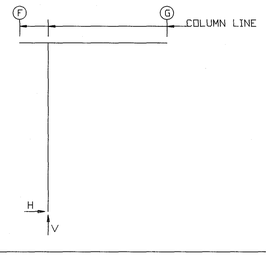
FRAME LINES: 5.6 5.3



RIGID FRAME: MAXIMUM REACTIONS, ANCHOR BOLTS, & BASE PLATES

Frm Line	Col Line	Column Reactions (k) Load ID	Hmax H	V Vmax	Load ID	Hmin H	V Vmin	Anc. Bolt Qty	Dia	Base Plate (in) Width	Length	Thick	Base EL. (in)
5.6*	@ 1.6	2	0.0	-0.4	2	0.0	-0.4	4	0.750	8.000	14.00	0.375	0.0
		1	0.0	3.8									

5.6* Frame lines: 5.6 5.3

RIGID FRAME: BASIC COLUMN REACTIONS (k)

Frame Line	Column Line	Dead Horiz	Dead Vert	Collateral Horiz	Collateral Vert	Live Horiz	Live Vert	Snow Horiz	Snow Vert	Snow_Drift Horiz	Snow_Drift Vert	Wind_Left1 Horiz	Wind_Left1 Vert
5.6*	@ 1.6	0.0	0.4	0.0	0.1	0.0	0.6	0.0	1.5	0.0	1.9	0.0	-0.5

Frame Line	Column Line	Wind_Right1 Horiz	Wind_Right1 Vert	Wind_Left2 Horiz	Wind_Left2 Vert	Wind_Right2 Horiz	Wind_Right2 Vert	Wind_Long1 Horiz	Wind_Long1 Vert	Wind_Long2 Horiz	Wind_Long2 Vert	LWIND1_L2E Horiz	LWIND1_L2E Vert
5.6*	@ 1.6	0.0	-0.3	0.0	-0.3	0.0	-0.1	0.0	-0.5	0.0	-0.3	0.0	-0.2

Frame Line	Column Line	LWIND1_R2E Horiz	LWIND1_R2E Vert	LWIND2_L2E Horiz	LWIND2_L2E Vert	LWIND2_R2E Horiz	LWIND2_R2E Vert	F1PAT_SL_1 Horiz	F1PAT_SL_1 Vert	F1PAT_SL_2 Horiz	F1PAT_SL_2 Vert
5.6*	@ 1.6	0.0	-0.2	0.0	-0.2	0.0	-0.2	0.0	0.1	0.0	0.6

5.6* Frame lines: 5.6 5.3

BUILDING BRACING REACTIONS

Loc	Wall Line	Col Line	± Reactions (k) Wind Horz	Wind Vert	Seismic Horz	Seismic Vert	Panel_Shear (lb/ft) Wind	Seis	Note
L_EW	5.6								(h)
F_SW	G						45	9	
R_EW	5.3								(h)
B_SW	F						45	9	

(h)Rigid frame at endwall

ANCHOR BOLT SUMMARY

Qty	Locate	Dia (in)	Type	Proj (in)
O 8	Frame	3/4"	A307	2.00

NOTES FOR REACTIONS

The following Design Data is per Package Steel Systems, Inc.'s standard design practices and established procedures and recommendations of the following Organizations and/or Specifications.

American Institute of Steel Construction (AISC 2005)
American Welding Society Structural Welding Code (AWS D1.1)
North American United States (NAUS07)

1. For maximum reactions tables, all loading conditions are examined and only the maximum/minimum horizontal or vertical reactions along with the corresponding horizontal or vertical for those load IDs are reported.
2. Positive reactions are shown in the sketch. Foundation loads are in the opposite directions.
3. Bracing reactions are in the plane of the brace with the horizontal pointing away from the braced bay. The vertical reaction can be downward or upward.
4. Reactions given are based on the design data below. Reactions are not furnished for loads not listed.
5. The endwall column reactions do NOT include wind and seismic reactions from endwall bracing. Reactions given in the bracing reactions table should be combined with the appropiate basic column reactions as necessary to determine the maximum reactions for foundation design.
6. The rigid frame maximum reactions include wind and seismic reactions from sidewall bracing. Reactions given in the bracing reactions table should not be combined with the appropiate basic column reactions as necessary to determine the maximum reactions for foundation design.
7. Foundation construction and design is not the responsibility of Package Steel Systems, Inc. The embedment of the anchor bolts in concrete is the responsibility of the foundation designer.
8. Suggested anchor rod diameter, quantity, minimum projection and placement are shown. All anchor rods are assumed to be ASTM F1544 Grade 36 or equal. Anchor rods (not by PSS) shall be set to a tolerance of +-1/8" in both elevation and location.
9. Column base plates are designed not to exceed a bearing pressure of 1050 pounds per sq. inch (0.35f'c where f'c= 3000 psi) unless noted otherwise.
10. Basic design wind pressure is furnished. For components and cladding not specifically designed and/or furnished by PSS, the design pressures and suctions shall be increased based on tributary area and location. Confirmation of the design loads and adequacy to resist such loads shall be the responsibility of a licensed design professional by others.

Building Reactions are based on the following information:

Building Code/Edition: IBC 09

Building Size:

Width (ft.)	7	
Length (ft.)	9	
Back Side Eave Height (ft.)	9.33	
Front Side Eave Height (ft.)	9.33	
Back Side Roof Slope	0.012	
Front Side Roof Slope		

Roof Dead, Collateral, & Live Loads:

Dead Load	5.00	psf
Collateral Load	3.00	psf
Live Load	20.00	psf
Live Load Reduction Taken	No	

Wind Loads:

Basic Wind Speed (3 Second Gust)	100	mph
Wind Exposure	B	
Building Enclosure (O/C/P)	Closed	
Wind Importance Factor (Iw)	1.15	
Internal Pressure Coeff. (GCpi)	0.18	

Acronyms:

AUXx = Auxiliary Load - Case x
C= Closed
CL= Collateral Load
DL= Dead Load
FxUNB_LL= Unbalanced Live Load for Frame IDx
LL= Max. of (Live or Snow)
LLR= Live Load Unbalanced
LnWndL= Longitudinal Wind Load - Left
LnWndR= Longitudinal Wind Load - Right
mph= miles per hour

Loading Conditions are as follows:
Dead+Collateral+Snow+Snow_Drift
0.6Dead+Wind_Long1+LWIND1_L2E
0.6Dead+Wind_Long1+LWIND1_R2E
1.04Dead+1.04Collateral+0.75Seismic_Left
0.56Dead+0.7Seismic_Right

Snow Loads:

Ground Snow (Pg)	60.00	psf
Flat Roof Snow (Pf)	46.20	psf
Snow Exposure Factor (Ce)	1.00	
Snow Thermal Factor (Ct)	1.00	
Snow Importance Factor (Is)	1.10	
Sloped Roof Factor (Cs)	1.00	
Snow Drift at Canopy	63.00	psf

Seismic Loads:

Seismic Importance (Ie)	1.25
Seismic Design Category (A/B/C/D)	B
Site Class-Type	D
Seismic Response Coeff. (Sds)	0.329
Seismic Response Coeff. (Sd1)	0.124
Response Modification (MF)	3.00
Response Modification (BF)	3.00
Design Base Shear (V) = Longit.	0.22 kips
Design Base Shear (V) = Transv.	0.25 kips

Analysis Procedure: Equivalent Lateral Force

Auxiliary Load(s):

None

O= Open
BF= Braced Frame
MF= Moment Frame
P= Partially Enclosed
psf= pounds per square foot
SEIS= Seismic
WLx= Wind Left - Case x
WP= Wind Pressure
WRx= Wind Right - Case x
WS= Wind Suction

General Notes

Design Responsibility:

Package Steel Systems, Inc. (PSS) is responsible only for the structural design of the Metal Building System it sells to the Builder. Neither PSS nor PSS's Engineer is the Design Professional or the Engineer of Record for the Construction Project. PSS is not responsible for the design of any components or materials manufactured or supplied by others or their interaction and connection to the Metal Building System unless such design responsibility is specifically required by the Order Documents.

Close Proximity Structures:

PSS is not responsible for loads (Seismic, Snow, etc.) imposed by, field modifications needed on, or structures in close proximity to this structure. It is the Builder's responsibility to verify that close proximity structures, together with their foundations, are capable of resisting all additional loads that may result from this structure.

Bracing:

Metal building brace rods and cables work in pairs to balance the forces caused by initial tensioning. Care must be taken when tightening brace rods or cables so as not to cause accidental damage or misalignment of building components. All rods/cables must be installed loose and then tightened sequentially and equally to maintain proper alignment of components. When properly tightened, rods and cables should not exhibit excessive sag. For long or large rod bracing it may be necessary to support the rod at mid-bay by suspending it from a purlin at the appropriate elevation.

A qualified professional engineer must design bracing for seismic or wind loading of suspended objects that are not part of the PSS structure. The design must meet code requirements and safely deliver the lateral loads to one of the PSS primary bracing systems. In addition, the bracing must be designed and erected in a manner that will not impose torsional or minor axis loads, or cause local failures in any PSS structural components. No material may be cut, drilled, or otherwise removed from any part of this building without the written consent of PSS. The engineer CANNOT rely on the roof deck to act as a diaphragm. PSS accepts no responsibility for the design and installation of bracing for objects that are not furnished or specified by PSS.

Field Work:

All local, state, and federal safety regulations are to be strictly followed. Temporary supports or bracing required for the building erection is the responsibility of the erector to determine, furnish and install. It is the responsibility of the Builder/Contractor to obtain appropriate approvals and necessary permits from city, county, state, or federal agencies, as required.

PSS provides complete components to erect all projects with minimal modifications. However, minor fieldwork of structural, secondary, panel, and trim items may be necessary to ensure proper fit. Such work is considered a normal part of metal building erection. Back charges for minor fieldwork will not be honored.

Welds shall be made only by operators certified by the standard qualifications procedure of the American Welding Society for the type of weld required. All field welds to be done using E70XX electrodes and in accordance with the American Welding Society Structural Welding Code.

A325 Bolt Tightening Requirements

All high strength bolts are A325-N unless specifically noted otherwise. Structural bolts shall be tightened by the TURN-OF-THE-NUT method in accordance with the ninth-edition AISC "Specifications for Structural Joints using ASTM A325 or A490 Bolts" per section 8D1. A325 bolts may be installed without washers when tightened by the TURN-OF-THE-NUT method. All high strength bolts, except as noted otherwise, are subject to direct tension and may require inspection as defined by AISC/RCSC "Specifications for Structural joints using ASTM A325 or A490 Bolts and the applicable building code or standard. It is the responsibility of the erector to assure proper tightness.

PSS accepts no responsibility for the consequences of any additions or alterations to this structure. Modifications to this structure must be performed under the supervision of a qualified licensed professional engineer who accepts responsibility for the adequacy and consequences of the additions or alterations.

The primary and secondary framing of this building may have been designed to support additional collateral loads (These loads may include sprinkler systems, mechanical equipment, ducts, ceilings, etc.). Care must be exercised however, to prevent local overstress of light gauge secondary members supporting concentrated loads.

Masonry & Concrete:

PSS accepts no responsibility for the design of masonry walls, concrete walls, foundations, mezzanine slabs, and floor slabs. Also, the attachment to masonry or concrete is not designed or supplied by PSS (Masonry anchor sizes, spacing, and quantity, unless specifically stated will be designed and supplied by others). The engineer responsible for the design of the masonry and concrete is also responsible for ensuring that the design (including wall base details) is compatible with the deflection criteria for this building. Eave purlins and rake channels are not designed to support lateral loads from masonry or other walls not by PSS. Values given for bends and anchor bolt total lengths are suggested lengths only. It is the responsibility of the foundation engineer to determine these values since they are a function of concrete strength as well as other factors.

Base plates are designed assuming concrete has a minimum strength of 3000 psi at 28 days unless otherwise noted.

Jamb foundations should be designed for a shear of 2 kips unless other wise stated.

Independent Mezzanines:

Independent mezzanines must be designed by a qualified professional engineer to meet all code requirements. The engineer must also ensure that proper isolation from the PSS building has been provided to avoid contact with PEMB structure due to differential movement. PSS accepts no responsibility for the design of independent mezzanines.

Panels:

Oil Canning is an inherent characteristic of cold rolled roof and wall panels. It is the result of several factors that include, but are not limited to, induced stresses in the base material, fabrication methods, installation procedures, and post installation thermal forces. Oil Canning does not affect the structural integrity or overall performance of the metal panels. Oil Canning is an aesthetic issue only and is not grounds for rejection of the panels.

Parapets:

Buildings with parapet walls and internal gutters must be furnished with rainwater overflow mechanisms (such as scuppers) to prevent the accumulation of water in the event of a gutter blockage. It is the responsibility of the Builder to make sure that the scuppers are of the appropriate size, quantity, location, and design to prevent water accumulation on the roof. Failure to do so can result in building collapse. PSS accepts no responsibility for the design and installation of overflow mechanisms.

MATERIALS:	ASTM DESIGNATIONS:	YIELD STRENGTH:
Structural Steel Plate (Built-up Sections)	A529 Grades 50 & 55	50 ksi
	A572 Grades 50 & 55	50 ksi
	A1011 HSLAS Grades 50 & 55	50 ksi
Hot Rolled Mill Shapes (WF, Channels, Angles)	A36	36 ksi
	A572 Grades 50	50 ksi
	A992	50 ksi min.
Round Struct. Tubing - Pipe	A500 Grade B	42 ksi
Shaped Struct. Tubing- Tube	A500 Grade B	46 ksi
Cold Formed Shapes (Purlins, Girts, Eave Struts)	A653 (SS) Grade 50 Class 1, 2, 3	55 ksi min.
	A653 (HSLAS) Grade 50, Types A or B	55 ksi min.
Roof and Wall Sheets	A653/A792 SS Grade 50 Class 1 or 2 (AZ55 Coating)	50 ksi
	A755/A792 SS Grade 50 Class 1 or 2 (AZ50 Coating)	50 ksi
Brace Rods	A529	50 ksi
Brace Angles	A36	36 ksi
Structural Cables (Cable Bracing)	A475 7-wire EHS Grade	
Cable Hardware	A536 Grade 65-45-12	45 ksi
Bolts	A307 Grade A	60 ksi (tensile strength)
	SAE-J429 Grade 2	
	A325 Type 1	120 ksi, 105 ksi
Nuts	A563 Grade A	
	SAE-J995 Grade 2	
	A563 Grade C, D or DH (A325)	
Washers (Hardened)	F436 Type 1	
Washers (Plain)	F844	
Anchor Bolts	A307 unless otherwise noted	

STATE OF MAINE
ZACK R. McCAIN, III
6869
REGISTERED PROFESSIONAL ENGINEER
3/29/16

REV.	DESCRIPTION:	DATE:	DRAFT	ENG.
3				
2				
1				
0	INITIAL DRAWING: RELEASED FOR CONSTRUCTION	CURRENT REVISION: 0		

PACKAGE STEEL SYSTEMS, INC.

Biskup Construction Inc.

PROJECT	Academy for Active Learners	ANCHOR BOLT REACTIONS (SECTION C)	
ID	1603-009	DESIGN: ZRM	DESIGN CHECK: ZRM
PROJECT	134 Warren Ave	DRAFT: TMZ	DRAFT CHECK: TMZ
ADDRESS	Portland, ME 04103	DATE: 3/29/16	DRAWING NO: 1

PACKAGE