STRUCTURAL CALCULATIONS

Project Name: Rob Kerth Ice Land
NBG Project #: C22B0182A

INDEX

P.O. Box 1009 • 1700 E. Louise Avenue, Lathrop, CA 95330 • Ph: (209) 983-0910 • Fax: (209) 858-2354
www.cbcsteelbuildings.com

Version: 1.1.123.0

CBC STEEL BUILDINGS a NUCOR company
1700 E. Louise Avenue Phone: 209-983-0910
Lathrop, CA 95330

Tuesday, August 23, 2022

R.C. Patterson, Inc.
2505 Delmar Avenue
Penryn, CA 95663
Attn.: BOB PATTERSON
Project Location: Sacramento, CA 95815
Project Number: C22B0182A

Project Name: Rob Kerth Ice Land
Buildings: A->105'-0"x147'-6"x20'-0"(RCG, 1:12);

This Letter of Design Certification ensures that the materials furnished by the metal building supplier are designed in accordance with the information specified to the metal building supplier on the order documents and summarized by the loading information listed below. The Project Engineer of Record (not the metal building supplier) is responsible for verifying that the building code and design loads meet any and all applicable local requirements.

The Professional Engineer whose seal appears on this Letter of Certification is employed by the metal building manufacturer, a Member of MBMA, and does not serve as or represent the Engineer of Record for this project and shall not be construed as such.

DESIGN LOAD CRITERIA:

Structural Loads Applied in General Accordance with: California (CBC 2019)
Risk Category: III - Substantial Hazards

PROJECT-WIDE LOADING INFORMATION:

Ground Snow Load: 0.00 psf | Snow Exposure Factor,Ce: 1.00 | Snow Imp. Factor,Is: 1.10
Roof Live Load: 20.00 psf | Reducible as per code | Rainfall Intensity: 4 in/hr
Design Wind Velocity: 110 mph | Nominal Design Wind Velocity: 85 mph | ***C&C Wind:26psf / -35psf
Is Roof to meet UL 90 Requirements?: No | Wind Exposure: C
Seismic Criteria: Ss:0.539 S1:0.246 | *No ground snow included in seismic calculation
Design Sds / Sd1: 0.492 / 0.346 | Analysis Procedure: Equivalent Lateral Force Procedure
Seis. Imp. Factor,Ie: 1.25 | Long. SFRS: Ord. Concentrically Braced Frame
Seis. Design Category: D Site Class: D | Lat. SFRS: Ord. Moment Frame

BUILDING-SPECIFIC LOADING INFORAMTION:

	Roof Dead	Collateral Dead		Snow Coeficient		Snow Load (psf)		Wind		Seismic		
Bldg	(psf)*	Pri (psf)	Sec (psf)	Ct	Cs	Ps (psf)	**Pm (psf)	Enclosure	GCpi	R	Cs	V (kips)
A	2.50	5.00	5.00	1.20	1.00	0.00	0.00	Enclosed	±0.18	3.25	0.189	37.72

**Primary Structural Not Included*
***Pm is based on the minimum roof snow load calculated per building code or the contract-specified roof snow load, whichever is greater. This value, Pm, is only applied in combination with Dead and Collateral Loads. Roof Snow in other loading conditions is determined per the specified Building Code.*
****Design wind pressures to be used for wall exterior component and cladding materials not provided by Metal Building Supplier*

Mezzanine Information:

Floor Dead Load: N/A | Floor Collateral Load: N/A | Floor Live Load: N/A

Crane Information:

No cranes on building.

Roof-Top Unit Information:

No roof-top units on building.

The design of structural members supporting roof gravity loads is controlled by the more critical effect of roof live load or roof snow applied in accordance with the governing building code.

DESIGN STANDARDS REFERENCED:

- AISC Specification for Structural Steel Buildings - Steel Construction Manual, 15th Edition, ©2017.
- AISI North-American Spec. for the Design of Cold-Formed Steel Structures, ©2016 Edition.
- IBC codes are designed in accordance with ASCE7-16 Edition.
- MBMA Metal Building Systems Manual, Latest Edition.
- AWS Latest Edition of Structural Welding Code.
- No buyout structural components provided on this project.

9/19/22

Professional Seal

MBMA METAL BUILDING MANUFACTURES ASSOCIATION©

IAS ACCREDITED Metal Building Systems

CBC STEEL BUILDINGS a NUCOR company
1700 E. Louise Avenue
Lathrop, CA 95330
Phone: 209-983-0910

ERECTION DRAWINGS COVER SHEET NOTES

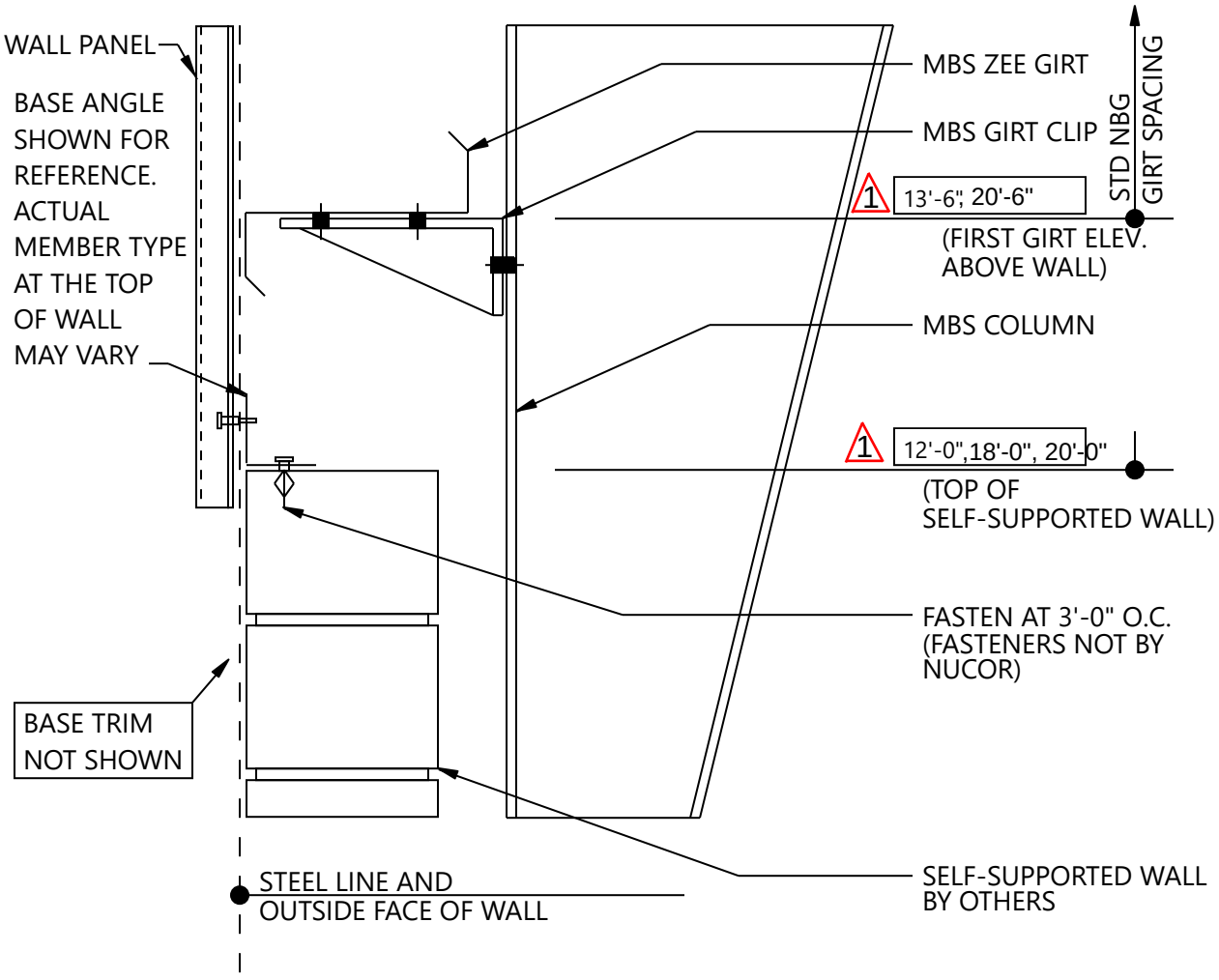
Special notes to be placed on Erection Drawing Cover Sheet:

WO7 - Wall by Others Designed to Accommodate Story Drift:

The concrete/masonry wall designer is responsible for designing and detailing the wall system by others to accommodate the lateral and longitudinal drifts as indicated.

WO10 - Wall Panel Loads Self-Supported Masonry:

The metal building manufacturer's wall panels above the top of the masonry/concrete walls must be attached to the walls with a spacing as shown. The masonry/concrete walls, as well as the the fasteners attaching the metal building manufacturer's wall panels to the masonry/concrete walls are designed and provided by others (not by the metal building manufacturer).
The masonry/concrete wall is self-supporting, and must be designed to support the loads as shown



WO10

MBS WALL PANEL LOADS
SELF-SUPPORTED WALL BY OTHERS

1 Top of Self-Supporting Wall & First Girt Height Updated

CBC STEEL BUILDINGS
A NUCOR Company

1700 E. Louise Avenue, Lathrop, Ca. 95330
Tel: (209) 983-0910 • Fax: (209) 858-2354

D E S I G N P A R A M E T E R S

Job No. : C22B0182A
Customer : Rob Kerth Ice Land
Designed by : VP
Checked by : **RA 8/30/22**
Date : 24-Aug-2022

Location: Sacramento, Ca
Builder: R.C. Patterson, Inc.

Sheet : A - 1
Revision : 01

STRUCTURE DESCRIPTION

Frame Type	:	Clear Span
Building Width	:	105.00 ft.
Building Length	:	147.50 ft.
Eave Height	:	20.00 ft.
Max. Bay Spacing	:	25.00 ft.
Roof Slope	:	1.000 in. / ft.

BASIC LOADS

Building Code : CBC 2019
Risk Category : III
Roof Live Load : 20 psf
Tributary Reduction : Yes
Frame Live Load : 12 psf

Wind Load
Wind Speed, V : 110 mph
V_{asd} : 85 mph
Enclosure Condition : Enclosed
Exposure : C

Seismic Load
Design Category : D
Importance : 1.25
Site Class : D
R_{Trans}: 3.50 / Ω_o : 2.50
R_{Long}: 3.25 / Ω_o : 2.00
S_S : 53.90%
S_{DS} : 0.49
S_1 : 24.60%
S_{D1} : 0.35
$C_{S\text{-}Trans}$: 0.18
$C_{S\text{-}Long}$: 0.19

Snow Load
Roof Snow : 0 psf
Ground Snow : 0 psf
Importance : 1.10
Ce : 1.0
Ct : 1.2

Collateral Load : 5.0 psf

Dead Load : 5.0 psf (Total)
Frame Wt: 2.5 psf
Purlins: 1.0 psf
Panels: 1.0 psf
Misc.: 0.5 psf

OTHER LOADS

REVISIONS

1 VP 11/4/22 per CO#2 **CK: RA 11/4/22**
A/0.a,4, B/1, D/5,8,11,13,16,20-23, E/1-2, F/9, H/1,2,4,5

*** This structure is designed in compliance with CBC Steel Buildings specifications and standards utilizing the pertinent provisions and recommendations of the American Institute of Steel Construction (AISC), International Code Council (ICC), American Iron and Steel Institute (AISI), the Metal Building Manufacturer's Association (MBMA) and their publications. ***

NUCOR BUILDINGS GROUP

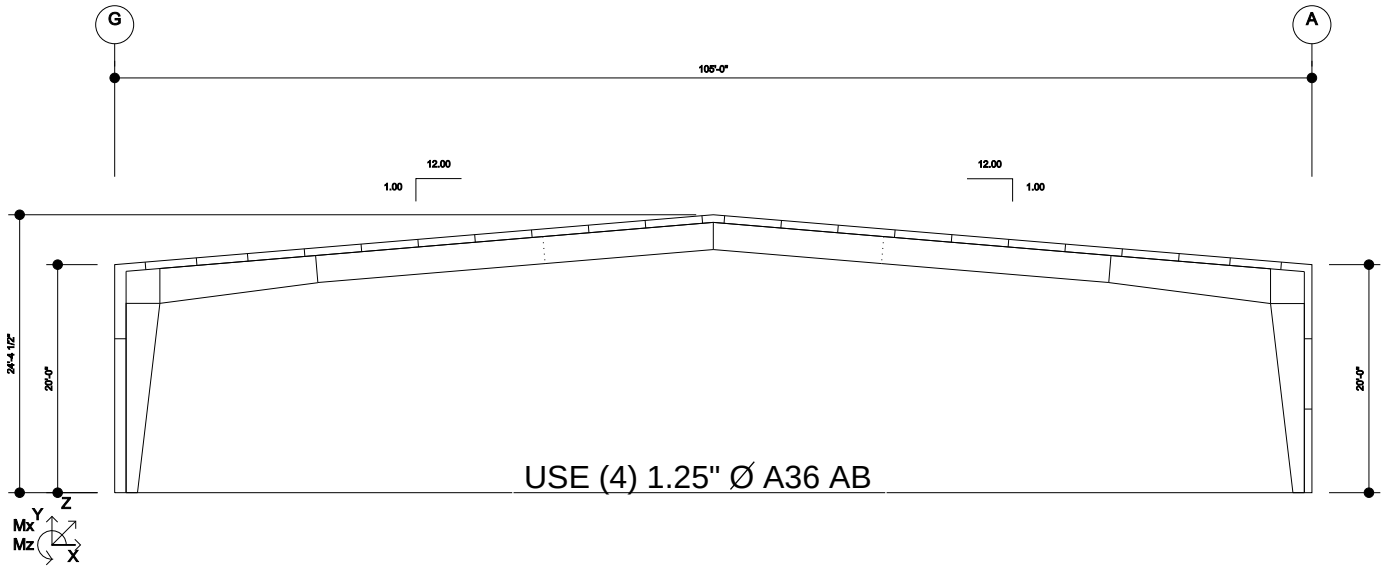
Job # : C22B0182A
File : E01.nfr
App Version : 1.6.127.0

Job Name : Nucor Buildings Group
Designer : BG\Viviana.Perez
Date : 8/23/2022

Frame : A-2

DESIGN SUMMARY - REACTIONS BY LOAD CASE REPORT

FRAME LINE 1,7



Member	X (kips)	Y (kips)	Z (kips)	Mx (kip-ft)	Mz (kip-ft)	Member	X (kips)	Y (kips)	Z (kips)	Mx (kip-ft)	Mz (kip-ft)
LOAD CASE 1 - DEAD						LOAD CASE 2 - COLLATERAL					
COL01	5	6	0	0	0	COL01	3	4	0	0	0
COL02	-5	6	0	0	0	COL02	-3	4	0	0	0
LOAD CASE 3 - ROOF LIVE						LOAD CASE 4 - WIND CASE 1 TO RIGHT					
COL01	8	9	0	0	0	COL01	-11	-14	0	0	0
COL02	-8	9	0	0	0	COL02	7	-8	0	0	0
LOAD CASE 5 - WIND CASE 1 TO LEFT						LOAD CASE 6 - WIND CASE 2 TO RIGHT					
COL01	-8	-8	0	0	0	COL01	-16	-19	0	0	0
COL02	12	-13	0	0	0	COL02	12	-14	0	0	0
LOAD CASE 7 - WIND CASE 2 TO LEFT						LOAD CASE 8 - LONG. WIND 1 TO BACK					
COL01	-12	-14	0	0	0	COL01	-9	-13	0	0	0
COL02	16	-19	0	0	0	COL02	9	-9	0	0	0
LOAD CASE 9 - LONG. WIND 1 TO FRONT						LOAD CASE 10 - LONG. WIND 2 TO BACK					
COL01	-9	-9	0	0	0	COL01	-13	-19	0	0	0
COL02	8	-13	0	0	0	COL02	13	-14	0	0	0
LOAD CASE 11 - LONG. WIND 2 TO FRONT						LOAD CASE 12 - SEISMIC TO RIGHT					
COL01	-14	-15	0	0	0	COL01	-2	-1	0	0	0
COL02	13	-19	0	0	0	COL02	-2	1	0	0	0
LOAD CASE 13 - SEISMIC TO LEFT											
COL01	2	1	0	0	0						
COL02	2	-1	0	0	0						

NOTES:
1. ALL WIND REACTIONS SHOWN IN THE TABLE ABOVE ARE BASED ON ULTIMATE DESIGN WIND SPEED AND ARE UNFACTORED.

2. SEISMIC REACTIONS ARE DUE TO BASE SHEAR. THE REDUNDANCY FACTOR AND THE OVERSTRENGTH FACTOR HAVE NOT BEEN INCLUDED IN THE REACTIONS SHOWN.

NUCOR BUILDINGS GROUP

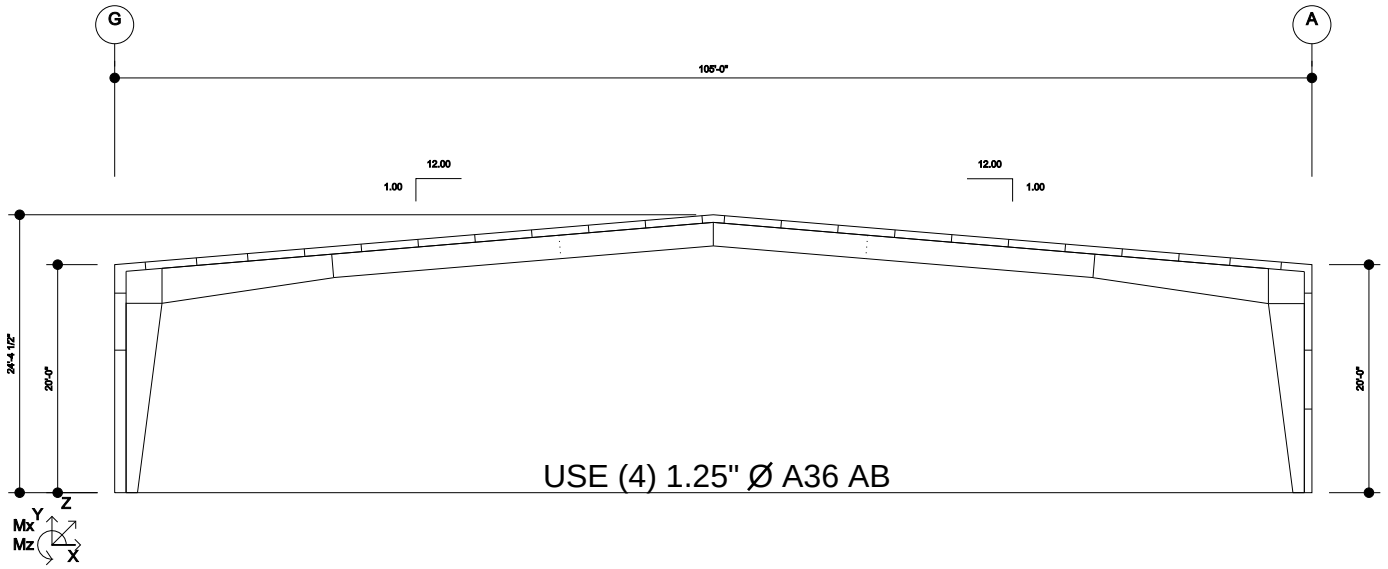
Job # : C22B0182A
File : F01a.nfr
App Version : 1.6.127.0

Job Name : Rob Kerth Iceland
Designer : BG\Viviana.Perez
Date : 8/23/2022

Frame : A-3

DESIGN SUMMARY - REACTIONS BY LOAD CASE REPORT

FRAME LINE 2-6



Member	X (kips)	Y (kips)	Z (kips)	Mx (kip-ft)	Mz (kip-ft)	Member	X (kips)	Y (kips)	Z (kips)	Mx (kip-ft)	Mz (kip-ft)
LOAD CASE 1 - DEAD						LOAD CASE 2 - COLLATERAL					
COL01	5	6	0	0	0	COL01	7	7	0	0	0
COL02	-5	6	0	0	0	COL02	-7	7	0	0	0
LOAD CASE 3 - ROOF LIVE						LOAD CASE 4 - WIND CASE 1 TO RIGHT					
COL01	15	17	0	0	0	COL01	-15	-16	0	0	0
COL02	-15	17	0	0	0	COL02	8	-8	0	0	0
LOAD CASE 5 - WIND CASE 1 TO LEFT						LOAD CASE 6 - WIND CASE 2 TO RIGHT					
COL01	-8	-8	0	0	0	COL01	-24	-27	0	0	0
COL02	16	-16	0	0	0	COL02	17	-20	0	0	0
LOAD CASE 7 - WIND CASE 2 TO LEFT						LOAD CASE 8 - LONG. WIND 1 TO BACK					
COL01	-17	-20	0	0	0	COL01	-10	-15	0	0	0
COL02	24	-27	0	0	0	COL02	10	-9	0	0	0
LOAD CASE 9 - LONG. WIND 1 TO FRONT						LOAD CASE 10 - LONG. WIND 2 TO BACK					
COL01	-10	-9	0	0	0	COL01	-19	-26	0	0	0
COL02	9	-14	0	0	0	COL02	19	-21	0	0	0
LOAD CASE 11 - LONG. WIND 2 TO FRONT						LOAD CASE 12 - SEISMIC TO RIGHT					
COL01	-20	-21	0	0	0	COL01	-3	-2	0	0	0
COL02	18	-26	0	0	0	COL02	-3	2	0	0	0
LOAD CASE 13 - SEISMIC TO LEFT											
COL01	3	2	0	0	0						
COL02	3	-2	0	0	0						

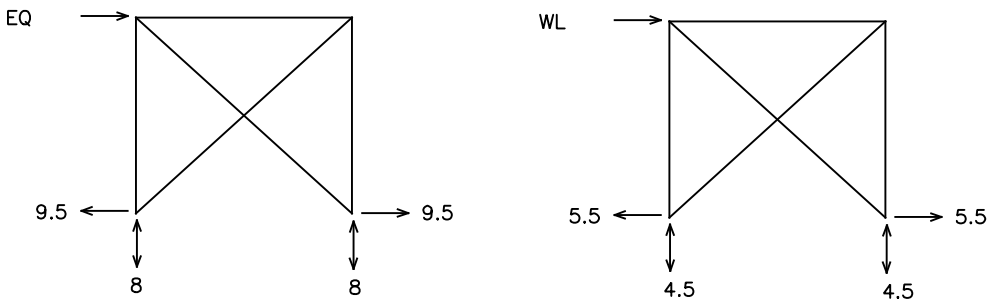
NOTES:
1. ALL WIND REACTIONS SHOWN IN THE TABLE ABOVE ARE BASED ON ULTIMATE DESIGN WIND SPEED AND ARE UNFACTORED.

2. SEISMIC REACTIONS ARE DUE TO BASE SHEAR. THE REDUNDANCY FACTOR AND THE OVERSTRENGTH FACTOR HAVE NOT BEEN INCLUDED IN THE REACTIONS SHOWN.

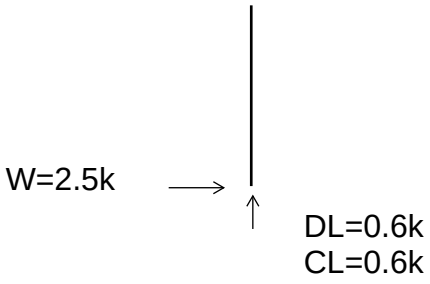
REACTION SCHEMATICS

(All reactions are in kips)

1 End post added @ 1/A.8 & 7/A.9



BRACING REACTION SIDEWALL A,G (2–3), (5–6)



1 END POST REACTIONS @ 1/A.8 & 7/A.9

USE (2) 3/4" Ø A36 AB

NOTES:
1. ALL WIND REACTIONS ARE BASED ON ULTIMATE DESIGN WIND SPEED AND ARE UNFACTORED.

2. SEISMIC REACTIONS ARE DUE TO BASE SHEAR. THE REDUNDANCY FACTOR AND THE OVERSTRENGTH FACTOR HAVE NOT BEEN INCLUDED IN THE REACTIONS SHOWN.

3. BRACING REACTIONS MUST BE COMBINED WITH MAIN FRAME REACTIONS AS REQUIRED BY CODE.

NUCOR BUILDINGS GROUP
A DIVISION OF NUCOR CORPORATION

Project No. : C22B0182A
Description : Rob Kerth Ice Land
Engineer : VP
Date : 8/22/2022

Wind Loading per ASCE 7-16

with AISI 2016 Specification and 2012 MBMA Manual

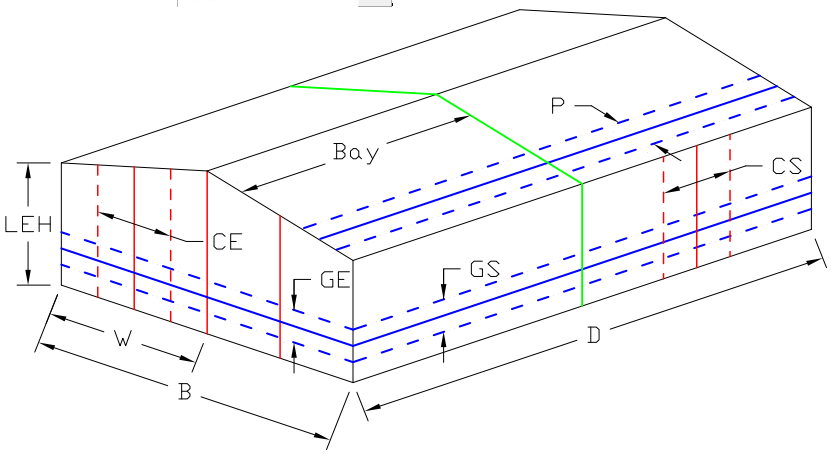
Version: 2020.07.27 (Date: 07/27/20) By NBG-GS

Geometry

Building Name: Building A **Building Type:** Gable **Roof:** Std. R Panel

Bldg. Width [B]:	105.0000'
Dist. To Ridge [W]:	52.5000'
Bldg. Length [D]:	147.5000'
Left Eave Ht. [LEH]:	20.0000'
Right Eave Ht. [REH]:	20.0000'
Left Roof Slope:	1.00:12
Right Roof Slope:	1.00:12
Bay Width [Bay]:	23.7500'
Purlin Trib. Width [P]:	5.0000'
EW Girt Trib Ht. [GE]:	6.0000'
SW Girt Trib. Ht. [GS]:	6.0000'
EW Girt Length:	21.0000'
SW Girt Length:	23.7500'
EW Col. Trib. Width [CE]:	21.0000'
SW Col. Trib. Width [CS]:	24.3750'

NBG Brand: CBC



Left SW Top-of-Parapet:
Opening Area:
Right SW Top-of-Parapet:
EW Top-of-Parapet:

Loading Information

Building Code: IBC 2018

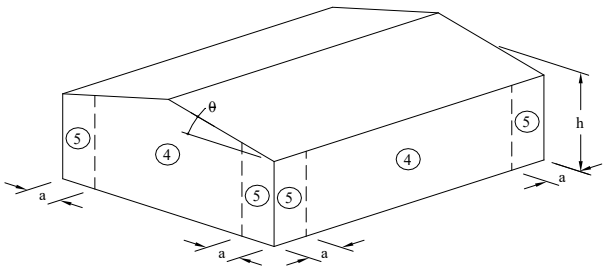
Wind Speed:	110 mph
Wind Exposure:	C
Ground Elevation:	0 ft.

Building Porosity: Enclosed
Interior Partitions Exist: No

General Loading Calculations

h: 20.0000' **K_d:** 0.85 **K_{zt}:** 1.00 **R_i:** 1.00 **q_h:** 23.75 psf
K_z or K_h: 0.90 **K_e:** 1.00 **G:** 0.85 **GC_{pi}:** ± 0.18

Components and Cladding, Walls

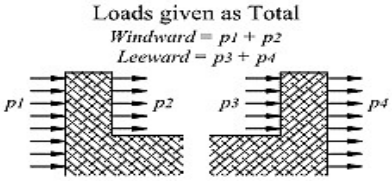


a = 8.00 ft.

Item	Tributary Area (ft^2)	Pressure Zones 4,5 (psf)	Suction Zone 4 (psf)	Suction Zone 5 (psf)
Sidewall Wind Column	488	19.28	-21.41	-21.45
Endwall Wind Column	420	19.52	-21.66	-21.94
Sidewall Girt	188	20.84	-22.97	-24.58
Endwall Girt	147	21.24	-23.38	-25.38
Wall Panel	12	25.35	-27.48	-33.60

Note: The value of GCp in results above has been reduced by 10% per Note 5 of Figure 30.3-1, since the slope angle is ≤ 10°.

Parapets



Tributary Area used for Parapet C&C = --- ft^2

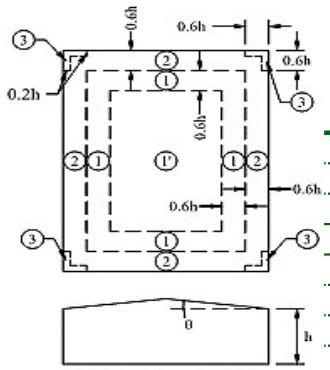
Item	Maximum Projection (ft)	K_{h_par}	q_p (psf)	MWFRS Windward (psf)	MWFRS Leeward (psf)	C & C Windward (psf)	C & C Leeward (psf)
Left Parapet	---	---	---	---	---	---	---
Right Parapet	---	---	---	---	---	---	---
EW Parapet	---	---	---	---	---	---	---

Wind Loading Continued…

Components and Cladding, Roofs

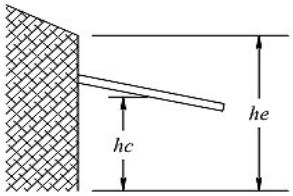
Applicable Roof Slope Angle = 4.76 deg

0.6h = 12.00 ft. **0.2h = 4.00 ft.**



Item	Tributary Area (ft^2)	Pressure All (psf)	Suction in Zones 1' (psf)	1 (psf)	2 (psf)	3 (psf)	--- ---	--- ---
Purlin/Joist	188	16.00	-22.39	-32.18	-42.86	-48.21	----	----
Panel	5	16.00	-25.65	-44.64	-58.89	-80.26	----	----
Fastener	5	16.00	-25.65	-44.64	-58.89	-80.26	----	----
Values Below are for the Overhang Portion of the Roof								
Purlin/Joist	188	----	-36.68	-36.68	-37.52	-42.86	----	----
Panel	5	----	-44.64	-44.64	-58.89	-80.26	----	----
Fastener	5	----	-44.64	-44.64	-58.89	-80.26	----	----

Components and Cladding, Below-Eave Canopy



he : Average Eave Height

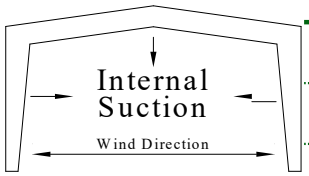
hc : Average Canopy Elevation

Item	Tributary Area (ft^2)	Pressure Total (psf)	Uplift Total (psf) *For Various Canopy Elevations* hc ≤ 10 ft	*Otherwise*	hc ≥ 18 ft
Purlin / Joist	188	16.00	-16.00	-16.00	-27.31
Panel	5	21.37	-16.00	-21.37	-33.24
Fastener	5	21.37	-16.00	-21.37	-33.24

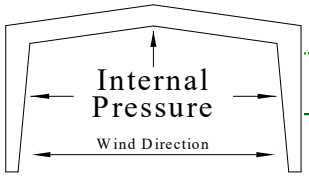
Main Wind Force Resisting Systems (Transverse Wind Direction)

Applicable Roof Slope Angle = 4.76 deg

a = 8.00 ft.

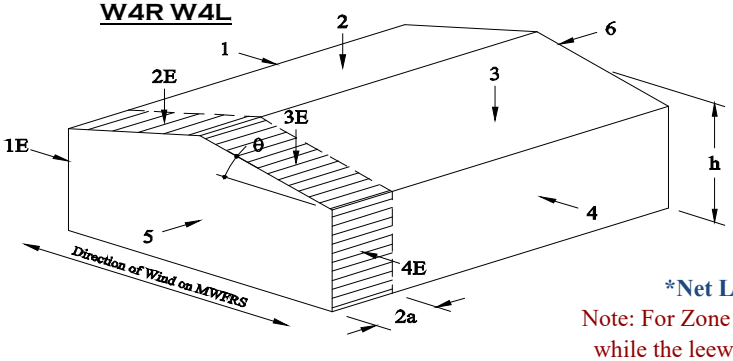


WIND W1R W1L W3R W3L



WIND W2R W2L W4R W4L

Item	Transverse Wind Direction W1R	W1L	W2R	W2L	W3R	W3L	W4R	W4L
C1:	0.58	-0.11	0.22	-0.47	----	----	----	----
Load, (psf)	13.77	-2.61	5.22	-11.16	----	----	----	----
C2:	-0.51	-0.19	-0.87	-0.55	----	----	----	----
Load, (psf)	-12.11	-4.51	-20.66	-13.06	----	----	----	----
C3:	-0.19	-0.51	-0.55	-0.87	----	----	----	----
Load, (psf)	-4.51	-12.11	-13.06	-20.66	----	----	----	----
C4:	-0.11	0.58	-0.47	0.22	----	----	----	----
Load, (psf)	-2.61	13.77	-11.16	5.22	----	----	----	----
C5:	-0.27	-0.27	-0.63	-0.63	----	----	----	----
Load, (psf)	-6.41	-6.41	-14.96	-14.96	----	----	----	----
C6:	-0.27	-0.27	-0.63	-0.63	----	----	----	----
Load, (psf)	-6.41	-6.41	-14.96	-14.96	----	----	----	----
Net* (psf)	**2.94**	**2.94**	**2.94**	**2.94**				



Item	Edge Zone Pressure Coefficients W1R & W3R	W1L & W3L	W2R & W4R	W2L & W4L
C1E:	0.79	-0.25	0.43	-0.61
Load, (psf)	18.76	-5.94	10.21	-14.49
C2E:	-0.89	-0.35	-1.25	-0.71
Load, (psf)	-21.13	-8.31	-29.68	-16.86
C3E:	-0.35	-0.89	-0.71	-1.25
Load, (psf)	-8.31	-21.13	-16.86	-29.68
C4E:	-0.25	0.79	-0.61	0.43
Load, (psf)	-5.94	18.76	-14.49	10.21

***Net Lat < 16 psf. Add additional pressure to windward wall.**

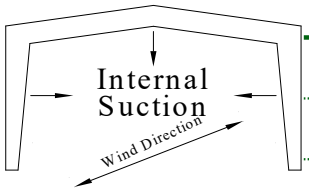
Note: For Zone 2/2E or 3/3E; the windward zone width shall be 50.00 ft., while the leeward zone width shall be 55.00 ft. per Figure 28.3-1 note 8.

Wind Loading Continued…

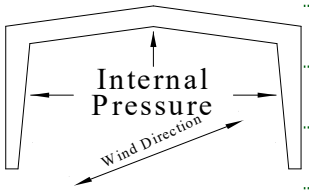
Main Wind Force Resisting Systems (Longitudinal Wind Direction)

Applicable Roof Slope Angle = 4.76 deg

a = 8.00 ft.

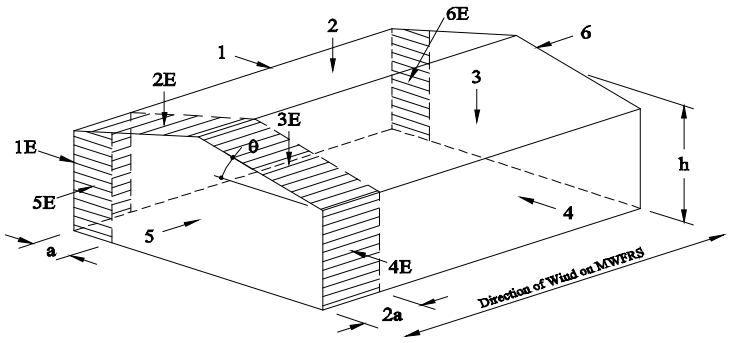


WIND W5B W5F W7B W7F



WIND W6B W6F W8B W8F

	Longitudinal Wind Direction							
Item	W5B	W5F	W6B	W6F	W7B	W7F	W8B	W8F
C1:	-0.27	-0.27	-0.63	-0.63	----	----	----	----
Load, (psf)	-6.41	-6.41	-14.96	-14.96	----	----	----	----
C2:	-0.51	-0.19	-0.87	-0.55	----	----	----	----
Load, (psf)	-12.11	-4.51	-20.66	-13.06	----	----	----	----
C3:	-0.19	-0.51	-0.55	-0.87	----	----	----	----
Load, (psf)	-4.51	-12.11	-13.06	-20.66	----	----	----	----
C4:	-0.27	-0.27	-0.63	-0.63	----	----	----	----
Load, (psf)	-6.41	-6.41	-14.96	-14.96	----	----	----	----
C1E:	-0.30	-0.30	-0.66	-0.66	----	----	----	----
Load, (psf)	-7.12	-7.12	-15.67	-15.67	----	----	----	----
C2E:	-0.89	-0.35	-1.25	-0.71	----	----	----	----
Load, (psf)	-21.13	-8.31	-29.68	-16.86	----	----	----	----
C3E:	-0.35	-0.89	-0.71	-1.25	----	----	----	----
Load, (psf)	-8.31	-21.13	-16.86	-29.68	----	----	----	----
C4E:	-0.30	-0.30	-0.66	-0.66	----	----	----	----
Load, (psf)	-7.12	-7.12	-15.67	-15.67	----	----	----	----



	End-Wall Pressure Coefficients			
Item	W5B & W7B	W5F & W7F	W6B & W8B	W6F & W8F
C5:	0.58	-0.11	0.22	-0.47
Load, (psf)	13.77	-2.61	5.22	-11.16
C6:	-0.11	0.58	-0.47	0.22
Load, (psf)	-2.61	13.77	-11.16	5.22
C5E:	0.79	-0.25	0.43	-0.61
Load, (psf)	18.76	-5.94	10.21	-14.49
C6E:	-0.25	0.79	-0.61	0.43
Load, (psf)	-5.94	18.76	-14.49	10.21

Longitudinal Force Resisted by Bracing: 20.44 kips

Total Longitudinal Net Pressure Applied to Building: 17.55 psf

Total Longitudinal Force Applied to Building: 40.88 kips

IBC 2018 Seismic Considerations:

Input Data

Equivalent Lateral Force Procedure (per ASCE 7, Section 12.8)

Spreadsheet Revision Number : 2021.01.20
Latest Revision Date : 1/20/2021

Project No.:	C22B0182A
Description:	Rob Kerth Ice Land
Engineer :	VP
Date :	8/24/2022

Building Data Input:

Building A

Nature of Occupancy	Substantial Hazard
Gable/Single Slope	Gable
Building Width	105.00 feet
Building Length	147.50 feet
Distance to Ridge (from BSW)	52.50 feet
Roof Slope, s:12 (slope to BSW)	1.00 : 12
Low Eave Height (Front SW)	20.00 feet
High Eave Height (Back SW)	20.00 feet
Mean Roof Height	22.19 feet

Roof Level Diaphragm	Flexible	*
Mezzanine Level Diaphragm	None	*

Vertical Distribution Required ☐
Seismic Irregularities Exist ☐

*Note: ASCE 7 states "Where diaphragms are not flexible, the design shall include the torsion moment plus the accidental torsional moments caused by an assumed 5% displacement in either direction of the building masses." Due to the configuration of rigid frame metal buildings, accidental torsion is NOT required in the lateral seismic calculations. Thus accidental torsion due to diaphragm rigidity shall only be applied to the longitudinal seismic calcs.

Seismic Data Input:

Short period response acceleration, S_S	Ss = 0.539	
1-second period response acceleration, S_1	S1 = 0.246	
Site Classification	D	**

**Note: ASCE 7 Section 11.4.2, states "Where the soil properties are not known in sufficient detail to determine the site class, Site Class D shall be used unless the authority having jurisdiction or geotechnical data determines Site Class E or F soils are present at the site." As a result, Site Class D will be used on nearly all buildings.

Roof Loading:

Lateral Frame Self weight (SW)	2.50 psf	
Roof Dead Load (RDL)	2.00 psf	
Roof Collateral Load (CDL)	5.00 psf	
Roof Self Weight (Bracing, Beams etc.)	0.50 psf	
Roof Snow (Pf)	0.00 psf	***

***Note: 20% of flat roof snow load is used in seismic dead load calculations when the flat roof snow load is greater than 30 psf. DO NOT include any snow drift loads in seismic dead load.

****Note: Full Height Hardwall is applied at mean roof height (mrh) at Endwalls. Enter the height required to account for the full dead load of the wall. For Parapets below the Ridge Height on Endwalls the actual Top Elevation must be adjusted.

Exterior Wall #1 (Left EW) Loads:

○ Full Height Wall ○ Full Height Wall w/ Parapet
◉ Partial Height Hardwall ○ Partial Height Hardwall w/ Parapet

☑ Exclude Wall in Lateral Seismic Calculations. (Shear Wall Supports Self Weight)

Wall Length	105.00 feet	
Top Elevation	22.19 feet	****
Upper Wall Weight	2.50 psf	
Top of Masonry Elevation	12.00 feet	
Lower Wall Weight	55.00 psf	

Exterior Wall #3 (Right EW) Loads:

○ Full Height Wall ○ Full Height Wall w/ Parapet
◉ Partial Height Hardwall ○ Partial Height Hardwall w/ Parapet

☑ Exclude Wall in Lateral Seismic Calculations. (Shear Wall Supports Self Weight)

Wall Length	105.00 feet	
Top Elevation	22.19 feet	****
Upper Wall Weight	2.50 psf	
Top of Masonry Elevation	12.00 feet	
Lower Wall Weight	55.00 psf	

Exterior Wall #2 (Front SW) Loads:

○ Full Height Wall ○ Full Height Wall w/ Parapet
◉ Partial Height Hardwall ○ Partial Height Hardwall w/ Parapet

☑ Exclude Wall in Longitudinal Seismic Calculations. (Shear Wall Supports Self Weight)

Top Elevation	20.00 feet	
Upper Wall Weight	2.50 psf	
Top of Masonry Elevation	12.00 feet	
Lower Wall Weight	55.00 psf	

Exterior Wall #4 (Back SW) Loads:

◉ Full Height Wall ○ Full Height Wall w/ Parapet
○ Partial Height Hardwall ○ Partial Height Hardwall w/ Parapet

☑ Exclude Wall in Longitudinal Seismic Calculations. (Shear Wall Supports Self Weight

Top Elevation	20.00 feet	
Wall Weight	2.50 psf	

Interior Wall #5 (Partition) Loads:

◉ Full Height Wall ○ Full Height Wall w/ Parapet
○ Partial Height Hardwall ○ Partial Height Hardwall w/ Parapet

☑ Exclude Wall in Lateral Seismic Calculations. (Shear Wall Supports Self Weight)

Top Elevation	22.19 feet	****
Wall Weight	0.00 psf	

Note: The weight of a concrete or masonry wall may be excluded from the seimic load calculations for lateral / longitudinal seismic force resisting systems, provided that details permit unrestrained movement of the seismic force resisting system relative to the wall. (This exclusion does not apply to metal panel walls, wood, EIFS, or other flexible wall systems that are attached to the building framing at several points.) Per MBMA "Seismic Design Guide for Metal Building Systems.

IBC 2018 Lateral Seismic Calculations:

Lateral Calcs. (1)

Equivalent Lateral Force Procedure (per ASCE 7, Section 12.8)

Spreadsheet Revision Number : 2021.01.20
Latest Revision Date : 1/20/2021

Frame Description / Location: FL/1,7

Project No.: C22B0182A
Description: Rob Kerth Ice Land
Engineer : VP
Date : 8/24/2022

Building Data Input Echo:

Building A

Occupancy Category	III	
Seismic Force Resisting System	Rigid Frame	*Ordinary Steel Moment Frames*
Gable/Single Slope	Gable	
Width	105.00 feet	
Length	147.50 feet	
Distance to Ridge	52.50 feet	
Roof Slope, s:12	1.00 : 12	
Low Eave Height	20.00 feet	
High Eave Height	20.00 feet	
Mean Roof Height	22.19 feet	
Bay Width	12.60 feet	

Frame Located at Bay:

(●) Left Endwall ( ) Interior Frame
( ) Right Endwall ( ) Int. Frame w/ Partition

Roof Concentrated Load Information:

Roof concentrated loads:

Hardwall (SW) Information:

Wall Length Exterior Wall #2 (Front SW): 12.60 feet
Wall Length Exterior Wall #4 (Back SW): 12.60 feet

Mezzanine Information:

Is Mez #1 or #2 Considered a Story?
Loading Area - Mezzanine #1:
Concentrated Loads - Mezzanine #1:

Loading Area - Mezzanine #2:
Concentrated Loads - Mezzanine #2:

Crane Information:

Quantity of Cranes / Bay - Aisle #1: *
Length of Runway - Aisle #1: **

Quantity of Cranes / Bay - Aisle #2: *
Length of Runway - Aisle #2: **

Quantity of Cranes / Bay - Aisle #3: *
Length of Runway - Aisle #3: **

Seismic Data Input Echo:

Short period response acceleration, Ss: Ss = 0.539
1-second period response acceleration, S1: S1 = 0.246

*Note: Enter quantity of cranes for one aisle only, DO NOT increase the crane quantities when crane information is used for more than one aisle.

**Note: Enter runway length, DO NOT double runway length as other seismic sheets have asked you to do previously.

Seismic Data Output:

Occupancy Importance Factor, Ie	1.25	
Site Coefficient Fa:	Fa = 1.37	
Site Coefficient Fv:	Fv = 2.11	
Max spectral response for short periods (Eq 11.4-1):	Sms = 0.738	
Max spectral response for 1-second period (Eq 11.4-2):	Sm1 = 0.519	
Design spectral response for short periods (Eq 11.4-3):	Sds = 0.492	
Design spectral response for 1-second periods (Eq 11.4-4):	Sd1 = 0.346	
Seismic Design Category:	D	
Response Modification Coefficient, R:	3.5	***
System Overstrength Factor, Ω_O:	2.5	***
Deflection Modification Factor, C_d:	3	***
Building Period Coefficient, Ct:	0.028	
Approximate Fundamental Period, Ta (Eq 12.8-7):	0.334	

***Note: ASCE 7 - Sections 12.2.3, 12.2.3.1 through 12.2.3.3 states, "Where different seismic force-resisting systems are used in combination to resist seismic forces in the same direction of structural response, other than those combinations considered as dual systems, the more stringent system limitation contained in Table 12.2-1 shall apply." The value of the response modification coefficient, R, used for design in the direction under consideration shall not be greater than the least value of R for any of the systems utilized in that direction. The deflection amplification factor, C_d, and the over-strength factor, Ω_o, shall be consistent with R required in that direction; excluding buildings with a risk category of I or II, and flexible diaphragms. In which case, resisting elements are permitted to be designed for the least value of R for each independent line of reference.

Please refer to ASCE 7 12.8.2 and table 12.8-1 for Fundamental Periods for strength design, for seismic story drift checks ONLY there is no upper limit stated

Seismic Load Output:

Seismic Base Shear, V (Eq 12.8-1): **3.26 kips**
Seismic Response Coefficient, Cs (Eq 12.8-1 to 12.8-6): 0.176

Redundancy Factor, ρ: 1.30
Distribution Exponent, k: 0.00

Multistory Distribution

Seismic Considerations	Eff. Seismic Weight W_x	Elevation h_x	Vertical Dist. Factor, C_{vx}	Seismic Force F_x	Seismic Base Moment M
Roof Loads	13276 lbs	22.19 feet	13276	2.33 kips	51.74 ft-kips
Exterior Wall #1 (Left EW) Loads	2674 lbs	17.17 feet 6.00 feet	2674	0.47 kips	8.07 ft-kips
Exterior Wall #2 (Front SW) Loads	252 lbs 8316 lbs	16.00 feet 6.00 feet	252 8316	0.04 kips 1.46 kips	0.71 ft-kips 8.76 ft-kips
Exterior Wall #4 (Back SW) Loads	630 lbs	10.00 feet	630	0.11 kips	1.11 ft-kips
Crane Aisle #1	0 lbs	--	--	--	--
Crane Aisle #2	0 lbs	--	--	--	--
Crane Aisle #3	0 lbs	--	--	--	--
Mezzanine #1	0 lbs	--	--	--	--
Mezzanine #2	0 lbs	--	--	--	--
Totals	**25148 lbs**	**--**	**25148**	**4.42 kips**	**70.39 ft-kips**

Alt. Roof Weight:	Alt. Panel Load:
13.65 psf	*0.030 kips/ft*
Frame Uniform Loads	
Roof Weight:	**Panel Load:**
11.60 psf	*0.026 kips/ft*
Frame Concentrated Loads	
Load	**Elevation**
0.507 kips	*18.67 feet*
0.059 kips	*18.67 feet*
--	--
--	--
--	--
--	--
--	--
Frame Base Shear:	*3.262 kips*

IBC 2018 Lateral Seismic Calculations:

Lateral Calcs. (2)

Equivalent Lateral Force Procedure (per ASCE 7, Section 12.8)

Spreadsheet Revision Number : 2021.01.20
Latest Revision Date : 1/20/2021

Frame Description / Location: FL/2-6

Project No.: C22B0182A
Description: Rob Kerth Ice Land
Engineer : VP
Date : 8/24/2022

Building Data Input Echo:

Building A

Occupancy Category	III	
Seismic Force Resisting System	Rigid Frame	*Ordinary Steel Moment Frames*
Gable/Single Slope	Gable	
Width	105.00 feet	
Length	147.50 feet	
Distance to Ridge	52.50 feet	
Roof Slope, s:12	1.00 : 12	
Low Eave Height	20.00 feet	
High Eave Height	20.00 feet	
Mean Roof Height	22.19 feet	
Bay Width	25.00 feet	

Frame Located at Bay:

○ Left Endwall ◉ Interior Frame
○ Right Endwall ○ Int. Frame w/ Partition

Hardwall (SW) Information:

Wall Length Exterior Wall #2 (Front SW): 25.00 feet
Wall Length Exterior Wall #4 (Back SW): 25.00 feet

Roof Concentrated Load Information:

Roof concentrated loads:

Mezzanine Information:

Is Mez #1 or #2 Considered a Story?
Loading Area - Mezzanine #1:
Concentrated Loads - Mezzanine #1:

Loading Area - Mezzanine #2:
Concentrated Loads - Mezzanine #2:

Crane Information:

Quantity of Cranes / Bay - Aisle #1: *
Length of Runway - Aisle #1: **

Quantity of Cranes / Bay - Aisle #2: *
Length of Runway - Aisle #2: **

Quantity of Cranes / Bay - Aisle #3: *
Length of Runway - Aisle #3: **

*Note: Enter quantity of cranes for one aisle only, DO NOT increase the crane quantities when crane information is used for more than one aisle.

**Note: Enter runway length, DO NOT double runway length as other seismic sheets have asked you to do previously.

Seismic Data Input Echo:

Short period response acceleration, Ss	Ss = 0.539
1-second period response acceleration, S1	S1 = 0.246

Seismic Data Output:

Occupancy Importance Factor, Ie	1.25	
Site Coefficient Fa:	Fa = 1.37	
Site Coefficient Fv:	Fv = 2.11	
Max spectral response for short periods (Eq 11.4-1):	Sms = 0.738	
Max spectral response for 1-second period (Eq 11.4-2):	Sm1 = 0.519	
Design spectral response for short periods (Eq 11.4-3):	Sds = 0.492	
Design spectral response for 1-second periods (Eq 11.4-4):	Sd1 = 0.346	
Seismic Design Category:	D	
Response Modification Coefficient, R:	3.5	***
System Overstrength Factor, Ω_O:	2.5	***
Deflection Modification Factor, C_d:	3	***
Building Period Coefficient, Ct:	0.028	
Approximate Fundamental Period, Ta (Eq 12.8-7):	0.334	

***Note: ASCE 7 - Sections 12.2.3, 12.2.3.1 through 12.2.3.3 states, "Where different seismic force-resisting systems are used in combination to resist seismic forces in the same direction of structural response, other than those combinations considered as dual systems, the more stringent system limitation contained in Table 12.2-1 shall apply." The value of the response modification coefficient, R, used for design in the direction under consideration shall not be greater than the least value of R for any of the systems utilized in that direction. The deflection amplification factor, C_d, and the over-strength factor, Ω_o, shall be consistent with R required in that direction; excluding buildings with a risk category of I or II, and flexible diaphragms. In which case, resisting elements are permitted to be designed for the least value of R for each independent line of reference.

Please refer to ASCE 7 12.8.2 and table 12.8-1 for Fundamental Periods for strength design, for seismic story drift checks ONLY there is no upper limit stated

Seismic Load Output:

Seismic Base Shear, V (Eq 12.8-1): **5.75 kips**
Seismic Response Coefficient, Cs (Eq 12.8-1 to 12.8-6): 0.176

Redundancy Factor, ρ: 1.30
Distribution Exponent, k: 0.00

Multistory Distribution

Seismic Considerations	Eff. Seismic Weight W_x	Elevation h_x	Vertical Dist. Factor, C_{vx}	Seismic Force F_x	Seismic Base Moment M
Roof Loads	26341 lbs	22.19 feet	26341	4.63 kips	102.66 ft-kips
Interior Wall #5 (Partition) Loads	0 lbs	--	--	--	--
Exterior Wall #2 (Front SW) Loads	500 lbs 16500 lbs	16.00 feet 6.00 feet	500 16500	0.09 kips 2.90 kips	1.41 ft-kips 17.39 ft-kips
Exterior Wall #4 (Back SW) Loads	1250 lbs	10.00 feet	1250	0.22 kips	2.20 ft-kips
Crane Aisle #1	0 lbs	--	--	--	--
Crane Aisle #2	0 lbs	--	--	--	--
Crane Aisle #3	0 lbs	--	--	--	--
Mezzanine #1	0 lbs	--	--	--	--
Mezzanine #2	0 lbs	--	--	--	--
Totals	**44591 lbs**	**--**	**44591**	**7.83 kips**	**123.66 ft-kips**

Alt. Roof Weight:	Alt. Panel Load:
12.09 psf	*0.053 kips/ft*
Frame Uniform Loads	
Roof Weight:	**Panel Load:**
10.03 psf	*0.044 kips/ft*
Frame Concentrated Loads	
Load	**Elevation**
1.007 kips	*18.67 feet*
0.118 kips	*18.67 feet*
--	--
--	--
--	--
--	--
--	--
Frame Base Shear:	*5.752 kips*

IBC 2018 Longitudinal Seismic Calculations:

Longitudinal Calcs.

Equivalent Lateral Force Procedure (per ASCE 7, Section 12.8)

Spreadsheet Revision Number : 2021.01.20
Latest Revision Date : 1/20/2021

Building Data Input Echo:

Building A

Occupancy Category	III	
Low SW Force Resisting System	X-Bracing	*Ordinary Steel Concentrically Braced Frames*
High SW Force Resisting System	X-Bracing	
Gable/Single Slope	Gable	
Width	105.00 feet	
Length	147.50 feet	
Distance to Ridge	52.50 feet	
Roof Slope, s:12	1.00 : 12	
Low Eave Height	20.00 feet	
High Eave Height	20.00 feet	
Mean Roof Height	22.19 feet	

Project No.: C22B0182A
Description: Rob Kerth Ice Land
Engineer : VP
Date : 8/24/2022

Roof Concentrated Load Information:

Roof concentrated loads:

Mezzanine Information:

Is Mez #1 or #2 Considered a Story?	
Loading Area - Mezzanine #1:	
Concentrated Loads - Mezzanine #1:	
Loading Area - Mezzanine #2:	
Concentrated Loads - Mezzanine #2:	

Seismic Data Input Echo:

Short period response acceleration, Ss	Ss = 0.539
1-second period response acceleration, S1	S1 = 0.246

Seismic Data Output:

Occupancy Importance Factor, Ie	1.25	
Site Coefficient Fa:	Fa = 1.37	
Site Coefficient Fv:	Fv = 2.11	
Max spectral response for short periods (Eq 11.4-1):	Sms = 0.738	
Max spectral response for 1-second period (Eq 11.4-2):	Sm1 = 0.519	
Design spectral response for short periods (Eq 11.4-3):	Sds = 0.492	
Design spectral response for 1-second periods (Eq 11.4-4):	Sd1 = 0.346	
Seismic Design Category:	D	
Response Modification Coefficient, R:	3.25	**
System Overstrength Factor, Ω_o:	2	**
Deflection Modification Factor, C_d:	3.25	**
Building Period Coefficient, Ct:	0.02	
Approximate Fundamental Period, Ta (Eq 12.8-7):	0.204	

Hardwall Information:

Wall Length Exterior Wall #2 (Front SW):	147.50 feet
Wall Length Exterior Wall #4 (Back SW):	147.50 feet
Wall Length Interior Wall #5 (Partition):	105.00 feet
Quantity of Partition Walls (Wall #5):	

Crane Information:

Quantity of Cranes - Aisle #1:		*
Length of Runway - Aisle #1:		
Quantity of Ind. Crane Columns - Aisle #1:		
Quantity of Cranes - Aisle #2:		*
Length of Runway - Aisle #2:		
Quantity of Ind. Crane Columns - Aisle #2:		
Quantity of Cranes - Aisle #3:		*
Length of Runway - Aisle #3:		
Quantity of Ind. Crane Columns - Aisle #3:		

*Note: Enter quantity of cranes for one aisle only, DO NOT increase the crane quantities when crane information is used for more than one aisle.

**Note: ASCE 7 - Sections 12.2.3, 12.2.3.1 through 12.2.3.3 states, "Where different seismic force-resisting systems are used in combination to resist seismic forces in the same direction of structural response, other than those combinations considered as dual systems, the more stringent system limitation contained in Table 12.2-1 shall apply." The value of the response modification coefficient, R, used for design in the direction under consideration shall not be greater than the least value of R for any of the systems utilized in that direction. The deflection amplification factor, C_d, and the over-strength factor, Ω_o, shall be consistent with R required in that direction; excluding buildings with a risk category of I or II, and flexible diaphragms. In which case, resisting elements are permitted to be designed for the least value of R for each independent line of reference.

Please refer to ASCE 7 12.8.2 and table 12.8-1 for Fundamental Periods for strength design, for seismic story drift checks ONLY there is no upper limit stated

Seismic Load Output:

Seismic Base Shear, V (Eq 12.8-1)	**37.72 kips**	Redundancy Factor, ρ	1.30
Seismic Response Coefficient, Cs (Eq 12.8-1 to 12.8-6)	0.189	Distribution Exponent, k	0.00

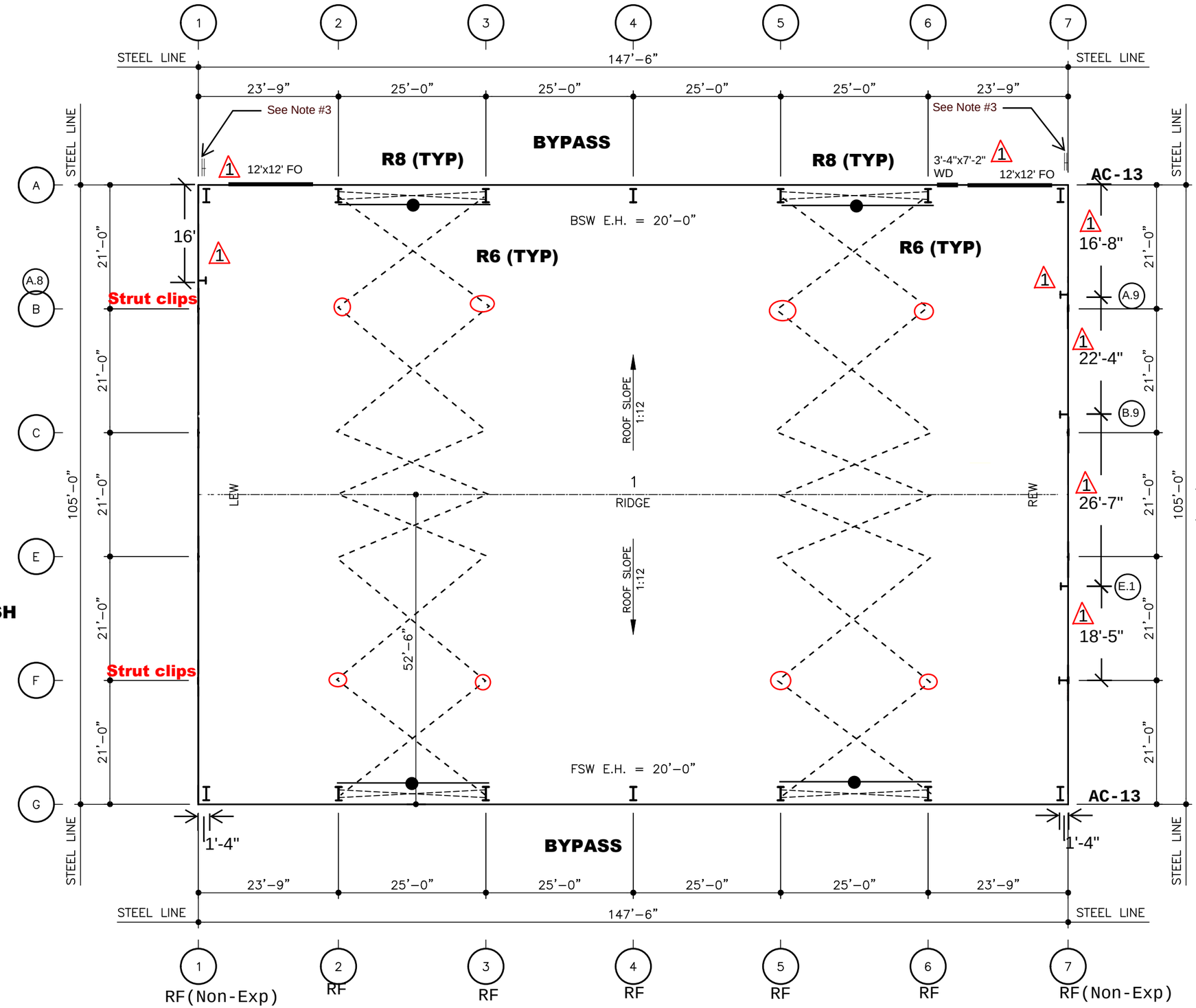
Multistory Distribution

Seismic Considerations	Eff. Seismic Weight W_x	Elevation h_x	Vertical Dist. Factor, C_{vx}	Seismic Force F_x	Seismic Base Moment M
Roof Loads	155412 lbs	22.19 feet	155412	29.40 kips	652.31 ft-kips
Exterior Wall #1 (Left EW) Loads	2674 lbs 69300 lbs	17.17 feet 6.00 feet	2674 69300	0.51 kips 13.11 kips	8.69 ft-kips 78.66 ft-kips
Exterior Wall #3 (Right EW) Loads	2674 lbs 69300 lbs	17.17 feet 6.00 feet	2674 69300	0.51 kips 13.11 kips	8.69 ft-kips 78.66 ft-kips
Interior Wall #5 (Partition) Loads	*0 lbs*	*11.13 feet*	--	--	--
Exterior Wall #2 (Front SW) Loads	2950 lbs	16.00 feet 6.00 feet	2950	0.56 kips	8.93 ft-kips
Exterior Wall #4 (Back SW) Loads	0 lbs	10.00 feet	--	--	--
Crane Aisle #1	0 lbs	--	--	--	--
Crane Aisle #2	0 lbs	--	--	--	--
Crane Aisle #3	0 lbs	--	--	--	--
Mezzanine #1	0 lbs	--	--	--	--
Mezzanine #2	0 lbs	--	--	--	--
Totals	**302310 lbs**	**--**	**302310**	**57.19 kips**	**835.94 ft-kips**

Bracing Uniform Loads	
Roof Snow:	--
Seismic Dead W:	*12.72 psf*
Total Seismic W:	***12.72 psf***
Seismic Factor:	***0.189***

Bracing Concentrated Loads	
Load	**Elevation**
0.446 kips	***20.00 feet***
--	--
--	--
--	--
--	--
--	--
Bracing Base Shear:	***37.720 kips***

B-1



1 Dimension of hang post updated on EWs. FO added to BSW. Posts added @ 1/A.8, & 7/A.9, grid lines adjusted, and hang post @ LEW removed

Note:

1 **1. Posts @ ~~1/B,C,E,F~~ & 7/B.9, E.1,F ~~7/B,C,E,F~~ are hang posts.**

2. FSW, LEW, & REW have 8" CMU wall up to 12'.

3. Has a 4" seismic gap between the 8" CMU wall and all CBC steel.

12ga Strut 1' uphill

ANTI-ROLL CLIP

FINAL

C22B0182

STEEL BUILDINGS A RUEGGER COMPANY

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PROJECT NAME: ROB RERTH ICE LAND SACRAMENTO, CA

CUSTOMER NAME: R.C. PATTERSON, INC. PENRYN, CA

DO NOT USE FOR FINAL CONSTRUCTION

7/7/2022 4:02 PM

SHEET TITLE: PRELIMINARY FLOOR PLAN

QUOTE NUMBER: CBO–220613R1

SHEET NUMBER: FP1

NUCOR BUILDINGS GROUP
A DIVISION OF NUCOR CORPORATION

Project No. : C22B0182A
Description : Rob Kerth Ice Land
Engineer : VP
Date : 8/22/2022

Wind Loading per ASCE 7-16

with AISI 2016 Specification and 2012 MBMA Manual

Version: 2020.07.27 (Date: 07/27/20) By NBG-GS

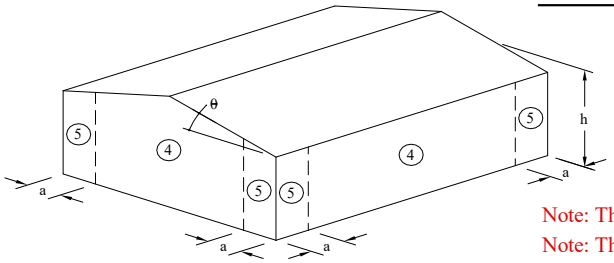
Wall Sheeting Spans

Building Name: Building A

Wall Panel Selection: Std. R Panel Panel 26 Ga. Grade 80, with Fy = 80ksi Fu = 82ksi

Deflection Limit: L/60

Min. Girt Thickness for Fastener Checks: 0.060



a = 8.00 ft.

Item	Tributary Area (ft^2)	Pressure Zones 4,5 (psf)	Suction Zone 4 (psf)	Suction Zone 5 (psf)
Wall Panel	12	15.21	-16.49	-20.16
Simple Span	(ft) →	7.95	8.00	7.47
2 Equal Spans	(ft) →	8.00	7.63	6.86
3 Equal Spans	(ft) →	8.00	8.00	7.47
Fasteners	(ft) →	---	7.50	7.50

Note: These panel spans are based on values found in the EDM per brand
Note: The wind loads determined in this sheet are multiplied by 0.6
Note: 50 Year-Wind deflection check

Roof Sheeting Spans

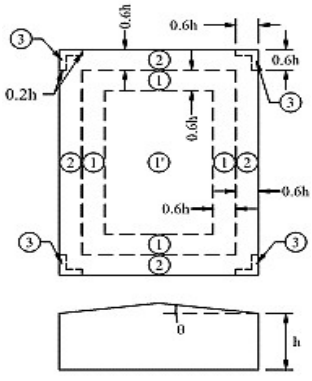
Self Weight (psf): 0.97 **Collateral Load (psf):** 0.00 **Max Live/Snow Load (psf):** 20.00

Roof Panel Selection: Std. R Panel 26 Ga. Grade 80, with Fy = 80ksi, Fu=82ksi

Deflection Limit: L/60

Minimum Purlin Thickness for Fastener: 0.060

Seaming Option for Interior Zone, (Zone 1): N/A
Seaming Option for Edge Zone, (Zone 2): N/A
Seaming Option for Corner Zone, (Zone 3): N/A



0.6h = 12.00 ft. **0.2h = 4.00 ft.**

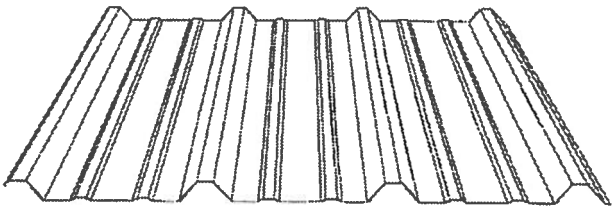
Item	Pressure All (ft.)	Suction in Zones 1' (ft.)	1 (ft.)	2 (ft.)	3 (ft.)	---	---
Roof Panel, (psf) →	23.17	-14.81	-26.20	-34.75	-47.58	----	----
Simple Span	5.50	5.50	5.50	5.50	4.84		
2 Equal Spans	5.50	5.50	5.50	5.27	4.48		
3 Equal Spans	5.50	5.50	5.50	5.50	4.84		
Seaming / Fasteners		6.00	6.00	6.00	4.58		

Note: These Panel Spans are Based on Values Found In the EDM for each brand
Note: The wind loads determined in this sheet are multiplied by 0.6
Note: 50 Year-Wind deflection check

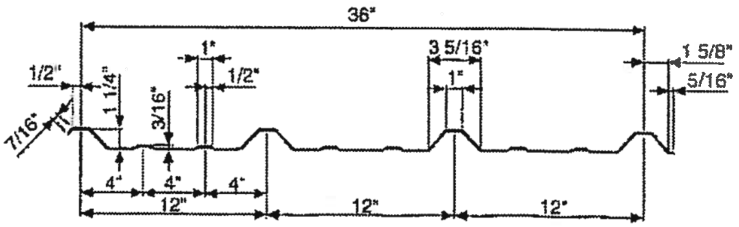
CBC STEEL BUILDINGS A NUCOR Company

CHART – 'C'

('R'-Panel)



R-Panel Profile



R-Panel Cross Section

Standard R-Panel Engineering Properties							
Gauge	Design Thickness	Total Thickness	Panel Weight	Top in Compression		Bottom in Compression	
	IN	IN	PSF	Ix	Sx	Ix	Sx
26	0.0177	0.0199	0.97	0.0397	0.0398	0.0317	0.0471
24	0.0225	0.0244	1.19	0.0543	0.0551	0.0423	0.0607

R Panel SAFE UNIFORM LOAD (PSF)

GRAVITY (PRESSURE)

TYPE OF SPAN	GAUGE	SPAN (FT)												
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.3333	8
SIMPLE SPAN	26	238	152	106	78	60	47	38	32	26	23	19	18	15
	80 ksi	430	220	127	80	54	38	28	21	16	13	10	9	7
	26	211	135	94	69	53	42	34	28	23	20	17	16	13
	50 ksi	433	222	128	81	54	38	28	21	16	13	10	9	7
	24	294	188	131	96	73	58	47	39	33	28	24	22	18
	50 ksi	619	317	183	116	77	54	40	30	23	18	14	13	10
TWO SPAN	26	277	177	123	90	69	55	44	37	31	26	23	21	17
	80 ksi	1035	530	307	193	129	91	66	50	38	30	24	21	16
	26	233	149	104	76	58	46	37	31	26	22	19	17	15
	50 ksi	1044	535	309	195	130	92	67	50	39	30	24	21	16
	24	299	192	133	98	75	59	48	40	33	28	24	22	19
	50 ksi	1491	764	442	278	186	131	95	72	55	43	35	30	23
THREE OR MORE SPANS	26	323	207	144	106	81	64	52	43	36	31	26	24	20
	80 ksi	861	441	255	161	108	76	55	41	32	25	20	17	13
	26	272	174	121	89	68	54	44	36	30	26	22	20	17
	50 ksi	868	445	257	162	109	76	56	42	32	25	20	18	14
	24	349	224	155	114	87	69	56	46	39	33	29	26	22
	50 ksi	1240	635	367	231	155	109	79	60	46	36	29	25	19

UPLIFT (SUCTION)

TYPE OF SPAN	GAUGE	SPAN (FT)												
		2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.3333	8
SIMPLE SPAN	26	277	177	123	90	69	55	44	37	31	26	23	21	17
	80 ksi	350	179	104	65	44	31	22	17	13	10	8	7	5
	26	233	149	104	76	58	46	37	31	26	22	19	17	15
	50 ksi	361	185	107	67	45	32	23	17	13	11	8	7	6
	24	299	192	133	98	75	59	48	40	33	28	24	22	19
	50 ksi	481	246	142	90	60	42	31	23	18	14	11	10	8
TWO SPAN	26	238	152	106	78	60	47	38	32	26	23	19	18	15
	80 ksi	842	431	250	157	105	74	54	40	31	25	20	17	13
	26	211	135	94	69	53	42	34	28	23	20	17	16	13
	50 ksi	869	445	257	162	109	76	56	42	32	25	20	18	14
	24	294	188	131	96	73	58	47	39	33	28	24	22	18
	50 ksi	1158	593	343	216	145	102	74	56	43	34	27	23	18
THREE OR MORE SPANS	26	278	178	124	91	70	55	44	37	31	26	23	21	17
	80 ksi	700	359	208	131	88	61	45	34	26	20	16	14	11
	26	246	158	109	80	62	49	39	33	27	23	20	18	15
	50 ksi	722	370	214	135	90	63	46	35	27	21	17	15	11
	24	343	220	152	112	88	68	55	45	38	32	28	26	21
	50 ksi	963	493	285	180	120	85	62	46	36	28	22	20	15

Notes:

1. E = 29500
2. Top value is based on stress and bottom value is based on deflection.
3. Weight of panel is not included in the above allowables.
4. Deflection allowables are based on l/180. To adjust for other limits use the following:
   For l/90 multiply the above allowables by 2.0
   For l/240 multiply the above allowables by 0.75
5. Stress allowables may be increased by 4/3 for wind loading if allowed by the building code.
6. The panel properties are calculated in accordance with the *2012 North American Specification for the Design of Cold Formed Steel Structural Members.*

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 08/24/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Current\182 Rob Kerth Ice Land\Light Gage\Purlin\Rob Kerth Ice land purlins

Project Name: Rob Kerth Ice land purlins

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-19

Purlin spacing: 5.00 o.c.
Insulation Thickness: 0.00

SPAN PARAMETERS

Span	Length	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap	Right Lap
	(ft)							(in)	(in)
1	1.33	08Z089	1	No	Top	1	2	Cant.	0.00
2	22.42	08Z089	1	No	Top	2	3	0.00	46.50
3	25.00	08Z067	2	No	Top	3	4	46.50	30.50
4	25.00	08Z067	3	No	Top	4	5	30.50	30.50
5	25.00	08Z067	4	No	Top	5	6	30.50	30.50
6	25.00	08Z067	5	No	Top	6	7	30.50	46.50
7	22.42	08Z089	6	No	Top	7	8	46.50	0.00
8	1.33	08Z089	6	No	Top	8	9	0.00	Cant.

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces					Maximum Computed Load Ratios					
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	1.33	08Z089	0.215	0.00	0.20	0.11	-0.13	0.00	0.00	0.02	0.02	0.02	0.02	0.03
		x	0.00	0.00	16.00	16.00	16.00	0.00	0.00	16.00	16.00	16.00	16.00	16.00
		comb	12	0	12	4	12	0	0	2	12	12	12	2
2	22.42	08Z089	-0.942	1.66	2.09	6.30	-9.73	0.00	0.15	0.18	0.73	0.73	0.91	0.75
		x	117.11	245.75	269.00	269.00	269.00	0.00	0.00	222.50	269.00	269.00	93.68	269.00
		comb	12	4	12	4	12	0	4	12	12	12	4	12
3	25.00	08Z067	-0.513	3.58	1.92	6.30	-9.73	0.00	0.45	0.39	0.84	0.84	0.88	0.81
		x	150.00	269.50	0.00	0.00	0.00	0.00	46.50	269.50	269.50	269.50	46.50	269.50
		comb	12	10	12	4	12	0	10	12	12	12	4	12
4	25.00	08Z067	-0.764	0.67	1.88	5.24	-8.57	0.00	0.09	0.41	0.93	0.93	0.93	0.89
		x	150.00	289.83	300.00	300.00	300.00	0.00	30.50	269.50	269.50	269.50	269.50	269.50
		comb	12	4	12	4	12	0	4	12	12	12	12	12
5	25.00	08Z067	-0.764	0.67	1.88	5.24	-8.57	0.00	0.09	0.41	0.93	0.93	0.93	0.89
		x	150.00	269.50	0.00	0.00	0.00	0.00	30.50	30.50	30.50	30.50	30.50	30.50
		comb	12	4	12	4	12	0	4	12	12	12	12	12
6	25.00	08Z067	-0.514	3.58	1.92	6.29	-9.73	0.00	0.45	0.39	0.84	0.84	0.88	0.81
		x	138.50	265.12	300.00	300.00	300.00	0.00	30.50	30.50	30.50	30.50	253.50	30.50
		comb	12	10	12	4	12	0	10	12	12	12	4	12
7	22.42	08Z089	-0.942	1.66	2.09	6.29	-9.73	0.00	0.15	0.18	0.73	0.73	0.90	0.75
		x	151.89	58.21	0.00	0.00	0.00	0.00	46.50	46.50	0.00	0.00	163.61	0.00
		comb	12	4	12	4	12	0	4	12	12	12	4	12
8	1.33	08Z089	0.215	0.00	0.20	0.11	-0.13	0.00	0.00	0.02	0.02	0.02	0.02	0.03
		x	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		comb	12	0	12	4	12	0	0	2	12	12	12	2

	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans	-0.942	3.58	2.09	6.30	-9.73	0.00	0.45	0.41	0.93	0.93	0.93	0.89
Distance from Left	117.11	269.50	269.00	269.00	269.00	0.00	46.50	269.50	269.50	269.50	269.50	269.50
Span	2	3	2	2	2	0	3	4	4	4	4	4
Load Combination	12	10	12	4	12	0	10	12	12	12	12	12

SUPPORT CONNECTIONS

Support No.	2	3	4	5	6	7	8
Connection Code	NC	NC	NC	NC	NC	NC	NC

* Roofing is screwed down

VERTICAL REACTIONS [kips]

Comb	Support No

	1	2	3	4	5	6	7	8	9
1	0.00	-0.96	-2.69	-2.41	-2.52	-2.41	-2.69	-0.96	0.00
2	0.00	-1.32	-3.70	-3.32	-3.47	-3.32	-3.70	-1.32	0.00
3	0.00	-0.36	-1.01	-0.91	-0.95	-0.91	-1.01	-0.36	0.00
4	0.00	1.14	2.54	2.13	2.28	2.13	2.53	1.14	0.00
5	0.00	0.78	1.71	1.44	1.54	1.44	1.71	0.78	0.00
6	0.00	0.86	1.73	1.41	1.52	1.41	1.72	0.85	0.00
7	0.00	0.55	1.04	0.83	0.90	0.83	1.04	0.55	0.00
8	0.00	-0.17	-0.98	-0.98	-0.99	-0.98	-0.98	-0.17	0.00
9	0.00	-0.71	-1.99	-1.79	-1.86	-1.79	-1.99	-0.71	0.00
10	0.00	-0.06	-0.18	-0.16	-0.17	-0.16	-0.18	-0.06	0.00
11	0.00	-0.39	-1.08	-0.97	-1.02	-0.97	-1.08	-0.39	0.00
12	0.00	-1.43	-4.01	-3.60	-3.75	-3.60	-4.01	-1.43	0.00

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
2	3	Max Ratios	0.36	0.27	0.27	0.19
		Combo	12	12	12	12
3	3	Max Ratios	0.66	0.81	0.76	0.31
		Combo	12	12	12	12
4	3	Max Ratios	0.84	0.90	0.68	0.32
		Combo	12	12	12	12
5	3	Max Ratios	0.88	0.96	0.71	0.33
		Combo	12	12	12	12
6	3	Max Ratios	0.84	0.90	0.68	0.32
		Combo	12	12	12	12
7	3	Max Ratios	0.66	0.81	0.76	0.31
		Combo	12	12	12	12
8	3	Max Ratios	0.36	0.27	0.27	0.19
		Combo	12	12	12	12
Maximum Ratios of All Supports			0.88	0.96	0.76	0.33
Support			5	5	3	5
Combo			12	12	12	12
Support Type			3	3	3	3

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	2.5	Dead Load
2	5.0	Collateral Load
3	0.0	Snow Load
4	20.0	Live Load
5	-32.2	Wind Load
6	-42.9	Edge Zone Wind Load
7	0.0	Alternate Snow Load
8	16.0	Wind Pressure Load
9	1.0	Seismic Load

LINEAR LOADS

Load Case	Span	Load Type	Start Load (lb/ft)	Start X (ft)	End Load (lb/ft)	End X (ft)
1	1	Shear	12.50	0.00	12.50	1.33
1	2	Shear	12.50	0.00	12.50	22.42
1	3	Shear	12.50	0.00	12.50	25.00
1	4	Shear	12.50	0.00	12.50	25.00
1	5	Shear	12.50	0.00	12.50	25.00
1	6	Shear	12.50	0.00	12.50	25.00
1	7	Shear	12.50	0.00	12.50	22.42
1	8	Shear	12.50	0.00	12.50	1.33
2	1	Shear	24.90	0.00	24.90	1.33
2	2	Shear	24.90	0.00	24.90	22.42
2	3	Shear	24.90	0.00	24.90	25.00
2	4	Shear	24.90	0.00	24.90	25.00
2	5	Shear	24.90	0.00	24.90	25.00
2	6	Shear	24.90	0.00	24.90	25.00
2	7	Shear	24.90	0.00	24.90	22.42
2	8	Shear	24.90	0.00	24.90	1.33
4	1	Shear	99.30	0.00	99.30	1.33
4	2	Shear	99.30	0.00	99.30	22.42
4	3	Shear	99.30	0.00	99.30	25.00
4	4	Shear	99.30	0.00	99.30	25.00
4	5	Shear	99.30	0.00	99.30	25.00
4	6	Shear	99.30	0.00	99.30	25.00
4	7	Shear	99.30	0.00	99.30	22.42
4	8	Shear	99.30	0.00	99.30	1.33
5	1	Shear	-214.30	0.00	-214.30	1.33
5	2	Shear	-214.30	0.00	-214.30	10.67
5	2	Shear	-160.90	10.67	-160.90	22.42
5	3	Shear	-160.90	0.00	-160.90	25.00

5	4	Shear	-160.90	0.00	-160.90	25.00
5	5	Shear	-160.90	0.00	-160.90	25.00
5	6	Shear	-160.90	0.00	-160.90	25.00
5	7	Shear	-160.90	0.00	-160.90	11.75
5	7	Shear	-214.30	11.75	-214.30	22.42
5	8	Shear	-214.30	0.00	-214.30	1.33
8	1	Shear	80.00	0.00	80.00	1.33
8	2	Shear	80.00	0.00	80.00	22.42
8	3	Shear	80.00	0.00	80.00	25.00
8	4	Shear	80.00	0.00	80.00	25.00
8	5	Shear	80.00	0.00	80.00	25.00
8	6	Shear	80.00	0.00	80.00	25.00
8	7	Shear	80.00	0.00	80.00	22.42
8	8	Shear	80.00	0.00	80.00	1.33

CONCENTRATED LOADS

Load Case	Span	P (k)	V (k)	M (k-ft)	X (ft)
5	2	2.76	0.00	0.00	0.00
5	2	-2.76	0.00	0.00	22.42
5	3	4.57	0.00	0.00	0.00
5	3	-4.57	0.00	0.00	25.00
5	4	1.12	0.00	0.00	0.00
5	4	-1.12	0.00	0.00	25.00
5	5	1.12	0.00	0.00	0.00
5	5	-1.12	0.00	0.00	25.00
5	6	4.57	0.00	0.00	0.00
5	6	-4.57	0.00	0.00	25.00
5	7	2.76	0.00	0.00	0.00
5	7	-2.76	0.00	0.00	22.42
9	2	0.39	0.00	0.00	0.00
9	2	-0.39	0.00	0.00	22.42
9	3	3.93	0.00	0.00	0.00
9	3	-3.93	0.00	0.00	25.00
9	4	0.44	0.00	0.00	0.00
9	4	-0.44	0.00	0.00	25.00
9	5	0.44	0.00	0.00	0.00
9	5	-0.44	0.00	0.00	25.00
9	6	3.93	0.00	0.00	0.00
9	6	-3.93	0.00	0.00	25.00
9	7	0.39	0.00	0.00	0.00
9	7	-0.39	0.00	0.00	22.42

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	2	3	4	5	6	7	8	9
1	Y	Live Load Only	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
2	Y	DL + COL + LL	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
3	Y	DL + COL + SL	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Y	0.6 DL + 0.6 WL	1.00	0.60	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00
5	Y	0.6 DL + 0.42 WL	1.00	0.60	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.00
6	Y	DL + COL + 0.6 WL	1.00	1.00	1.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00
7	Y	DL + COL + 0.75 SL + 0.45 WL	1.00	1.00	1.00	0.75	0.00	0.45	0.00	0.00	0.00	0.00
8	Y	DL + COL + 0.75 LL + 0.45 WL	1.00	1.00	1.00	0.00	0.75	0.45	0.00	0.00	0.00	0.00
9	Y	DL + COL + 0.75 SL + 0.45 WP	1.00	1.00	1.00	0.75	0.00	0.00	0.00	0.00	0.45	0.00
10	Y	0.53DL+0.91E	1.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91
11	Y	1.07DL+1.07COL+0.91E	1.00	1.07	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.91
12	Y	DL+COL+0.75LL+0.45WPL	1.00	1.00	1.00	0.00	0.75	0.00	0.00	0.00	0.45	0.00

DEFLECTION LIMITATIONS

The deflection limit with DEAD LOAD = L / 120.0
The maximum deflection with DEAD LOAD = 2.50"
The deflection limit without DEAD LOAD = L / 150.0
The maximum deflection without DEAD LOAD = 2.00"

* Deflection limitations were applied to combinations 1-3,5

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight = 630.20 lbs
Total system cost = 1109.95 dollars

PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z089	27.62
2	08Z067	31.42
3	08Z067	30.08
4	08Z067	30.08
5	08Z067	31.42
6	08Z089	27.62

MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z067	394.83	705.55	55.0
08Z089	235.37	404.41	55.0

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 11/03/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

1 Girt gages, laps, and heights updated.

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Completed\2022\182 Rob Kerth Ice Land\Light Gage\SW\Ice land SW CO2

Project Name: Ice land SW

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-20,21

1 Girts @ 7'-6", 13'-8"

16ga 13'-8" girt only on FSW

Purlin spacing: 6.84 o.c.
Insulation Thickness: 0.00

SPAN PARAMETERS 1 1

Span	Length (ft)	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap (in)	Right Lap (in)	
1	1.33	08Z060	1	Yes	Top	1	2	Cant.	0.00	
2	22.42	08Z060	1	Yes	Top	2	3	0.00	~~22.50~~	34.5
3	25.00	08Z060	2	Yes	Top	3	4	~~22.50~~	22.50	
4	25.00	08Z060	3	Yes	Top	4	5	22.50	22.50	
5	25.00	08Z060	4	Yes	Top	5	6	22.50	22.50	
6	25.00	08Z060	5	Yes	Top	6	7	22.50	~~22.50~~	
7	22.42	08Z060	6	Yes	Top	7	8	~~22.50~~	0.00	34.5
8	1.33	08Z060	6	Yes	Top	8	9	0.00	Cant.	

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces						Maximum Computed Load Ratios				
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	1.33	08Z060	-0.216	0.00	-0.13	0.09	-0.08	0.00	0.00	0.05	0.02	0.02	0.02	0.05
		x	0.00	0.00	16.00	16.00	16.00	0.00	0.00	16.00	16.00	16.00	16.00	16.00
		comb	2	0	2	2	1	0	0	2	1	1	1	2
2	22.42	08Z060	0.952	0.00	-1.32	5.93	-5.35	0.00	0.00	0.44	1.00	1.00	1.00	0.87
		x	117.11	0.00	269.00	269.00	269.00	0.00	0.00	246.50	93.68	93.68	93.68	246.50
		comb	2	0	2	2	1	0	0	2	2	2	2	2
3	25.00	08Z060	0.407	0.00	-1.22	5.93	-5.35	0.00	0.00	0.40	0.89	0.89	0.89	0.89
		x	150.00	0.00	0.00	0.00	0.00	0.00	0.00	22.50	22.50	22.50	22.50	22.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
4	25.00	08Z060	0.570	0.00	-1.19	5.35	-4.85	0.00	0.00	0.39	0.76	0.76	0.76	0.79
		x	150.00	0.00	300.00	300.00	300.00	0.00	0.00	277.50	277.50	277.50	277.50	277.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
5	25.00	08Z060	0.570	0.00	-1.19	5.35	-4.85	0.00	0.00	0.39	0.76	0.76	0.76	0.79
		x	150.00	0.00	0.00	0.00	0.00	0.00	0.00	22.50	22.50	22.50	22.50	22.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
6	25.00	08Z060	0.407	0.00	-1.22	5.93	-5.35	0.00	0.00	0.40	0.89	0.89	0.89	0.89
		x	138.50	0.00	300.00	300.00	300.00	0.00	0.00	277.50	277.50	277.50	277.50	277.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
7	22.42	08Z060	0.952	0.00	-1.32	5.93	-5.35	0.00	0.00	0.44	1.00	1.00	1.00	0.87
		x	151.89	0.00	0.00	0.00	0.00	0.00	0.00	22.50	163.61	163.61	163.61	22.50
		comb	2	0	2	2	1	0	0	2	2	2	2	2
8	1.33	08Z060	-0.216	0.00	-0.13	0.09	-0.08	0.00	0.00	0.05	0.02	0.02	0.02	0.05
		x	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		comb	2	0	2	2	1	0	0	2	1	1	1	2

	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans	0.952	0.00	-1.32	5.93	-5.35	0.00	0.00	0.44	1.00	1.00	1.00	0.89
Distance from Left	117.11	0.00	269.00	269.00	269.00	0.00	0.00	246.50	93.68	93.68	93.68	22.50
Span	2	0	2	2	2	0	0	2	2	2	2	3
Load Combination	2	0	2	2	1	0	0	2	2	2	2	2

SUPPORT CONNECTIONS

Support No.	2	3	4	5	6	7	8
Connection Code	NC	NC	NC	NC	NC	NC	NC

VERTICAL REACTIONS [kips]

Comb	Support No 1	2	3	4	5	6	7	8	9

1	0.00	-0.84	-2.29	-2.09	-2.16	-2.09	-2.29	-0.84	0.00
2	0.00	0.97	2.54	2.30	2.39	2.30	2.54	0.97	0.00
3	0.00	-0.59	-1.61	-1.47	-1.51	-1.47	-1.61	-0.59	0.00
4	0.00	0.68	1.78	1.61	1.67	1.61	1.78	0.68	0.00

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
2	1	Max Ratios	0.50	0.36	0.18	0.10
		Combo	1	1	2	2
3	1	Max Ratios	0.68	0.71	0.48	0.25
		Combo	1	1	2	2
4	1	Max Ratios	0.62	0.63	0.43	0.23
		Combo	1	1	2	2
5	1	Max Ratios	0.64	0.66	0.45	0.24
		Combo	1	1	2	2
6	1	Max Ratios	0.62	0.63	0.43	0.23
		Combo	1	1	2	2
7	1	Max Ratios	0.68	0.71	0.48	0.25
		Combo	1	1	2	2
8	1	Max Ratios	0.50	0.36	0.18	0.19
		Combo	1	1	2	2
Maximum Ratios of All Supports			0.68	0.71	0.48	0.25
Support			3	3	3	3
Combo			1	1	2	2
Support Type			1	1	1	1

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	20.8	Pressure Wind Load
2	-23.0	Suction Wind Load
3	-24.6	Edge Suction Wind Load

LINEAR LOADS

Load Case	Span	Load Type	Start Load	Start X	End Load	End X
			(lb/ft)	(ft)	(lb/ft)	(ft)
1	1	Shear	142.50	0.00	142.50	1.33
1	2	Shear	142.50	0.00	142.50	22.42
1	3	Shear	142.50	0.00	142.50	25.00
1	4	Shear	142.50	0.00	142.50	25.00
1	5	Shear	142.50	0.00	142.50	25.00
1	6	Shear	142.50	0.00	142.50	25.00
1	7	Shear	142.50	0.00	142.50	22.42
1	8	Shear	142.50	0.00	142.50	1.33
2	1	Shear	-168.10	0.00	-168.10	1.33
2	2	Shear	-168.10	0.00	-168.10	6.67
2	2	Shear	-157.10	6.67	-157.10	22.42
2	3	Shear	-157.10	0.00	-157.10	25.00
2	4	Shear	-157.10	0.00	-157.10	25.00
2	5	Shear	-157.10	0.00	-157.10	25.00
2	6	Shear	-157.10	0.00	-157.10	25.00
2	7	Shear	-157.10	0.00	-157.10	15.75
2	7	Shear	-168.10	15.75	-168.10	22.42
2	8	Shear	-168.10	0.00	-168.10	1.33

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	2
1	Y	Wind Pressure	1.00	0.60	0.00
2	Y	Wind Suction	1.00	0.00	0.60
3	Y	Wind Pressure Deflection	1.00	0.42	0.00
4	Y	Wind Suction Deflection	1.00	0.00	0.42

DEFLECTION LIMITATIONS

The 50 year deflection limit = L / 90.0
The 50 year maximum deflection = 3.33"

* Deflection limitations were applied to combinations 3-4

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight = 477.14 lbs
Total system cost = 760.00 dollars

PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z060	25.62
2	08Z060	28.75
3	08Z060	28.75
4	08Z060	28.75
5	08Z060	28.75
6	08Z060	25.62

MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z060	477.14	760.00	55.0

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 11/03/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

1 Girt gages, laps, and heights updated.

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Completed\2022\182 Rob Kerth Ice Land\Light Gage\SW\Ice land SW CO2 loaded

Project Name: Ice land SW loaded

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-20

1 @BSW Girts @ 13'-8"

Purlin spacing: 6.25 o.c.
Insulation Thickness: 0.00

SPAN PARAMETERS 1 1

Span	Length	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap	Right Lap
	(ft)							(in)	(in)
1	1.33	08Z099	1	No	Top	1	2	Cant.	0.00
2	22.42	08Z099	1	No	Top	2	3	0.00	34.50
3	25.00	08Z067	2	No	Top	3	4	34.50	22.50
4	25.00	08Z060	3	No	Top	4	5	22.50	22.50
5	25.00	08Z060	4	No	Top	5	6	22.50	22.50
6	25.00	08Z067	5	No	Top	6	7	22.50	34.50
7	22.42	08Z099	6	No	Top	7	8	34.50	0.00
8	1.33	08Z099	6	No	Top	8	9	0.00	Cant.

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces						Maximum Computed Load Ratios				
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	1.33	08Z099	-0.259	0.00	-0.12	0.08	-0.07	0.00	0.00	0.01	0.01	0.01	0.01	0.01
		x	0.00	0.00	16.00	16.00	16.00	0.00	0.00	16.00	16.00	16.00	16.00	16.00
		comb	2	0	2	2	1	0	0	1	1	1	1	1
2	22.42	08Z099	1.232	0.00	-1.91	7.74	-6.98	0.00	0.00	0.15	0.97	0.97	0.97	0.68
		x	128.04	0.00	269.00	269.00	269.00	0.00	0.00	234.50	128.04	128.04	128.04	128.04
		comb	2	0	2	2	1	0	0	2	2	2	2	2
3	25.00	08Z067	-0.247	0.00	-1.23	7.74	-6.98	0.00	0.00	0.27	0.92	0.92	0.92	0.88
		x	58.00	0.00	0.00	0.00	0.00	0.00	0.00	34.50	34.50	34.50	34.50	34.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
4	25.00	08Z060	0.609	0.00	-1.13	5.27	-4.77	0.00	0.00	0.37	0.77	0.77	0.77	0.78
		x	138.50	0.00	300.00	300.00	300.00	0.00	0.00	277.50	277.50	277.50	277.50	277.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
5	25.00	08Z060	0.613	0.00	-1.13	5.27	-4.77	0.00	0.00	0.37	0.77	0.77	0.77	0.78
		x	161.50	0.00	0.00	0.00	0.00	0.00	0.00	22.50	22.50	22.50	22.50	22.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
6	25.00	08Z067	-0.255	0.00	-1.23	7.79	-7.03	0.00	0.00	0.27	0.93	0.93	0.93	0.89
		x	242.00	0.00	300.00	300.00	300.00	0.00	0.00	265.50	265.50	265.50	265.50	265.50
		comb	2	0	2	2	1	0	0	2	1	1	1	2
7	22.42	08Z099	1.224	0.00	-2.04	7.79	-7.03	0.00	0.00	0.17	0.95	0.95	0.95	0.67
		x	142.56	0.00	0.00	0.00	0.00	0.00	0.00	34.50	166.56	166.56	166.56	166.56
		comb	2	0	2	2	1	0	0	2	2	2	2	2
8	1.33	08Z099	-0.269	0.00	-0.12	0.08	-0.07	0.00	0.00	0.01	0.01	0.01	0.01	0.01
		x	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		comb	2	0	2	2	1	0	0	1	1	1	1	1
			Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans			1.232	0.00	-2.04	7.79	-7.03	0.00	0.00	0.37	0.97	0.97	0.97	0.89
Distance from Left			128.04	0.00	0.00	300.00	300.00	0.00	0.00	277.50	128.04	128.04	128.04	265.50
Span			2	0	7	6	6	0	0	4	2	2	2	6
Load Combination			2	0	2	2	1	0	0	2	2	2	2	2

SUPPORT CONNECTIONS

Support No.	2	3	4	5	6	7	8
Connection Code	NC	NC	NC	NC	NC	NC	NC

VERTICAL REACTIONS [kips]

Comb	Support No								
	1	2	3	4	5	6	7	8	9

1	0.00	-1.49	-2.84	-1.77	-2.05	-1.76	-2.96	-1.38	0.00
2	0.00	1.69	3.15	1.94	2.27	1.94	3.28	1.56	0.00
3	0.00	-1.04	-1.99	-1.24	-1.44	-1.24	-2.07	-0.96	0.00
4	0.00	1.18	2.20	1.36	1.59	1.36	2.29	1.09	0.00

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
2	1	Max Ratios	0.30	0.22	0.32	0.10
		Combo	1	1	2	2
3	1	Max Ratios	0.40	0.52	0.59	0.23
		Combo	1	1	2	2
4	1	Max Ratios	0.46	0.46	0.37	0.18
		Combo	1	1	2	2
5	1	Max Ratios	0.61	0.64	0.43	0.22
		Combo	1	1	2	2
6	1	Max Ratios	0.46	0.46	0.37	0.18
		Combo	1	1	2	2
7	1	Max Ratios	0.42	0.53	0.62	0.23
		Combo	1	1	2	2
8	1	Max Ratios	0.28	0.20	0.30	0.19
		Combo	1	1	2	2
Maximum Ratios of All Supports			0.61	0.64	0.62	0.23
Support			5	5	7	7
Combo			1	1	2	2
Support Type			1	1	1	1

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	20.8	Pressure Wind Load
2	-23.0	Suction Wind Load
3	-24.6	Edge Suction Wind Load

LINEAR LOADS

Load Case	Span	Load Type	Start Load	Start X	End Load	End X
			(lb/ft)	(ft)	(lb/ft)	(ft)
1	1	Shear	130.30	0.00	130.30	1.33
1	2	Shear	130.30	0.00	130.30	22.42
1	3	Shear	130.30	0.00	130.30	25.00
1	4	Shear	130.30	0.00	130.30	25.00
1	5	Shear	130.30	0.00	130.30	25.00
1	6	Shear	130.30	0.00	130.30	25.00
1	7	Shear	130.30	0.00	130.30	22.42
1	8	Shear	130.30	0.00	130.30	1.33
2	1	Shear	-153.60	0.00	-153.60	1.33
2	2	Shear	-153.60	0.00	-153.60	6.67
2	2	Shear	-143.60	6.67	-143.60	22.42
2	3	Shear	-143.60	0.00	-143.60	25.00
2	4	Shear	-143.60	0.00	-143.60	25.00
2	5	Shear	-143.60	0.00	-143.60	25.00
2	6	Shear	-143.60	0.00	-143.60	25.00
2	7	Shear	-143.60	0.00	-143.60	15.75
2	7	Shear	-153.60	15.75	-153.60	22.42
2	8	Shear	-153.60	0.00	-153.60	1.33

CONCENTRATED LOADS

Load Case	Span	P (k)	V (k)	M (k-ft)	X (ft)
1	2	0.00	0.90	0.00	1.67
1	2	0.00	1.37	0.00	13.67
1	7	0.00	1.18	0.00	5.88
1	7	0.00	1.09	0.00	17.88
2	2	0.00	-1.00	0.00	1.67
2	2	0.00	-1.52	0.00	13.67
2	7	0.00	-1.31	0.00	5.88
2	7	0.00	-1.21	0.00	17.88

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	Load Case No. 2
1	Y	Wind Pressure	1.00	0.60	0.00
2	Y	Wind Suction	1.00	0.00	0.60
3	Y	Wind Pressure Deflection	1.00	0.42	0.00
4	Y	Wind Suction Deflection	1.00	0.00	0.42

DEFLECTION LIMITATIONS

The 50 year deflection limit	=	L / 90.0
The 50 year maximum deflection	=	3.33"

* Deflection limitations were applied to combinations 3-4

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight	=	608.96 lbs
Total system cost	=	940.48 dollars

PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z099	26.62
2	08Z067	29.75
3	08Z060	28.75
4	08Z060	28.75
5	08Z067	29.75
6	08Z099	26.62

MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z060	165.02	262.86	55.0
08Z067	190.99	300.39	55.0
08Z099	252.94	377.23	55.0

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 11/03/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

1 Spans, girt gages, and heights updated.

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Completed\2022\182 Rob Kerth Ice Land\Light Gage\EW\Ice land LEW CO2

Project Name: Ice land single bay

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-22,23

@1,7 (A-B) 7'-6", 13'-8", 20'-6"

Purlin spacing: 6.84 o.c.
Insulation Thickness: 0.00

1 1

SPAN PARAMETERS

Span	Length	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap	Right Lap
	(ft)							(in)	(in)
1	16.00	08Z067	1	No	Top	1	2	-----	-----

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces					Maximum Computed Load Ratios				
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	16.00	08Z067	0.577	0.00	-0.83	2.79	-3.33	0.00	0.00	0.23	0.95	0.95	0.95	0.62
		x	96.00	0.00	0.00	96.00	96.00	0.00	0.00	0.00	96.00	96.00	96.00	96.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2

	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans	0.577	0.00	-0.83	2.79	-3.33	0.00	0.00	0.23	0.95	0.95	0.95	0.62
Distance from Left	96.00	0.00	0.00	96.00	96.00	0.00	0.00	0.00	96.00	96.00	96.00	96.00
Span	1	0	1	1	1	0	0	1	1	1	1	1
Load Combination	2	0	2	1	2	0	0	2	2	2	2	2

SUPPORT CONNECTIONS

Support No.	1	2
Connection Code	NC	NC

VERTICAL REACTIONS [kips]

Comb	Support No	
	1	2
1	-0.70	-0.70
2	0.83	0.83
3	-0.49	-0.49
4	0.58	0.58

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
1	1	Max Ratios	0.53	0.35	0.16	0.15
		Combo	1	1	2	2
2	1	Max Ratios	0.53	0.35	0.16	0.15
		Combo	1	1	2	2
Maximum Ratios of All Supports			0.53	0.35	0.16	0.15
Support			1	1	1	1
Combo			1	1	2	2
Support Type			1	1	1	1

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	21.2	Pressure Wind Load
2	-23.4	Suction Wind Load

3	-25.4	Edge Suction Wind Load	

LINEAR LOADS

Load Case	Span	Load Type	Start Load (lb/ft)	Start X (ft)	End Load (lb/ft)	End X (ft)
1	1	Shear	145.30	0.00	145.30	16.00
2	1	Shear	-173.60	0.00	-173.60	16.00

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	2
1	Y	Wind Pressure	1.00	0.60	0.00
2	Y	Wind Suction	1.00	0.00	0.60
3	Y	Wind Pressure Deflection	1.00	0.42	0.00
4	Y	Wind Suction Deflection	1.00	0.00	0.42

DEFLECTION LIMITATIONS

The 50 year deflection limit = L / 90.0
The 50 year maximum deflection = 2.13"

* Deflection limitations were applied to combinations 3-4

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight = 51.36 lbs
Total system cost = 80.78 dollars

PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z067	16.00

MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z067	51.36	80.78	55.0

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 11/03/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Completed\2022\182 Rob Kerth Ice Land\Light Gage\EW\Ice land LEW CO2 3.1875

Project Name: Ice land EW 2.1875

1 Spans, girt gages, and heights updated.

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-22 @LEW

1 Girts @ 7'-6", 13'-8", 20'-6"

Purlin spacing: 3.19 o.c.
Insulation Thickness: 0.00

1 1

SPAN PARAMETERS

Span	Length	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap	Right Lap
	(ft)							(in)	(in)
1	16.00	08Z060	1	Yes	Top	1	2	-----	0.00
2	26.00	08Z075	2	Yes	Top	2	3	0.00	0.00
3	21.00	08Z060	3	Yes	Top	3	4	0.00	0.00
4	21.00	08Z060	4	Yes	Top	4	5	0.00	0.00
5	21.00	08Z060	5	Yes	Top	5	6	0.00	-----

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces					Maximum Computed Load Ratios				
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	16.00	08Z060	0.288	0.00	-0.38	1.30	-1.49	0.00	0.00	0.15	0.48	0.48	0.48	0.31
		x	96.00	0.00	0.00	96.00	96.00	0.00	0.00	0.00	96.00	96.00	96.00	84.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2
2	26.00	08Z075	1.546	0.00	-0.58	3.43	-3.78	0.00	0.00	0.11	0.93	0.93	0.93	0.60
		x	156.00	0.00	0.00	156.00	156.00	0.00	0.00	0.00	156.00	156.00	156.00	144.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2
3	21.00	08Z060	0.817	0.00	-0.47	2.23	-2.46	0.00	0.00	0.18	0.79	0.79	0.79	0.51
		x	120.00	0.00	0.00	120.00	132.00	0.00	0.00	0.00	120.00	120.00	120.00	120.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2
4	21.00	08Z060	0.817	0.00	-0.47	2.23	-2.46	0.00	0.00	0.18	0.79	0.79	0.79	0.51
		x	120.00	0.00	0.00	120.00	132.00	0.00	0.00	0.00	120.00	120.00	120.00	120.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2
5	21.00	08Z060	0.839	0.00	-0.49	2.23	-2.52	0.00	0.00	0.19	0.81	0.81	0.81	0.53
		x	132.00	0.00	252.00	120.00	132.00	0.00	0.00	252.00	120.00	120.00	120.00	120.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2

	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans	1.546	0.00	-0.58	3.43	-3.78	0.00	0.00	0.19	0.93	0.93	0.93	0.60
Distance from Left	156.00	0.00	0.00	156.00	156.00	0.00	0.00	252.00	156.00	156.00	156.00	144.00
Span	2	0	2	2	2	0	0	5	2	2	2	2
Load Combination	2	0	2	1	2	0	0	2	2	2	2	2

SUPPORT CONNECTIONS

Support No.	1	2	3	4	5	6
Connection Code	NC	NC	NC	NC	NC	NC

VERTICAL REACTIONS [kips]

Comb	Support No					
	1	2	3	4	5	6
1	-0.32	-0.85	-0.95	-0.85	-0.85	-0.43
2	0.38	0.95	1.05	0.94	0.94	0.49
3	-0.23	-0.60	-0.67	-0.60	-0.60	-0.30
4	0.27	0.66	0.74	0.66	0.66	0.35

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
1	1	Max Ratios	0.31	0.20	0.07	0.08
		Combo	1	1	2	2

2	1	Max Ratios	0.81	0.54	0.18	0.15
		Combo	1	1	2	2
3	1	Max Ratios	0.90	0.60	0.20	0.21
		Combo	1	1	2	2
4	1	Max Ratios	0.81	0.54	0.18	0.19
		Combo	1	1	2	2
5	1	Max Ratios	0.81	0.54	0.18	0.19
		Combo	1	1	2	2
6	1	Max Ratios	0.40	0.27	0.09	0.10
		Combo	1	1	2	2
Maximum Ratios of All Supports			0.90	0.60	0.20	0.21
Support			3	3	3	3
Combo			1	1	2	2
Support Type			1	1	1	1

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	21.2	Pressure Wind Load
2	-23.4	Suction Wind Load
3	-25.4	Edge Suction Wind Load

LINEAR LOADS

Load Case	Span	Load Type	Start Load (lb/ft)	Start X (ft)	End Load (lb/ft)	End X (ft)
1	1	Shear	67.70	0.00	67.70	16.00
1	2	Shear	67.70	0.00	67.70	26.00
1	3	Shear	67.70	0.00	67.70	21.00
1	4	Shear	67.70	0.00	67.70	21.00
1	5	Shear	67.70	0.00	67.70	21.00
2	1	Shear	-80.90	0.00	-80.90	8.00
2	1	Shear	-74.50	8.00	-74.50	16.00
2	2	Shear	-74.50	0.00	-74.50	26.00
2	3	Shear	-74.50	0.00	-74.50	21.00
2	4	Shear	-74.50	0.00	-74.50	21.00
2	5	Shear	-74.50	0.00	-74.50	13.00
2	5	Shear	-80.90	13.00	-80.90	21.00

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	Load Case No. 2
1	Y	Wind Pressure	1.00	0.60	0.00
2	Y	Wind Suction	1.00	0.00	0.60
3	Y	Wind Pressure Deflection	1.00	0.42	0.00
4	Y	Wind Suction Deflection	1.00	0.00	0.42

DEFLECTION LIMITATIONS

The 50 year deflection limit = L / 90.0
The 50 year maximum deflection = 3.47"

* Deflection limitations were applied to combinations 3-4

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight = 320.07 lbs
Total system cost = 506.28 dollars

PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z060	16.00
2	08Z075	26.00
3	08Z060	21.00
4	08Z060	21.00
5	08Z060	21.00

MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z060	226.73	361.14	55.0
08Z075	93.34	145.14	55.0

NBG LIGHT GAGE ANALYSIS SHORT REPORT | 11/03/2022

Software: NBG Light Gage Analysis [version: 2018.12.04.1 date: 12/04/2018]
Analysis Config: CBC [version: 2016.07.12.001]

Input File: C:\Users\viviana.perez\OneDrive - Nucor\Desktop\Vivi's Projects\Completed\2022\182 Rob Kerth Ice Land\Light Gage\EW\Ice land EW CO2

Project Name: Ice land EW

1 Spans, girt gages, laps, and heights updated.

AISI Spec Year: 2016
Building Code: IBC 2018
Inventory: CBCCA-RP

See D-23 @REW

1 Girts @ 7'-6", 13'-8", 20'-6"

Purlin spacing: 5.35 o.c.
Insulation Thickness: 0.00

1 1

SPAN PARAMETERS

Span	Length (ft)	Section	Design Group	Design	Brace Type	Left Support	Right Support	Left Lap (in)	Right Lap (in)
1	21.00	08Z089	1	No	Top	1	2	-----	0.00
2	18.42	08Z067	2	No	Top	2	3	0.00	0.00
3	26.58	~~08Z099~~	3	No	Top	3	4	0.00	0.00
4	22.33	08Z089	4	No	Top	4	5	0.00	0.00
5	16.67	08Z060	5	No	Top	5	6	0.00	-----

16ga w/ 2.1875' trib

MAXIMUM COMPUTED DISPLACEMENTS, FORCES & LOAD RATIOS

Span Properties			Maximum Computed Displacements & Forces					Maximum Computed Load Ratios				
No	Length	Section	Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
1	21.00	08Z089	0.957	0.00	-0.83	3.75	-4.24	0.00	0.00	0.10	0.83	0.83	0.83	0.54
		x	120.00	0.00	0.00	132.00	120.00	0.00	0.00	0.00	120.00	120.00	120.00	120.00
		comb	2	0	2	1	2	0	0	2	2	2	2	2
2	18.42	08Z067	0.728	0.00	-0.69	2.88	-3.17	0.00	0.00	0.19	0.90	0.90	0.90	0.59
		x	104.68	0.00	221.00	116.32	104.68	0.00	0.00	0.00	104.68	104.68	104.68	104.68
		comb	2	0	2	1	2	0	0	2	2	2	2	2
3	26.58	~~08Z099~~	2.160	0.00	-1.00	6.01	-6.62	~~0.00~~	~~0.00~~	~~0.09~~	1.14	1.14	1.14	~~0.74~~
		x	153.59	0.00	0.00	165.41	153.59	0.00	0.00	0.00	153.59	153.59	153.59	153.59
		comb	2	0	2	1	2	0	0	2	2	2	2	2
4	22.33	08Z089	1.193	0.00	-0.84	4.24	-4.67	0.00	0.00	0.10	0.92	0.92	0.92	0.60
		x	128.17	0.00	268.00	139.83	139.83	0.00	0.00	0.00	128.17	128.17	128.17	128.17
		comb	2	0	2	1	2	0	0	2	2	2	2	2
5	16.67	08Z060	0.565	0.00	-0.66	2.36	-2.71	0.00	0.00	0.26	0.86	0.86	0.86	0.56
		x	105.88	0.00	200.00	94.12	105.88	0.00	0.00	200.00	94.12	94.12	94.12	94.12
		comb	2	0	2	1	2	0	0	2	2	2	2	2
			Displacement	Axial	Shear	Moment(+)	Moment(-)	Ten.(T)	Comp.(P)	Shear(V)	Mom.(M)	T&M	P&M	V&M
Max of All Spans			2.160	0.00	-1.00	6.01	-6.62	0.00	0.00	0.26	1.14	1.14	1.14	0.74
Distance from Left			153.59	0.00	0.00	165.41	153.59	0.00	0.00	200.00	153.59	153.59	153.59	153.59
Span			3	0	3	3	3	0	0	5	3	3	3	3
Load Combination			2	0	2	1	2	0	0	2	2	2	2	2

0.9 0.9 0.9 0.6

SUPPORT CONNECTIONS

Support No.	1	2	3	4	5	6
Connection Code	NC	NC	NC	NC	NC	NC

VERTICAL REACTIONS [kips]

Comb	Support No 1	2	3	4	5	6
1	-0.72	-1.34	-1.53	-1.67	-1.33	-0.57
2	0.83	1.49	1.69	1.84	1.48	0.66
3	-0.50	-0.94	-1.07	-1.17	-0.93	-0.40
4	0.58	1.04	1.18	1.29	1.03	0.47

* Negative reaction for gravity loads

SUPPORT RATIOS

Support	Support Type*		Crippling	Crip & Bend	Bolt Shear	Bearing*
1	1	Max Ratios	0.32	0.21	0.16	0.11
		Combo	1	1	2	2

2	1	Max Ratios	1.03	0.68	0.28	0.26
		Combo	1	1	2	2
3	1	Max Ratios	1.17	0.78	0.32	0.20
		Combo	1	1	2	2
4	1	Max Ratios	0.74	0.49	0.35	0.25
		Combo	1	1	2	2
5	1	Max Ratios	1.26	0.84	0.28	0.29
		Combo	1	1	2	2
6	1	Max Ratios	0.54	0.36	0.13	0.13
		Combo	1	1	2	2
Maximum Ratios of All Supports			1.26	0.84	0.35	0.29
Support			5	5	4	5
Combo			1	1	2	2
Support Type			1	1	1	1

* Bolt type between purlin & clip: A307
* Support types: 1 = No Clip | 2 = Crippling Clip | 3 = Bolted or Welded Clip w/ A307 | 4 = Bolted or Welded Clip w/ A325
* Bearing ratio is check of bearing of clip bolts on purlins

GENERAL LOADS

Load Case	Uniform Load (psf)	Load Case Name
1	21.2	Pressure Wind Load
2	-23.4	Suction Wind Load
3	-25.4	Edge Suction Wind Load

LINEAR LOADS

Load Case	Span	Load Type	Start Load (lb/ft)	Start X (ft)	End Load (lb/ft)	End X (ft)
1	1	Shear	113.60	0.00	113.60	21.00
1	2	Shear	113.60	0.00	113.60	18.42
1	3	Shear	113.60	0.00	113.60	26.58
1	4	Shear	113.60	0.00	113.60	22.33
1	5	Shear	113.60	0.00	113.60	16.67
2	1	Shear	-135.80	0.00	-135.80	8.00
2	1	Shear	-125.10	8.00	-125.10	21.00
2	2	Shear	-125.10	0.00	-125.10	18.42
2	3	Shear	-125.10	0.00	-125.10	26.58
2	4	Shear	-125.10	0.00	-125.10	22.33
2	5	Shear	-125.10	0.00	-125.10	8.67
2	5	Shear	-135.80	8.67	-135.80	16.67

LOAD COMBINATIONS

Comb #	Active (Y/N)	Load Combination Name	Allowable Factor	Load Case No. 1	2
1	Y	Wind Pressure	1.00	0.60	0.00
2	Y	Wind Suction	1.00	0.00	0.60
3	Y	Wind Pressure Deflection	1.00	0.42	0.00
4	Y	Wind Suction Deflection	1.00	0.00	0.42

DEFLECTION LIMITATIONS

The 50 year deflection limit = L / 90.0
The 50 year maximum deflection = 3.54"

* Deflection limitations were applied to combinations 3-4

ERROR MESSAGES

* Warning! Overstressed in Moment (M)
* Warning! Overstressed in Tension & Bending (T&M)
* Warning! Overstressed in Compression & Bending (P&M)

GENERAL NOTES

* '* Ends of laps are considered as brace points.'
* '* Inflection points are considered brace points except for spans with discrete bracing.'
* All calculations are in accordance with the 2016 North American Specification.

SYSTEM WEIGHT & COST

Total system weight = 417.82 lbs
Total system cost = 635.13 dollars

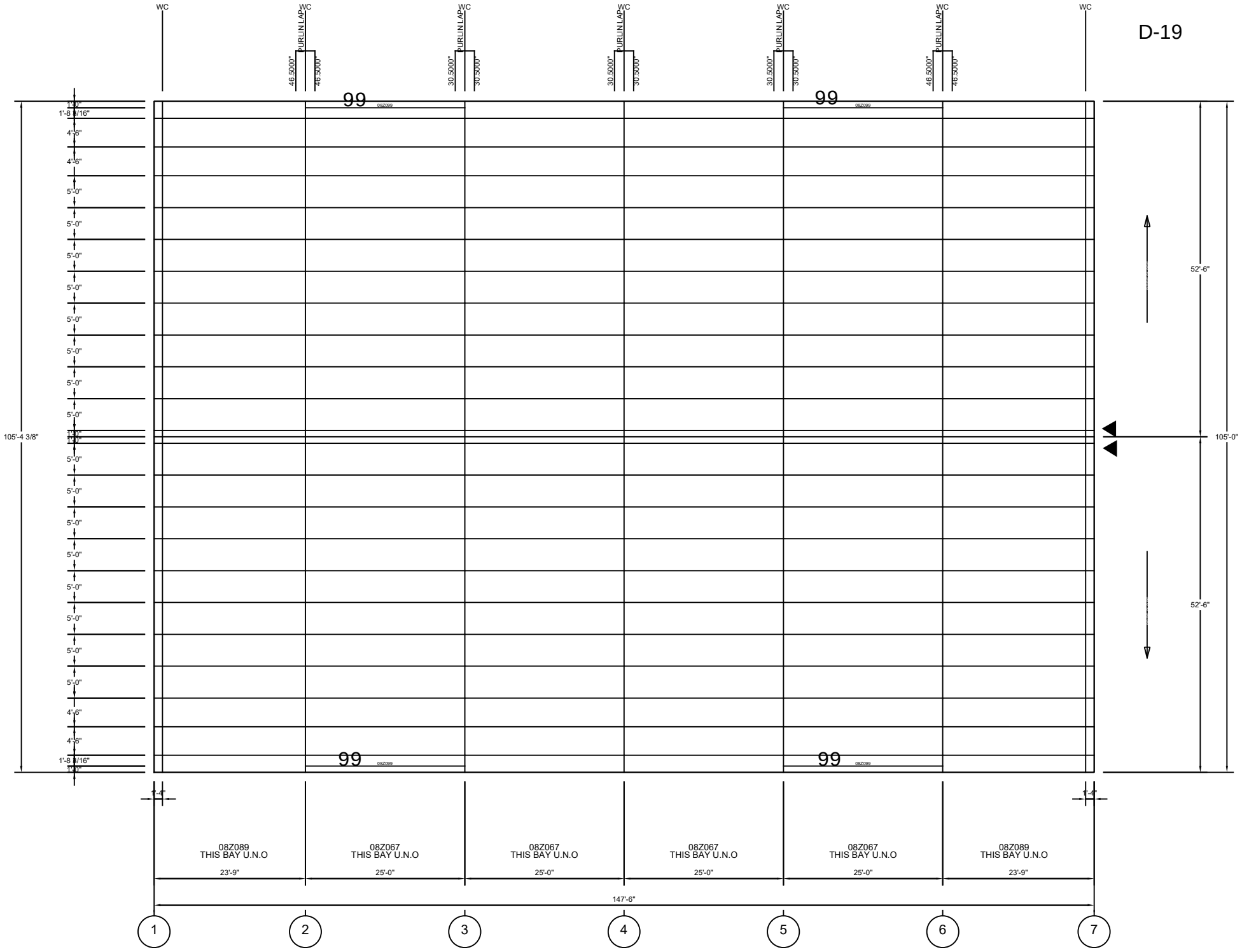
PURLIN PRODUCTION LIST

Purlin	Section	Length
1	08Z089	21.00
2	08Z067	18.42

3	08Z099	26.58
4	08Z089	22.33
5	08Z060	16.67

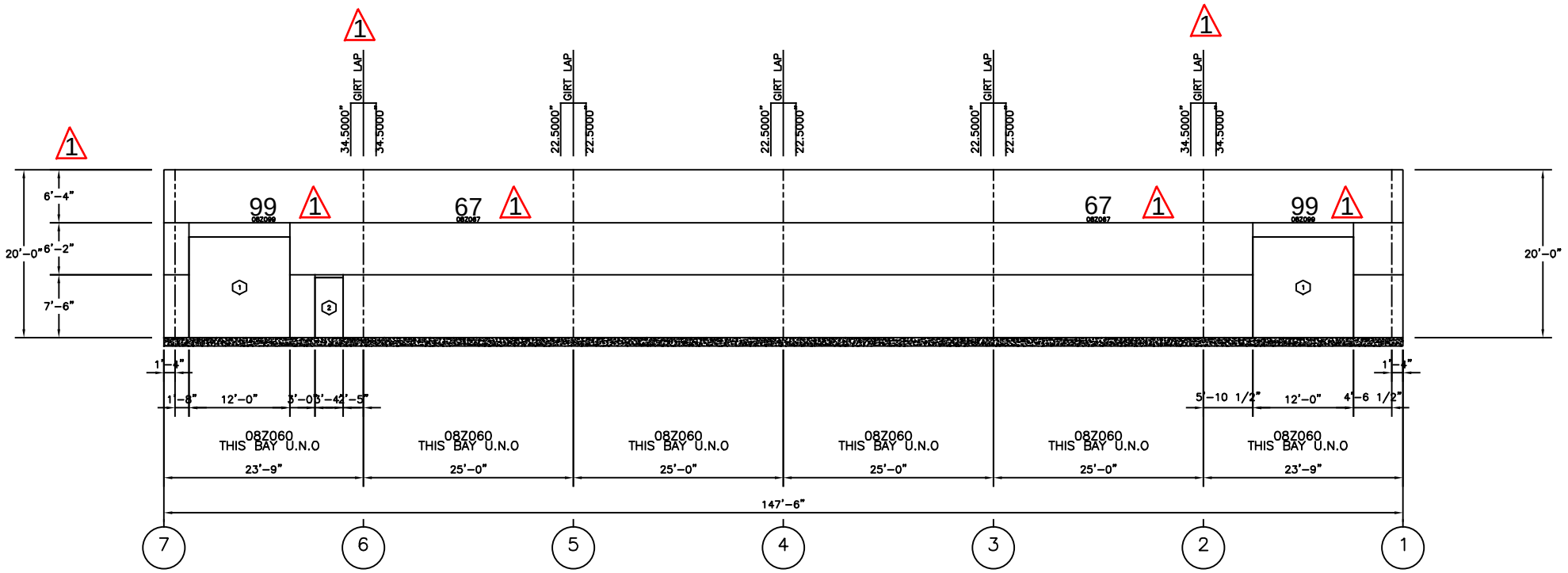
MATERIAL SUMMARY

Section	Weight	Cost	Fy
08Z060	47.83	76.19	55.0
08Z067	59.12	92.98	55.0
08Z089	184.60	277.64	55.0
08Z099	126.27	188.32	55.0



ROOF FRAMING PLAN, FSW: R01 - 1 / BSW: R02 - 1

◀ ANTI-ROLL CLIP



WALL ELEVATION, BSW – 1

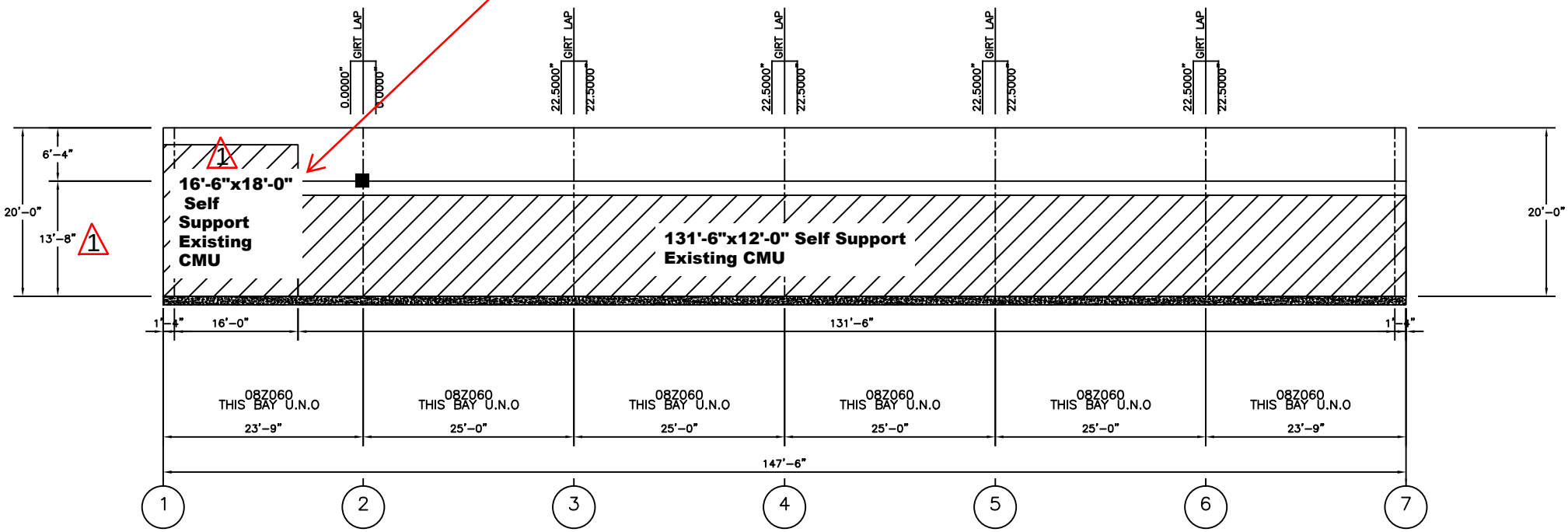
Framed Opening Schedule

ID	Qty	Width	Height	Header	Sill	Sill Height	Jambs Left	Jambs Right	Field / Factory
1	2	12'-0"	12'-0"	08C060			08C060	08C060	Factory
2	1	3'-4"	7'-2"	08C060			08C060	08C060	Factory

1

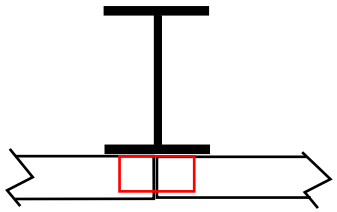
1 FO added & girt heights/gages

clip girt to
CMU wall

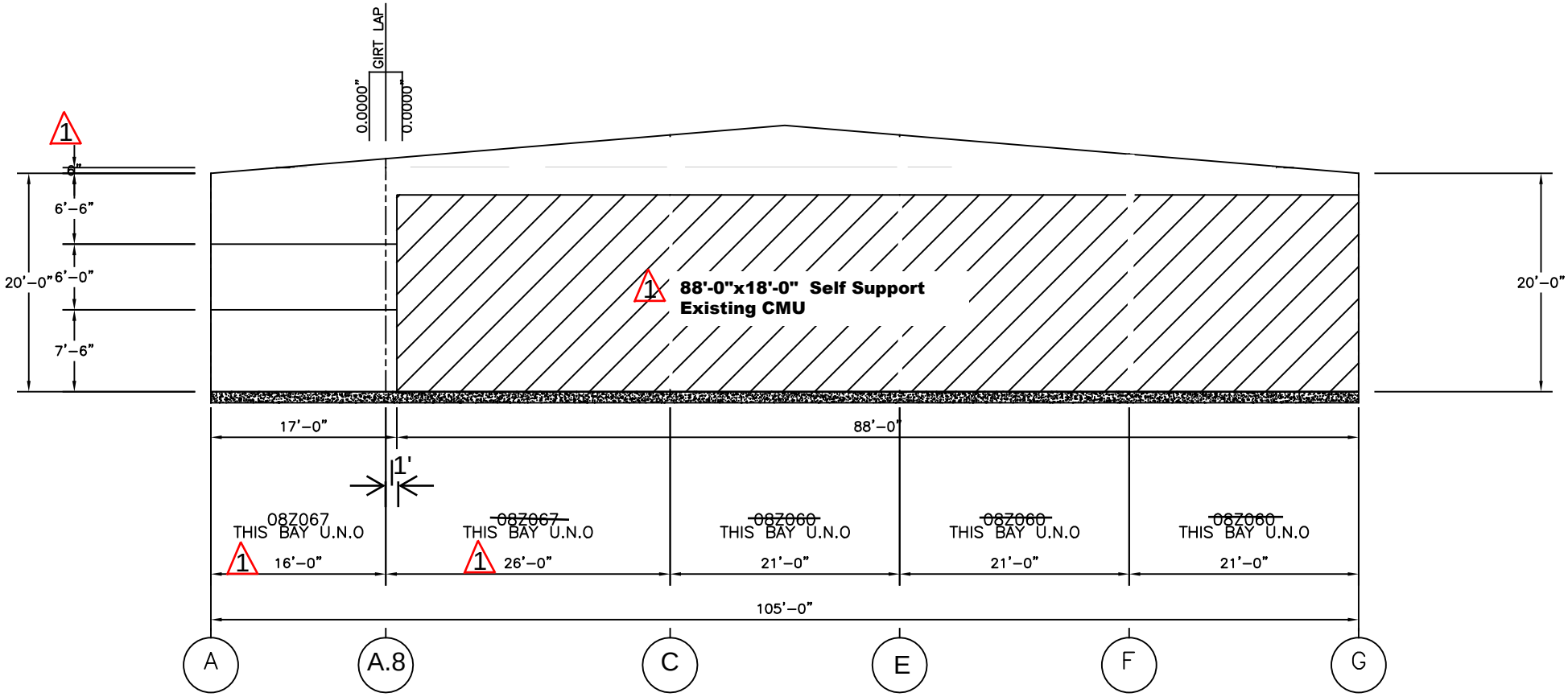


WALL ELEVATION, FSW – 1

1 Girt heights and wall deletions updated



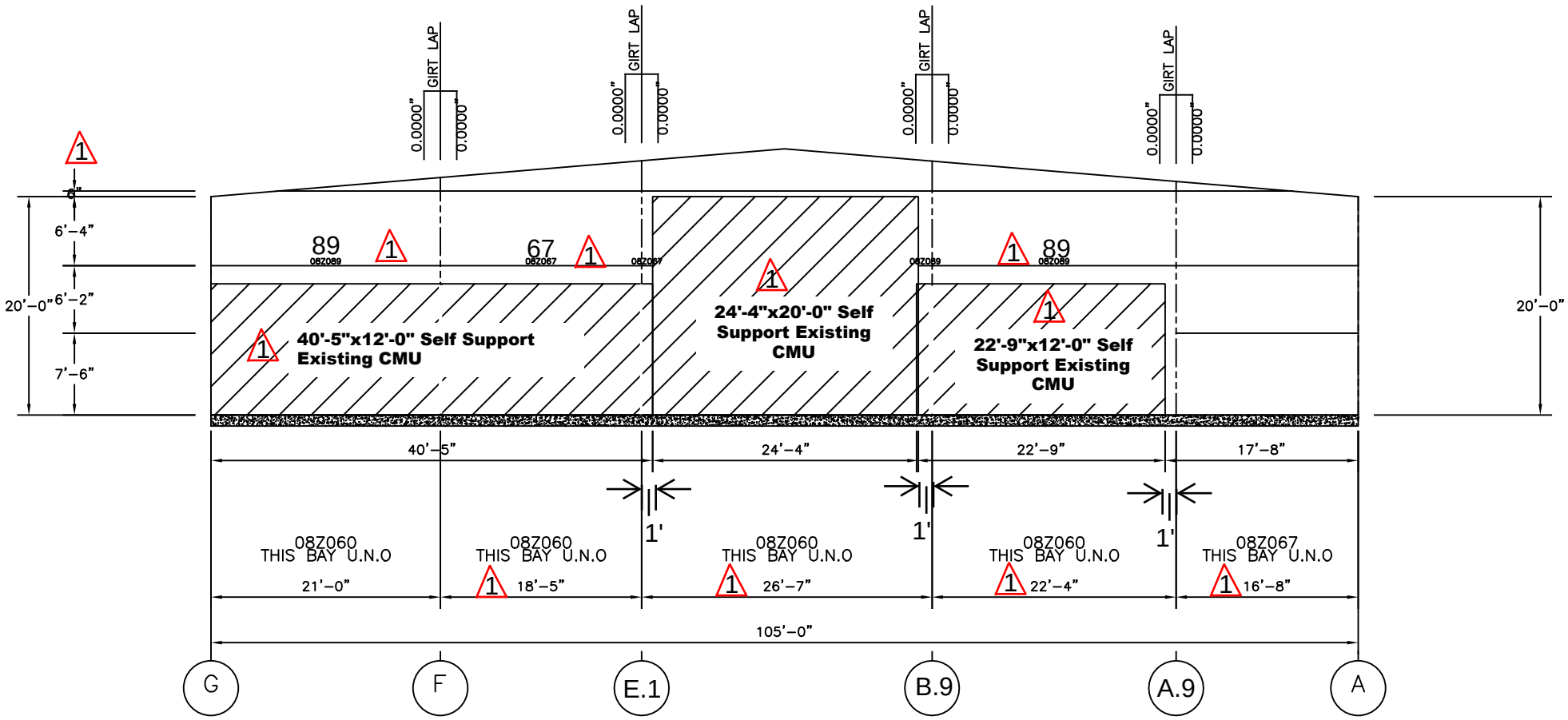
1 ■ Do not lap, pin connection,



WALL ELEVATION, LEW – 1

1 Girt heights/gages, wall deletions, & post locations updated

1 **Note: No girts or posts above wall deletion. Only panel.**



WALL ELEVATION, REW – 1

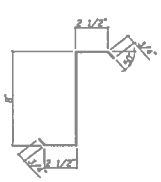
1 Girt heights/gages, wall deletions, & post locations updated

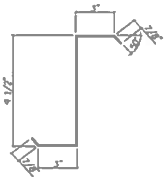
Note: Hang post @ C-F

CBC STEEL BUILDINGS
A NUCOR Company

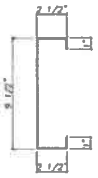
Sheet D-24
Job #
Date
By

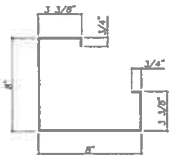
8" & 9.5" COLD-FORMED MEMBER SECTION PROPERTIES

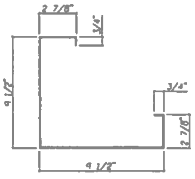

8" Zee

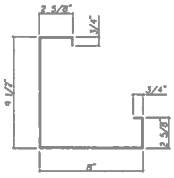

9.5" Zee

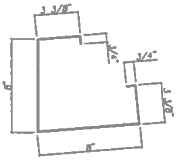

8" Cee

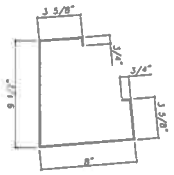

9.5" Cee

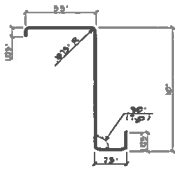

8" Gee


9.5" Gee


8" - 9.5" Gee


8" Eave Strut


9.5" Eave Strut


10" Zee Rake Beam

Note: Inside Radius 0.25" (Typical all Members).

Size	T	W	A_g	A_e	I_{xe}	$I_{x\text{-}Defn}$	S_{xe}	M_a	M_a	V_a
	In	lb/ft	In^2	In^2	In^4	In^4	In^3	k-in	k-ft	k
ZEE										
8 Z 16	0.060	2.87	0.84	0.45	7.36	8.09	1.74	57.25	4.77	2.60
8 Z 15	0.067	3.20	0.94	0.53	8.27	8.99	1.97	64.74	5.39	3.63
8 Z 14	0.075	3.59	1.05	0.64	9.42	10.02	2.27	74.69	6.22	5.11
8 Z 13	0.089	4.26	1.25	0.84	11.45	11.80	2.81	92.45	7.70	8.57
8 Z 12	0.099	4.73	1.39	0.98	12.79	13.05	3.15	103.87	8.66	10.82
9.5 Z 15	0.067	3.82	1.12	0.57	13.44	15.28	2.61	85.96	7.16	3.02
9.5 Z 14	0.075	4.27	1.26	0.67	15.49	17.04	3.08	101.54	8.46	4.24
9.5 Z 13	0.089	5.07	1.49	0.87	18.65	20.78	3.75	123.60	10.30	7.11
9.5 Z 12	0.099	5.64	1.66	1.05	21.17	22.24	4.32	142.28	11.86	9.81
CEE										
8 C 16	0.060	2.87	0.84	0.48	7.47	7.94	1.80	59.27	4.94	2.60
8 C 15	0.067	3.20	0.94	0.56	8.42	8.82	2.05	67.38	5.62	3.63
8 C 14	0.075	3.59	1.05	0.71	9.75	9.81	2.37	78.12	6.51	5.11
8 C 13	0.089	4.26	1.25	0.89	11.52	11.53	2.88	94.85	7.90	8.57
8 C 12	0.099	4.73	1.39	1.02	12.73	12.73	3.18	104.83	8.74	10.82
9.5 C 15	0.067	3.59	1.05	0.62	13.28	13.53	2.76	91.10	7.59	3.02
9.5 C 14	0.075	4.26	1.25	0.71	15.06	15.68	3.06	100.75	8.40	4.24
9.5 C 13	0.089	5.03	1.48	0.93	18.21	18.81	3.76	123.80	10.32	7.11
9.5 C 12	0.099	5.25	1.54	1.06	19.59	19.59	4.13	135.81	11.32	9.81
GEE										
GP 8X8X16 (Gravity, +ve)	0.060	4.76	1.41	0.64	9.82	11.14	4.13	57.54	4.80	3.58
(Uplift, -ve)	-	-	-	-	9.75	10.48	2.34	77.02	6.42	-
GP 9.5X9.5X14 (Gravity, +ve)	0.075	6.44	1.89	0.90	19.17	22.17	7.43	91.90	7.66	5.30
(Uplift, -ve)	-	-	-	-	18.66	19.96	3.82	114.28	9.52	-
GPX 8X9.5X16 (Gravity, +ve)	0.060	4.76	1.41	0.63	13.64	15.75	5.20	65.29	5.44	2.65
(Uplift, -ve)	-	-	-	-	13.74	14.71	2.62	86.46	7.21	-
EAVE STRUT										
GE 8X8X16 1:12 (Gravity, +ve)	0.060	4.76	1.41	0.64	9.36	10.65	1.68	55.56	4.63	3.59
(Uplift, -ve)	-	-	-	-	9.29	9.93	2.20	72.06	6.01	-
GE 8X8X16 4:12 (Gravity, +ve)	0.060	4.75	1.40	0.64	8.79	9.56	1.63	53.74	4.48	3.86
(Uplift, -ve)	-	-	-	-	8.25	8.98	1.81	59.72	4.98	-
GE 9.5X8X14 1:12 (Gravity, +ve)	0.075	6.44	1.89	0.92	18.28	20.87	2.81	92.54	7.71	5.69
(Uplift, -ve)	-	-	-	-	18.98	20.24	3.65	120.20	10.02	-
GE 9.5X8X14 4:12 (Gravity, +ve)	0.075	6.42	1.89	0.92	17.01	18.57	2.65	87.35	7.28	6.05
(Uplift, -ve)	-	-	-	-	17.38	18.40	3.20	105.46	8.79	-
ZEE RAKE BEAM										
ER 10X14 (Gravity, +ve)	0.075	4.96	1.46	0.76	18.04	19.59	3.68	116.64	9.72	4.02
(Uplift, -ve)	-	-	-	-	20.65	22.03	3.43	112.83	9.40	-
EH 10X12 (Gravity, +ve)	0.102	6.70	1.97	1.18	25.30	27.36	5.30	159.23	13.27	10.16
(Uplift, -ve)	-	-	-	-	29.53	29.53	4.83	168.60	14.05	-

Notes -
1. Section properties are calculated in accordance with the 2012 North American Specification for the Design of Cold-Formed Steel Members. Fy = 55 ksi.
2. Bending allowables shown may be utilized for members having the compression flange continuously fastened to sheathing.
3. Effective section properties are calculated at yield stress of Fy = 55 ksi. Deflection Moment of Inertia, $I_{x\text{-}Def'n}$ is calculated at working stress level of 0.6 Fy.

CBC STEEL BUILDINGS A NUCOR Company

Sheet :	E - 1
Job # :	C22B0182A
Date :	3-Nov-22
By :	VP

1 @ 1/ A.8 & 7/A.9

ENDWALL POST DESIGN-LINE ~~1 & 7~~

Column/End Post Design

1 End posts added

Horizontal Loads

Effective Wind Area Horizontal = 188.32 ft²

Column Length = 21.40 ft

Trib. Width = 8.80 ft

GC_p = -0.79

GC_{pi} = -0.18

Wind, WL:

q_h = 23.75 psf

WL = -22.97 psf

$w_{0.6WL}$ = (0.6WL) x Trib. Width

= 0.6(-23.0) x 8.8ft

= -121 plf

Max. Shear, V = (w x L) / 2

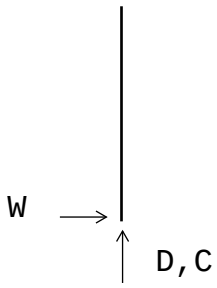
= (-121.3 x 21.4 ft) / 2

= **1.30 k**

Max. Moment, M = (w x L^2) / 8

= (-121.3 x 21.4 ft²) / 8

6.94 k-ft



D=5.0psf(8.8ft)(12.6ft)=0.55k~0.6k

C=5.0psf(8.8ft)(12.6ft)=0.55k~0.6k

W_h=23.75psf(8.8ft)(21.4ft/2)=2.24k~2.5k

NUCOR BUILDINGS GROUP
A DIVISION OF NUCOR CORPORATION

@ 1/ A.8 & 7/A.9

1 End posts added

Project No. : C22B0182A
Description : Rob Kerth Ice Land- WP
Engineer : VP
Date : 11/3/2022

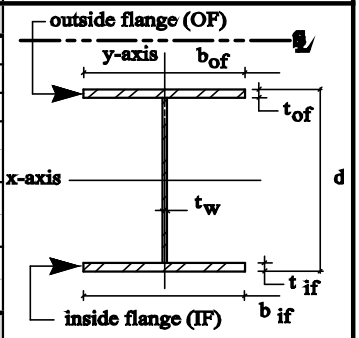
BEAM-COLUMN S.S. (AISC 15th Edition)

MAIN REPORT: DESIGN SUMMARY
Version: 2018.09.12 (Date: 09/12/18) By NBG-GS

1

Use 3/8" BP w/ (2) 3/4" AB w/ AC-21 @ top

GENERAL INFORMATION (*ENTER DATA IN GRAY SHADED CELLS!*)			Span and Loading Conditions WP				Remarks
Member Length	L_{bx}	ft.	21.40				Assumes Lbx = L
Unbraced Length - Minor	L_{by}	ft.	7.50				
Consideration of *Tension Field Action* for Shear			FALSE	FALSE	FALSE	FALSE	<= See cell comment & Chapter G.
Clear Distance between Transverse Stiffeners	a	in.					<= See cell comment & Section G2.
Lateral-torsional buckling factor	C_b		1.000	1.000	1.000	1.000	<= See cell comment
Kx Factor	K_x		1.000	1.000	1.000	1.000	
Ky Factor	K_y		1.000	1.000	1.000	1.000	
Kz Factor	K_z		1.000	1.000	1.000	1.000	<= See cell comment
SECTION GEOMETRY							
Select Wide-flange or Built-up Section:			WF	None	None	None	
Section Description:			W8X10	--	--	--	
Enter WF-Section:			W8X10				
Total Depth	d	in.	7.890	--	--	--	
Web Thickness	t_w	in.	0.170	--	--	--	
Outside Flange Width	b_{of}	in.	3.940	--	--	--	
Outside Flange Thickness	t_{of}	in.	0.205	--	--	--	
Inside Flange Width	b_{if}	in.	3.940	--	--	--	
Inside Flange Thickness	t_{if}	in.	0.205	--	--	--	
MATERIAL INFORMATION							
Material Strength	F_y	ksi	50	50	50	55	
Elastic Modulus	E	ksi	29,000	29,000	29,000	29,000	Standard for steel shown
Shear Modulus	G	ksi	11,200	11,200	11,200	11,200	Standard for steel shown
Flange Yield Strength	F_{yf}	ksi	50	50	50	55	
Web Yield Strength	F_{yw}	ksi	50	50	50	55	
Ultimate Strength	F_u	ksi	65	65	65	70	
APPLIED LOADS			☐ Applied Loading includes second order effects.				
Factor of Safety (Allowable Stress Factor)	S_f		1.000	1.000	1.000	1.000	
Axial (compression => + pos., tension => - neg.)	P_a	kips	0.000				
Shear (absolute value)	V_x	kips	1.300				Major Axis (x-axis)
Moment (outside flange in compression => + pos.)	M_x	ft-kip	6.940				
Shear (absolute value)	V_y	kips					Minor Axis (y-axis)
Moment (absolute value)	M_y	ft-kip					



Design Results:	ASD		OK	--	--	--	Remarks
ASD Combined Strength Ratio	CSR		0.464	--	--	--	Eq. H1-1a or H1-1b
ASD Shear Strength Ratio (x-axis)	V_{rx}/V_{cx}		0.056	--	--	--	Major Axis (x-axis)
ASD Shear Strength Ratio (y-axis)	V_{ry}/V_{cy}		0.000	--	--	--	Minor Axis (y-axis)

Deflection Results (Major-axis)			OK	--	--	--	Remarks
Deflection Limits (about x-axis)			L / 180	L / 180	L / 180	L / 180	Limits as numerals (i.e. 360 = L/360)
Maximum Deflection (about x-axis)	Δ_{max}	in.	1.427 in.	0.000 in.	0.000 in.	0.000 in.	
Member Deflection (about x-axis)	$\Delta_{x\text{-}axis}$	in.	0.640 in.	--	--	--	$\Delta_{x\text{-}axis} \le \Delta_{max}$

Deflection Results (Minor-axis)			OK	--	--	--	Remarks
Deflection Limits (about y-axis)			L / 180	L / 180	L / 180	L / 180	Limits as numerals (i.e. 360 = L/360)
Maximum Deflection (about y-axis)	Δ_{max}	in.	1.427 in.	0.000 in.	0.000 in.	0.000 in.	
Member Deflection (about y-axis)	$\Delta_{y\text{-}axis}$	in.	0.000 in.	--	--	--	$\Delta_{y\text{-}axis} \le \Delta_{max}$

NUCOR BUILDINGS GROUP

Job # : C22B0182A
Job Name : Nucor Buildings Group
Frame : E01
Date : 8/23/2022
Designer : BG\Viviana.Perez
File : E01.nfr
App Version : 1.6.127.0

F R A M E D E S C R I P T I O N

Frame type : RCG
Frame width : 105.00 Ft.
Bay width : 12.60 Ft.

	LEFT	RIGHT		
Dim to ridge	52.50 Ft.	52.50 Ft.		
Roof slope	1.00/12	-1.00/12		
Eave height	20.00 Ft.	20.00 Ft.		
Girt offset	12.00 In.	8.00 In.	Typ. Girt spacing	5.00 Ft.
Purlin offset	8.00 In.	8.00 In.	Typ. Purlin spacing	5.00 Ft.

Col. spacing : 105.0000

Supports / Spring Constants

COL01 - Bottom V H
COL02 - Bottom V H

Column Bracing:

WP1 Girt Brace : Y
Flange Brace : 1
Location (ft): 13.5

WP2 Girt Brace : Y Y
Flange Brace : 1 1
Location (ft): 7.3 13.5

Other Braces:

Column :
Left Brace :
Right Brace :
Location (ft):

L O A D I N G C O N D I T I O N S

Building Code & Year : IBC2018
Risk Category : III-Substantial Hazard
AISC Specification : 2016 ASD

L O A D S (Psf)

Roof Dead load : 2.50
Roof Coll load : 5.00
Roof Live load : 12.00
Roof Snow load : 0.00
Floor dead load : 0.00
Floor live load : 0.00
Ground Snow load: 0.00 Ce = 1.00
Ss = 0.539 S1 = 0.246 Seismic Design Category = D Site Class = D
R = 3.50 Cd = 3.00 Sds = 0.492 Sd1 = 0.346 rho = 1.30 omega = 2.500

Is Building Irregular = False

Roof Seismic Factor : 0.176 PSF
Floor Seismic Factor : 0.176 PSF

Wind speed : 110.00 Mph Exp. : C
Wind pressure : 23.75 Psf

Building is Enclosed

Wind pressure coefficients Is End Bay? True

	C1	C2E	C2	C3	C3E	C4
W1R	0.790	0.000	-0.890	-0.350	0.000	-0.250
W1L	-0.250	0.000	-0.350	-0.890	0.000	0.790
W2R	0.430	0.000	-1.250	-0.710	0.000	-0.610
W2L	-0.610	0.000	-0.710	-1.250	0.000	0.430
W5B	-0.300	0.000	-0.890	-0.350	0.000	-0.300
W5F	-0.300	0.000	-0.350	-0.890	0.000	-0.300
W6B	-0.660	0.000	-1.250	-0.710	0.000	-0.660
W6F	-0.660	0.000	-0.710	-1.250	0.000	-0.660

Tributary Widths

Panel	Trib. Width (ft)
WP1	12.60
WP2	12.60
RP1	12.60
RP2	12.60

P R O G R A M - A P P L I E D L O A D S

Panel Loads

Load Case	On Panel	Start Load Klf	End Load Klf	Start Loc Ft.	End Loc Ft.
RDL	RP1	-0.032	-0.032	0.000	52.500
RDL	RP2	-0.032	-0.032	52.500	105.000
COL	RP1	-0.063	-0.063	0.000	52.500
COL	RP2	-0.063	-0.063	52.500	105.000
RLL	RP1	-0.151	-0.151	0.000	52.500
RLR	RP2	-0.151	-0.151	52.500	105.000
W1R	WP1	0.236	0.236	0.000	20.000
W1R	WP2	0.075	0.075	0.000	20.000
W1R	RP1	-0.266	-0.266	0.000	52.500
W1R	RP2	-0.105	-0.105	52.500	105.000
W1L	WP1	-0.075	-0.075	0.000	20.000
W1L	WP2	-0.236	-0.236	0.000	20.000
W1L	RP1	-0.105	-0.105	0.000	52.500
W1L	RP2	-0.266	-0.266	52.500	105.000
W2R	WP1	0.129	0.129	0.000	20.000
W2R	WP2	0.183	0.183	0.000	20.000
W2R	RP1	-0.374	-0.374	0.000	52.500
W2R	RP2	-0.212	-0.212	52.500	105.000
W2L	WP1	-0.183	-0.183	0.000	20.000
W2L	WP2	-0.129	-0.129	0.000	20.000
W2L	RP1	-0.212	-0.212	0.000	52.500
W2L	RP2	-0.374	-0.374	52.500	105.000
W5B	WP1	-0.090	-0.090	0.000	20.000
W5B	WP2	0.090	0.090	0.000	20.000
W5B	RP1	-0.266	-0.266	0.000	52.500
W5B	RP2	-0.105	-0.105	52.500	105.000
W5F	WP1	-0.090	-0.090	0.000	20.000
W5F	WP2	0.090	0.090	0.000	20.000
W5F	RP1	-0.105	-0.105	0.000	52.500
W5F	RP2	-0.266	-0.266	52.500	105.000
W6B	WP1	-0.197	-0.197	0.000	20.000
W6B	WP2	0.197	0.197	0.000	20.000
W6B	RP1	-0.374	-0.374	0.000	52.500
W6B	RP2	-0.212	-0.212	52.500	105.000
W6F	WP1	-0.197	-0.197	0.000	20.000
W6F	WP2	0.197	0.197	0.000	20.000
W6F	RP1	-0.212	-0.212	0.000	52.500
W6F	RP2	-0.374	-0.374	52.500	105.000
EQR	RP1	0.030	0.030	0.000	52.500
EQR	RP2	0.030	0.030	52.500	105.000
EQL	RP1	-0.030	-0.030	0.000	52.500
EQL	RP2	-0.030	-0.030	52.500	105.000

U S E R - A P P L I E D L O A D S

Shear loads that are applied perpendicular to the web have been considered in the baseplate design only.
The locations listed below for each longitudinal bracing load apply only to the column axial load
(tension on base of column and compression when at top of column).

Load Case	On Mem	Hor. Kips	Vert. Kips	Perp Shear Kips	Moment K-Ft.	Loc Ft.	Special Load #	Description
RDL	SPAN1	0.000	-0.600	0.000	0.000	21.000	C-1	Hang Post
RDL	SPAN1	0.000	-0.750	0.000	0.000	42.000	C-3	Hang Post
RDL	SPAN2	0.000	-0.750	0.000	0.000	63.000	C-4	Hang Post
RDL	SPAN2	0.000	-0.600	0.000	0.000	84.000	C-2	Hang Post

L O A D C O M B I N A T I O N S

	ASR	Cases
1)	1.00	SW+RDL+COL+NLL
2)	1.00	SW+RDL+COL+NLR
3)	1.00	SW+RDL+COL+RLL+RLR+NLL
4)	1.00	SW+RDL+COL+RLL+RLR+NLR
5)	1.00	SW+RDL+COL+0.60W1L
6)	1.00	SW+RDL+COL+0.60W2L
7)	1.00	SW+RDL+COL+0.60W1R
8)	1.00	SW+RDL+COL+0.60W2R
9)	1.00	0.60SW+0.60RDL+0.60W1L
10)	1.00	0.60SW+0.60RDL+0.60W2L
11)	1.00	0.60SW+0.60RDL+0.60W1R
12)	1.00	0.60SW+0.60RDL+0.60W2R
13)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W1L
14)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W2L
15)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W1R
16)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W2R
17)	1.00	SW+RDL+COL+0.60W5B
18)	1.00	SW+RDL+COL+0.60W6B
19)	1.00	SW+RDL+COL+0.60W5F
20)	1.00	SW+RDL+COL+0.60W6F
21)	1.00	0.60SW+0.60RDL+0.60W5B
22)	1.00	0.60SW+0.60RDL+0.60W6B
23)	1.00	0.60SW+0.60RDL+0.60W5F
24)	1.00	0.60SW+0.60RDL+0.60W6F
25)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W5B
26)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W6B
27)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W5F
28)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W6F
29)	1.00	1.07SW+1.07RDL+1.07COL+0.91EQL
30)	1.00	1.07SW+1.07RDL+1.07COL+0.91EQR
31)	1.00	1.05SW+1.05RDL+1.05COL+0.68EQL
32)	1.00	1.05SW+1.05RDL+1.05COL+0.68EQR
33)	1.00	0.53SW+0.53RDL+0.91EQL
34)	1.00	0.53SW+0.53RDL+0.91EQR

*** DESIGN SUMMARY REPORT ***

Built Up Rafter - RAF01

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	Flow (k/in) B/R
1	F6.31	F6.38	W188	3	1	-15.4	0.13	-216.1	0.71	0.83	0.89	3	1	12.81	0.32	0.23	0.26

Chkpt	1	5	
Depth	36.69	28.69	
Section	1		

	width	thick	Fy
T/L Flg	6.0	0.3125	55.00
Web		0.1875	55.00
B/R Flg	6.0	0.3750	55.00

Built Up Rafter - RAF02

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	Flow (k/in) B/R
1	F5.25	F5.25	W135	4	12	-14.2	0.41	74.0	0.66	0.52	1.00	3	6	9.23	0.44	0.22	0.22
2	F5.25	F5.25	W188	4	16	-14.0	0.36	94.1	0.68	0.58	0.97	3	13	3.34	0.08	0.07	0.07

Chkpt	6	12	13	18		
Depth	28.50	28.50		28.50		
Section	1		2			

	width	thick	Fy	width	thick	Fy
T/L Flg	5.0	0.2500	55.00	5.0	0.2500	55.00
Web		0.1345	55.00		0.1875	55.00
B/R Flg	5.0	0.2500	55.00	5.0	0.2500	55.00

Built Up Rafter - RAF03

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	Flow (k/in) B/R
1	F5.25	F5.25	W188	3	21	-14.0	0.36	94.6	0.68	0.58	0.97	4	24	-3.25	0.08	0.07	0.07
2	F5.25	F5.25	W135	3	25	-14.2	0.41	75.3	0.67	0.52	1.01	4	31	-9.14	0.44	0.22	0.22

Chkpt	19	24	25	31		
Depth	28.50	28.50		28.50		
Section	1		2			

	width	thick	Fy	width	thick	Fy
T/L Flg	5.0	0.2500	55.00	5.0	0.2500	55.00
Web		0.1875	55.00		0.1345	55.00
B/R Flg	5.0	0.2500	55.00	5.0	0.2500	55.00

Built Up Rafter - RAF04

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	Flow (k/in) B/R
1	F6.25	F6.31	W188	4	36	-15.3	0.16	-215.9	0.81	0.95	1.03	4	36	-12.71	0.31	0.21	0.24

Chkpt	32	36	
Depth	28.56	36.56	
Section	1		

	width	thick	Fy
T/L Flg	6.0	0.2500	55.00
Web		0.1875	55.00
B/R Flg	6.0	0.3125	55.00

Built Up Column - COL01

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	Flow (k/in) B/R
1	F8.25	F8.31	W188	3	42	-16.5	0.11	-215.4	0.71	0.84	0.90	3	42	-12.93	0.32	0.92	0.99

Chkpt	37	42	
Depth	12.00	35.56	
Section	1		

	width	thick	Fy
T/L Flg	8.0	0.2500	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.3125	55.00

Built Up Column - COL02

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	Load Comb	Loc	SHEAR Force Kips	Shear Ratio	Flow T/L	(k/in) B/R
1	F8.31	F8.25	W188	4	49	-16.4	0.11	215.6	0.84	0.71	0.90	4	49	12.94	0.32	0.99	0.92

Chkpt 43 49
Depth 12.00 35.56
Section | 1 |

	width	thick	Fy
T/L Flg	8.0	0.3125	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.2500	55.00

Frame Weight (lbs) = 3569
Deflections (in):

10 yr Wind dx	-0.47	= H/ 422	LONG. WIND 2 TO BACK	
Seismic dx	0.59	= H/ 337	SEISMIC TO RIGHT	
Story Drift	1.42	= 0.007H	SEISMIC TO RIGHT	
Stability Coefficient	0.01		1.07SW+1.07RDL+1.07COL+0.91EQR	
Stability Ratio	0.04		1.07SW+1.07RDL+1.07COL+0.91EQR	
Fundamental Period	0.5575		Single Story Period	
Maximum dx	0.77	= H/ 256	1.07SW+1.07RDL+1.07COL+0.91EQR	
Maximum dy	-4.44	= L/ 270 @ MOD 1,	SW+RDL+COL+RLL+RLR	
Max. Live dy	-2.20	= L/ 545 @ MOD 1,	LIVE ON LEFT AND RIGHT	

Job # : C22B0182A
File : E01.nfr
App Version : 1.6.127.0

Job Name : Nucor Buildings Group
Designer : BG\Viviana.Perez
Date : 8/23/2022

Frame : E01

BOLTED END-PLATES (BEP) SUMMARY

Bolt Pre Tension Method : TurnOfNut

PLATE SIZE: (in)

Splice	Left	Right	Members		Web	Left Plate				Right Plate			
ID	Type	Type	Joined	Loc	Depth	Width	Thick	Length	Fy(ksi)	Width	Thick	Length	Fy(ksi)
1	6E	6E	COL01 To RAF01	Top	36.00	8.00	0.50	42.00	55.0	6.00	0.50	42.00	55.0
1	6E	6E	COL01 To RAF01	Bot	36.00	8.00	0.50	42.00	55.0	6.00	0.50	42.00	55.0
2	4E	4E	RAF01 To RAF02	Top	28.00	6.00	0.38	34.00	55.0	6.00	0.38	34.00	55.0
2	4E	4E	RAF01 To RAF02	Bot	28.00	6.00	0.38	34.00	55.0	6.00	0.38	34.00	55.0
3	4E	4E	RAF02 To RAF03	Top	28.00	6.00	0.38	33.85	55.0	6.00	0.38	33.85	55.0
3	4E	4E	RAF02 To RAF03	Bot	28.00	6.00	0.38	33.85	55.0	6.00	0.38	33.85	55.0
4	4E	4E	RAF03 To RAF04	Top	28.00	6.00	0.38	33.75	55.0	6.00	0.38	33.75	55.0
4	4E	4E	RAF03 To RAF04	Bot	28.00	6.00	0.38	33.75	55.0	6.00	0.38	33.75	55.0
5	6E	6E	RAF04 To COL02	Top	36.00	6.00	0.50	42.00	55.0	8.00	0.50	42.00	55.0
5	6E	6E	RAF04 To COL02	Bot	36.00	6.00	0.50	42.00	55.0	8.00	0.50	42.00	55.0

PLATE DESIGN

				Max Moment				Max Shear				Left	Right
Splice	Left	Right	Tension	Load	Axial	Shear	Moment	Load	Axial	Shear	Moment	Plate	Plate
ID	Type	Type	Location	Comb	(kip)	(kip)	(ft-kip)	Comb	(kip)	(kip)	(ft-kip)	Ratio	Ratio
1	6E	6E	Top	2	-13.87	14.41	-216.09	10	5.47	-7.25	94.58	0.74	0.88
1	6E	6E	Bot	10	5.47	-7.25	94.58	2	-13.87	14.41	-216.09	0.38	0.46
2	4E	4E	Top	2	-14.69	9.25	-59.63	10	6.10	-4.13	18.52	0.50	0.51
2	4E	4E	Bot	22	7.30	-3.06	37.30	2	-14.69	9.25	-59.63	0.54	0.56
3	4E	4E	Top	8	6.37	-0.98	-34.15	15	-0.88	1.33	13.76	0.49	0.49
3	4E	4E	Bot	2	-13.87	0.03	92.34	22	7.38	-1.34	-31.59	0.89	0.89
4	4E	4E	Top	2	-14.68	-9.16	-56.55	8	6.11	4.08	16.58	0.46	0.46
4	4E	4E	Bot	20	7.27	3.02	35.40	2	-14.68	-9.16	-56.55	0.52	0.51
5	6E	6E	Top	2	-13.87	-14.30	-215.92	8	5.48	7.22	94.39	0.89	0.74
5	6E	6E	Bot	8	5.48	7.22	94.39	2	-13.87	-14.30	-215.92	0.47	0.38

BOLT RUPTURE DESIGN

Splice	Left	Right		Bolt	Pre-									Load	Axial	Moment	Left Bolt	Right Bolt
ID	Type	Type	Loc	Type	Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Comb	(kip)	(ft-kip)	Ratio	Ratio
1	6E	6E	Top	A325	Yes	0.75	3.50	--	1.31	1.48	3.00	2.25	1.25	2	-13.87	-216.09	0.56	0.56
1	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.31	1.31	3.00	2.25	1.25	10	5.47	94.58	0.29	0.29
2	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.44	3.00	--	1.25	2	-14.69	-59.63	0.22	0.23
2	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.36	3.00	--	1.25	22	7.30	37.30	0.24	0.24
3	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.41	2.88	--	1.25	8	6.37	-34.15	0.22	0.22
3	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.34	2.88	--	1.25	2	-13.87	92.34	0.40	0.40
4	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.38	2.88	--	1.25	2	-14.68	-56.55	0.21	0.21
4	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.38	2.88	--	1.25	20	7.27	35.40	0.23	0.23
5	6E	6E	Top	A325	Yes	0.75	3.50	--	1.31	1.39	3.00	2.25	1.25	2	-13.87	-215.92	0.56	0.56
5	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.31	1.44	3.00	2.25	1.25	8	5.48	94.39	0.29	0.29

COMBINED BOLT BEARING SHEAR DESIGN

Splice	Left	Right		Bolt	Pre-									Load	Shear	Left Bolt	Right Bolt
ID	Type	Type	Loc	Type	Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Comb	(kip)	Ratio	Ratio
1	6E	6E	Top	A325	Yes	0.75	3.50	--	1.31	1.48	3.00	2.25	1.25	10	-7.25	0.10	0.10
1	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.31	1.31	3.00	2.25	1.25	2	14.41	0.20	0.20
2	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.44	3.00	--	1.25	10	-4.13	0.09	0.09

COMBINED BOLT BEARING SHEAR DESIGN **FRAME LINE 1,7**

Splice ID	Left Type	Right Type	Loc	Bolt Type	Pre-Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Load Comb	Shear (kip)	Left Bolt Ratio	Right Bolt Ratio
2	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.36	3.00	--	1.25	2	9.25	0.19	0.19
3	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.41	2.88	--	1.25	15	1.33	0.03	0.03
3	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.34	2.88	--	1.25	22	-1.34	0.03	0.03
4	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.38	2.88	--	1.25	8	4.08	0.09	0.09
4	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.38	2.88	--	1.25	2	-9.16	0.19	0.19
5	6E	6E	Top	A325	Yes	0.75	3.50	--	1.31	1.39	3.00	2.25	1.25	8	7.22	0.10	0.10
5	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.31	1.44	3.00	2.25	1.25	2	-14.30	0.20	0.20

WELD DESIGN

Splice ID	Loc	Left							Right						
		Welds			Checks				Welds			Checks			
		Flg	Web	Stf	Load Comb	Tensile Rupture	Load Comb	Shear Rupture	Flg	Web	Stf	Load Comb	Tensile Rupture	Load Comb	Shear Rupture
1	Top	FWD3	WP13		2	0.57	10	0.11	FWD3	WP13		2	0.78	10	0.11
1	Bot	FWD3	WP13		10	0.30	2	0.21	FWD3	WP13		10	0.41	2	0.22
2	Top	FWD3	WP13		2	0.26	10	0.08	FWD3	WP13		2	0.32	10	0.10
2	Bot	FWD3	WP13		22	0.28	2	0.19	FWD3	WP13		22	0.35	2	0.23
3	Top	FWD3	WP13		8	0.29	15	0.03	FWD3	WP13		8	0.29	15	0.03
3	Bot	FWD3	WP13		2	0.52	22	0.03	FWD3	WP13		2	0.52	22	0.03
4	Top	FWD3	WP13		2	0.30	8	0.10	FWD3	WP13		2	0.24	8	0.08
4	Bot	FWD3	WP13		20	0.33	2	0.23	FWD3	WP13		20	0.27	2	0.19
5	Top	FWD3	WP13		2	0.78	8	0.11	FWD3	WP13		2	0.57	8	0.11
5	Bot	FWD3	WP13		8	0.41	2	0.22	FWD3	WP13		8	0.30	2	0.21

BASEPLATE AND ANCHOR ROD DESIGN RESULTS

BASEPLATE AND ANCHOR ROD INFORMATION: (in)

Column ID	Column Type	Pattern	Column Depth	Base Plate				Anchor Rods					
				Width	Thickness	Length	Fy(ksi)	Qty	Dia.	Grade	Pfi	Pb	Gage
COL01	WF/BU	Left	12	10	0.625	12.0000	55	4	1.25	Grade36	4	5	5
COL02	WF/BU	Right	12	10	0.625	12.0000	55	4	1.25	Grade36	4	5	5

BASEPLATE DESIGN CHECKS

Column ID	Concrete Bearing (Compression)					Base Plate Yielding (Tension)				
	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Design Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Design Ratio
COL01	2	-16.22	-13.90	0.00	0.09	10	7.90	6.40	0.00	0.55
COL02	2	-16.08	13.84	0.00	0.09	8	7.87	-6.65	0.00	0.55

ANCHOR ROD SHEAR AND TENSION DESIGN CHECKS

Column ID	Anchor Rod Tension Design					Anchor Rod Shear Design					Combined Tension-Shear Design					Combined Shear-Tension Design				
	Load Comb	Axial (kip)	Shear (kips)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio
COL01	10	7.90	6.40	0.00	0.07	2	-16.22	-13.90	0.00	0.22	10	7.90	6.40	0.00	0.07	2	-16.22	-13.90	0.00	0.22
COL02	8	7.87	-6.65	0.00	0.07	2	-16.08	13.84	0.00	0.22	8	7.87	-6.65	0.00	0.07	2	-16.08	13.84	0.00	0.22

BASEPLATE LEFT FLANGE WELD DESIGN CHECKS

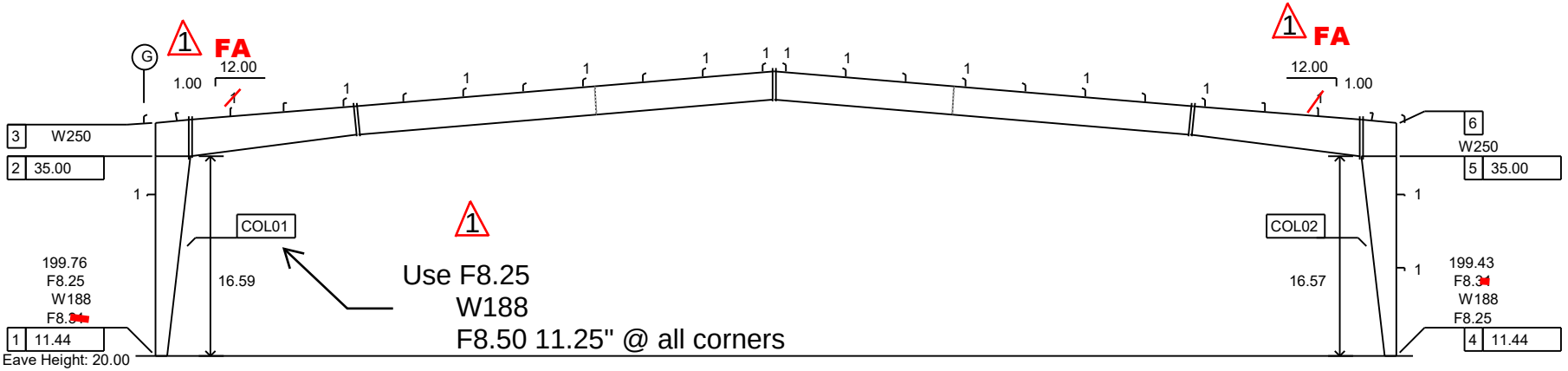
Column ID	Left Flange Weld (Pipe Weld)						Web Weld						Right Flange Weld					
	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio
COL01	FWS3	10	7.90	6.40	0.00	0.05	FWR3	2	-16.22	-13.90	0.00	0.31	FWS3	10	7.90	6.40	0.00	0.07
COL02	FWS3	8	7.87	-6.65	0.00	0.07	FWR3	2	-16.08	13.84	0.00	0.31	FWS3	8	7.87	-6.65	0.00	0.05

No	ASR	Combination
1	1.00	1.00SW+1.00RDL+1.00COL
2	1.00	1.00SW+1.00RDL+1.00COL+1.00RLL+1.00RLR
3	1.00	1.00SW+1.00RDL+1.00COL+0.60W1L
4	1.00	1.00SW+1.00RDL+1.00COL+0.60W2L
5	1.00	1.00SW+1.00RDL+1.00COL+0.60W1R
6	1.00	1.00SW+1.00RDL+1.00COL+0.60W2R
7	1.00	0.60SW+0.60RDL+0.60W1L
8	1.00	0.60SW+0.60RDL+0.60W2L
9	1.00	0.60SW+0.60RDL+0.60W1R
10	1.00	0.60SW+0.60RDL+0.60W2R
11	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W1L
12	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W2L
13	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W1R
14	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W2R
15	1.00	1.00SW+1.00RDL+1.00COL+0.60W5B
16	1.00	1.00SW+1.00RDL+1.00COL+0.60W6B
17	1.00	1.00SW+1.00RDL+1.00COL+0.60W5F
18	1.00	1.00SW+1.00RDL+1.00COL+0.60W6F
19	1.00	0.60SW+0.60RDL+0.60W5B
20	1.00	0.60SW+0.60RDL+0.60W6B
21	1.00	0.60SW+0.60RDL+0.60W5F
22	1.00	0.60SW+0.60RDL+0.60W6F
23	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W5B
24	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W6B
25	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W5F
26	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W6F
27	1.00	1.069SW+1.069RDL+1.069COL+0.91EQL
28	1.00	1.069SW+1.069RDL+1.069COL+0.91EQR
29	1.00	1.052SW+1.052RDL+1.052COL+0.682EQL
30	1.00	1.052SW+1.052RDL+1.052COL+0.682EQR
31	1.00	0.53SW+0.53RDL+0.91EQL
32	1.00	0.53SW+0.53RDL+0.91EQR
33*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQL
34*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQL
35*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQL
36*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQR
37*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQR
38*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQR

*Indicates a Special Seismic Load Combination

FRAME LINE 1,7

	7	8	9		10	11		12	13
Web Depth	36.00	28.00	28.00	CT	28.00	28.00	CT	28.00	36.00
Length on Slope	165.02	240.00	180.00		180.00	240.00		169.03	
Left/Top Flange	F6.31	F5.25	F5.25		F5.25	F5.25		F6.25	
Web	W188	W135	W188		W188	W135		W188	
Right/Bottom Flange	F6.38	F5.25	F5.25		F5.25	F5.25		F6.31	
Horizontal Tail Dim.	17.6208		52.5000				87.3792		
Purlin Offset: 8.0	RAF01		RAF02			RAF03		RAF04	
Projected Area: 325									



Left Eave Height: 20.00
Left Girt Offset: 12.0
Right Eave Height: 20.00
Right Girt Offset: 8.0
Total Width: 105.00 Frame Wt: 4402 Max Wind dx: H/422 Max dx: H/256 Max dy: L/270

Location Code	1 P	2	3	4 P	5	6	7 M	8 M	9	10 M	11	12 M	13 M
Left Plate	NA	4x0.375	8x0.250	NA	4x0.375	8x0.250	8x0.500	6x0.375	-	6x0.375	-	6x0.375	6x0.500
Right Plate	10x0.625	-	-	10x0.625	-	-	6x0.500	6x0.375	-	6x0.375	-	6x0.375	8x0.500
Bolt Quantity-Diameter	4-1.250	-	-	4-1.250	-	-	12-0.75-S	8-0.75-S	-	8-0.75-S	-	8-0.75-S	12-0.75-S
Pfi/Pf	4.000/NA	-	-	4.000/NA	-	-	1.313/3.000	1.250/3.000	-	1.250/2.875	-	1.250/2.875	1.313/3.000
Top Welds (L/R)	FWS3	-	W1-FWS3	FWS3	-	W1-FWS3	FWD3/FWD3	FWD3/FWD3	-	FWD3/FWD3	-	FWD3/FWD3	FWD3/FWD3
Bottom Welds (L/R)	FWS3	-	W3-FWS3	FWS3	-	W3-FWS3	FWD3/FWD3	FWD3/FWD3	-	FWD3/FWD3	-	FWD3/FWD3	FWD3/FWD3
Web Welds (L/R)	FWR3	-	W4-FWS3	FWR3	-	W4-FWS3	WP13/WP13	WP13/WP13	-	WP13/WP13	-	WP13/WP13	WP13/WP13
Connection Code	BHFCNA	-	-	BHFCNA	-	-	KVEUEU	SPEUEU	-	SVEUEU	-	SPEUEU	KVEUEU
Pb/Gage	5.000/5.000		-	5.000/5.000		-	2.250/3.500	NA/3.500	-	NA/3.500	-	NA/3.500	2.250/3.500

NUCOR BUILDINGS GROUP

Job # : C22B0182A
Job Name : Rob Kerth Iceland
Frame : F01
Date : 8/23/2022
Designer : BG\Viviana.Perez
File : F01a.nfr
App Version : 1.6.127.0

F R A M E D E S C R I P T I O N

Frame type : RCG
Frame width : 105.00 Ft.
Bay width : 25.00 Ft.

	LEFT	RIGHT		
Dim to ridge	52.50 Ft.	52.50 Ft.		
Roof slope	1.00/12	-1.00/12		
Eave height	20.00 Ft.	20.00 Ft.		
Girt offset	12.00 In.	8.00 In.	Typ. Girt spacing	5.00 Ft.
Purlin offset	8.00 In.	8.00 In.	Typ. Purlin spacing	5.00 Ft.

Col. spacing : 105.0000

Supports / Spring Constants

COL01 - Bottom V H
COL02 - Bottom V H

Column Bracing:

WP1 Girt Brace : Y
Flange Brace : 2
Location (ft): 13.5

WP2 Girt Brace : Y Y
Flange Brace : 2 2
Location (ft): 7.3 13.5

Other Braces:

Column :
Left Brace :
Right Brace :
Location (ft):

L O A D I N G C O N D I T I O N S

Building Code & Year : IBC2018
Risk Category : III-Substantial Hazard
AISC Specification : 2016 ASD

L O A D S (Psf)

Roof Dead load : 2.50
Roof Coll load : 5.00
Roof Live load : 12.00
Roof Snow load : 0.00
Floor dead load : 0.00
Floor live load : 0.00
Ground Snow load: 0.00 Ce = 1.00
Ss = 0.539 S1 = 0.246 Seismic Design Category = D Site Class = D
R = 3.50 Cd = 3.00 Sds = 0.492 Sd1 = 0.346 rho = 1.30 omega = 2.500

Is Building Irregular = False

Roof Seismic Factor : 0.176 PSF
Floor Seismic Factor : 0.176 PSF

Wind speed : 110.00 Mph Exp. : C
Wind pressure : 23.75 Psf

Building is Enclosed

Wind pressure coefficients Is End Bay? False

	C1	C2E	C2	C3	C3E	C4
W1R	0.580	0.000	-0.510	-0.190	0.000	-0.110
W1L	-0.110	0.000	-0.190	-0.510	0.000	0.580
W2R	0.220	0.000	-0.870	-0.550	0.000	-0.470
W2L	-0.470	0.000	-0.550	-0.870	0.000	0.220
W5B	-0.270	0.000	-0.510	-0.190	0.000	-0.270
W5F	-0.270	0.000	-0.190	-0.510	0.000	-0.270
W6B	-0.630	0.000	-0.870	-0.550	0.000	-0.630
W6F	-0.630	0.000	-0.550	-0.870	0.000	-0.630

Tributary Widths

Panel	Trib. Width (ft)
WP1	25.00
WP2	25.00
RP1	25.00
RP2	25.00

P R O G R A M - A P P L I E D L O A D S

Panel Loads

Load Case	On Panel	Start Load Klf	End Load Klf	Start Loc Ft.	End Loc Ft.
RDL	RP1	-0.063	-0.063	0.000	52.500
RDL	RP2	-0.063	-0.063	52.500	105.000
COL	RP1	-0.125	-0.125	0.000	52.500
COL	RP2	-0.125	-0.125	52.500	105.000
RLL	RP1	-0.300	-0.300	0.000	52.500
RLR	RP2	-0.300	-0.300	52.500	105.000
W1R	WP1	0.344	0.344	0.000	20.000
W1R	WP2	0.065	0.065	0.000	20.000
W1R	RP1	-0.303	-0.303	0.000	52.500
W1R	RP2	-0.113	-0.113	52.500	105.000
W1L	WP1	-0.065	-0.065	0.000	20.000
W1L	WP2	-0.344	-0.344	0.000	20.000
W1L	RP1	-0.113	-0.113	0.000	52.500
W1L	RP2	-0.303	-0.303	52.500	105.000
W2R	WP1	0.131	0.131	0.000	20.000
W2R	WP2	0.279	0.279	0.000	20.000
W2R	RP1	-0.516	-0.516	0.000	52.500
W2R	RP2	-0.327	-0.327	52.500	105.000
W2L	WP1	-0.279	-0.279	0.000	20.000
W2L	WP2	-0.131	-0.131	0.000	20.000
W2L	RP1	-0.327	-0.327	0.000	52.500
W2L	RP2	-0.516	-0.516	52.500	105.000
W5B	WP1	-0.160	-0.160	0.000	20.000
W5B	WP2	0.160	0.160	0.000	20.000
W5B	RP1	-0.303	-0.303	0.000	52.500
W5B	RP2	-0.113	-0.113	52.500	105.000
W5F	WP1	-0.160	-0.160	0.000	20.000
W5F	WP2	0.160	0.160	0.000	20.000
W5F	RP1	-0.113	-0.113	0.000	52.500
W5F	RP2	-0.303	-0.303	52.500	105.000
W6B	WP1	-0.374	-0.374	0.000	20.000
W6B	WP2	0.374	0.374	0.000	20.000
W6B	RP1	-0.516	-0.516	0.000	52.500
W6B	RP2	-0.327	-0.327	52.500	105.000
W6F	WP1	-0.374	-0.374	0.000	20.000
W6F	WP2	0.374	0.374	0.000	20.000
W6F	RP1	-0.327	-0.327	0.000	52.500
W6F	RP2	-0.516	-0.516	52.500	105.000
EQR	RP1	0.051	0.051	0.000	52.500
EQR	RP2	0.051	0.051	52.500	105.000
EQL	RP1	-0.051	-0.051	0.000	52.500
EQL	RP2	-0.051	-0.051	52.500	105.000

Concentrated Loads

Load Case	On Mem	Hor. Kips	Vert. Kips	Moment K-Ft.	Loc Ft.
W1R	COL01	0.757	0.000	0.000	20.000
W1R	COL02	0.757	0.000	0.000	20.000
W1L	COL01	-0.757	0.000	0.000	20.000
W1L	COL02	-0.757	0.000	0.000	20.000
W2R	COL01	0.757	0.000	0.000	20.000
W2R	COL02	0.757	0.000	0.000	20.000
W2L	COL01	-0.757	0.000	0.000	20.000
W2L	COL02	-0.757	0.000	0.000	20.000

Endwall Bracing Loads

Shear loads that are applied perpendicular to the web have been considered in the baseplate design only.

Load Case	On Mem	Hor. Kips	Vert. Kips	Perp Shear Kips	Moment K-Ft.	Loc Ft.

U S E R - A P P L I E D L O A D S

Shear loads that are applied perpendicular to the web have been considered in the baseplate design only. The locations listed below for each longitudinal bracing load apply only to the column axial load (tension on base of column and compression when at top of column).

Load Case	On Mem	Hor. Kips	Vert. Kips	Perp Shear Kips	Moment K-Ft.	Loc Ft.	Special Load #	Description
BWF	COL01	0.000	4.500	-5.500	0.000	0.500	Long. Bracing-1	COL01
BWF	COL02	0.000	4.500	-5.500	0.000	0.500	Long. Bracing-2	COL02
BWB	COL01	0.000	-4.500	5.500	0.000	18.500	Long. Bracing-1	COL01
BWB	COL02	0.000	-4.500	5.500	0.000	18.500	Long. Bracing-2	COL02
EQB	COL01	0.000	-7.750	9.500	0.000	18.500	Long. Bracing-1	COL01
EQB	COL02	0.000	-7.750	9.500	0.000	18.500	Long. Bracing-2	COL02
EQF	COL01	0.000	7.750	-9.500	0.000	0.500	Long. Bracing-1	COL01
EQF	COL02	0.000	7.750	-9.500	0.000	0.500	Long. Bracing-2	COL02

L O A D C O M B I N A T I O N S

	ASR	Cases
1)	1.00	SW+RDL+COL+NLL
2)	1.00	SW+RDL+COL+NLR
3)	1.00	SW+RDL+COL+RLL+RLR+NLL
4)	1.00	SW+RDL+COL+RLL+RLR+NLR
5)	1.00	SW+RDL+COL+0.60W1L
6)	1.00	SW+RDL+COL+0.60W2L
7)	1.00	SW+RDL+COL+0.60W1R
8)	1.00	SW+RDL+COL+0.60W2R
9)	1.00	0.60SW+0.60RDL+0.60W1L
10)	1.00	0.60SW+0.60RDL+0.60W2L
11)	1.00	0.60SW+0.60RDL+0.60W1R
12)	1.00	0.60SW+0.60RDL+0.60W2R
13)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W1L
14)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W2L
15)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W1R
16)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W2R
17)	1.00	SW+RDL+COL+0.60W5B+0.60BWB
18)	1.00	SW+RDL+COL+0.60W6B+0.60BWB
19)	1.00	SW+RDL+COL+0.60W5F+0.60BWF
20)	1.00	SW+RDL+COL+0.60W6F+0.60BWF
21)	1.00	0.60SW+0.60RDL+0.60W5B+0.60BWB
22)	1.00	0.60SW+0.60RDL+0.60W6B+0.60BWB
23)	1.00	0.60SW+0.60RDL+0.60W5F+0.60BWF
24)	1.00	0.60SW+0.60RDL+0.60W6F+0.60BWF
25)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W5B+0.45BWB
26)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W6B+0.45BWB
27)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W5F+0.45BWF
28)	1.00	SW+RDL+COL+0.75RLL+0.75RLR+0.45W6F+0.45BWF
29)	1.00	1.07SW+1.07RDL+1.07COL+0.91EQL
30)	1.00	1.07SW+1.07RDL+1.07COL+0.91EQR
31)	1.00	1.07SW+1.07RDL+1.07COL+0.91EQB+NLL

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32) 1.00  1.07SW+1.07RDL+1.07COL+0.91EQB+NLR
33) 1.00  1.07SW+1.07RDL+1.07COL+0.91EQF+NLL
34) 1.00  1.07SW+1.07RDL+1.07COL+0.91EQF+NLR
35) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQL
36) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQR
37) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQB+NLL
38) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQB+NLR
39) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQF+NLL
40) 1.00  1.05SW+1.05RDL+1.05COL+0.68EQF+NLR
41) 1.00  0.53SW+0.53RDL+0.91EQL
42) 1.00  0.53SW+0.53RDL+0.91EQR
43) 1.00  0.53SW+0.53RDL+0.91EQB+NLL
44) 1.00  0.53SW+0.53RDL+0.91EQB+NLR
45) 1.00  0.53SW+0.53RDL+0.91EQF
```

Job : C22B0182A Rob Kerth Iceland NUCOR BUILDINGS GROUP Date: 08-24-22 Page: 1
Frame: F01 By : BG\Viviana.Perez File: F01A

*** DESIGN SUMMARY REPORT ***

Built Up Rafter - RAF01

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	(k/in) B/R
1	F8.31	F8.50	W188	3	1	-27.5	0.13	-382.4	1.00	0.87	0.94	3	1	21.69	0.53	0.45	0.56

Chkpt	1	5	
Depth	36.81	24.81	
Section	| 1	|	

	width	thick	Fy
T/L Flg	8.0	0.3125	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.5000	55.00

Built Up Rafter - RAF02

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	(k/in) B/R
1	F6.31	F6.38	W135	3	6	-26.1	0.31	-103.3	0.64	0.77	0.99	3	6	15.13	0.73	0.48	0.52
2	F6.31	F6.38	W188	4	14	-24.8	0.27	136.7	0.84	0.71	1.02	3	12	4.99	0.12	0.14	0.16

Chkpt	6	11	12	16		
Depth	24.69	24.69		24.69		
Section	| 1	|	2	|		

	width	thick	Fy	width	thick	Fy
T/L Flg	6.0	0.3125	55.00	6.0	0.3125	55.00
Web		0.1345	55.00		0.1875	55.00
B/R Flg	6.0	0.3750	55.00	6.0	0.3750	55.00

Built Up Rafter - RAF03

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	(k/in) B/R
1	F6.31	F6.38	W188	3	19	-24.8	0.27	137.9	0.85	0.72	1.02	4	21	-4.81	0.12	0.14	0.15
2	F6.31	F6.38	W135	3	22	-25.2	0.29	112.8	0.80	0.63	1.00	4	27	-14.95	0.72	0.47	0.51

Chkpt	17	21	22	27		
Depth	24.69	24.69		24.69		
Section	| 1	|	2	|		

	width	thick	Fy	width	thick	Fy
T/L Flg	6.0	0.3125	55.00	6.0	0.3125	55.00
Web		0.1875	55.00		0.1345	55.00
B/R Flg	6.0	0.3750	55.00	6.0	0.3750	55.00

Built Up Rafter - RAF04

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	(k/in) B/R
1	F8.31	F8.50	W188	4	32	-27.5	0.13	-380.7	1.00	0.86	0.93	4	32	-21.55	0.53	0.45	0.55

Chkpt	28	32	
Depth	24.81	36.81	
Section	| 1	|	

	width	thick	Fy
T/L Flg	8.0	0.3125	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.5000	55.00

Built Up Column - COL01

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	SHEAR Load Comb	SHEAR Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow T/L	(k/in) B/R
1	F8.31	F8.50	W188	3	39	-29.0	0.13	-381.8	0.97	0.82	0.89	3	39	-22.86	0.56	1.67	1.88

Chkpt	33	39	
Depth	12.00	37.81	
Section	| 1	|	

	width	thick	Fy
T/L Flg	8.0	0.3125	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.5000	55.00

Built Up Column - COL02

Section	T/L Flange Mat'l	B/R Flange Mat'l	Web Mat'l	Load Comb	Loc	Axial Kips	Axial Ratio	Moment Ft-kip	T/L Bend Ratio	B/R Bend Ratio	Max Unity Check	Load Comb	Loc	SHEAR Force Kips	SHEAR Shear Ratio	Flow (k/in) T/L	Flow (k/in) B/R
1	F8.50	F8.31	W188	4	47	-28.9	0.13	380.7	0.82	0.96	0.89	4	47	22.85	0.56	1.88	1.67

Chkpt	40	47
Depth	12.00	37.81
Section	1	

	width	thick	Fy
T/L Flg	8.0	0.5000	55.00
Web		0.1875	55.00
B/R Flg	8.0	0.3125	55.00

Frame Weight (lbs) = 4299

Deflections (in):

10 yr Wind dx =	0.49	= H/ 402	LONG. WIND 2 TO FRONT	
Seismic dx =	1.00	= H/ 198	SEISMIC TO RIGHT	
Story Drift =	2.41	= 0.012H	SEISMIC TO RIGHT	
Stability Coefficient =	0.01		1.07SW+1.07RDL+1.07COL+0.91EQB	
Stability Ratio =	0.07		1.07SW+1.07RDL+1.07COL+0.91EQB	
Fundamental Period =	0.7633		Single Story Period	
Maximum dx =	-1.15	= H/ 172	1.07SW+1.07RDL+1.07COL+0.91EQL	
Maximum dy =	-5.89	= L/ 203	@ MOD 1, SW+RDL+COL+RLL+RLR	
Max. Live dy =	-3.42	= L/ 350	@ MOD 1, LIVE ON LEFT AND RIGHT	

FRAME LINE 2-6

NUCOR BUILDINGS GROUP

Job # : C22B0182A
File : F01a.nfr
App Version : 1.6.127.0

Job Name : Rob Kerth Iceland
Designer : BG\Viviana.Perez
Date : 8/23/2022

Frame : F01

BOLTED END-PLATES (BEP) SUMMARY

Bolt Pre Tension Method : TurnOfNut

PLATE SIZE: (in)

Splice ID	Left Type	Right Type	Members Joined	Loc	Web Depth	Left Plate Width	Left Plate Thick	Left Plate Length	Left Plate Fy(ksi)	Right Plate Width	Right Plate Thick	Right Plate Length	Right Plate Fy(ksi)
1	6E	6E	COL01 To RAF01	Top	36.00	8.00	0.63	42.37	55.0	8.00	0.63	42.37	55.0
1	6E	6E	COL01 To RAF01	Bot	36.00	8.00	0.63	42.37	55.0	8.00	0.63	42.37	55.0
2	6E	6E	RAF01 To RAF02	Top	24.00	8.00	0.50	30.25	55.0	6.00	0.38	30.25	55.0
2	6E	6E	RAF01 To RAF02	Bot	24.00	8.00	0.50	30.25	55.0	6.00	0.38	30.25	55.0
3	4E	4E	RAF02 To RAF03	Top	24.00	6.00	0.50	30.08	55.0	6.00	0.50	30.08	55.0
3	4E	4E	RAF02 To RAF03	Bot	24.00	6.00	0.50	30.08	55.0	6.00	0.50	30.08	55.0
4	4E	4E	RAF03 To RAF04	Top	24.00	6.00	0.38	30.25	55.0	8.00	0.50	30.25	55.0
4	4E	4E	RAF03 To RAF04	Bot	24.00	6.00	0.38	30.25	55.0	8.00	0.50	30.25	55.0
5	6E	6E	RAF04 To COL02	Top	36.00	8.00	0.63	42.37	55.0	8.00	0.63	42.37	55.0
5	6E	6E	RAF04 To COL02	Bot	36.00	8.00	0.63	42.37	55.0	8.00	0.63	42.37	55.0

6E 6E

PLATE DESIGN

Splice ID	Left Type	Right Type	Tension Location	Max Moment Load Comb	Max Moment Axial (kip)	Max Moment Shear (kip)	Max Moment Moment (ft-kip)	Max Shear Load Comb	Max Shear Axial (kip)	Max Shear Shear (kip)	Max Shear Moment (ft-kip)	Left Plate Ratio	Right Plate Ratio
1	6E	6E	Top	2	-24.72	24.86	-382.37	10	9.39	-11.18	161.79	0.86	0.86
1	6E	6E	Bot	10	9.39	-11.18	161.79	2	-24.72	24.86	-382.37	0.44	0.43
2	6E	6E	Top	2	-26.07	15.19	-103.27	10	10.37	-6.85	37.68	0.44	0.96
2	6E	6E	Bot	22	12.31	-5.32	52.90	2	-26.07	15.19	-103.27	0.37	0.81
3	4E	4E	Top	8	10.64	-0.93	-45.66	15	-3.07	1.58	24.96	0.44	0.44
3	4E	4E	Bot	2	-24.72	0.07	134.42	22	12.38	-1.58	-41.86	0.84	0.84
4	4E	4E	Top	2	-26.06	-15.01	-96.56	8	10.38	6.78	35.25	1.00	0.45
4	4E	4E	Bot	20	12.14	5.27	50.93	2	-26.06	-15.01	-96.56	0.89	0.39
5	6E	6E	Top	2	-24.72	-24.69	-380.68	8	9.42	11.10	161.73	0.86	0.86
5	6E	6E	Bot	8	9.42	11.10	161.73	2	-24.72	-24.69	-380.68	0.43	0.44

BOLT RUPTURE DESIGN

Splice ID	Left Type	Right Type	Loc	Bolt Type	Pre-Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Load Comb	Axial (kip)	Moment (ft-kip)	Left Bolt Ratio	Right Bolt Ratio
1	6E	6E	Top	A325	Yes	0.75	3.50	--	1.38	1.61	3.25	2.25	1.25	2	-24.72	-382.37	0.98	0.98
1	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.38	1.50	3.25	2.25	1.25	10	9.39	161.79	0.50	0.50
2	6E	6E	Top	A325	Yes	0.75	3.50	--	1.25	1.56	3.13	2.25	1.25	2	-26.07	-103.27	0.33	0.46
2	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.25	1.34	3.13	2.25	1.25	22	12.31	52.90	0.28	0.28
3	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.48	3.00	--	1.25	8	10.64	-45.66	0.35	0.35
3	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.33	3.00	--	1.25	2	-24.72	134.42	0.67	0.67
4	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.56	3.13	--	1.25	2	-26.06	-96.56	0.59	0.43
4	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.50	3.13	--	1.25	20	12.14	50.93	0.39	0.39
5	6E	6E	Top	A325	Yes	0.75	3.50	--	1.38	1.51	3.25	2.25	1.25	2	-24.72	-380.68	0.98	0.98
5	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.38	1.46	3.25	2.25	1.25	8	9.42	161.73	0.50	0.50

COMBINED BOLT BEARING SHEAR DESIGN

Splice ID	Left Type	Right Type	Loc	Bolt Type	Pre-Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Load Comb	Shear (kip)	Left Bolt Ratio	Right Bolt Ratio
1	6E	6E	Top	A325	Yes	0.75	3.50	--	1.38	1.61	3.25	2.25	1.25	10	-11.18	0.16	0.16
1	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.38	1.50	3.25	2.25	1.25	2	24.86	0.35	0.35
2	6E	6E	Top	A325	Yes	0.75	3.50	--	1.25	1.56	3.13	2.25	1.25	10	-6.85	0.10	0.10

COMBINED BOLT BEARING SHEAR DESIGN

Splice ID	Left Type	Right Type	Loc	Bolt Type	Pre-Tension	Dia	Gage	Gage 2	Pfi	Pfo	Pf	Pb	de	Load Comb	Shear (kip)	Left Bolt Ratio	Right Bolt Ratio
2	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.25	1.34	3.13	2.25	1.25	2	15.19	0.21	0.21
3	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.48	3.00	--	1.25	15	1.58	0.03	0.03
3	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.33	3.00	--	1.25	22	-1.58	0.03	0.03
4	4E	4E	Top	A325	Yes	0.75	3.50	--	1.25	1.56	3.13	--	1.25	8	6.78	0.14	0.14
4	4E	4E	Bot	A325	Yes	0.75	3.50	--	1.25	1.50	3.13	--	1.25	2	-15.01	0.31	0.31
5	6E	6E	Top	A325	Yes	0.75	3.50	--	1.38	1.51	3.25	2.25	1.25	8	11.10	0.16	0.16
5	6E	6E	Bot	A325	Yes	0.75	3.50	--	1.38	1.46	3.25	2.25	1.25	2	-24.69	0.35	0.35

WELD DESIGN

Splice ID	Loc	Left							Right						
		Welds			Checks				Welds			Checks			
		Flg	Web	Stf	Load Comb	Tensile Rupture	Load Comb	Shear Rupture	Flg	Web	Stf	Load Comb	Tensile Rupture	Load Comb	Shear Rupture
1	Top	FWD4	WP13		2	0.87	10	0.17	FWD4	WP13		2	0.96	10	0.16
1	Bot	FWD3	WP13		10	0.51	2	0.37	FWD3	WP13		10	0.57	2	0.37
2	Top	FWD3	WP13		2	0.38	10	0.14	FWD3	WP13		2	0.53	10	0.20
2	Bot	FWD3	WP13		22	0.32	2	0.32	FWD3	WP13		22	0.45	2	0.45
3	Top	FWD3	WP13		8	0.40	15	0.04	FWD3	WP13		8	0.40	15	0.04
3	Bot	FWD3	WP13		2	0.77	22	0.04	FWD3	WP13		2	0.77	22	0.04
4	Top	FWD3	WP13		2	0.54	8	0.20	FWD3	WP13		2	0.39	8	0.15
4	Bot	FWD3	WP13		20	0.49	2	0.44	FWD3	WP13		20	0.35	2	0.34
5	Top	FWD4	WP13		2	0.95	8	0.16	FWD4	WP13		2	0.87	8	0.16
5	Bot	FWD3	WP13		8	0.57	2	0.37	FWD3	WP13		8	0.51	2	0.36

BASEPLATE AND ANCHOR ROD DESIGN RESULTS

BASEPLATE AND ANCHOR ROD INFORMATION: (in)

Column ID	Column Type	Pattern	Column Depth	Base Plate				Anchor Rods					
				Width	Thickness	Length	Fy(ksi)	Qty	Dia.	Grade	Pfi	Pb	Gage
COL01	WF/BU	Left	12	10	0.625	12.0000	55	4	1.25	Grade36	4	5	5
COL02	WF/BU	Right	12	10	0.625	12.0000	55	4	1.25	Grade36	4	5	5

BASEPLATE DESIGN CHECKS

Column ID	Concrete Bearing (Compression)					Base Plate Yielding (Tension)				
	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Design Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Design Ratio
COL01	2	-28.00	-24.80	0.00	0.15	10	12.07	10.76	0.00	0.68
COL02	2	-27.84	24.78	0.00	0.15	22	14.05	-7.36	-3.30	0.73

ANCHOR ROD SHEAR AND TENSION DESIGN CHECKS

Column ID	Anchor Rod Tension Design					Anchor Rod Shear Design					Combined Tension-Shear Design					Combined Shear-Tension Design				
	Load Comb	Axial (kip)	Shear (kips)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear(kip)	Rod Ratio
COL01	10	12.07	10.76	0.00	0.11	2	-28.00	-24.80	0.00	0.39	10	12.07	10.76	0.00	0.11	2	-28.00	-24.80	0.00	0.39
COL02	22	14.05	-7.36	-3.30	0.13	2	-27.84	24.78	0.00	0.39	22	14.05	-7.36	-3.30	0.13	2	-27.84	24.78	0.00	0.39

BASEPLATE LEFT FLANGE WELD DESIGN CHECKS

Column ID	Left Flange Weld (Pipe Weld)						Web Weld						Right Flange Weld					
	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio	Weld Size	Load Comb	Axial (kip)	Shear (kip)	Bracing Shear (kip)	Weld Ratio
COL01	FWS3	-74	7.68	-3.91	-16.63	0.57	FWR3	2	-28.00	-24.80	0.00	0.56	FWS3	-74	7.68	-3.91	-16.63	0.32
COL02	FWS3	-71	7.72	3.90	-16.63	0.32	FWR3	2	-27.84	24.78	0.00	0.56	FWS3	-71	7.72	3.90	-16.63	0.57

LOAD COMBINATIONS:

FRAME LINE 2-6

No	ASR	Combination
1	1.00	1.00SW+1.00RDL+1.00COL
2	1.00	1.00SW+1.00RDL+1.00COL+1.00RLL+1.00RLR
3	1.00	1.00SW+1.00RDL+1.00COL+0.60W1L
4	1.00	1.00SW+1.00RDL+1.00COL+0.60W2L
5	1.00	1.00SW+1.00RDL+1.00COL+0.60W1R
6	1.00	1.00SW+1.00RDL+1.00COL+0.60W2R
7	1.00	0.60SW+0.60RDL+0.60W1L
8	1.00	0.60SW+0.60RDL+0.60W2L
9	1.00	0.60SW+0.60RDL+0.60W1R
10	1.00	0.60SW+0.60RDL+0.60W2R
11	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W1L
12	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W2L
13	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W1R
14	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W2R
15	1.00	1.00SW+1.00RDL+1.00COL+0.60W5B+0.60BWB
16	1.00	1.00SW+1.00RDL+1.00COL+0.60W6B+0.60BWB
17	1.00	1.00SW+1.00RDL+1.00COL+0.60W5F+0.60BWF
18	1.00	1.00SW+1.00RDL+1.00COL+0.60W6F+0.60BWF
19	1.00	0.60SW+0.60RDL+0.60W5B+0.60BWB
20	1.00	0.60SW+0.60RDL+0.60W6B+0.60BWB
21	1.00	0.60SW+0.60RDL+0.60W5F+0.60BWF
22	1.00	0.60SW+0.60RDL+0.60W6F+0.60BWF
23	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W5B+0.45BWB
24	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W6B+0.45BWB
25	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W5F+0.45BWF
26	1.00	1.00SW+1.00RDL+1.00COL+0.75RLL+0.75RLR+0.45W6F+0.45BWF
27	1.00	1.069SW+1.069RDL+1.069COL+0.91EQL
28	1.00	1.069SW+1.069RDL+1.069COL+0.91EQR
29	1.00	1.069SW+1.069RDL+1.069COL+0.91EQB
30	1.00	1.069SW+1.069RDL+1.069COL+0.91EQF
31	1.00	1.052SW+1.052RDL+1.052COL+0.682EQL
32	1.00	1.052SW+1.052RDL+1.052COL+0.682EQR
33	1.00	1.052SW+1.052RDL+1.052COL+0.682EQB
34	1.00	1.052SW+1.052RDL+1.052COL+0.682EQF
35	1.00	0.53SW+0.53RDL+0.91EQL
36	1.00	0.53SW+0.53RDL+0.91EQR
37	1.00	0.53SW+0.53RDL+0.91EQB
38	1.00	0.53SW+0.53RDL+0.91EQF
39*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQL
40*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQL
41*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQL
42*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQL+0.525EQB
43*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQL+0.394EQB
44*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQL+0.525EQB
45*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQL+0.525EQF
46*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQL+0.394EQF
47*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQL+0.525EQF
48*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQR
49*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQR
50*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQR

*Indicates a Special Seismic Load Combination

LOAD COMBINATIONS:

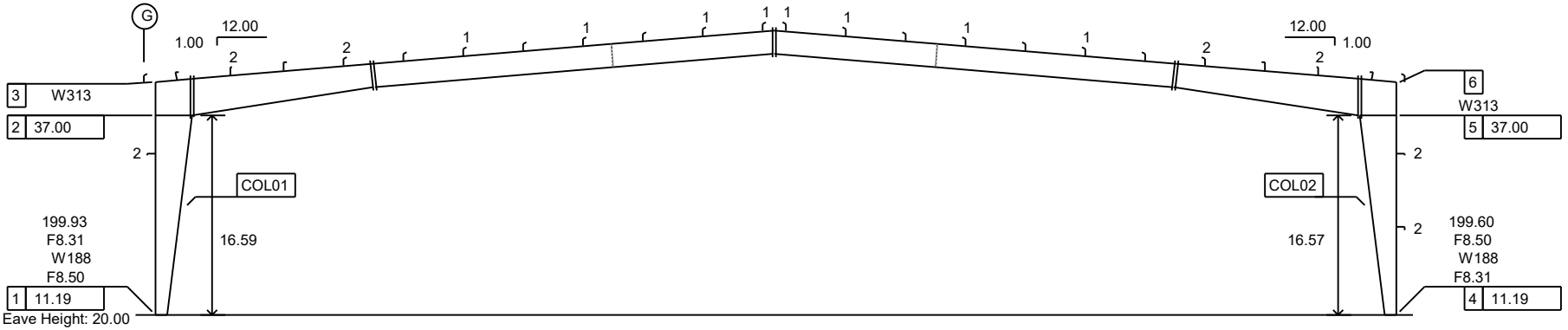
No	ASR	Combination
51*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQR+0.525EQB
52*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQR+0.394EQB
53*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQR+0.525EQB
54*	1.20	1.069SW+1.069RDL+1.069COL+1.75EQR+0.525EQF
55*	1.20	1.052SW+1.052RDL+1.052COL+1.313EQR+0.394EQF
56*	1.20	0.531SW+0.531RDL+0.531COL+1.75EQR+0.525EQF
57*	1.20	1.069SW+1.069RDL+1.069COL+1.40EQB
58*	1.20	1.052SW+1.052RDL+1.052COL+1.05EQB
59*	1.20	0.531SW+0.531RDL+0.531COL+1.40EQB
60*	1.20	1.069SW+1.069RDL+1.069COL+0.525EQL+1.75EQB
61*	1.20	1.052SW+1.052RDL+1.052COL+0.394EQL+1.313EQB
62*	1.20	0.531SW+0.531RDL+0.531COL+0.525EQL+1.75EQB
63*	1.20	1.069SW+1.069RDL+1.069COL+0.525EQR+1.75EQB
64*	1.20	1.052SW+1.052RDL+1.052COL+0.394EQR+1.313EQB
65*	1.20	0.531SW+0.531RDL+0.531COL+0.525EQR+1.75EQB
66*	1.20	1.069SW+1.069RDL+1.069COL+1.40EQF
67*	1.20	1.052SW+1.052RDL+1.052COL+1.05EQF
68*	1.20	0.531SW+0.531RDL+0.531COL+1.40EQF
69*	1.20	1.069SW+1.069RDL+1.069COL+0.525EQL+1.75EQF
70*	1.20	1.052SW+1.052RDL+1.052COL+0.394EQL+1.313EQF
71*	1.20	0.531SW+0.531RDL+0.531COL+0.525EQL+1.75EQF
72*	1.20	1.069SW+1.069RDL+1.069COL+0.525EQR+1.75EQF
73*	1.20	1.052SW+1.052RDL+1.052COL+0.394EQR+1.313EQF
74*	1.20	0.531SW+0.531RDL+0.531COL+0.525EQR+1.75EQF

*Indicates a Special Seismic Load Combination

FRAME LINE 2-6

	7	8	9	10	11	12	13
Web Depth	36.00	24.00	24.00 CT	24.00	24.00 CT	24.00	36.00
Length on Slope	180.00	240.00	163.01	163.01	240.00	184.01	
Left/Top Flange	F8.31	F6.31	F6.31	F6.31	F6.31	F8.31	
Web	W188	W135	W188	W188	W135	W188	
Right/Bottom Flange	F8.50	F6.38	F6.38	F6.38	F6.38	F8.50	
Horizontal Tail Dim.	19.0315		52.5000			85.9685	
	RAF01		RAF02		RAF03	RAF04	

Purlin Offset: 8.0
Projected Area: 304



Left Eave Height: 20.00
Left Girt Offset: 12.0
Right Eave Height: 20.00
Right Girt Offset: 8.0
Total Width: 105.00

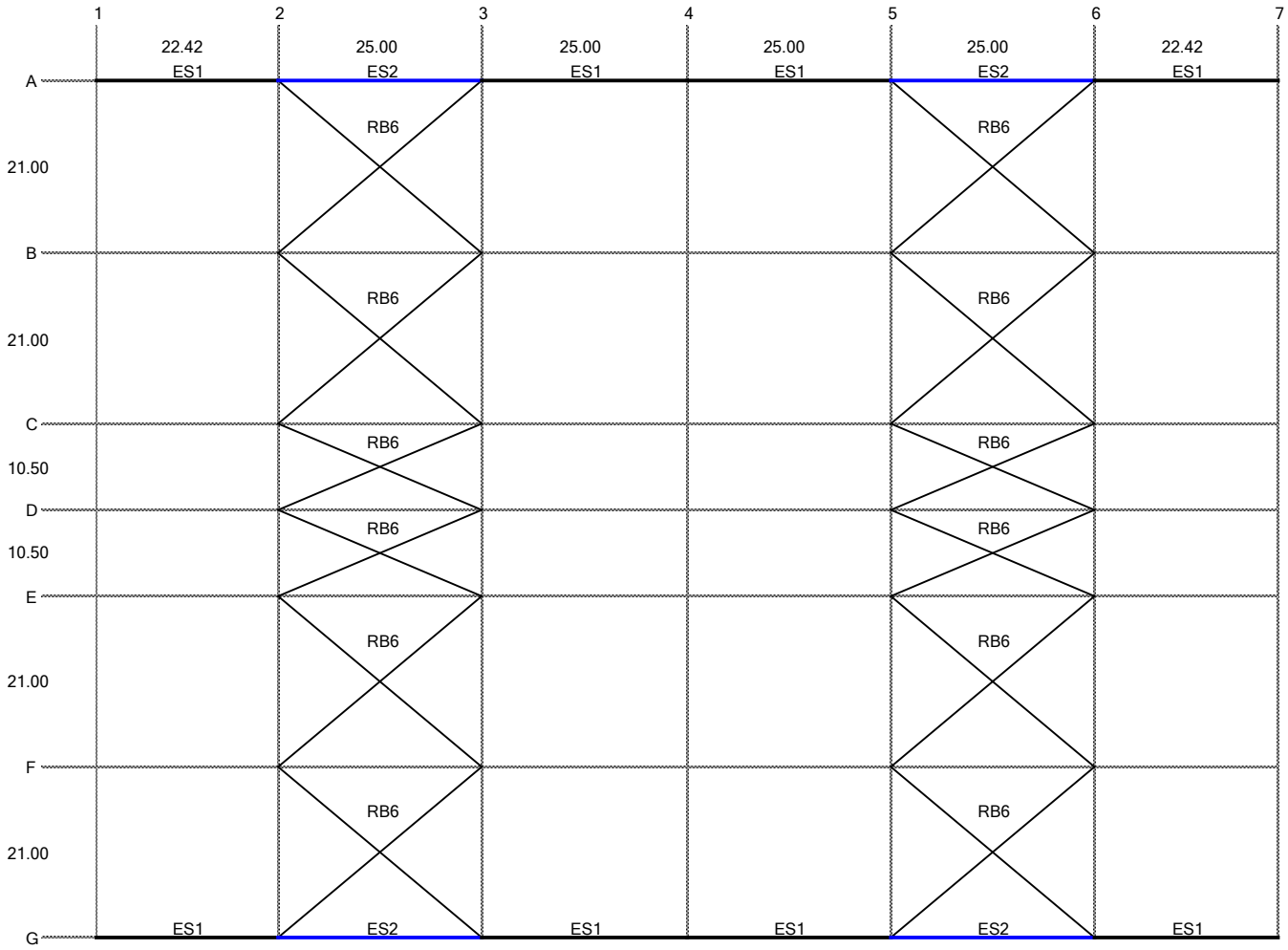
105.00

Frame Wt: 5385 Max Wind dx: H/400 Max dx: H/199 Max dy: L/203

Location Code	1 P	2	3	4 P	5	6	7 M	8 M	9	10 M	11	12 M	13 M
Left Plate	NA	4x0.375	8x0.313	NA	4x0.375	8x0.313	8x0.625	8x0.500	-	6x0.500	-	6x0.375	8x0.625
Right Plate	10x0.625	-	-	10x0.625	-	-	8x0.625	6x0.375	-	6x0.500	-	8x0.500	8x0.625
Bolt Quantity-Diameter	4-1.250	-	-	4-1.250	-	-	12-0.75-S	12-0.75-S	-	8-0.75-S	-	8-0.75-S	12-0.75-S
Pfi/Pf	4.000/NA	-	-	4.000/NA	-	-	1.375/3.250	1.250/3.125	-	1.250/3.000	-	1.250/3.125	1.375/3.250
Top Welds (L/R)	FWS3	-	W1-FWS3	FWS3	-	W1-FWS3	FWD4/FWD4	FWD3/FWD3	-	FWD3/FWD3	-	FWD3/FWD3	FWD4/FWD4
Bottom Welds (L/R)	FWS3	-	W3-FWS4	FWS3	-	W3-FWS4	FWD3/FWD3	FWD3/FWD3	-	FWD3/FWD3	-	FWD3/FWD3	FWD3/FWD3
Web Welds (L/R)	FWR3	-	W4-FWS3	FWR3	-	W4-FWS3	WP13/WP13	WP13/WP13	-	WP13/WP13	-	WP13/WP13	WP13/WP13
Connection Code	BHFCNA	-	-	BHFCNA	-	-	KVEUEU	SPEUEU	-	SVEUEU	-	SPEUEU	KVEUEU
Pb/Gage	5.000/5.000		-	5.000/5.000		-	2.250/3.500	2.250/3.500	-	NA/3.500	-	NA/3.500	2.250/3.500

B01
C22B0182a
Roof Plan

Viviana.Perez
8/22/2022



RB6 - 3/4" ROD

ES1 - 8E060B2 - EaveStrut w/ std. (2)-bolt connx.

ES2 - ~~P6.188 PipeStrut + 8E060 w/ std. (2) bolt connx.~~

AC-13 clip w/ 12ga strut purlin 1' uphill

B01
C22B0182a
Sidewall Elevations - Bldg. A

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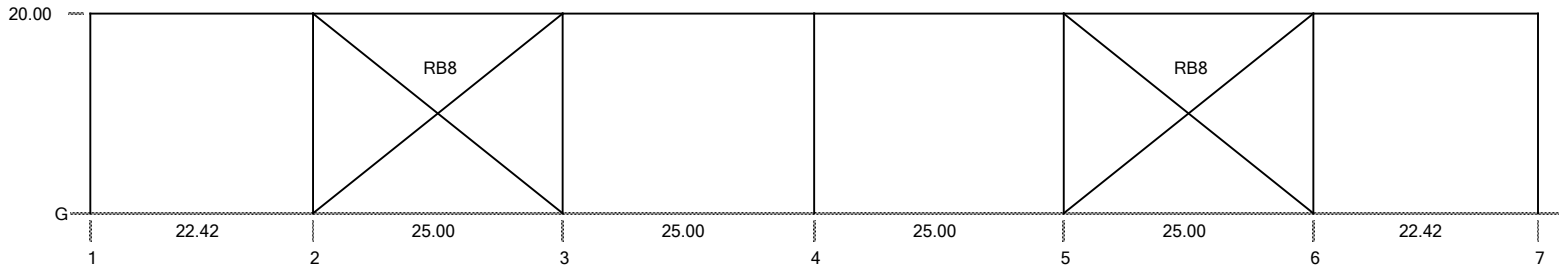
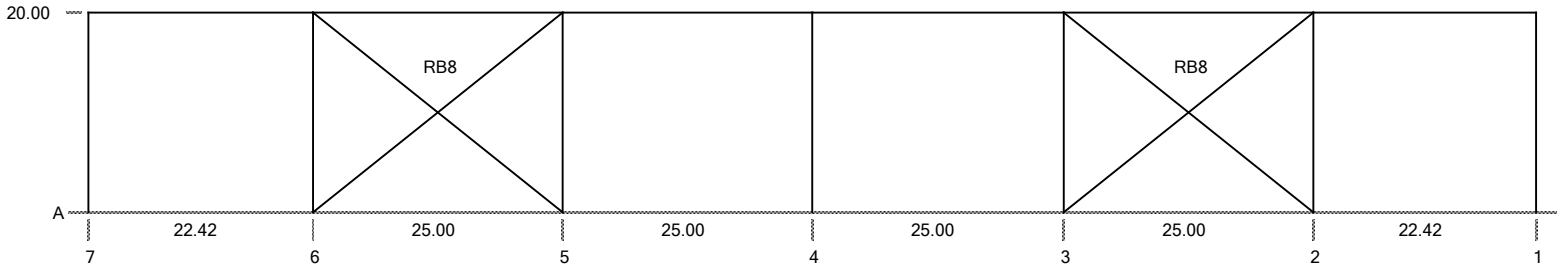
8/22/2022

Front Sidewall



RB8 - 1 ROD

Back Sidewall



RB8 - 1 ROD

INPUT REPORT

NUCOR BUILDINGS GROUP — BRACING PROGRAM
Job Name: Ice Land — Job Number : C22B0182a
Designer: Viviana.Perez — Date : 8/22/2022
File : B01.nbr — App Version: 1.5.98.0

STRUCTURAL GEOMETRY

Building Width :	105.00 Ft.	Building Length :	144.84 Ft.
BSW Eave Ht :	20.00 Ft.	Left Roof Slope :	1.00/12
FSW Eave Ht :	20.00 Ft.	Right Roof Slope :	1.00/12
Girt Offset :	8.00 In.	Purlin Offset :	8.00 In.
Ridge Location :	52.50 Ft.		

Main Frame Spans: 105.0000'
Bay Spacing : 22.4200', 4@25.0000', 22.4200'

Endwall Spacing -> Left : 2@21.0000', 2@10.5000', 2@21.0000'
Right: 2@21.0000', 2@10.5000', 2@21.0000'
Girt Spacings -> BSW : 7.5000', 6.0000', 3.2500'
FSW : 7.5000', 6.0000', 3.2500'
Purlin Spacing -> RP1 : 1.0000', 10@5.0000', 1.6820'
RP2 : 1.0000', 10@5.0000', 1.6820'
Roof Connection Type: Bolted

LOADING CONDITIONS

Building Code & Year : IBC 2018
Risk Category : III-Substantial Hazard

GRAVITY LOADING (DEAD, LIVE AND SNOW)

Roof Dead Load =	2.50 PSF	Roof Col. Load =	5.00 PSF	Roof Live Load =	12.00 PSF
Ground Snow =	0.00 PSF	Roof Snow Load =	0.00 PSF	Is Slippery =	False
Roof Exp.(Ce) =	1.0	Thermal Con.(Ct) =	1.0	Slope Factor(Cs) =	1.00

SEISMIC

Site Class: D — Longitudinal Framing System: Braced Bays

Seismic Data:
Ss = 0.539 — S1 = 0.246 — Seismic Dead Wt = 13.15 PSF
Sds = 0.492 — Sd1 = 0.346 — Total Seismic Wt = 13.15 PSF

rho = 1.30 — omega = 2.00 — R = 3.25
Roof Diaphragm = Flexible
Roof Seismic Factor = 0.189 — Design Category = D — Irregular Building = False

WIND

Wind Speed : 110 MPH — Wind Exposure: C — Wind Enclosure: Enclosed
MRH Pressure: 23.75 PSF

WIND PRESSURE COEFFICIENTS

	C5	C6	C5E	C6E
W5B	0.580	-0.110	0.790	-0.250
W5F	-0.110	0.580	-0.250	0.790

Net Pressure On Building
W5B (PSF) 17.88
W5F (PSF) -17.88

Wind Pressures

	Interior Zone W5B (PSF)	Interior Zone W5F (PSF)	Exterior Zone W5B (PSF)	Exterior Zone W5F (PSF)	To Elev. (Ft.)
Windward	13.77	13.77	18.76	18.76	24.38
Leeward	-2.61	-2.61	-5.94	-5.94	---

Parapet Wind Pressure

	Left Endwall		Right Endwall	
Windard	---	(PSF)	---	(PSF)
Leeward	---	(PSF)	---	(PSF)

USER-APPLIED LOADS

Load Case (ID)	Roof/ Wall (ID)	Load Dir. (X,Z)	Load Magnitude (Kips)	Frame Line (ID)	Roof Grid (ID)	Wall Elevation (Ft.)	Description

LOAD COMBINATIONS

ID	ASR	Name
1)	1.00	SW+RDL+COL+0.60W5B
2)	1.00	SW+RDL+COL+0.60W5F
3)	1.00	0.60SW+0.60RDL+0.60W5B
4)	1.00	0.60SW+0.60RDL+0.60W5F
5)	1.00	SW+RDL+COL+0.75RLL+0.45W5B

```
6)    1.00    SW+RDL+COL+0.75RLL+0.45W5F
7)    1.00    1.07SW+1.07RDL+1.07COL+0.91EQB
8)    1.00    1.07SW+1.07RDL+1.07COL+0.91EQF
9)    1.00    1.05SW+1.05RDL+1.05COL+0.68EQB
10)   1.00    1.05SW+1.05RDL+1.05COL+0.68EQF
11)   1.00    0.53SW+0.53RDL+0.91EQB
12)   1.00    0.53SW+0.53RDL+0.91EQF
13)   1.00    SW+RDL+COL+RLL+0.39NLB
14)   1.00    SW+RDL+COL+RLL-0.39NLB
15)   1.00    SW+RDL+COL+0.15NLB
16)   1.00    SW+RDL+COL-0.15NLB
```

^^^ REACTION REPORT -- BY LOAD CASE ^^^

NUCOR BUILDINGS GROUP — BRACING PROGRAM
Job Name: Ice Land — Job Number : C22B0182a
Designer: Viviana.Perez — Date : 8/22/2022
File : B01.nbr — App Version: 1.5.98.0

REACTIONS -- LOAD CASE W5B

Frame Line	Grid Line	Horizontal + = right	Vertical + = up	Moment + = counterclockwise
1	A	0.00	0.00	0.00
1	G	0.00	0.00	0.00
2	A	-5.21	-4.16	0.00
2	G	-5.21	-4.16	0.00
3	A	0.00	4.16	0.00
3	G	0.00	4.16	0.00
4	A	0.00	0.00	0.00
4	G	0.00	0.00	0.00
5	A	-5.20	-4.16	0.00
5	G	-5.20	-4.16	0.00
6	A	0.00	4.16	0.00
6	G	0.00	4.16	0.00
7	A	0.00	0.00	0.00
7	G	0.00	0.00	0.00
Summation		-20.82	0.00	

REACTIONS -- LOAD CASE W5F

Frame Line	Grid Line	Horizontal + = right	Vertical + = up	Moment + = counterclockwise
1	A	0.00	0.00	0.00
1	G	0.00	0.00	0.00
2	A	0.00	4.16	0.00
2	G	0.00	4.16	0.00
3	A	5.20	-4.16	0.00
3	G	5.20	-4.16	0.00
4	A	0.00	0.00	0.00
4	G	0.00	0.00	0.00
5	A	0.00	4.16	0.00
5	G	0.00	4.16	0.00
6	A	5.21	-4.16	0.00
6	G	5.21	-4.16	0.00
7	A	0.00	0.00	0.00
7	G	0.00	0.00	0.00
Summation		20.82	0.00	

REACTIONS -- LOAD CASE EQB

Frame Line	Grid Line	Horizontal + = right	Vertical + = up	Moment + = counterclockwise
1	A	0.00	0.00	0.00
1	G	0.00	0.00	0.00
2	A	-9.44	-7.56	0.00
2	G	-9.44	-7.56	0.00
3	A	0.00	7.56	0.00
3	G	0.00	7.56	0.00
4	A	0.00	0.00	0.00
4	G	0.00	0.00	0.00
5	A	-9.44	-7.55	0.00
5	G	-9.44	-7.55	0.00
6	A	0.00	7.55	0.00
6	G	0.00	7.55	0.00
7	A	0.00	0.00	0.00
7	G	0.00	0.00	0.00
Summation		-37.77	0.00	

REACTIONS -- LOAD CASE EQF

Frame Line	Grid Line	Horizontal + = right	Vertical + = up	Moment + = counterclockwise
1	A	0.00	0.00	0.00
1	G	0.00	0.00	0.00
2	A	0.00	7.55	0.00
2	G	0.00	7.55	0.00
3	A	9.44	-7.55	0.00
3	G	9.44	-7.55	0.00
4	A	0.00	0.00	0.00
4	G	0.00	0.00	0.00

5	A	0.00	7.56	0.00
5	G	0.00	7.56	0.00
6	A	9.44	-7.56	0.00
6	G	9.44	-7.56	0.00
7	A	0.00	0.00	0.00
7	G	0.00	0.00	0.00
Summation		37.77	0.00	

^^^ BRACING DESIGN SUMMARY REPORT -- BY CONTROLLING LOAD COMBINATION ^^^

NUCOR BUILDINGS GROUP — BRACING PROGRAM
Job Name: Ice Land — Job Number : C22B0182a
Designer: Viviana.Perez — Date : 8/22/2022
File : B01.nbr — App Version: 1.5.98.0

BRACES

Memb. ID	Frame Lines	Grid/ Top	Elev.	Orient.	Mat. code	Member desc.	Load comb.	Axial (k)	Axial Allowed	Min tw	Omega Applied
B1	2-3	A-B		/	RB6	3/4_ROD	8	9.10	10.89	0.115	TW ONLY
B2	2-3	A-B		\	RB6	3/4_ROD	7	9.10	10.89	0.115	TW ONLY
B3	2-3	B-C		/	RB6	3/4_ROD	8	4.55	10.89	0.056	TW ONLY
B4	2-3	B-C		\	RB6	3/4_ROD	7	4.55	10.89	0.056	TW ONLY
B5	2-3	C-D		/	RB6	3/4_ROD	8	0.94	10.89	0.007	TW ONLY
B6	2-3	C-D		\	RB6	3/4_ROD	7	0.94	10.89	0.007	TW ONLY
B7	2-3	D-E		/	RB6	3/4_ROD	7	0.94	10.89	0.007	TW ONLY
B8	2-3	D-E		\	RB6	3/4_ROD	8	0.94	10.89	0.007	TW ONLY
B9	2-3	E-F		/	RB6	3/4_ROD	7	4.55	10.89	0.056	TW ONLY
B10	2-3	E-F		\	RB6	3/4_ROD	8	4.55	10.89	0.056	TW ONLY
B11	2-3	F-G		/	RB6	3/4_ROD	7	9.10	10.89	0.115	TW ONLY
B12	2-3	F-G		\	RB6	3/4_ROD	8	9.10	10.89	0.115	TW ONLY
B13	5-6	A-B		/	RB6	3/4_ROD	8	9.10	10.89	0.115	TW ONLY
B14	5-6	A-B		\	RB6	3/4_ROD	7	9.10	10.89	0.115	TW ONLY
B15	5-6	B-C		/	RB6	3/4_ROD	8	4.55	10.89	0.056	TW ONLY
B16	5-6	B-C		\	RB6	3/4_ROD	7	4.55	10.89	0.056	TW ONLY
B17	5-6	C-D		/	RB6	3/4_ROD	8	0.94	10.89	0.007	TW ONLY
B18	5-6	C-D		\	RB6	3/4_ROD	7	0.94	10.89	0.007	TW ONLY
B19	5-6	D-E		/	RB6	3/4_ROD	7	0.94	10.89	0.007	TW ONLY
B20	5-6	D-E		\	RB6	3/4_ROD	8	0.94	10.89	0.007	TW ONLY
B21	5-6	E-F		/	RB6	3/4_ROD	7	4.55	10.89	0.056	TW ONLY
B22	5-6	E-F		\	RB6	3/4_ROD	8	4.55	10.89	0.056	TW ONLY
B23	5-6	F-G		/	RB6	3/4_ROD	7	9.10	10.89	0.115	TW ONLY
B24	5-6	F-G		\	RB6	3/4_ROD	8	9.10	10.89	0.115	TW ONLY
B25	2-3	A	20.00	/	RB8	1_ROD	7	17.18	22.92	0.150	Y
B26	2-3	A	20.00	\	RB8	1_ROD	8	17.17	22.92	0.150	Y
B27	5-6	A	20.00	/	RB8	1_ROD	7	17.17	22.92	0.150	Y
B28	5-6	A	20.00	\	RB8	1_ROD	8	17.18	22.92	0.150	Y
B29	2-3	G	20.00	/	RB8	1_ROD	7	17.18	22.92	0.150	Y
B30	2-3	G	20.00	\	RB8	1_ROD	8	17.17	22.92	0.150	Y
B31	5-6	G	20.00	/	RB8	1_ROD	7	17.17	22.92	0.150	Y
B32	5-6	G	20.00	\	RB8	1_ROD	8	17.18	22.92	0.150	Y

The minimum web thickness (Min tw) provided for Single/DoubleX-Bracing clevis connections are based on the Standard Brace Clevis plate.

STRUTS

Memb. ID	Frame Lines	Grid/ Elev.		Mat. code	Member desc.	Load comb.	Axial (k)	Axial Allowed	Omega Applied
S1L	1-2	B	-4.38	PUR		1	-0.23		N
S1R	1-2	B	0.61	PUR		1	-1.66		N
S2L	1-2	C	-0.46	PUR		3	-1.39		N
S2R	1-2	C	4.52	PUR		3	-0.14		N
S3L	1-2	D	-1.00	PUR		1	-0.53		N
S3R	1-2	D	1.00	PUR		1	-0.53		N
S4L	1-2	E	-4.52	PUR		3	-0.14		N
S4R	1-2	E	0.46	PUR		3	-1.39		N
S5L	1-2	F	-0.61	PUR		1	-1.66		N
S5R	1-2	F	4.38	PUR		1	-0.23		N
S6L	2-3	B	-4.38	PUR		8	-0.64		N
S6R	2-3	B	0.61	PUR		8	-4.65		N
S7L	2-3	C	-0.46	PUR		8	-2.02		N
S7R	2-3	C	4.52	PUR		8	-0.21		N
S8L	2-3	D	-1.00	PUR		1	-0.53		N
S8R	2-3	D	1.00	PUR		1	-0.53		N
S9L	2-3	E	-4.52	PUR		8	-0.21		N
S9R	2-3	E	0.46	PUR		8	-2.02		N
S10L	2-3	F	-0.61	PUR		8	-4.65		N
S10R	2-3	F	4.38	PUR		8	-0.64		N
S11L	3-4	B	-4.38	PUR		1	-0.09		N
S11R	3-4	B	0.61	PUR		1	-0.67		N
S12L	3-4	C	-0.46	PUR		2	-0.56		N
S12R	3-4	C	4.52	PUR		2	-0.06		N
S13L	3-4	D	-1.00	PUR		1	-0.21		N
S13R	3-4	D	1.00	PUR		1	-0.21		N
S14L	3-4	E	-4.52	PUR		2	-0.06		N
S14R	3-4	E	0.46	PUR		2	-0.56		N
S15L	3-4	F	-0.61	PUR		1	-0.67		N
S15R	3-4	F	4.38	PUR		1	-0.09		N
S16L	4-5	B	-4.38	PUR		2	-0.09		N
S16R	4-5	B	0.61	PUR		2	-0.67		N
S17L	4-5	C	-0.46	PUR		1	-0.56		N
S17R	4-5	C	4.52	PUR		1	-0.06		N
S18L	4-5	D	-1.00	PUR		2	-0.21		N
S18R	4-5	D	1.00	PUR		2	-0.21		N
S19L	4-5	E	-4.52	PUR		1	-0.06		N
S19R	4-5	E	0.46	PUR		1	-0.56		N

S20L	4-5	F	-0.61	PUR			2	-0.67		N
S20R	4-5	F	4.38	PUR			2	-0.09		N
S21L	5-6	B	-4.38	PUR			7	-0.64		N
S21R	5-6	B	0.61	PUR			7	-4.65		N
S22L	5-6	C	-0.46	PUR			7	-2.02		N
S22R	5-6	C	4.52	PUR			7	-0.21		N
S23L	5-6	D	-1.00	PUR			2	-0.53		N
S23R	5-6	D	1.00	PUR			2	-0.53		N
S24L	5-6	E	-4.52	PUR			7	-0.21		N
S24R	5-6	E	0.46	PUR			7	-2.02		N
S25L	5-6	F	-0.61	PUR			7	-4.65		N
S25R	5-6	F	4.38	PUR			7	-0.64		N
S26L	6-7	B	-4.38	PUR			2	-0.23		N
S26R	6-7	B	0.61	PUR			2	-1.66		N
S27L	6-7	C	-0.46	PUR			4	-1.39		N
S27R	6-7	C	4.52	PUR			4	-0.14		N
S28L	6-7	D	-1.00	PUR			2	-0.53		N
S28R	6-7	D	1.00	PUR			2	-0.53		N
S29L	6-7	E	-4.52	PUR			4	-0.14		N
S29R	6-7	E	0.46	PUR			4	-1.39		N
S30L	6-7	F	-0.61	PUR			2	-1.66		N
S30R	6-7	F	4.38	PUR			2	-0.23		N
S31	1-2	A	20.00	8E060B2	EaveStrut		1	-1.18	2.48	Y
S32	2-3	A	20.00	~~P6.188~~	~~PipeStrut~~	*	8	-12.11	24.60	Y
S32	2-3	A	20.00	8E060B2	EaveStrut					Y
S33	3-4	A	20.00	8E060B2	EaveStrut		1	-0.40	2.48	Y
S34	4-5	A	20.00	8E060B2	EaveStrut		2	-0.40	2.48	Y
S35	5-6	A	20.00	~~P6.188~~	~~PipeStrut~~	*	7	-12.11	24.60	Y
S35	5-6	A	20.00	8E060B2	EaveStrut					Y
S36	6-7	A	20.00	8E060B2	EaveStrut		2	-1.18	2.48	Y
S37	1-2	G	20.00	8E060B2	EaveStrut		1	-1.18	2.48	Y
S38	2-3	G	20.00	~~P6.188~~	~~PipeStrut~~	*	8	-12.11	24.60	Y
S38	2-3	G	20.00	8E060B2	EaveStrut					Y
S39	3-4	G	20.00	8E060B2	EaveStrut		1	-0.40	2.48	Y
S40	4-5	G	20.00	8E060B2	EaveStrut		2	-0.40	2.48	Y
S41	5-6	G	20.00	~~P6.188~~	~~PipeStrut~~	*	7	-12.11	24.60	Y
S41	5-6	G	20.00	8E060B2	EaveStrut					Y
S42	6-7	G	20.00	8E060B2	EaveStrut		2	-1.18	2.48	Y

*Use AC-13 clip w/ 12ga strut purlin 1' uphill

COST & WEIGHT SUMMARY
IN DOLLARS & LBS

	Cables	Rods	Angles	Ev/Bx/Pi Struts	Purlin Struts	Portals	Total
COST	0	1224	0	2670	0	0	3895
WEIGHT	0	1858	0	2675	0	0	4534

SECOND ORDER ANALYSIS

Automatically Select 2nd Order Method

Load Combination	Sum Yi	Sum H	Delta	B2
1 SW+RDL+COL+0.60W5B	-38.2	12.50	0.211	1.00
2 SW+RDL+COL+0.60W5F	-38.2	-12.50	0.211	1.00
3 0.60SW+0.60RDL+0.60W5B	53.0	12.50	0.211	1.00
4 0.60SW+0.60RDL+0.60W5F	53.0	-12.50	0.211	1.00
5 SW+RDL+COL+0.75RLL+0.45W5B	-194.1	9.37	0.158	1.02
6 SW+RDL+COL+0.75RLL+0.45W5F	-194.1	-9.37	0.158	1.02
7 1.07SW+1.07RDL+1.07COL+0.91EQB	-121.9	26.46	0.461	1.01
8 1.07SW+1.07RDL+1.07COL+0.91EQF	-121.9	-26.46	0.461	1.01
9 1.05SW+1.05RDL+1.05COL+0.68EQB	-120.0	19.84	0.346	1.01
10 1.05SW+1.05RDL+1.05COL+0.68EQF	-120.0	-19.84	0.346	1.01
11 0.53SW+0.53RDL+0.91EQB	-20.1	26.46	0.461	1.00
12 0.53SW+0.53RDL+0.91EQF	-20.1	-26.46	0.461	1.00
13 SW+RDL+COL+RLL+0.39NLB	-296.6	0.59	0.010	1.04
14 SW+RDL+COL+RLL-0.39NLB	-296.6	-0.59	0.010	1.04
15 SW+RDL+COL+0.15NLB	-114.1	0.23	0.004	1.01
16 SW+RDL+COL-0.15NLB	-114.1	-0.23	0.004	1.01

CBC STEEL BUILDINGS
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1700 E. Louise Avenue • Lathrop, CA 95330
Tel: (209) 983-0910

Job: C22B0182A Sheet No. H-1
Date: 11/4/22 By: VP

Hang Post Design
Wall deletion @ 12'

FL-7 REW **L=11.3ft trib=11.62ft**

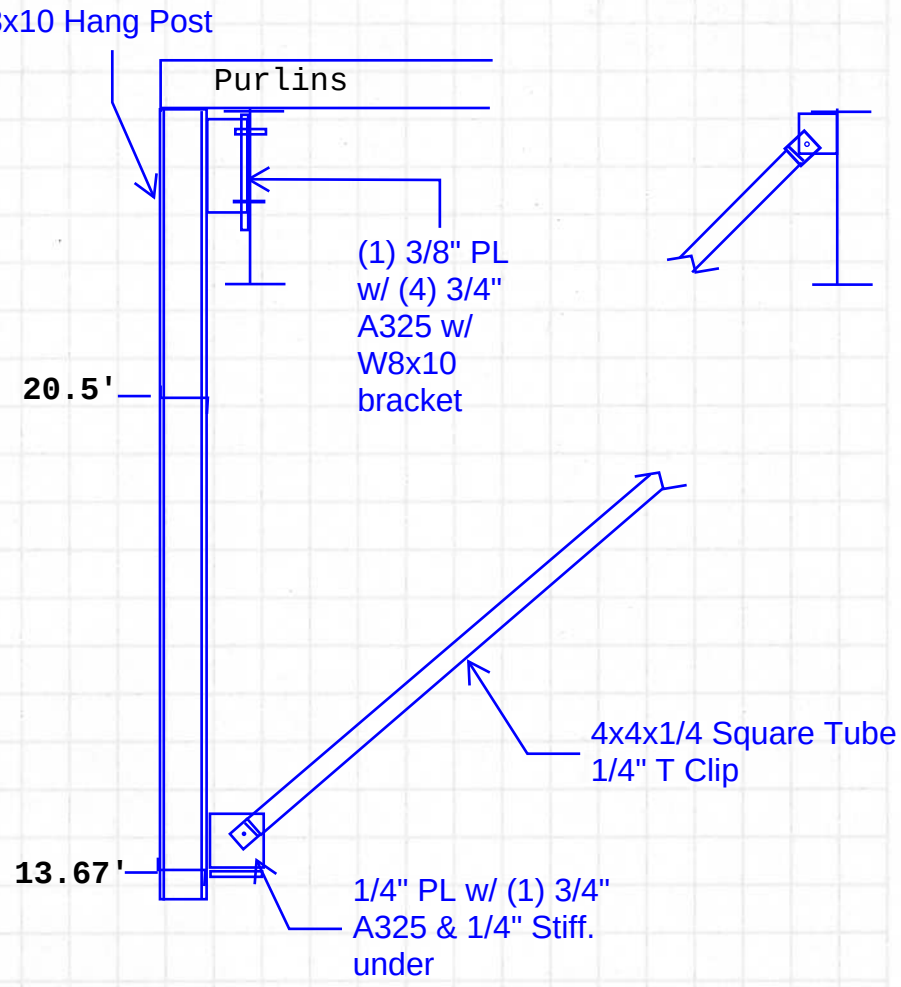
w=0.6*23.75psf*11.6ft
=0.167 k/ft~0.2k/ft
V=0.2k/ft*(11.3ft/2)=**1.13k**
M=0.2k/ft*(11.3ft)^2/8=**3.2k-ft**

FL-7 REW **L=9.75ft trib=19.71ft**

w=0.6*23.75psf*19.71ft
=0.28 k/ft~0.3k/ft
V=0.3k/ft*(9.75ft/2)=**1.5k**
M=0.3k/ft*(9.75ft)^2/8=**3.6k-ft**

A=1.5k/cosθ=4.4k~5k

θ =70°



Note: Align stiffener w/ girt height

Hang post on EWs

NUCOR BUILDINGS GROUP
A DIVISION OF NUCOR CORPORATION

H-2

Project No. : C22B0182A
Description : Rob Kerth Ice Land- Hang Post
Engineer : VP
Date : 11/4/2022

BEAM-COLUMN S.S. (AISC 15th Edition)

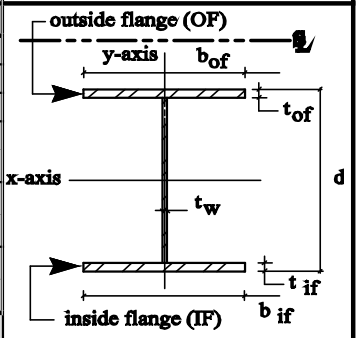
1 Loads updated

MAIN REPORT: DESIGN SUMMARY

Version: 2018.09.12 (Date: 09/12/18) By NBG-GS

@7/B.9,E.1 @7/A.9,F

GENERAL INFORMATION (*ENTER DATA IN GRAY SHADED CELLS!*)			Span and Loading Conditions: Hang Post REW	Hang Post REW	Hang Post LEW		Remarks
Member Length	L_{bx}	ft.	11.30	9.75			Assumes Lbx = L
Unbraced Length - Minor	L_{by}	ft.	6.83	6.83			
Consideration of *Tension Field Action* for Shear			FALSE	FALSE	FALSE	FALSE	<= See cell comment & Chapter G.
Clear Distance between Transverse Stiffeners	a	in.					<= See cell comment & Section G2.
Lateral-torsional buckling factor	C_b		1.000	1.000	1.000	1.000	<= See cell comment
Kx Factor	K_x		1.000	1.000	1.000	1.000	
Ky Factor	K_y		1.000	1.000	1.000	1.000	
Kz Factor	K_z		1.000	1.000	1.000	1.000	<= See cell comment
SECTION GEOMETRY							
Select Wide-flange or Built-up Section:			WF	WF	None	None	
Section Description:			W8X10	W8X10	--	--	
Enter WF-Section:			W8X10	W8X10			
Total Depth	d	in.	7.890	7.890	--	--	
Web Thickness	t_w	in.	0.170	0.170	--	--	
Outside Flange Width	b_{of}	in.	3.940	3.940	--	--	
Outside Flange Thickness	t_{of}	in.	0.205	0.205	--	--	
Inside Flange Width	b_{if}	in.	3.940	3.940	--	--	
Inside Flange Thickness	t_{if}	in.	0.205	0.205	--	--	
MATERIAL INFORMATION							
Material Strength	F_y	ksi	50	50	50	55	
Elastic Modulus	E	ksi	29,000	29,000	29,000	29,000	Standard for steel shown
Shear Modulus	G	ksi	11,200	11,200	11,200	11,200	Standard for steel shown
Flange Yield Strength	F_{yf}	ksi	50	50	50	55	
Web Yield Strength	F_{yw}	ksi	50	50	50	55	
Ultimate Strength	F_u	ksi	65	65	65	70	
APPLIED LOADS			☐ Applied Loading includes second order effects.				
Factor of Safety (Allowable Stress Factor)	S_f		1.000	1.000	1.000	1.000	
Axial (compression => + pos., tension => - neg.)	P_a	kips	1.000	1.000			
Shear (absolute value)	V_x	kips	1.130	1.500			Major Axis (x-axis)
Moment (outside flange in compression => + pos.)	M_x	ft-kip	3.200	3.600			
Shear (absolute value)	V_y	kips					Minor Axis (y-axis)
Moment (absolute value)	M_y	ft-kip					



Design Results:	ASD		OK	OK	OK	--	Remarks
ASD Combined Strength Ratio	CSR		0.215	0.240	0.074	--	Eq. H1-1a or H1-1b
ASD Shear Strength Ratio (x-axis)	V_{rx}/V_{cx}		0.048	0.064	0.043	--	Major Axis (x-axis)
ASD Shear Strength Ratio (y-axis)	V_{ry}/V_{cy}		0.000	0.000	0.000	--	Minor Axis (y-axis)

Deflection Results (Major-axis)			OK	OK	OK	--	Remarks
Deflection Limits (about x-axis)			L / 180	L / 180	L / 180	L / 180	Limits as numerals (i.e. 360 = L/360)
Maximum Deflection (about x-axis)	Δ_{max}	in.	0.753 in.	0.650 in.	0.367 in.	0.000 in.	
Member Deflection (about x-axis)	$\Delta_{x\text{-}axis}$	in.	0.082 in.	0.069 in.	0.008 in.	--	$\Delta_{x\text{-}axis} \le \Delta_{max}$

Deflection Results (Minor-axis)			OK	OK	OK	--	Remarks
Deflection Limits (about y-axis)			L / 180	L / 180	L / 180	L / 180	Limits as numerals (i.e. 360 = L/360)
Maximum Deflection (about y-axis)	Δ_{max}	in.	0.753 in.	0.650 in.	0.367 in.	0.000 in.	
Member Deflection (about y-axis)	$\Delta_{y\text{-}axis}$	in.	0.000 in.	0.000 in.	0.000 in.	--	$\Delta_{y\text{-}axis} \le \Delta_{max}$

NUCOR BUILDINGS GROUP
A DIVISION OF NUCOR CORPORATION

Project No.:	C22B0182A
Project Name:	Rob Kerth Ice Land
Engineer:	VP
Date:	8/29/2022

HSS Beam-Column (AISC 15th Ed.)

Version: 2020.05.18 (5/18/20) by NBG-GS

Span and Loading Information		**Case 1**	**Case 2**	**Case 3**	**Case 4**
Member Length	ft	24.9			
Unbraced Length - Major	in.	298.8	0	0	0
Unbraced Length - Minor	in.	298.8	0	0	0
Cbx	-	1	1	1	1
Cby	-	1	1	1	1
Cmx	-	1	1	1	1
Cmy	-	1	1	1	1
Kx	-	1	1	1	1
Ky	-	1	1	1	1
Shear Lag Factor 'U'	-	0.75	0.75	0.75	0.75
Applied Loads					
X-axis Uniform Load (+Dn)	kip/ft	0	0	0	0
Y-axis Uniform Load (+Dn)	kip/ft	0.01221	0	0	0
Axial Tension Load	kip	0	0	0	0
Axial Compression Load	kip	5	0	0	0
Mx End 1 (+=Ten. On Bot.)	ft-kip	0	0	0	0
Mx End 2 (+=Ten. On Bot.)	ft-kip	0	0	0	0
Mx Interior (+=Ten on Bot.)	ft-kip	0	0	0	0
My End 1 (+=Ten. On Bot.)	ft-kip	0	0	0	0
My End 2 (+=Ten. On Bot.)	ft-kip	0	0	0	0
My Interior (+=Ten on Bot.)	ft-kip	0	0	0	0
Vx Shear	kip	0	0	0	0
Vy Shear	kip	0	0	0	0
Torsion	ft-kip	0	0	0	0
Stress Factor	-	1	1	1	1
KL/r	-	197	---	---	---
	Result	OK	OK	OK	OK
	Max CSR	0.50	0.00	0.00	0.00
Section Information					
Section Type		Nucor Std. Tube	Nucor Std. Pipe	Nucor Std. Pipe	Nucor Std. Pipe
Section		T4.250	P6.134	P6.134	P6.134
Fy	ksi	46	42	42	42
Depth / Diameter	in.	4	6.625	6.625	6.625
Width / Diameter	in.	4	6.625	6.625	6.625
Design Thickness	in.	0.233	0.125	0.125	0.125
Design Loads					
Max Mx	ft-kip	0	0	0	0
Max My	ft-kip	0.946290263	0	0	0
Axial Tension	kip	0	0	0	0
Axial Compression	kip	5	0	0	0
Vx	kip	0	0	0	0
Vy	kip	0.1520145	0	0	0
Torsion	ft-kip	0	0	0	0
Stress Ratios					
Mx		0.000	0.000	0.000	0.000
My		0.089	0.000	0.000	0.000
Mx+My		0.089	0.000	0.000	0.000
Tension		0.000	0.000	0.000	0.000
P		0.381	0.000	0.000	0.000
M / P		0.498	0.000	0.000	0.000
Vx		0.000	0.000	0.000	0.000
Vy		0.006	0.000	0.000	0.000
M/V		0.089	0.000	0.000	0.000
Torsion		0.000	0.000	0.000	0.000
M/V/P/Torsion		0.470	0.000	0.000	0.000
M/V/Tension/Torsion		0.089	0.000	0.000	0.000
Deflection Results					
X-Axis Deflection	in.	0.000	0.000	0.000	0.000
L / X		N/A	N/A	N/A	N/A
Y-Axis Deflection	in.	0.467	0.000	0.000	0.000
L / Y		640	N/A	N/A	N/A

1 FO added

1 Framed Openings Calculation

(AISC 360-10 ASD & AISI S100-2012)

CBC STEEL BUILDINGS A NUCOR Company

Job Number C22B0182A Engineer VP

Module 1 ☐ FSW BAY ☑ RSW BAY ☐ LEW BAY ☐ REW BAY

DIMENSIONS	
Span length (column to column)	22.42 ft
Door width (j)	12.00 ft
Door Height	12.00 ft
Distance from left column to 1st jamb (i)	5.88 ft
Distance from header to jamb support	1.67 ft
Ht. of the girt/eave above jamb support	20.00 ft
Deflection (standard is **L/90** for 50 yr. wind)	L / 90

MSA SECONDARY FRAME OUTPUT		ω
Wind pressure (50 yr. wind)	23.75 psf	0.6
Suction coefficient	-0.90	
Pressure coefficient	0.81	
Suction	-12.87 psf	
Pressure	11.57 psf	
Design spacing, jamb supp.	38.00 in	
Allowable Stress Ratio	1.03	

Wall Girt Depth ◉ 8" ○ 9.5" ○ 12"

Nested (2) Girts ? ☑ Yes

Use Hot-Rolled Channels? ○ Yes ◉ No

Distance Between Lateral Supports (in) N/A in

Channel Depth Selection ○ C8 ○ C9 ○ C10

Use Hot Rolled Jambs? ☐ No

Use Different Depth Jambs? ☐ No

PANEL CONDITION

Jamb Support(s) R = 0.65

See comment window for R values

Header R = 0.65 Jambs R = N/A

See comment windows for R values

Use Different Depth Jamb Support? ☐ No

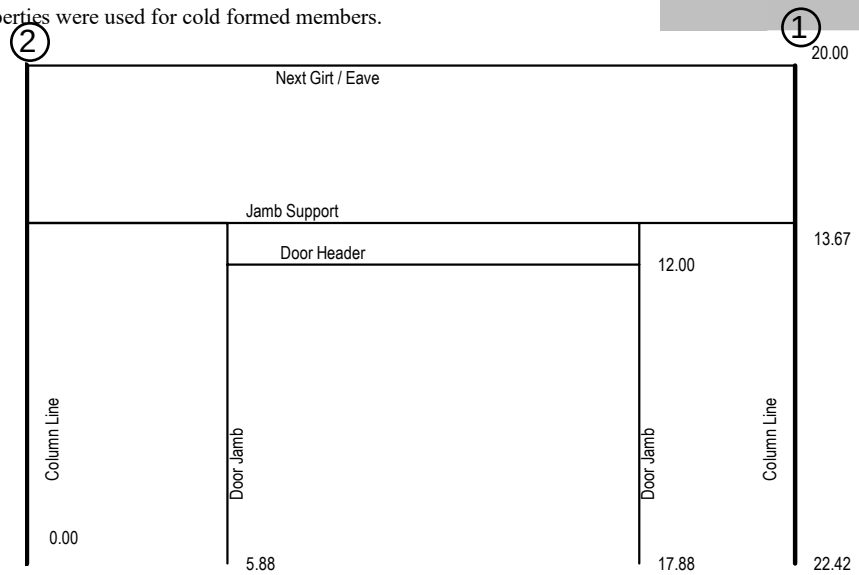
Maximum Girt Spacing = **6.167 ft**

See D-20

Recommended Member For *Jamb Support(s)*	~~*Nested* 8Z15~~ **8Z099**	Stress Ratio= 0.93	Δ_{max} = L / 324
Recommended Minimum Member Size For *Jambs*	**8C16**	Stress Ratio= 0.66	Δ_{max} = L / 608
Recommended Minimum Member Size For *Header*	**8C16**	Stress Ratio= 0.06	Δ_{max} = L / 9629

All members are designed as simple span.

The reduced sectional properties were used for cold formed members.



1 FO added

CBC STEEL BUILDINGS A NUCOR Company

1 Framed Openings Calculation

(AISC 360-10 ASD & AISI S100-2012)

Job Number C22B0182A Engineer VP

Module 1 ☐ FSW BAY ☑ RSW BAY ☐ LEW BAY ☐ REW BAY

DIMENSIONS	
Span length (column to column)	22.42 ft
Door width (j)	12.00 ft
Door Height	12.00 ft
Distance from left column to 1st jamb (i)	1.67 ft
Distance from header to jamb support	1.67 ft
Ht. of the girt/eave above jamb support	20.00 ft
Deflection (standard is **L/90** for 50 yr. wind)	L / 90

Door is 1.7 feet from column, check column weak axis bending

MSA SECONDARY FRAME OUTPUT		ω
Wind pressure (50 yr. wind)	23.75 psf	0.6
Suction coefficient	-0.90	
Pressure coefficient	0.81	
Suction	-12.87 psf	
Pressure	11.57 psf	
Design spacing, jamb supp.	38.00 in	
Allowable Stress Ratio	1.03	

Wall Girt Depth ◉ 8" ○ 9.5" ○ 12"

Nested (2) Girts ? ☑ Yes

Use Hot-Rolled Channels? ○ Yes ◉ No

Distance Between Lateral Supports (in) N/A in

Channel Depth Selection ○ C8 ○ C9 ○ C10

Use Hot Rolled Jambs? ☐ No

Use Different Depth Jambs? ☐ No

PANEL CONDITION

Jamb Support(s) R = 0.65

See comment window for R values

Header R = 0.65 Jambs R = N/A

See comment windows for R values

Use Different Depth Jamb Support? ☐ No

Maximum Girt Spacing = **6.167 ft**

See D-20

Recommended Member For *Jamb Support(s)*	~~*Nested* 8Z14~~ **8Z099**	Stress Ratio= 0.95	Δ_{max} = L / 297
Recommended Minimum Member Size For *Jambs*	**8C16**	Stress Ratio= 0.76	Δ_{max} = L / 524
Recommended Minimum Member Size For *Header*	**8C16**	Stress Ratio= 0.06	Δ_{max} = L / 9629

All members are designed as simple span.

The reduced sectional properties were used for cold formed members.