	40	1789	42	0	43
26		1	min	-6329	21	-2808	20	-0	11
27	LR2	2	max	7324	4	851	38	0	40
28		2	min	-2164	40	-1831	4	-0	4

AISI S100-16 : ASD Cold Formed Steel Code Checks

	Member	Shape	H1.2-1 Check	Loc[ft]	LC	H2-1 Check	Loc[ft]	LC
1	C1	12in x 3.5in 12G CEE	0.92	5.090	3	0.90	5.090	3
2	C2	12in x 3.5in 12G CEE	0.92	5.090	3	0.90	5.090	3
3	KB1	4in x 2.5in 14G CEE	0.87	4.016	3	0.00	4.016	1
4	KB2	4in x 2.5in 14G CEE	0.87	4.016	3	0.00	4.016	1
5	AB	4in x 2.5in 14G CEE	0.35	10.666	39	0.00	10.666	1
6	LR1	12in x 3.5in 12G CEE	0.67	9.965	3	0.37	9.965	19
7	LR2	12in x 3.5in 12G CEE	0.67	9.965	3	0.37	9.965	19

AISI S100-16 : ASD Cold Formed Steel Allowable Member Load

	Member	Shape	Pn/Om[lb]	Tn/Om[lb]	Mn/Om[lb-ft]	Cb	Cm
1	C1	12in x 3.5in 12G CEE	28187	64173	15269	1	1
2	C2	12in x 3.5in 12G CEE	28187	64173	15269	1	1
3	KB1	4in x 2.5in 14G CEE	12794	21256	2265	1	1
4	KB2	4in x 2.5in 14G CEE	12794	21256	2265	1	1
5	AB	4in x 2.5in 14G CEE	2946	21256	1276	1	1
6	LR1	12in x 3.5in 12G CEE	27092	64173	15269	1	1
7	LR2	12in x 3.5in 12G CEE	27092	64173	15269	1	1

FRAME BRACE END SCREW CONNECTION DESIGN

Brace results apply at Frames 2, 3

Gable Frame Columns: Single 12in x 3.5in 12G CEE
Gable Frame Rafters: Single 12in x 3.5in 12G CEE
Gable Frame Typ. Knee Braces: Single 4in x 2.5in 14G CEE
Gable Frame Apex Braces: Single 4in x 2.5in 14G CEE
Knee Brace Vert. Intersection Dimension per Detail A/2 (ft.): 5' - 4 1/4"
Knee Brace Horiz. Intersection Dimension per Detail A/2 (ft.): 1' - 11 1/2"
Apex Brace Horiz. Intersection Dimension per Detail B/2 (ft.): 3' - 11 1/4"

Screw Size: #14
Ultimate Single Shear Screw Strength (lbs.): 2450
Ω = 2.5

	n Screws	R3d (group effect factor)	V single screw (lbs.)	P (design allowable, lbs.)
Knee Brace	22	0.63	518	11406
Apex Brace	10	0.68	558	5577

MAX. KNEE BRACE FORCE (lbs.): **11133** (INSTALL (22) #14 SCREWS AT EACH END OF EACH KNEE BRACE)

MAX. APEX BRACE FORCE (lbs.): **5227** (INSTALL (10) #14 SCREWS AT EACH END OF EACH APEX BRACE)

FRAME BRACE END ALTERNATE BOLT CONNECTION DESIGN

NOTATIONS

Fu = Tensile strength of connected part (psi)
Fy = Yield strength of connected part (psi)
db = Nominal bolt diameter (in.)
g1 = Nominal gauge of thinnest connected part (in.)
t1 = Thickness of thinnest connected part (in.)
Pn = Nominal bearing strength per bolt (lbs.)

ALLOWABLE SHEAR BASED ON CONNECTED MATERIALS:

Fu (psi) = 70000 db = 0.625
Fy (psi) = 55000 g1 = 14
d/t = 8.93 t1 = 0.07
C = 3.00
Pn = 9188

Allowable shear based on connected material bearing (lbs.): 3700

Bolt Grade: A325
Allowable shear based on A325 bolt in shear (lbs.): 8283

Allowable Shear on Each Bolt (lbs.): **3700**

*** MAX. KNEE BRACE FORCE (lbs.):** **11133** (USE MIN. (4) 5/8" DIAM. A325 BOLTS AT EACH END OF EACH KNEE BRACE)

*** MAX. APEX BRACE FORCE (lbs.):** **5227** (USE MIN. (2) 5/8" DIAM. A325 BOLTS AT EACH END OF EACH APEX BRACE)

LATERAL FORCE RESISTANCE X-BRACING AND DIAPHRAGM ANALYSIS

Reports verifying diaphragm capacity available upon request.

'ENDWALL A' X-BRACING TOTAL SHEAR FORCE, ASD, LBS.:	**715**	(X-BRACING USED TO RESIST LOAD)
BAY #	2	
X-BRACING WIDTH (ft.):	14.50	
HEIGHT (ft.):	10.45	
SHEAR FORCE, ASD (lbs.):	715	
BASE UPLIFT TENSION, ASD (lbs.):	516	
X-BRACING TENSION, ASD (lbs.):	882	
STRAP SIZE:	(1) 1.5" x 14ga. strap	

'ENDWALL B' X-BRACING TOTAL SHEAR FORCE, ASD, LBS.:	**715**	(X-BRACING USED TO RESIST LOAD)
BAY #	2	
X-BRACING WIDTH (ft.):	14.50	
HEIGHT (ft.):	10.45	
SHEAR FORCE, ASD (lbs.):	715	
BASE UPLIFT TENSION, ASD (lbs.):	516	
X-BRACING TENSION, ASD (lbs.):	882	
STRAP SIZE:	(1) 1.5" x 14ga. strap	

'SIDEWALL A' TOTAL SHEAR FORCE, ASD, LBS.:	**1353**	(SHEETING DIAPHRAGM ACTION USED TO RESIST LOAD)
PANEL #:	1	
PANEL WIDTH (ft.):	40.00	
PANEL WIDTH RELATIVE STIFFNESS:	1600	
HEIGHT (ft.):	8.00	
MAX. PANEL SHEAR FORCE, ASD (lbs.):	1353	
PANEL SHEAR, ASD (plf):	34	
ALLOWABLE PANEL SHEAR, ASD (plf):	258	
	OK	
MAX. BASE OF PANEL UPLIFT, UNFACTORED (lbs.):	451	
D.L. TRIB. TO END OF PANEL, UNFACTORED (lbs.):	1680	
BASE OF NET PANEL UPLIFT, ULT (lbs.):	0	
PANEL EDGE CONCRETE ANCHOR:	N/A, NO NET PANEL UPLIFT	

'SIDEWALL B' TOTAL SHEAR FORCE, ASD, LBS.:	**1353**	(SHEETING DIAPHRAGM ACTION USED TO RESIST LOAD)
PANEL #:	1	
PANEL WIDTH (ft.):	40.00	
PANEL WIDTH RELATIVE STIFFNESS:	1600	
HEIGHT (ft.):	8.00	
MAX. PANEL SHEAR FORCE, ASD (lbs.):	1353	
PANEL SHEAR, ASD (plf):	34	
ALLOWABLE PANEL SHEAR, ASD (plf):	258	
	OK	
MAX. BASE OF PANEL UPLIFT, UNFACTORED (lbs.):	451	
D.L. TRIB. TO END OF PANEL, UNFACTORED (lbs.):	1680	
BASE OF NET PANEL UPLIFT, ULT (lbs.):	0	
PANEL EDGE CONCRETE ANCHOR:	N/A, NO NET PANEL UPLIFT	

'ROOF' TOTAL SHEAR FORCE, ASD, LBS.:	**701**
PANEL #:	1
PANEL WIDTH (ft.):	40.00
PANEL WIDTH RELATIVE STIFFNESS:	1600
HEIGHT (ft.):	16.49
MAX. PANEL SHEAR FORCE, ASD (lbs.):	701
PANEL SHEAR, ASD (plf):	18
ALLOWABLE PANEL SHEAR, ASD (plf):	215
	OK
REACTION AT PANEL END, ASD:	289

(SHEETING DIAPHRAGM ACTION USED TO RESIST LOAD)

ROOF PURLIN DESIGN

MEMBER SIZE USED -->	6in x 2.125/2.375in 16G ZEE	
	ALL BAYS	
SPAN (ft.):	13.33	
DOWNWARD LOAD TRIB. WIDTH (ft.):	3.84	
DOWNWARD DISTRIBUTED LOAD (lbs./ft.):	93	
UPWARD LOAD TRIB. WIDTH (ft.):	3.84	
UPWARD DISTRIBUTED LOAD (lbs./ft.):	72	
DESIGN DOWNWARD BENDING MOMENT, Mu (ft.-lbs.):	3453	
DESIGN DOWNWARD END SHEAR (lbs.):	620	
DESIGN UPWARD BENDING MOMENT, Mu (ft.-lbs.):	2679	
DESIGN UPWARD END SHEAR (lbs.):	530	
PURLIN BRACING LOCATIONS:	M/S	
INSIDE FLANGE UNBRACED LENGTH (FT.):	6.50	
(Mn values from NASPEC Section C3.1) -->		
+Mn allow (ft.-lbs.):	4718	
-Mn allow (ft.-lbs.):	4336	
	OK	
DOWNWARD DEFLECTION (in.):	0.57	
	= (L/276)	
UPWARD DEFLECTION (in.):	0.44	
	= (L/357)	
	6in x 3.5in 14G Eave Strut Typ. OK	

WALL GIRT DESIGN

	SIDEWALL 'A' AND 'B' GIRT DESIGN
MEMBER SIZE USED -->	6in x 2.125/2.375in 16G ZEE
	ALL BAYS
BAY WIDTH (ft.):	13.33
MAX. GIRT SPAN (ft.):	13.33
TRIB. WIDTH (ft.):	4.00
INWARD DISTRIBUTED LOAD (lbs./ft.):	67
OUTWARD DISTRIBUTED LOAD (lbs./ft.):	73
DESIGN INWARD BENDING MOMENT, Mu (ft.-lbs.):	2524
DESIGN INWARD END SHEAR (lbs.):	474
DESIGN OUTWARD BENDING MOMENT, Mu (ft.-lbs.):	2717
DESIGN OUTWARD END SHEAR (lbs.):	519
GIRT BRACING LOCATIONS:	M/S
INSIDE FLANGE UNBRACED LENGTH (FT.):	6.67
(Mn values from NASPEC Section C3.1) -->	
+Mn allow (ft.-lbs.):	4718
-Mn allow (ft.-lbs.):	4336
	OK
INWARD DEFLECTION (in.):	0.41
	= (L/384)
OUTWARD DEFLECTION (in.):	0.45
	= (L/351)

	ENDWALL 'A' GIRT DESIGN		ENDWALL 'B' GIRT DESIGN	
MEMBER SIZE USED -->	6in x 2.125/2.375in 12G ZEE		6in x 2.125/2.375in 12G ZEE	
	BAY #1	BAY #2	BAY #1	BAY #2
BAY WIDTH (ft.):	14.50	14.50	14.50	14.50
MAX. GIRT SPAN (ft.):	14.50	14.50	14.50	14.50
TRIB. WIDTH (ft.):	6.00	6.00	6.00	6.00
INWARD DISTRIBUTED LOAD (lbs./ft.):	96	96	96	96
OUTWARD DISTRIBUTED LOAD (lbs./ft.):	106	106	106	106
DESIGN INWARD BENDING MOMENT, Mu (ft.-lbs.):	4246	4246	4246	4246
DESIGN INWARD END SHEAR (lbs.):	727	727	727	727
DESIGN OUTWARD BENDING MOMENT, Mu (ft.-lbs.):	4668	4668	4668	4668
DESIGN OUTWARD END SHEAR (lbs.):	799	799	799	799
GIRT BRACING LOCATIONS:	M/S	M/S	M/S	M/S
INSIDE FLANGE UNBRACED LENGTH (FT.):	7.25	7.25	7.25	7.25
(Mn values from NASPEC Section C3.1) -->				
+Mn allow (ft.-lbs.):	9500	9500	9500	9500
-Mn allow (ft.-lbs.):	7500	7500	7500	7500
	OK	OK	OK	OK
INWARD DEFLECTION (in.):	0.48	0.48	0.48	0.48
	= (L/359)	= (L/359)	= (L/359)	= (L/359)
OUTWARD DEFLECTION (in.):	0.53	0.53	0.53	0.53
	= (L/326)	= (L/326)	= (L/326)	= (L/326)

ENDWALL COLUMN DESIGN

LOCATION:	**ENDWALL 'A' (LEFT ENDWALL)**
COLUMN #:	1-2
END BAY (Y/N?):	Y
DISTANCE FROM BLDG. CORNER:	16.00
BAY WIDTH TO SIDE 1 (ft.):	16.00
BAY WIDTH TO SIDE 2 (ft.):	16.00
MAX. ENDWALL COLUMN HT. (ft.):	11.48
MAX. TRIB. WIDTH (ft.):	15.00
MAX. DISTRIBUTED LOAD (plf):	252
MAX DESIGN MOMENT, with Ωf = 1.67 (ft.-lbs.):	6939
V horiz. (lbs.):	1447
# OF #14 TOP END CONN. SCREWS:	6
COMPOSITE DESIGN (Y/N)?	N
ENDWALL COLUMN MEMBER -->	Sgl. 10in x 3.5in 14G CEE
DESIGN SECTION -->	10in x 3.5in 14G CEE
FLYBRACING ELEV. (ft.):	---
INSIDE FLANGE UNBRACED LENGTH (FT.):	11.48
(Mn values from NASPEC Section C3.1) -->	
+Mn allow =	12673
-Mn allow =	9264
	OK
DEFLECTION :	0.18
DEFLECTION (L/?):	L/778
	OK

LOCATION:	**ENDWALL 'B' (RIGHT ENDWALL)**
COLUMN #:	1-2
END BAY (Y/N?):	Y
DISTANCE FROM BLDG. CORNER:	16.00
BAY WIDTH TO SIDE 1 (ft.):	16.00
BAY WIDTH TO SIDE 2 (ft.):	16.00
MAX. ENDWALL COLUMN HT. (ft.):	11.48
MAX. TRIB. WIDTH (ft.):	15.00
MAX. DISTRIBUTED LOAD (plf):	252
MAX DESIGN MOMENT, with Ωf = 1.67 (ft.-lbs.):	6939
V horiz. (lbs.):	1447
# OF #14 TOP END CONN. SCREWS:	6
COMPOSITE DESIGN (Y/N)?	N
ENDWALL COLUMN MEMBER -->	Sgl. 10in x 3.5in 14G CEE
DESIGN SECTION -->	10in x 3.5in 14G CEE
FLYBRACING ELEV. (ft.):	---
INSIDE FLANGE UNBRACED LENGTH (FT.):	11.48
(Mn values from NASPEC Section C3.1) -->	
+Mn allow =	12673
-Mn allow =	9264
	OK
DEFLECTION :	0.18
DEFLECTION (L/?):	L/778
	OK

OPENING FRAMING DESIGN

OPENING #	WALL LOCATION	BAY #	DESIGN WIND PRESSURE (psf):	BAY WIDTH (ft.)	MAX. DIST. FROM EDGE OF BAY TO OPENING C.L.	OPENING WIDTH (ft.)	OPENING HEIGHT (ft.)	DESIGN JAMB HEIGHT (ft.)	JAMB MOMENT (ft.-lbs.)	JAMB MEMBER	ALLOWABLE MOMENT FOR JAMB MEMBER (ft.-lbs.)		HEADER GIRT LENGTH (ft.)	HEADER GIRT MOMENT (ft.-lbs.)		HEADER GIRT MEMBER	HEADER GIRT MEMBER (SINGLE OR DOUBLE)	ALLOWABLE MOMENT FOR HEADER GIRT (ft.-lbs.)	BRACING (ft.)		OPENING #
1	Endwall A	1	18.29	14.50	13.33	3.33	7.33			---			12.48	3854		6in x 2.125/2.375in 12G ZEE	SGL.	9264	5.23	OK	1

FOUNDATION DESIGN

CONCRETE STRENGTH (f'c):	2500	psi
REINF. YIELD STRENGTH:	60000	psi
ALLOW. SOIL PRESSURE:	1500	psf

NOTE: FOOTING SHALL EXTEND BELOW LOCAL FROST DEPTH. CONSULT LOCAL BUILDING DEPARTMENT FOR REQUIREMENTS.

SIDEWALL CONTINUOUS FOOTING

CONCRETE SLAB THICKNESS	4	in. (MIN.)	
DEPTH OF FTG. BELOW GRADE	12	in. (MIN.)	
DESIGN SOIL PRESSURE	1350	psf	
FOOTING WIDTH	12	IN. (MIN.)	
FOOTING DEPTH	12	IN. (MIN.)	
DOWNWARD LOAD AT C.S. FRAME	4470	lbs.	
FOOTING AREA REQUIRED	3.3	ft.^2	
NET UPLIFT LOAD AT C.S. FRAME	1257	lbs. *	
NET UPLIFT FROM SIDEWALL X-BRACE	0	lbs.	
DESIGN d top	10.0	in.	
DESIGN d bottom	8.5	in.	
LENGTH FTG. REQ'D. (DL+RLL)	3.3	ft.	**OK**
LENGTH FTG. REQ'D (UPLIFT)	4.6	ft.	**OK**

		TOP	BOTTOM	
Mu DESIGN MOMENT (ft.-lbs.):		1005	3145	(ACTUAL MOMENT AT ANCHOR BOLT LOCATION = 717 FT.-LBS., f(t) top = 29 psi AND f(r) = 375 psi, THEREFORE DESIGN
	a=	0.05	0.20	ANCHOR BOLTS IN UNCRACKED CONCRETE (SEE CALC PG. F3)
AREA OF REINF. REQUIRED:		0.03	0.11	(FROM A.C.I. FLEXURE TABLES)
AREA OF REINF. PROVIDED:		**0.20**	**0.20**	**OK**

USE -----> 12" WIDE BY 12" DEEP FOOTING W/ (1)-#4 TOP AND (1)-#4 BTM.

(NO SHEAR REINF. REQ'D)

FOUNDATION DESIGN

CONCRETE STRENGTH (f'c):	2500	psi
REINF. YIELD STRENGTH:	60000	psi
ALLOW. SOIL PRESSURE:	1500	psf

NOTE: FOOTING SHALL EXTEND BELOW LOCAL FROST DEPTH. CONSULT LOCAL BUILDING DEPARTMENT FOR REQUIREMENTS.

ENDWALL CONTINUOUS FOOTING

CONCRETE SLAB THICKNESS	4	in. (MIN.)	
DEPTH OF FTG. BELOW GRADE	12	in. (MIN.)	
DESIGN SOIL PRESSURE	1350	psf	
FOOTING WIDTH	12	IN. (MIN.)	
FOOTING DEPTH	12	IN. (MIN.)	
DOWNWARD LOAD AT ENDWALL COLUMN	1747	lbs.	
FOOTING AREA REQUIRED	1.3	ft.^2	
NET UPLIFT LOAD FROM ENDWALL COLUMN	1874	lbs.	
NET UPLIFT FROM ENDWALL X-BRACE	378	lbs.	
DESIGN d top	10.0	in.	
DESIGN d bottom	8.5	in.	
LENGTH FTG. REQ'D. (DL+RLL)	1.3	ft.	**OK**
LENGTH FTG. REQ'D (UPLIFT)	6.8	ft.	**OK**

		TOP	BOTTOM	
Mu DESIGN MOMENT (ft.-lbs.):		2234	480	(ACTUAL MOMENT AT ANCHOR BOLT LOCATION = 1595 FT.-LBS., f(t) top = 66 psi AND f(r) = 375 psi, THEREFORE DESIGN
	a=	0.12	0.03	ANCHOR BOLTS IN UNCRACKED CONCRETE (SEE CALC PG. F4)
AREA OF STEEL REQ.		0.07	0.02	(FROM A.C.I. FLEXURE TABLES)
AREA OF STL. PROVIDED		**0.20**	**0.20**	**OK**

USE -----> 12" WIDE BY 12" DEEP FOOTING W/ (1)-#4 TOP AND (1)-#4 BTM.

(NO SHEAR REINF. REQ'D)

CONCRETE ANCHOR DESIGN PER ACI 318-19, CHAPTER 17

ANCHOR LOCATION: SIDEWALL C.S. FRAME COLUMNS

DESIGN LOADS (from RISA analysis), ALLOWABLE STRESS LEVELS :	SIDE #1	SIDE #2
D.L. SHEAR FORCE (LBS.), POSITIVE SHEAR LOADS ARE TOWARD EDGE OF SLAB:	**663**	**663**
D.L. VERTICAL FORCE (LBS.):	**-1197**	**-1197**
F.L.L. SHEAR FORCE (LBS.):	**0**	**0**
F.L.L. VERTICAL FORCE (LBS.):	**0**	**0**
RLL SHEAR FORCE (LBS.):	**1659**	**1659**
RLL VERTICAL FORCE (LBS.):	**-2994**	**-2994**
SL SHEAR FORCE (LBS.):	**0**	**0**
SL VERTICAL FORCE (LBS.):	**0**	**0**
WIND L-R SHEAR FORCE (LBS.):	**-1809**	**-193**
WIND L-R VERTICAL FORCE (LBS.):	**2196**	**1687**
WIND R-L SHEAR FORCE (LBS.):	**-193**	**-1809**
WIND R-L VERTICAL FORCE (LBS.):	**1687**	**2196**
SEISMIC SHEAR FORCE (LBS.):	**33**	**-33**
SEISMIC VERTICAL FORCE (LBS.):	**-18**	**18**

CONCRETE ANCHOR MANUFACTURER AND TYPE: DEWALT 'SCREW-BOLT+' ANCHOR
(VALUES FROM ICC REPORT ESR-3889, EFF. THRU 11/2025)
STEEL CONCRETE ANCHOR TENSILE STRENGTH: 115000 PSI
NORMAL WT. CONCRETE STRENGTH (f'c): 2500 PSI
CONCRETE ANCHOR TENSION REINFORCING PROVIDED? **N**
CONCRETE ANCHOR SHEAR REINFORCING PROVIDED? **N**

ACI 318-19 Table 5.3.1:	(Eqn. 9-2)	(Eqn. 9-3)	(Eqn. 9-4)	(Eqn. 9-5)	(Eqn. 9-6)	(Eqn. 9-7)
GOVERNING LOAD COMB. EQUATION:	(9-2a.2)	(9-3a.2)	(9-4a.2)	(9-5a.1)	(9-6b.2)	(9-7a.1)
ULT. SHEAR FORCE (LBS.), Vu:	**1626**	**3450**	**1505**	**843**	**-1212**	**644**
ULT. TENSION FORCE (LBS.), Tu:	**0**	**0**	**0**	**0**	**1119**	**0**
CONCRETE ANCHOR TYPE (diam. x length):	**.5X3.0**					
CONCRETE ANCHOR DIAM. (IN.):	**0.500**	**0.500**	**0.500**	**0.500**	**0.500**	**0.500**
CONCRETE ANCHOR LENGTH (IN.):	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
NUMBER OF CONCRETE ANCHORS:	**2**	**2**	**2**	**2**	**2**	**2**
SPECIAL INSPECTION REQUIRED?	**N**	**N**	**N**	**N**	**N**	**N**
X' CONCRETE ANCHOR SPACING:	**6.00**	**6.00**	**6.00**	**6.00**	**6.00**	**6.00**
EFFECTIVE EMBEDMENT:	**2.17**	**2.17**	**2.17**	**2.17**	**2.17**	**2.17**
LOAD EDGE DISTANCE, c1:	**8.00**	**8.00**	**8.00**	**8.00**	**36.00**	**8.00**
PERP. EDGE DISTANCE, c2:	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**
DEPTH OF CONCRETE EDGE (IN.):	**12.0**	**12.0**	**12.0**	**12.0**	**12.0**	**12.0**
CRACKED CONCRETE CONDITION (Y/N)?	**N**	**N**	**N**	**N**	**N**	**N**
e eccentricity (IN.) =	0.00	0.00	0.00	0.00	0.00	0.00
psi [ec,N] ((Eqn. 17.4.2.5a)) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [ed,N] ((Eqn. 17.4.2.7a, 17.4.2.7b)) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [c,N] ((Sec. 17.4.2.6)) =	1.40	1.40	1.40	1.40	1.40	1.40
psi [cp,N] (Eqn.17.4.2.7b, 17.4.3.1) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [c,P] (Sec. 17.4.3.6) =	1.40	1.40	1.40	1.40	1.40	1.40
V eccentricity (IN.) =	0.00	0.00	0.00	0.00	0.00	0.00
psi [ec,V] (Eqn. 17.5.2.5) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [ed,V] (Eqn. 17.5.2.6a, 17.5.2.6b) =	1.00	1.00	1.00	1.00	0.97	1.00
psi [c,V] (Sec. 17.5.2.7) =	1.40	1.40	1.40	1.40	1.40	1.40
ANo (IN.^2) =	42.4	42.4	42.4	42.4	42.4	42.4
AN (IN.^2) =	42.4	42.4	42.4	42.4	42.4	42.4
Nb (LBS.) =	3836	3836	3836	3836	3836	3836
Ncbg (LBS.) =	5370	5370	5370	5370	5370	5370
Ns (LBS.) =	40950	40950	40950	40950	40950	40950
Npn (LBS.) =	0	0	0	0	0	0
SEISMIC TENSION DUCTILITY FACTOR:	1.00	1.00	1.00	0.40	1.00	0.40
ΦNn (LBS.) =	**5370**	**5370**	**5370**	**2148**	**5370**	**2148**
	0.00%	0.00%	0.00%	0.00%	20.84%	0.00%
Avc (IN.^2) =	360.0	360.0	360.0	360.0	1296.0	360.0
Avco (IN.^2) =	288.0	288.0	288.0	288.0	5832.0	288.0
Vb (LBS.) =	7511	7511	7511	7511	71698	7511
Vcbg (LBS.) =	13144	13144	13144	13144	21562	13144
Vs (LBS.) =	17720	17720	17720	17720	17720	17720
SEISMIC SHEAR DUCTILITY FACTOR:	1.00	1.00	1.00	0.40	1.00	0.40
ΦVn (LBS.) =	**13144**	**13144**	**13144**	**5258**	**17720**	**5258**
	12.37%	26.25%	11.45%	16.03%	6.84%	12.24%
MAX. UNITY VALUE (Sec. 17.6):	0.12	0.26	0.11	0.16	0.21	0.12

MAX. UNITY: 0.26

USE -----> (2) - 1/2" DIAM. X 3" LONG DEWALT 'SCREW-BOLT+' ANCHOR CONCRETE ANCHORS IN 3.5 IN. DEEP HOLES

(SIDEWALL CONCRETE ANCHOR DESIGN GOVERNS AT THIS LOCATION)

CONCRETE ANCHOR DESIGN PER ACI 318-19, CHAPTER 17

ANCHOR LOCATION: ENDWALL COLUMNS

DESIGN LOADS AT ALLOWABLE STRESS LEVELS :

D.L. SHEAR FORCE (LBS.), POSITIVE SHEAR LOADS ARE TOWARD EDGE OF SLAB:	**1**
D.L. TENSION FORCE (LBS.):	**-615**
F.L.L. SHEAR FORCE (LBS.):	**0**
F.L.L. TENSION FORCE (LBS.):	**0**
SL (RLL) SHEAR FORCE (LBS.):	**0**
SL (RLL) TENSION FORCE (LBS.):	**-2051**
WIND SHEAR FORCE (LBS.):	**1447**
WIND TENSION FORCE (LBS.):	**2127**
SEISMIC SHEAR FORCE (LBS.):	**6**
SEISMIC TENSION FORCE (LBS.):	**0**

CONCRETE ANCHOR
MANUFACTURER AND TYPE: DEWALT 'SCREW-BOLT+' ANCHOR
(VALUES FROM ICC REPORT ESR-3889, EFF. THRU 11/2025)

STEEL ANCHOR TENSILE STRENGTH:	115000	PSI
NORMAL WT. CONCRETE STRENGTH:	2500	PSI
ANCHOR TENSION REINFORCING PROVIDED?	N	
ANCHOR SHEAR REINFORCING PROVIDED?	N	

ACI 318-19 Table 5.3.1:	(EQ. 9-2)	(EQ. 9-3)	(EQ. 9-4)	(EQ. 9-5)	(EQ. 9-6)	(EQ. 9-7)
ULT. SHEAR FORCE (LBS.), Vu:	**1**	**1159**	**1448**	**7**	**1448**	**7**
ULT. TENSION FORCE (LBS.), Tu:	**0**	**0**	**363**	**0**	**1573**	**0**
ANCHOR TYPE (diam. x length):	**.5X3.0**					
ANCHOR DIAM. (IN.):	**0.500**	**0.500**	**0.500**	**0.500**	**0.500**	**0.500**
ANCHOR LENGTH (IN.):	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
NUMBER OF ANCHORS:	**2**	**2**	**2**	**2**	**2**	**2**
SPECIAL INSPECTION REQUIRED?	**N**	**N**	**N**	**N**	**N**	**N**
X' ANCHOR SPACING:	**6.00**	**6.00**	**6.00**	**6.00**	**6.00**	**6.00**
EFFECTIVE EMBEDMENT:	**2.17**	**2.17**	**2.17**	**2.17**	**2.17**	**2.17**
LOAD EDGE DISTANCE, c1:	**8.00**	**8.00**	**8.00**	**8.00**	**8.00**	**8.00**
PERP. EDGE DISTANCE, c2:	**48.00**	**48.00**	**48.00**	**48.00**	**48.00**	**48.00**
DEPTH OF CONCRETE EDGE (IN.):	**12.0**	**12.0**	**12.00**	**12.00**	**12.00**	**12.00**
CRACKED CONCRETE CONDITION (Y/N)?	**N**	**N**	**N**	**N**	**N**	**N**
e eccentricity (IN.) =	0.00	0.00	0.00	0.00	0.00	0.00
psi [ec,N] ((Eqn. 17.4.2.5a)) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [ed,N] ((Eqn. 17.4.2.7a, 17.4.2.7b)) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [c,N] ((Sec. 17.4.2.6)) =	1.40	1.40	1.40	1.40	1.40	1.40
psi [cp,N] (Eqn.17.4.2.7b, 17.4.3.1) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [c,P] (Sec. 17.4.3.6) =	1.40	1.40	1.40	1.40	1.40	1.40
V eccentricity (IN.) =	0.00	0.00	0.00	0.00	0.00	0.00
psi [ec,V] (Eqn. 17.5.2.5) =	1.00	1.00	1.00	1.00	1.00	1.00
psi [ed,V] (Eqn. 17.5.2.6a, 17.5.2.6b) =	0.73	0.73	0.73	0.73	0.73	0.73
psi [c,V] (Sec. 17.5.2.7) =	1.40	1.40	1.40	1.40	1.40	1.40
ANo (IN.^2) =	42.4	42.4	42.4	42.4	42.4	42.4
AN (IN.^2) =	42.4	42.4	42.4	42.4	42.4	42.4
Nb (LBS.) =	3836	3836	3836	3836	3836	3836
Ncbg (LBS.) =	5370	5370	5370	5370	5370	5370
Ns (LBS.) =	40950	40950	40950	40950	40950	40950
Npn (LBS.) =	0	0	0	0	0	0
SEISMIC TENSION DUCTILITY FACTOR:	1.00	1.00	1.00	0.40	1.00	0.40
ΦNn (LBS.) =	**5370**	**5370**	**5370**	**2148**	**5370**	**2148**
	0.00%	0.00%	6.76%	0.00%	29.29%	0.00%
Avc (IN.^2) =	360.0	360.0	360.0	360.0	360.0	360.0
Avco (IN.^2) =	288.0	288.0	288.0	288.0	288.0	288.0
Vb (LBS.) =	7511	7511	7511	7511	7511	7511
Vcbg (LBS.) =	9639	9639	9639	9639	9639	9639
Vs (LBS.) =	17720	17720	17720	17720	17720	17720
SEISMIC SHEAR DUCTILITY FACTOR:	1.00	1.00	1.00	0.40	1.00	0.40
ΦVn (LBS.) =	**9639**	**9639**	**9639**	**3856**	**9639**	**3856**
	0.01%	12.02%	15.03%	0.18%	15.02%	0.17%
MAX. UNITY VALUE (Sec. 17.6):	0.00	0.12	0.15	0.00	0.29	0.00

MAX. UNITY: 0.29

USE -----> (2) - 1/2" DIAM. X 3" LONG DEWALT 'SCREW-BOLT+' ANCHOR ANCHORS IN 3.5 IN. DEEP HOLES

(ENDWALL ANCHOR DESIGN GOVERNS AT THIS LOCATION)

CORNERSTONE BUILDING BRANDS

TABLE 5 - ALLOWABLE UNIFORM LIVE LOADS FOR "R" PANEL (psf) [1,2,3,4,5,6,7,8]

SPAN TYPE	LOAD TYPE	29 GAGE (Fy = 80 KSI) SPAN IN FEET						26 GAGE (Fy = 80 KSI) SPAN IN FEET					
		2.0	3.0	4.0	5.0	6.0	7.0	2.0	3.0	4.0	5.0	6.0	7.0
SIMPLE	NEGATIVE WIND LOAD	217.0	96.0	54.0	35.0	24.0	8.0	301.0	134.0	75.0	48.0	33.0	25.0
	LIVE LOAD/DEFLECTION	113.0	50.0	22.0	11.0	7.0	4.0	185.0	82.0	35.0	18.0	10.0	7.0
2-SPAN	NEGATIVE WIND LOAD	133.0	63.0	36.0	24.0	16.0	12.0	231.0	107.0	60.0	39.0	27.0	20.0
	LIVE LOAD/DEFLECTION	100.0	47.0	27.0	18.0	12.0	9.0	173.0	80.0	45.0	29.0	20.0	15.0
3-SPAN	NEGATIVE WIND LOAD	159.0	77.0	45.0	29.0	20.0	15.0	281.0	131.0	75.0	48.0	33.0	25.0
	LIVE LOAD/DEFLECTION	119.0	58.0	34.0	21.0	12.0	8.0	211.0	98.0	56.0	33.0	19.0	12.0
4-SPAN OR MORE	NEGATIVE WIND LOAD	151.0	72.0	43.0	28.0	19.0	15.0	264.0	123.0	71.0	45.0	32.0	23.0
	LIVE LOAD/DEFLECTION	113.0	54.0	32.0	21.0	13.0	8.0	198.0	92.0	53.0	34.0	20.0	13.0

SPAN TYPE	LOAD TYPE	24 GAGE (Fy = 50 KSI) SPAN IN FEET						22 GAGE (Fy = 50 KSI) SPAN IN FEET					
		2.0	3.0	4.0	5.0	6.0	7.0	2.0	3.0	4.0	5.0	6.0	7.0
SIMPLE	NEGATIVE WIND LOAD	331.0	147.0	83.0	53.0	37.0	27.0	377.0	168.0	94.0	60.0	42.0	31.0
	LIVE LOAD/DEFLECTION	244.0	109.0	51.0	26.0	15.0	10.0	330.0	147.0	67.0	34.0	20.0	12.0
2-SPAN	NEGATIVE WIND LOAD	313.0	143.0	81.0	52.0	36.0	27.0	369.0	165.0	93.0	60.0	41.0	31.0
	LIVE LOAD/DEFLECTION	235.0	107.0	61.0	39.0	27.0	20.0	277.0	124.0	70.0	45.0	31.0	23.0
3-SPAN	NEGATIVE WIND LOAD	385.0	176.0	100.0	64.0	45.0	33.0	311.0	207.0	117.0	75.0	52.0	39.0
	LIVE LOAD/DEFLECTION	289.0	132.0	75.0	48.0	28.0	17.0	233.0	155.0	88.0	53.0	31.0	19.0
4-SPAN OR MORE	NEGATIVE WIND LOAD	361.0	165.0	93.0	60.0	43.0	31.0	428.0	193.0	109.0	71.0	49.0	36.0
	LIVE LOAD/DEFLECTION	271.0	124.0	70.0	45.0	29.0	18.0	321.0	145.0	82.0	53.0	32.0	20.0

For SI: 1 foot = 304.8 mm, 1 ksi = 6.89 MPa, 1 psi = 0.0479 kN/m^2.

1. Allowable loads are based on equal span lengths and Fy of 60 KSI for 29 and 26 gauge and Fy of 50 KSI for 24 and 22 gauge.
2. Live load is allowable live load based on combined bending+ shear stress.
3. Wind load is allowable wind load based on combined bending + shear and has been increased by 33.333%.
4. Deflection loads are limited by a maximum deflection ratio of L/240 of span or maximum combined bending + shear stress from live load.
5. Weight of the panel has not been deducted from allowable loads.
6. Load table values do not address web crippling requirements, (see Table 4), or connection of panel to substrate,(fastener pullout/pullover)
7. Minimum bearing length of 1.5" required.
8. See page Figure 3 for fastener location.

SCREW CONNECTION DESIGN

NOTATIONS

ds = Nominal screw diameter (in.)
Ω Omega = 3.0
Pns = Nominal shear stength per screw (lbs.)
Pnt = Nominal tension strength per screw (lbs.)
Pnot = Nominal pull-out strength per screw (lbs.)
Pnov = Nominal pull-over strength per screw (lbs.)
g1 = nominal gauge of member in contact with the screw head (in.)
t1 = Thickness of member in contact with the screw head (in.)
g2 = nominal gauge of member NOT in contact with the screw head (in.)
t2 = Thickness of member NOT in contact with the screw head (in.)
Fu1 = Tensile strength of member in contact with the screw head (lbs.)
Fu2 = Tensile strength of member NOT in contact with the screw head (lbs.)

	ROOF PANEL (PBR-Panel 26G)		WALL PANEL (PBR-Panel 26G)	
g1 =	26	g1 =	26
g2 =	16	g2 =	12
t1 =	0.0179	t1 =	0.0179
t2 =	0.057	t2 =	0.1046
Fu1 =	80000	Fu1 =	80000
Fu2 =	67000	Fu2 =	67000
Screw # =	12	Screw # =	12
ds (in.) =	0.216	ds (in.) =	0.216
ALLOWABLE SHEAR BASED ON CONNECTED MATERIALS:			
t2/t1 =	3.18	t2/t1 =	5.84
Pns (eq. E4.3.1-4) =	835	Pns (eq. E4.3.1-4) =	835
Allowable Shear per Screw (Ω Omega = 3.0):	278	Allowable Shear per Screw =	278
ALLOWABLE SHEAR BASED ON SCREW:			
Allowable Shear per Screw =	625	Allowable Shear per Screw =	625
Design Shear per Screw =	**278**	**Design Shear per Screw =**	**278**

ALLOWABLE TENSION BASED ON CONNECTED MATERIALS:		
Pullout Strength, Pnot (eq. E4.4.1.1) =	701	1287
Pullover Strength, Pnov (eq. E4.4.2.1) =	537	537
Allowable Tension per Screw (lbs.) =	**179**	**179**
Nominal Screw Tension Strength (lbs) =	860	860

This item has been electronically signed and sealed by Coleman D. Larsen, 12/17/24 using a Digital Signature.

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