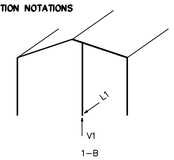
FRAME DESCRIPTION: Endwall EWB | USER NAME: ssyli | JOB NAME: 42908A | DATE: 4/09/18 | FILE: REW3BLDG1 | PAGE: EW-1

PATH: R:\jobs\Active\Eng\16-B-42908\ver01-ssyli\BLDG-A\run01\

SUPPORT REACTIONS FOR EACH LOAD GROUP
NOTE: All reactions are in kips and kip-ft. TIME: 09:19:30

REACTION NOTATIONS



LOAD GROUP REACTION TABLE

COLUMN	1-B		
LOAD GROUP	H1	V1	L1
D	0.	0.3	0.
W+	0.	0.	7.2
W-	0.	0.	-8.0
E+	0.	0.	2.1
E-	0.	0.	-2.1

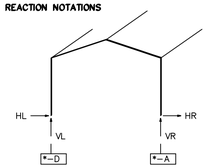
LOAD GROUP DESCRIPTION

- D : DEAD LOAD
- W+ : WIND LOAD AS AN INWARD ACTING PRESSURE
- W- : WIND LOAD AS AN OUTWARD ACTING SUCTION
- E+ : EARTHQUAKE FORCE ACTING INWARD
- E- : EARTHQUAKE FORCE ACTING OUTWARD

FRAME ID #2 cs 34.333/18./13.333 20./13 | USER NAME: ssyli | JOB NAME: 42908A | DATE: 4/ 9/18 | FILE: frame_1.fra | PAGE: 2-3

SUPPORT REACTIONS FOR EACH LOAD GROUP
*LOCATION: Gridlines: 1
NOTES:(1) All reactions are in kips and kip-ft. TIME: 11:21:41
(2) Primary wind load cases are not concurrent.
(3) X-bracing reactions (RBPULW and RBUPEQ) are combined withLWL and LEQ groups only.

REACTION NOTATIONS



LOAD GROUP REACTION TABLE GRIDLINES * = 1

COLUMN	*-D			*-A		
LOAD GROUP	HL	VL	LNL	HR	VR	LNR
DL	0.5	2.6	0.0	-0.5	2.6	0.0
COLL	0.3	1.1	0.0	-0.3	1.1	0.0
SNOW	6.7	28.7	0.0	-6.7	28.7	0.0
LL	1.2	5.1	0.0	-1.2	5.1	0.0
EQ	-3.4	-3.5	0.0	-3.4	3.5	0.0
WL1	-6.0	-13.3	0.0	-2.9	-6.5	0.0
WL2	-6.7	-9.8	0.0	-2.1	-3.0	0.0
LWL1	1.8	-9.4	0.0	-0.2	-8.5	0.0
LWL2	0.2	-8.5	0.0	-1.8	-9.4	0.0
LWL3	1.0	-5.5	0.0	0.6	-4.6	0.0
LWL4	-0.6	-4.6	0.0	-1.0	-5.5	0.0
WL3	2.9	-6.5	0.0	6.0	-13.3	0.0
WL4	2.1	-3.0	0.0	6.7	-9.8	0.0
RS	5.6	15.1	0.0	-5.6	29.8	0.0
LS	5.6	29.8	0.0	-5.6	15.1	0.0

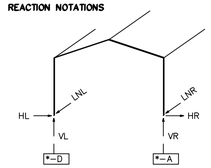
LOAD GROUP DESCRIPTION

- DL : Roof Dead Load
- COLL : Roof Collateral Load
- SNOW : Roof Snow Load
- LL : Roof Live Load
- EQ : Lateral Seismic Load [parallel to plane of frame]
- WL1 : Wind from Left to Right with +GCpi
- WL2 : Wind from Left to Right with -GCpi
- LWL1 : Windward Corner Left with +GCpi
- LWL2 : Windward Corner Right with +GCpi
- LWL3 : Windward Corner Left with -GCpi
- LWL4 : Windward Corner Right with -GCpi
- WL3 : Wind from Right to Left with +GCpi
- WL4 : Wind from Right to Left with -GCpi
- RS : Unbalanced Right Roof Snow Load
- LS : Unbalanced Left Roof Snow Load

FRAME ID #1 cs 34.333/18./20.875 20./13 | USER NAME: ssyli | JOB NAME: 42908A | DATE: 4/ 9/18 | FILE: frame_2-3.fra | PAGE: 1-3

SUPPORT REACTIONS FOR EACH LOAD GROUP
*LOCATION: Gridlines: 2 3
NOTES:(1) All reactions are in kips and kip-ft. TIME: 11:21:59
(2) The seismic overstrength factor (Omega) is not included in the "RBDWEQ" and "RBUPEQ" Load Group reactions.
Seismic "BASE-ONLY" combination reactions include an overstrength factor of: 2.000
(3) Primary wind load cases are not concurrent.
(4) X-bracing reactions (RBPULW and RBUPEQ) are combined with LWL and LEQ groups only.

REACTION NOTATIONS



LOAD GROUP REACTION TABLE GRIDLINES * = 2 3

COLUMN	*-D			*-A		
LOAD GROUP	HL	VL	LNL	HR	VR	LNR
DL	0.7	3.7	0.0	-0.7	3.7	0.0
COLL	0.4	1.8	0.0	-0.4	1.8	0.0
SNOW	9.1	45.4	0.0	-9.1	45.4	0.0
LL	1.6	8.0	0.0	-1.6	8.0	0.0
RBDWEQ	0.0	12.5	0.0	-0.0	12.5	0.0
EQ	-5.4	-5.5	0.0	-5.4	5.5	0.0
RBUPEQ	0.2	-12.5	-14.8	-0.2	-12.5	-14.8
WL1	-8.1	-18.2	0.0	-5.4	-8.1	0.0
WL2	-9.7	-12.7	0.0	-3.8	-2.6	0.0
WL3	5.4	-8.1	0.0	8.1	-18.2	0.0
WL4	3.8	-2.6	0.0	9.7	-12.7	0.0
LWL1	3.5	-12.4	0.0	-1.7	-11.2	0.0
RBUPLW	0.1	-4.0	-4.8	-0.1	-4.0	-4.8
LWL2	1.7	-11.2	0.0	-3.5	-12.4	0.0
LWL3	1.9	-6.2	0.0	-0.0	-5.1	0.0
LWL4	0.0	-5.1	0.0	-1.9	-6.2	0.0
RS	7.7	23.6	0.0	-7.7	47.1	0.0
LS	7.7	47.1	0.0	-7.7	23.6	0.0

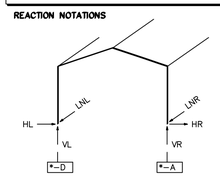
LOAD GROUP DESCRIPTION

- DL : Roof Dead Load
- COLL : Roof Collateral Load
- SNOW : Roof Snow Load
- LL : Roof Live Load
- RBDWEQ : Downward Acting Rod Brace Load from Long. Seismic
- EQ : Lateral Seismic Load [parallel to plane of frame]
- RBUPEQ : Upward Acting Rod Brace Load from Long. Seismic
- WL1 : Wind from Left to Right with +GCpi
- WL2 : Wind from Left to Right with -GCpi
- WL3 : Wind from Right to Left with +GCpi
- WL4 : Wind from Right to Left with -GCpi
- LWL1 : Windward Corner Left with +GCpi
- RBUPLW : Upward Acting Rod Brace Load from Long. Wind
- LWL2 : Windward Corner Right with +GCpi
- LWL3 : Windward Corner Left with -GCpi
- LWL4 : Windward Corner Right with -GCpi
- RS : Unbalanced Right Roof Snow Load
- LS : Unbalanced Left Roof Snow Load

FRAME ID #1 cs 34.333/18./20.875 20./13 | USER NAME: ssyli | JOB NAME: 42908A | DATE: 4/ 9/18 | FILE: frame_2-3.fra | PAGE: 1-4

SUPPORT REACTIONS FOR EACH LOAD GROUP
*LOCATION: Gridlines: 2 3
NOTES:(1) All reactions are in kips and kip-ft. TIME: 11:21:59
(2) The seismic overstrength factor (Omega) is not included in the "RBDWEQ" and "RBUPEQ" Load Group reactions.
Seismic "BASE-ONLY" combination reactions include an overstrength factor of: 2.000
(3) Primary wind load cases are not concurrent.
(4) X-bracing reactions (RBPULW and RBUPEQ) are combined with LWL and LEQ groups only.

REACTION NOTATIONS



LOAD GROUP REACTION TABLE GRIDLINES * = 2 3

COLUMN	*-D			*-A		
LOAD GROUP	HL	VL	LNL	HR	VR	LNR
RBDWLW	0.0	4.0	0.0	-0.0	4.0	0.0

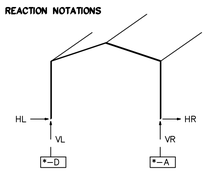
LOAD GROUP DESCRIPTION

- RBDWLW : Downward Acting Rod Brace Load from Long. Wind

FRAME ID #3 cs 34.333/18./13.292 20./13 | USER NAME: ssyli | JOB NAME: 42908A | DATE: 4/ 9/18 | FILE: frame_4.fra | PAGE: 3-3

SUPPORT REACTIONS FOR EACH LOAD GROUP
*LOCATION: Gridlines: 4
NOTES:(1) All reactions are in kips and kip-ft. TIME: 11:22:15
(2) Primary wind load cases are not concurrent.
(3) X-bracing reactions (RBPULW and RBUPEQ) are combined with LWL and LEQ groups only.

REACTION NOTATIONS



LOAD GROUP REACTION TABLE GRIDLINES * = 4

COLUMN	*-D			*-A		
LOAD GROUP	HL	VL	LNL	HR	VR	LNR
DL	0.4	2.7	0.0	-0.4	2.7	0.0
COLL	0.2	1.1	0.0	-0.2	1.1	0.0
SNOW	4.9	28.6	0.0	-4.9	28.6	0.0
LL	0.9	5.0	0.0	-0.9	5.0	0.0
EQ	-3.4	-3.4	0.0	-3.4	3.4	0.0
WL1	-5.5	-13.3	0.0	-3.4	-6.4	0.0
WL2	-6.3	-9.8	0.0	-2.6	-2.9	0.0
LWL1	1.9	-9.4	0.0	-0.4	-8.4	0.0
LWL2	0.4	-8.4	0.0	-1.9	-9.4	0.0
LWL3	1.1	-5.5	0.0	0.4	-4.6	0.0
LWL4	-0.4	-4.6	0.0	-1.1	-5.5	0.0
WL3	3.4	-6.4	0.0	5.5	-13.3	0.0
WL4	2.6	-2.9	0.0	6.3	-9.8	0.0
RS	4.2	15.0	0.0	-4.2	29.7	0.0
LS	4.2	29.7	0.0	-4.2	15.0	0.0

LOAD GROUP DESCRIPTION

- DL : Roof Dead Load
- COLL : Roof Collateral Load
- SNOW : Roof Snow Load
- LL : Roof Live Load
- EQ : Lateral Seismic Load [parallel to plane of frame]
- WL1 : Wind from Left to Right with +GCpi
- WL2 : Wind from Left to Right with -GCpi
- LWL1 : Windward Corner Left with +GCpi
- LWL2 : Windward Corner Right with +GCpi
- LWL3 : Windward Corner Left with -GCpi
- LWL4 : Windward Corner Right with -GCpi
- WL3 : Wind from Right to Left with +GCpi
- WL4 : Wind from Right to Left with -GCpi
- RS : Unbalanced Right Roof Snow Load
- LS : Unbalanced Left Roof Snow Load

NOTES

1) THE REACTIONS PROVIDED ARE BASED ON THE ORDER DOCUMENTS AT THE TIME OF MAILING. ANY CHANGES TO BUILDING LOADS OR DIMENSIONS MAY CHANGE THE REACTIONS. THE REACTIONS WILL BE SUPERSEDED AND VOIDED BY ANY FUTURE MAILING.
2) THE REACTIONS PROVIDED HAVE BEEN CREATED WITH THE FOLLOWING LAYOUT (UNLESS NOTED OTHERWISE).
a) A REACTION TABLE IS PROVIDED WITH THE REACTIONS FOR EACH LOAD GROUP.
b) RIGID FRAMES
(1) GABLED BUILDINGS
(a) LEFT AND RIGHT COLUMNS ARE DETERMINED AS IF VIEWING THE LEFT SIDE OF THE BUILDING, AS SHOWN ON THE ANCHOR ROD DRAWING, FROM THE OUTSIDE OF THE BUILDING.
(b) INTERIOR COLUMNS ARE SPACED FROM LEFT SIDE TO RIGHT SIDE.
(2) SINGLE SLOPE BUILDINGS
(a) LEFT COLUMN IS THE LOW SIDE COLUMN.
(b) RIGHT COLUMN IS THE HIGH SIDE COLUMN.
(c) INTERIOR COLUMNS ARE SPACED FROM LOW SIDE TO HIGH SIDE.
c) ENDWALLS
(1) LEFT AND RIGHT COLUMNS ARE DETERMINED AS IF VIEWING THE WALL FROM THE OUTSIDE.
(2) INTERIOR COLUMNS ARE SPACED FROM LEFT TO RIGHT.
d) ANCHOR ROD SIZE IS DETERMINED BY SHEAR AND TENSION AT THE BOTTOM OF THE BASE PLATE. THE LENGTH OF THE ANCHOR ROD AND METHOD OF LOAD TRANSFER TO THE FOUNDATION ARE TO BE DETERMINED BY THE FOUNDATION ENGINEER.
e) ANCHOR RODS ARE ASTM F1554 Gr. 36 MATERIAL UNLESS NOTED OTHERWISE ON THE ANCHOR ROD LAYOUT DRAWING.
f) X-BRACING
(1) ROD BRACING REACTIONS HAVE BEEN INCLUDED IN VALUES SHOWN IN THE REACTION TABLES.
(2) FOR IBC AND UBC BASED BUILDING CODES, WHEN X-BRACING IS PRESENT IN THE SIDEWALL, INDIVIDUAL LONGITUDINAL SEISMIC LOADS (RBUPEQ AND RBDWEQ) DO NOT INCLUDE THE AMPLIFICATION FACTOR, Ω_0.
(3) FOR CANADA BUILDING CODE (NBC), WHEN X-BRACING IS PRESENT IN THE SIDEWALL OR ENDWALL, INDIVIDUAL LONGITUDINAL SEISMIC LOADS (RBUPEQ & RBDWEQ) ARE MULTIPLIED BY FORCE REDUCTION FACTOR, Rd, WHEN SPECIFIED SHORT-PERIOD SPECTRAL ACCELERATION RATIO $I_E F_a S_a(0.2)$ IS GREATER THAN 0.45.
3) REACTIONS ARE PROVIDED AS UN-FACTORED FOR EACH LOAD GROUP APPLIED TO THE COLUMN. THE FOUNDATION ENGINEER WILL APPLY THE APPROPRIATE LOAD FACTORS AND COMBINE THE REACTIONS IN ACCORDANCE WITH THE BUILDING CODE AND DESIGN SPECIFICATIONS TO DETERMINE BEARING PRESSURES AND CONCRETE DESIGN. THE FACTORS APPLIED TO LOAD GROUPS FOR THE STEEL COLUMN DESIGN MAY BE DIFFERENT THAN THE FACTORS USED IN THE FOUNDATION DESIGN.
a) FOR PROJECTS USING ULTIMATE DESIGN WIND SPEEDS SUCH AS 2012 IBC, 2015 IBC, OR 2014 FLORIDA BUILDING CODE, THE WIND LOAD REACTIONS ARE AT A STRENGTH VALUE WITH A LOAD FACTOR OF 1.0.
b) FOR IBC CODES, THE SEISMIC REACTIONS PROVIDED ARE AT A STRENGTH LEVEL AND DO NOT CONTAIN THE RHO FACTOR.
c) FOR NBCC CODES, THE SEISMIC REACTIONS PROVIDED DO NOT CONTAIN THE R_d*R_o FACTOR.
THE MANUFACTURER DOES NOT PROVIDE "MAXIMUM" LOAD COMBINATION REACTIONS. HOWEVER, THE INDIVIDUAL LOAD REACTIONS PROVIDED MAY BE USED BY THE FOUNDATION ENGINEER TO DETERMINE THE APPLICABLE LOAD COMBINATIONS FOR HIS/HER DESIGN PROCEDURES AND ALLOW FOR AN ECONOMICAL FOUNDATION DESIGN.

Revision	Date	Description	By	Ck'd
1	04/20/18	NO CHANGES THIS SHEET	HNL	DDB

STAR BUILDING SYSTEMS® AN NCI COMPANY
8600 SOUTH I-35 SERVICE RD. OKLAHOMA CITY, OK 73149 (405) 636-2010

Customer: NORTHERN MANAGEMENT SERVICES INC SANDPOINT, ID

Project Name & Location: ALASKA RAILROAD CORPORATION GIRDWOOD, AK PORTAGE, AK

Drawing Status: ☐ Preliminary (Not For Construction) ☐ For Approval (Not For Construction) ☐ For Construction Permit ☒ For Erector Installation

REVISED

Scale: NOT TO SCALE
Drawn by: HNL 4/10/18
Checked by: HGF 4/11/18
Project Engineer: SSY
Job Number: 16-B-42908
Sheet Number: F3 of 4

The engineer whose seal appears hereon is an employee for the manufacturer for the materials described herein. Said seal or certification is limited to the products designed and manufactured by manufacturer only. The undersigned engineer is not the overall engineer of record for this project.

Allen D. Hurtz, P.E.
Alaska P.E. CE-10209

DRST1A ENST2A

STATE OF ALASKA 49TH ALLEN D. HURTZ No. CE-10209 REGISTERED PROFESSIONAL ENGINEER

Apr 20, 2018