STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

April 5, 2018

Mark Roberts
QC Development
PO Box 916
Storrs, CT 06268

RE: **EM-CING-110-180326 -** New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 335 South Washington Street, Plainville, Connecticut.

Dear Mr. Roberts:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 5, 2018 submitted in response to the Council's April 4, 2018 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MB/CMW/cg

From: Mark Roberts [mailto:mark.roberts@qcdevelopment.net]
Sent: Thursday, April 05, 2018 11:36 AM
To: Galligan, Coleen
Cc: CSC-DL Siting Council
Subject: RE: Incomplete - EM-CING-110-180326 - South Washington St.

Hello Coleen – thanks for your inquiry regarding this filing. The note refers to a separate analysis that was performed on the antenna mount itself, which I have attached for your reference.

Please let me know if you have any further questions.

Thanks

Mark Roberts
QC Development
860-670-9068

From: Galligan, Coleen <Coleen.Galligan@ct.gov>
Sent: Thursday, April 5, 2018 11:22 AM
To: Mark Roberts <mark.roberts@qcdevelopment.net>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Incomplete - EM-CING-110-180326 - South Washington St.

March 27, 2018

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:

Site Number:	CT1029 (LTE 3C)
FA Number:	10105805
PACE Number:	MRCTB027294
PTN Number:	2051A0EK6W
Site Name:	Plainville South Washington Street
Site Address:	335 South Washington Street Plainville, CT 06062

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna mount to determine its capability of supporting the following equipment loading:

- (3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (3) HPA-65R-BUU-H6 Antennas (72.0"x14.8"x9.0" – Wt. = 51 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" –Wt. = 51 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7"ø – Wt. = 33 lbs. /each)
- **(3) QS66512-2 Antennas (72"x12"x9.6" – Wt. = 111 lbs. /each)**
- **(3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)**
- **(3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)**
- **(6) DBC0061D1V51-2 Diplexers (8"x6.2"x6.5" – Wt. = 26 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7"ø – Wt. = 33 lbs. /each)**

**Proposed Loading Shown in Bold.*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's sub-consultant, ProVertic LLC, conducted a mapping of the existing AT&T antenna mount on January 28, 2018.

Based on our analysis, we have determined that the existing antenna mount **IS CAPABLE** of supporting the proposed antenna installation.

	Member(s)	Controlling Load Case	Stress Ratio	Pass/Fail
Existing 3C Configuration Mount Rating	77	LC4	77%	**PASS**

This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments. (See the attached analysis).

Reference Documents:

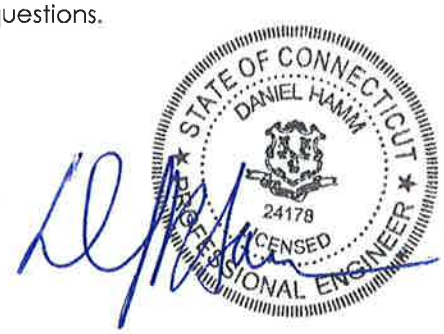
Mount Mapping Report prepared by ProVertic LLC dated March 23, 2018.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

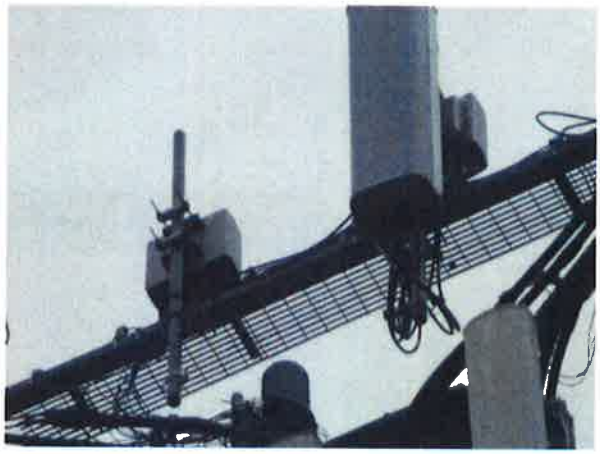
Respectfully Submitted,
Hudson Design Group LLC



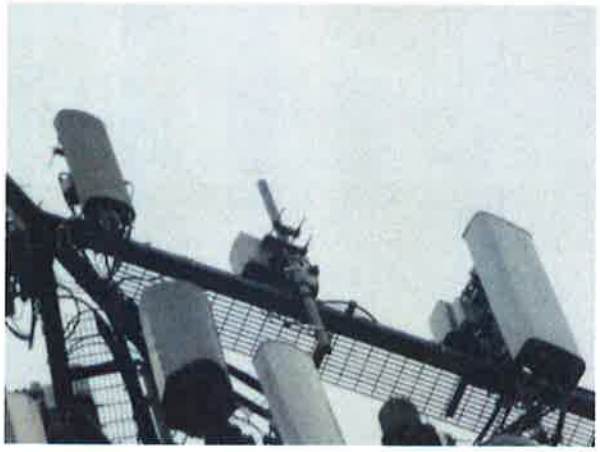
Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

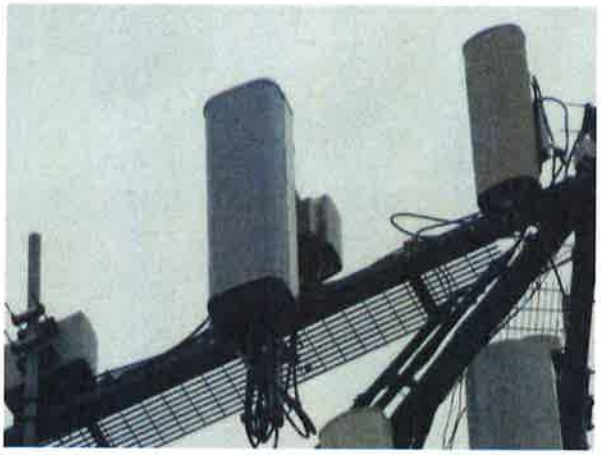
FIELD PHOTOS:



p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027





p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	122 (ft)
	z_g=	1200 (ft)
K_z= 1.046	α=	7.0

$Kzmin \le Kz \le 2.01$

Table 2-4

Exposur	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Categor	1

	K_h=	#DIV/0!
	K_e=	0 (from Table 2-4)
	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
	z=	122
	H=	0 (Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	121	Gh=	0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	**Gh=**	**1.00**

2.6.9.2 Design Wind Force on Appurtenances

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

		K_z=	1.046
		K_{zt}=	1.0
q_z=	**28.05**	K_d=	0.95
$q_{z\,(ice)}$=	**6.36**	V_{max}=	105
		$V_{max\,(ice)}$=	50
		I=	1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.00 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**154**	**43**
HPA-65R-BUU-H6 Antenna	72.0	14.8	9.0	7.40	4.86	1.31	**271**	**72**
QS66512-2 Antenna	72.0	12.0	9.6	6.00	6.00	1.36	**228**	**62**
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**78**	**22**
RRUS-11 RRH (Shielded)	19.7	6.0	7.2	0.82	3.28	1.23	**28**	**9**
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**77**	**22**
RRUS-32 RRH (Shielded)	27.2	1.1	7.0	0.21	24.73	1.99	**12**	**8**
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**77**	**22**
RRUS-32 B2 RRH (Shielded)	27.2	1.1	7.0	0.21	24.73	1.99	**12**	**8**
LGP21401 TMA	14.4	9.0	2.7	0.90	1.60	1.20	**30**	**10**
LGP21401 TMA (Shielded)	14.4	0.0	2.7	0.00	0.00	1.20	**0**	**2**
DBC0061D1V51-2 Diplexer	8.0	6.2	6.5	0.34	1.29	1.20	**12**	**4**
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	1.20	**54**	**16**
4"x4"x1/4" HSS	4.0	12.0	4.0	0.33	0.33	1.20	**11**	**4**
2" pipe	2.4	12.0	0.0	0.20	0.20	0.70	**4**	**2**

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.00	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	136
HPA-65R-BUU-H6 Anter	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	271	181	248
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	228	191	219
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	78	33	67
RRUS-11 RRH (Shielded	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	39	33	38
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	69
RRUS-32 RRH (Shielded	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	41	47	43
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	69
RRUS-32 B2 RRH (Shielc	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	41	47	43
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	30	10	25
LGP21401 TMA (Shielde	14.4	4.5	2.7	0.45	0.27	3.20	5.33	1.23	1.33	16	10	14
DBC0061D1V51-2 Diple	8.0	6.2	6.5	0.34	0.36	1.29	1.23	1.20	1.20	12	12	12
Squid Surge Arrestor	24.0	9.7	9.7	1.62	1.62	2.47	2.47	1.20	1.20	54	54	54

WIND LOADS WITH ICE:

7770 Antenna	57.0	13.0	7.0	5.15	2.77	4.38	8.14	1.28	1.44	42	25	38
HPA-65R-BUU-H6 Anter	74.0	16.8	11.0	8.63	5.65	4.40	6.73	1.28	1.39	71	50	65
QS66512-2 Antenna	74.0	14.0	11.6	7.19	5.96	5.29	6.38	1.32	1.37	61	52	58
RRUS-11 RRH	21.7	19.0	9.2	2.86	1.39	1.14	2.36	1.20	1.20	22	11	19
RRUS-11 RRH (Shielded	21.7	9.5	9.2	1.43	1.39	2.28	2.36	1.20	1.20	11	11	11
RRUS-32 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	20
RRUS-32 RRH (Shielded	29.2	7.1	9.0	1.43	1.83	4.14	3.24	1.27	1.23	12	14	12
RRUS-32 B2 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	20
RRUS-32 B2 RRH (Shielc	29.2	7.1	9.0	1.43	1.83	4.14	3.24	1.27	1.23	12	14	12
LGP21401 TMA	16.4	11.0	4.7	1.25	0.54	1.49	3.49	1.20	1.24	10	4	8
LGP21401 TMA (Shielde	16.4	5.5	4.7	0.63	0.54	2.98	3.49	1.22	1.24	5	4	5
DBC0061D1V51-2 Diple	10.0	8.2	8.5	0.57	0.59	1.22	1.18	1.20	1.20	4	5	4
Squid Surge Arrestor	26.0	11.7	11.7	2.11	2.11	2.22	2.22	1.20	1.20	16	16	16

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.00	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	100
HPA-65R-BUU-H6 Ante	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	271	181	203
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	228	191	200
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	78	33	45
RRUS-11 RRH (Shieldec	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	59	33	40
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	54
RRUS-32 RRH (Shieldec	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	59	47	50
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	54
RRUS-32 B2 RRH (Shiel	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	59	47	50
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	30	10	15
LGP21401 TMA (Shield	14.4	6.8	2.7	0.68	0.27	2.13	5.33	1.20	1.33	23	10	13
DBC0061D1V51-2 Diple	8.0	6.2	6.5	0.34	0.36	1.29	1.23	1.20	1.20	12	12	12
Squid Surge Arrestor	24.0	9.7	9.7	1.62	1.62	2.47	2.47	1.20	1.20	54	54	54

WIND LOADS WITH ICE:

7770 Antenna	57.0	13.0	7.0	5.15	2.77	4.38	8.14	1.28	1.44	42	25	30
HPA-65R-BUU-H6 Ante	74.0	16.8	11.0	8.63	5.65	4.40	6.73	1.28	1.39	71	50	55
QS66512-2 Antenna	74.0	14.0	11.6	7.19	5.96	5.29	6.38	1.32	1.37	61	52	54
RRUS-11 RRH	21.7	19.0	9.2	2.86	1.39	1.14	2.36	1.20	1.20	22	11	13
RRUS-11 RRH (Shieldec	21.7	14.3	9.2	2.15	1.39	1.52	2.36	1.20	1.20	16	11	12
RRUS-32 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	16
RRUS-32 RRH (Shieldec	29.2	10.6	9.0	2.14	1.83	2.76	3.24	1.21	1.23	17	14	15
RRUS-32 B2 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	16
RRUS-32 B2 RRH (Shiel	29.2	10.6	9.0	2.14	1.83	2.76	3.24	1.21	1.23	17	14	15
LGP21401 TMA	16.4	11.0	4.7	1.25	0.54	1.49	3.49	1.20	1.24	10	4	6
LGP21401 TMA (Shield	16.4	8.3	4.7	0.94	0.54	1.99	3.49	1.20	1.24	7	4	5
DBC0061D1V51-2 Diple	10.0	8.2	8.5	0.57	0.59	1.22	1.18	1.20	1.20	4	5	4
Squid Surge Arrestor	26.0	11.7	11.7	2.11	2.11	2.22	2.22	1.20	1.20	16	16	16

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.00	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	82
HPA-65R-BUU-H6 Ante	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	271	181	181
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	228	191	191
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	78	33	33
RRUS-11 RRH (Shieldec	19.7	6.0	7.2	0.82	0.99	3.28	2.74	1.23	1.21	28	33	33
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	47
RRUS-32 RRH (Shieldec	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	47
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	47
RRUS-32 B2 RRH (Shiel	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	47
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	30	10	10
LGP21401 TMA (Shield	14.4	0.0	2.7	0.00	0.27	0.00	5.33	1.20	1.33	0	10	10
DBC0061D1V51-2 Diple	8.0	6.2	6.5	0.34	0.36	1.29	1.23	1.20	1.20	12	12	12
Squid Surge Arrestor	24.0	9.7	9.7	1.62	1.62	2.47	2.47	1.20	1.20	54	54	54

WIND LOADS WITH ICE:

7770 Antenna	57.0	13.0	7.0	5.15	2.77	4.38	8.14	1.28	1.44	42	25	25
HPA-65R-BUU-H6 Ante	74.0	16.8	11.0	8.63	5.65	4.40	6.73	1.28	1.39	71	50	50
QS66512-2 Antenna	74.0	14.0	11.6	7.19	5.96	5.29	6.38	1.32	1.37	61	52	52
RRUS-11 RRH	21.7	19.0	9.2	2.86	1.39	1.14	2.36	1.20	1.20	22	11	11
RRUS-11 RRH (Shieldec	21.7	8.0	9.2	1.21	1.39	2.71	2.36	1.21	1.20	9	11	11
RRUS-32 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	14
RRUS-32 RRH (Shieldec	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	14
RRUS-32 B2 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	14
RRUS-32 B2 RRH (Shiel	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	14
LGP21401 TMA	16.4	11.0	4.7	1.25	0.54	1.49	3.49	1.20	1.24	10	4	4
LGP21401 TMA (Shield	16.4	2.0	4.7	0.23	0.54	8.20	3.49	1.44	1.24	2	4	4
DBC0061D1V51-2 Diple	10.0	8.2	8.5	0.57	0.59	1.22	1.18	1.20	1.20	4	5	5
Squid Surge Arrestor	26.0	11.7	11.7	2.11	2.11	2.22	2.22	1.20	1.20	16	16	16

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.00	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	100
HPA-65R-BUU-H6 Ante	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	271	181	203
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	228	191	200
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	78	33	45
RRUS-11 RRH (Shieldec	19.7	6.0	7.2	0.82	0.99	3.28	2.74	1.23	1.21	28	33	32
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	54
RRUS-32 RRH (Shieldec	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	38
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	54
RRUS-32 B2 RRH (Shiel	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	38
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	30	10	15
LGP21401 TMA (Shield	14.4	0.0	2.7	0.00	0.27	2.13	5.33	1.20	1.33	0	10	8
DBC0061D1V51-2 Diple	8.0	6.2	6.5	0.34	0.36	1.29	1.23	1.20	1.20	12	12	12
Squid Surge Arrestor	24.0	9.7	9.7	1.62	1.62	2.47	2.47	1.20	1.20	54	54	54

WIND LOADS WITH ICE:

7770 Antenna	57.0	13.0	7.0	5.15	2.77	4.38	8.14	1.28	1.44	42	25	30
HPA-65R-BUU-H6 Ante	74.0	16.8	11.0	8.63	5.65	4.40	6.73	1.28	1.39	71	50	55
QS66512-2 Antenna	74.0	14.0	11.6	7.19	5.96	5.29	6.38	1.32	1.37	61	52	54
RRUS-11 RRH	21.7	19.0	9.2	2.86	1.39	1.14	2.36	1.20	1.20	22	11	13
RRUS-11 RRH (Shieldec	21.7	8.0	9.2	1.21	1.39	2.71	2.36	1.21	1.20	9	11	10
RRUS-32 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	16
RRUS-32 RRH (Shieldec	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	12
RRUS-32 B2 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	16
RRUS-32 B2 RRH (Shiel	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	12
LGP21401 TMA	16.4	11.0	4.7	1.25	0.54	1.49	3.49	1.20	1.24	10	4	6
LGP21401 TMA (Shield	16.4	2.0	4.7	0.23	0.54	8.20	3.49	1.44	1.24	2	4	4
DBC0061D1V51-2 Diple	10.0	8.2	8.5	0.57	0.59	1.22	1.18	1.20	1.20	4	5	4
Squid Surge Arrestor	26.0	11.7	11.7	2.11	2.11	2.22	2.22	1.20	1.20	16	16	16

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.00	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	154	82	136
HPA-65R-BUU-H6 Ante	72.0	14.8	9.0	7.40	4.50	4.86	8.00	1.31	1.43	271	181	248
QS66512-2 Antenna	72.0	12.0	9.6	6.00	4.80	6.00	7.50	1.36	1.42	228	191	219
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	78	33	67
RRUS-11 RRH (Shieldec	19.7	6.0	7.2	0.82	0.99	3.28	2.74	1.23	1.21	28	33	30
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	69
RRUS-32 RRH (Shieldec	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	20
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	77	47	69
RRUS-32 B2 RRH (Shiel	27.2	1.1	7.0	0.21	1.32	24.73	3.89	1.99	1.26	12	47	20
LGP21401 TMA	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	30	10	25
LGP21401 TMA (Shield	14.4	0.0	2.7	0.00	0.27	0.00	5.33	1.20	1.33	0	10	3
DBC0061D1V51-2 Diple	8.0	6.2	6.5	0.34	0.36	1.29	1.23	1.20	1.20	12	12	12
Squid Surge Arrestor	24.0	9.7	9.7	1.62	1.62	2.47	2.47	1.20	1.20	54	54	54

WIND LOADS WITH ICE:

7770 Antenna	57.0	13.0	7.0	5.15	2.77	4.38	8.14	1.28	1.44	42	25	38
HPA-65R-BUU-H6 Ante	74.0	16.8	11.0	8.63	5.65	4.40	6.73	1.28	1.39	71	50	65
QS66512-2 Antenna	74.0	14.0	11.6	7.19	5.96	5.29	6.38	1.32	1.37	61	52	58
RRUS-11 RRH	21.7	19.0	9.2	2.86	1.39	1.14	2.36	1.20	1.20	22	11	19
RRUS-11 RRH (Shieldec	21.7	8.0	9.2	1.21	1.39	2.71	2.36	1.21	1.20	9	11	10
RRUS-32 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	20
RRUS-32 RRH (Shieldec	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	8
RRUS-32 B2 RRH	29.2	14.1	9.0	2.86	1.83	2.07	3.24	1.20	1.23	22	14	20
RRUS-32 B2 RRH (Shiel	29.2	3.1	9.0	0.63	1.83	9.42	3.24	1.48	1.23	6	14	8
LGP21401 TMA	16.4	11.0	4.7	1.25	0.54	1.49	3.49	1.20	1.24	10	4	8
LGP21401 TMA (Shield	16.4	2.0	4.7	0.23	0.54	8.20	3.49	1.44	1.24	2	4	3
DBC0061D1V51-2 Diple	10.0	8.2	8.5	0.57	0.59	1.22	1.18	1.20	1.20	4	5	4
Squid Surge Arrestor	26.0	11.7	11.7	2.11	2.11	2.22	2.22	1.20	1.20	16	16	16

Date: 3/27/2018
Project Name: Plainville South Washington Street
Project Number: CT1029
Designed By: LN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice (in): 1.00
* Density of ice used = 56 PCF

7770 Antenna

Weight of ice based on total radial SF area:		
Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		61 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		96 lbs

HPA-65R-BUU-H6 Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	14.8	
Depth (in):	9.0	
Total weight of ice on object:		120 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		171 lbs

QS66512-2 Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	12.0	
Depth (in):	9.6	
Total weight of ice on obj.		108 lbs
Weight of object:	111 lbs	
Combined weight of ice and object:		219 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:		
Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		39 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		90 lbs

RRUS-32 RRH

Weight of ice based on total radial SF area:		
Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		39 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		99 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:		
Height (in):	14.4	
Width (in):	9.0	
Depth (in):	2.7	
Total weight of ice on object:		13 lbs
Weight of object:	19 lbs	
Combined weight of ice and object:		32 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:		
Height (in):	24.0	
Width (in):	9.7	
Depth (in):	9.7	
Total weight of ice on object:		36 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		69 lbs

DBC0061D1V51-2 Diplexer

Weight of ice based on total radial SF area:		
Height (in):	8.0	
Width (in):	6.2	
Depth (in):	6.5	
Total weight of ice on object:		9 lbs
Weight of object:	26 lbs	
Combined weight of ice and object:		35 lbs

2" pipe

Per foot weight of ice:		
diameter (in):	2.4	
Per foot weight of ice on object:		3 lbs/ft

4x4x1/4 HSS

Weight of ice based on total radial SF area:		
Depth (in):	4	
height (in):	12	
Width (in):	4	
Per foot weight of ice on object:		6 lbs/ft

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

Current Date: 3/27/2018 4:20 PM
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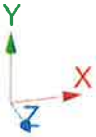

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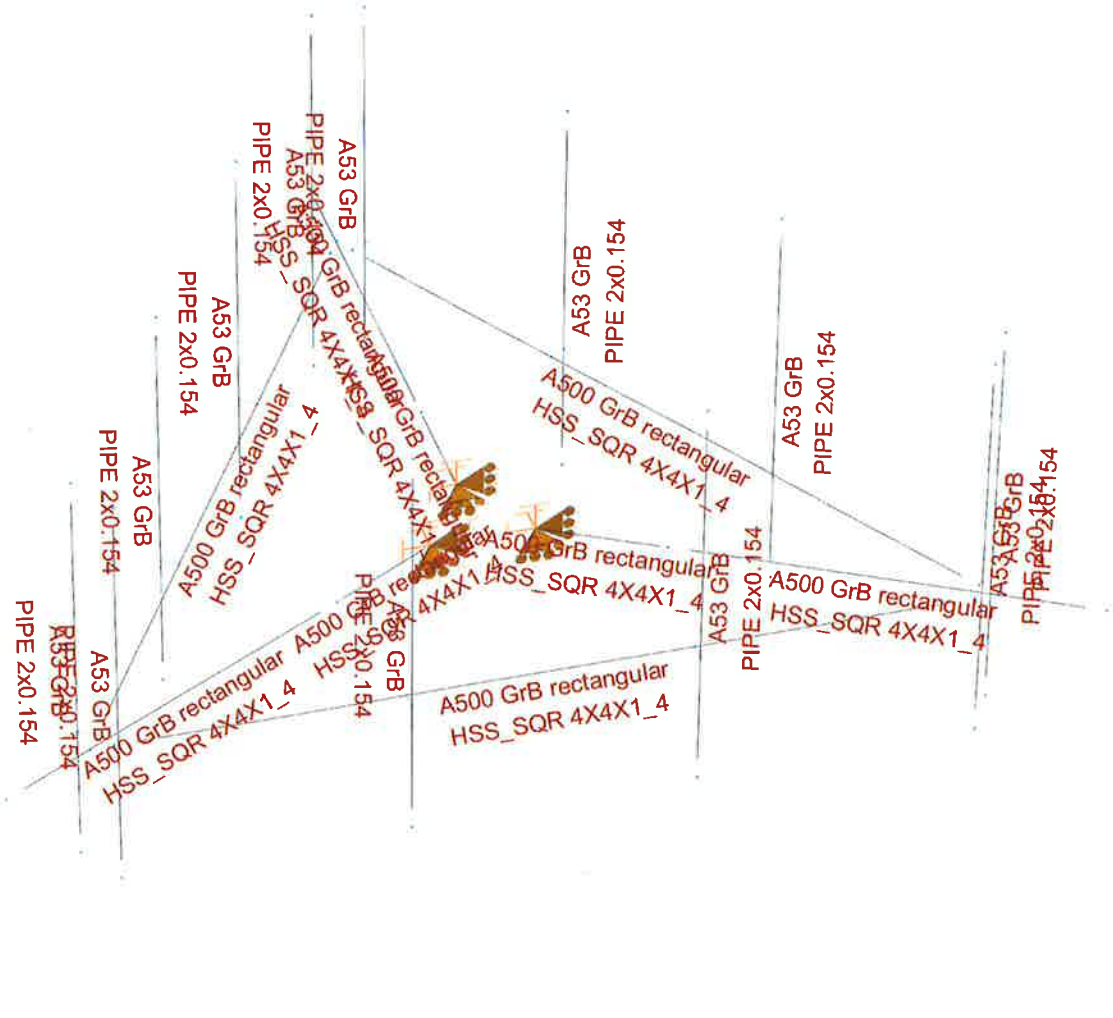

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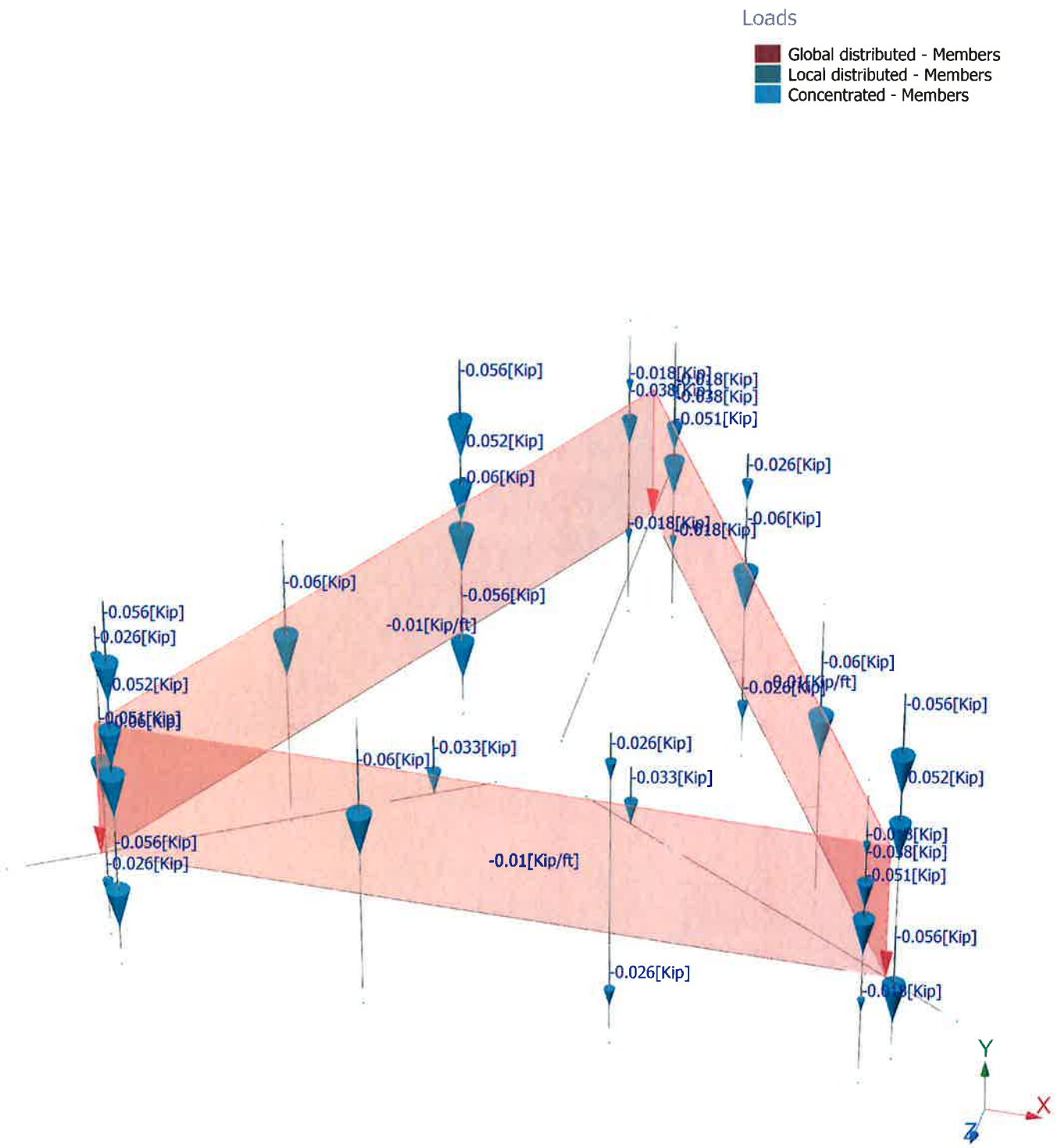
Load condition: DL=Dead Load



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Units system: English
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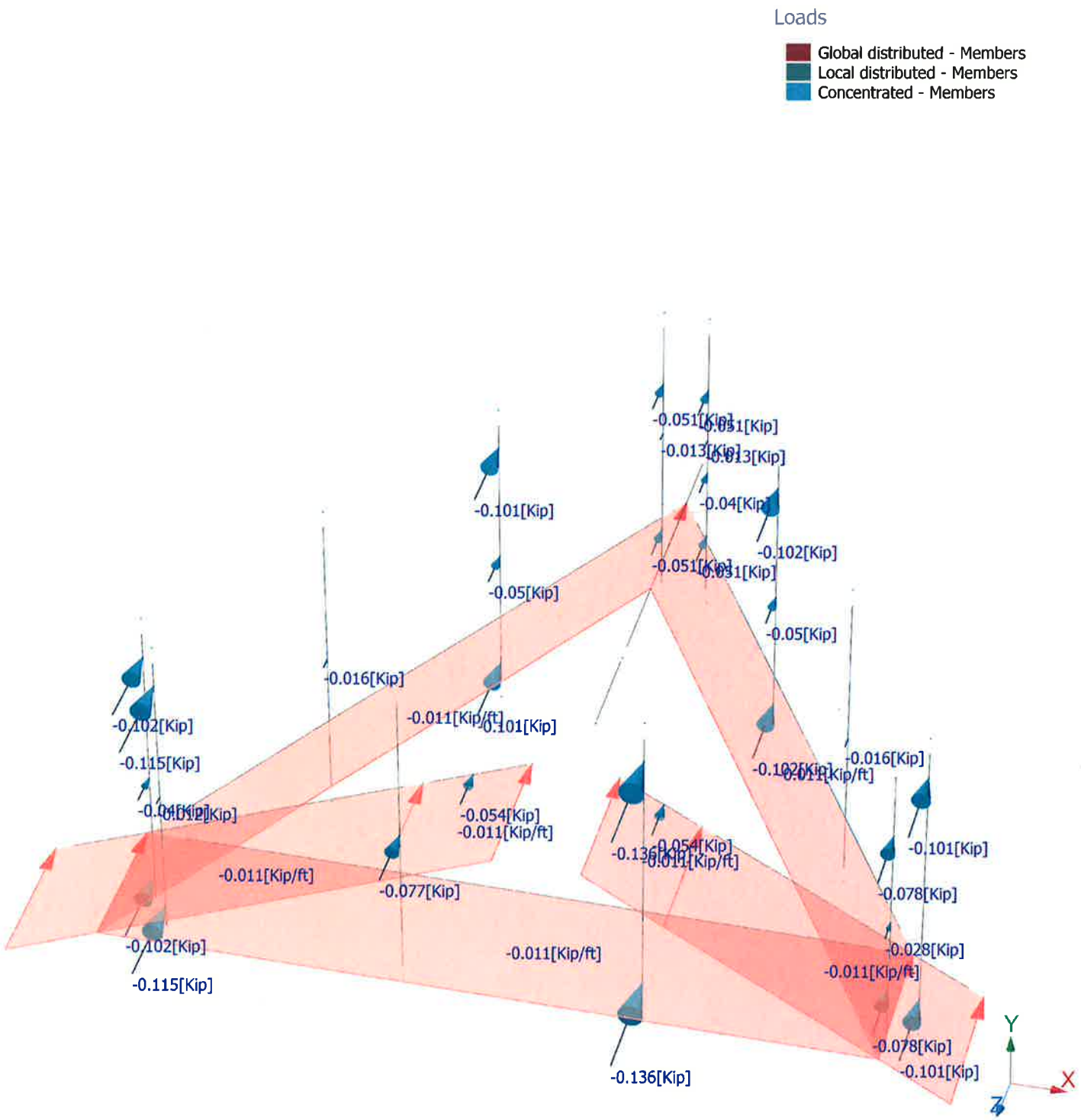
Load condition: W0=Wind Load 0/60deg



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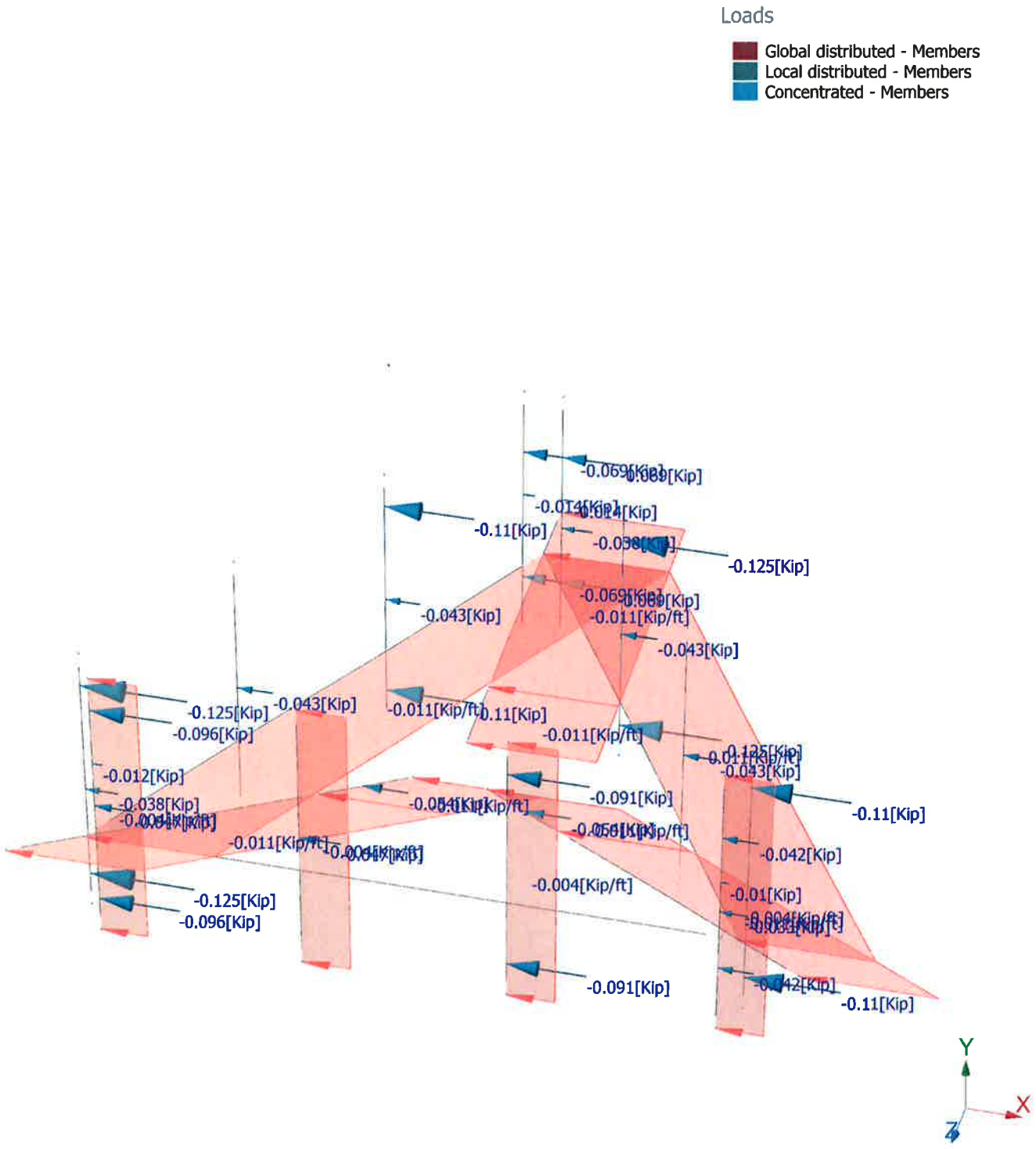
Load condition: W30=Wind Load 30/90deg



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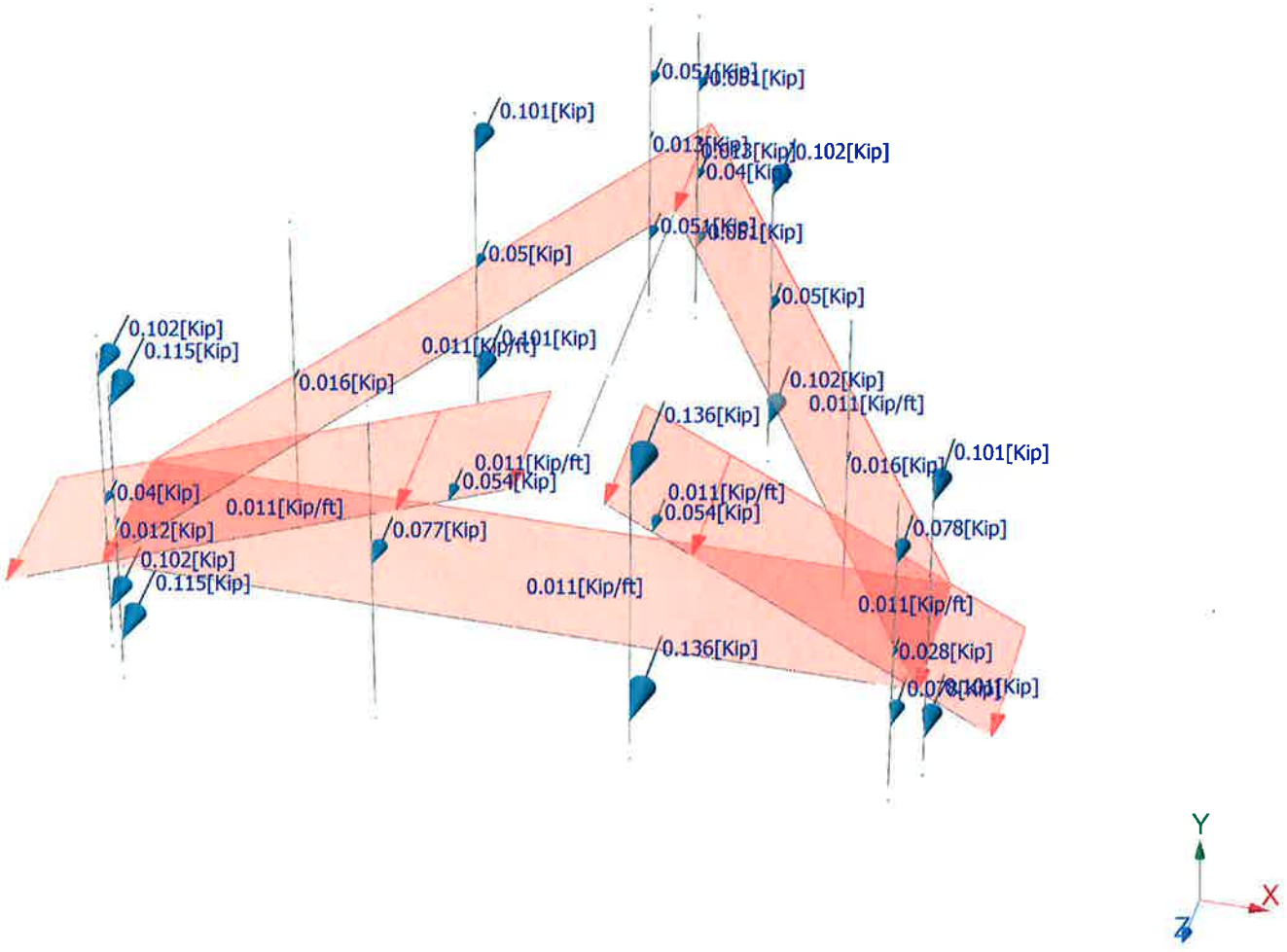

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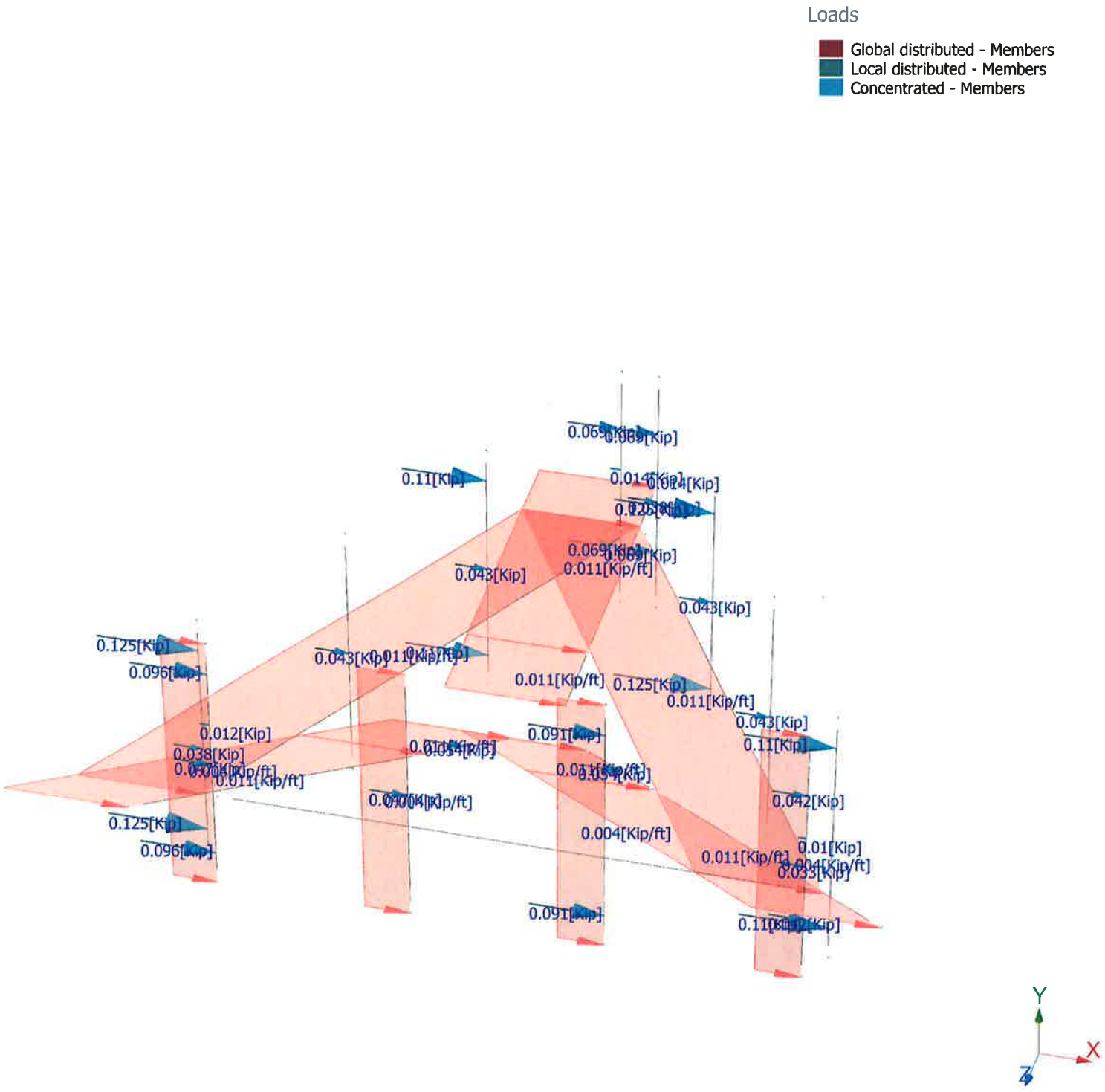
Load condition: W210=-W30



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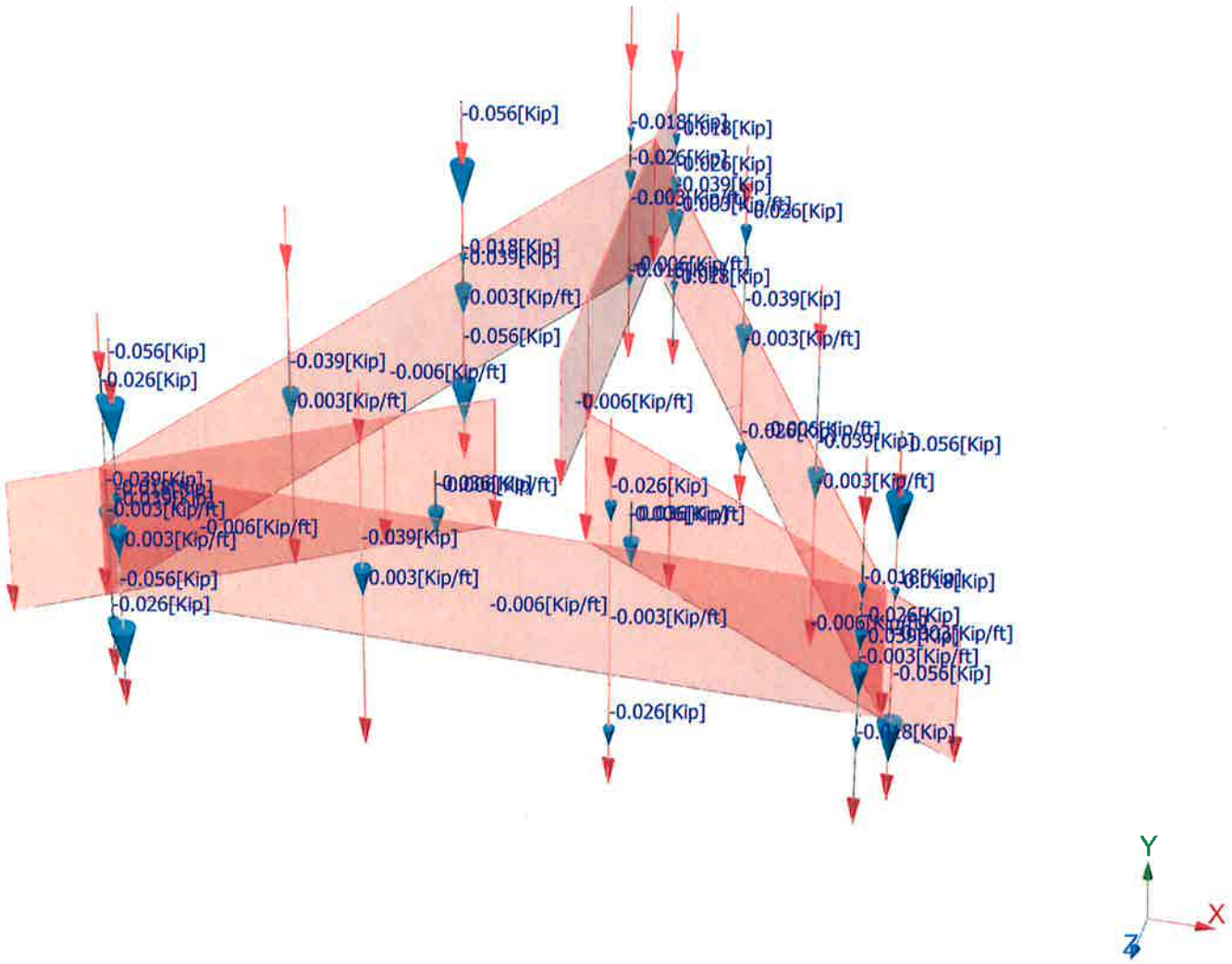
Load condition: Di=Ice Load



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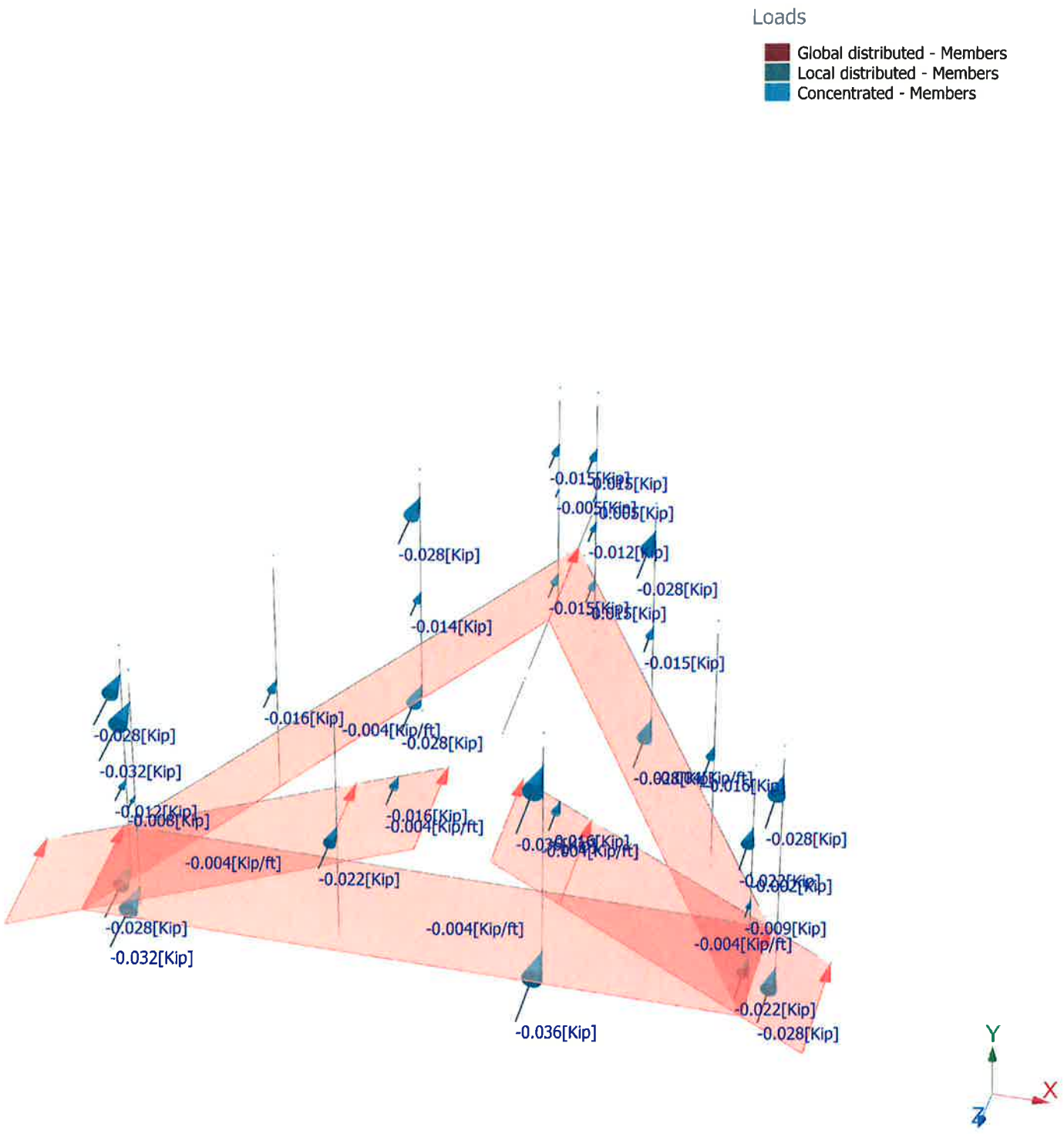
Load condition: Wi0=Ice Wind Load 0/60deg



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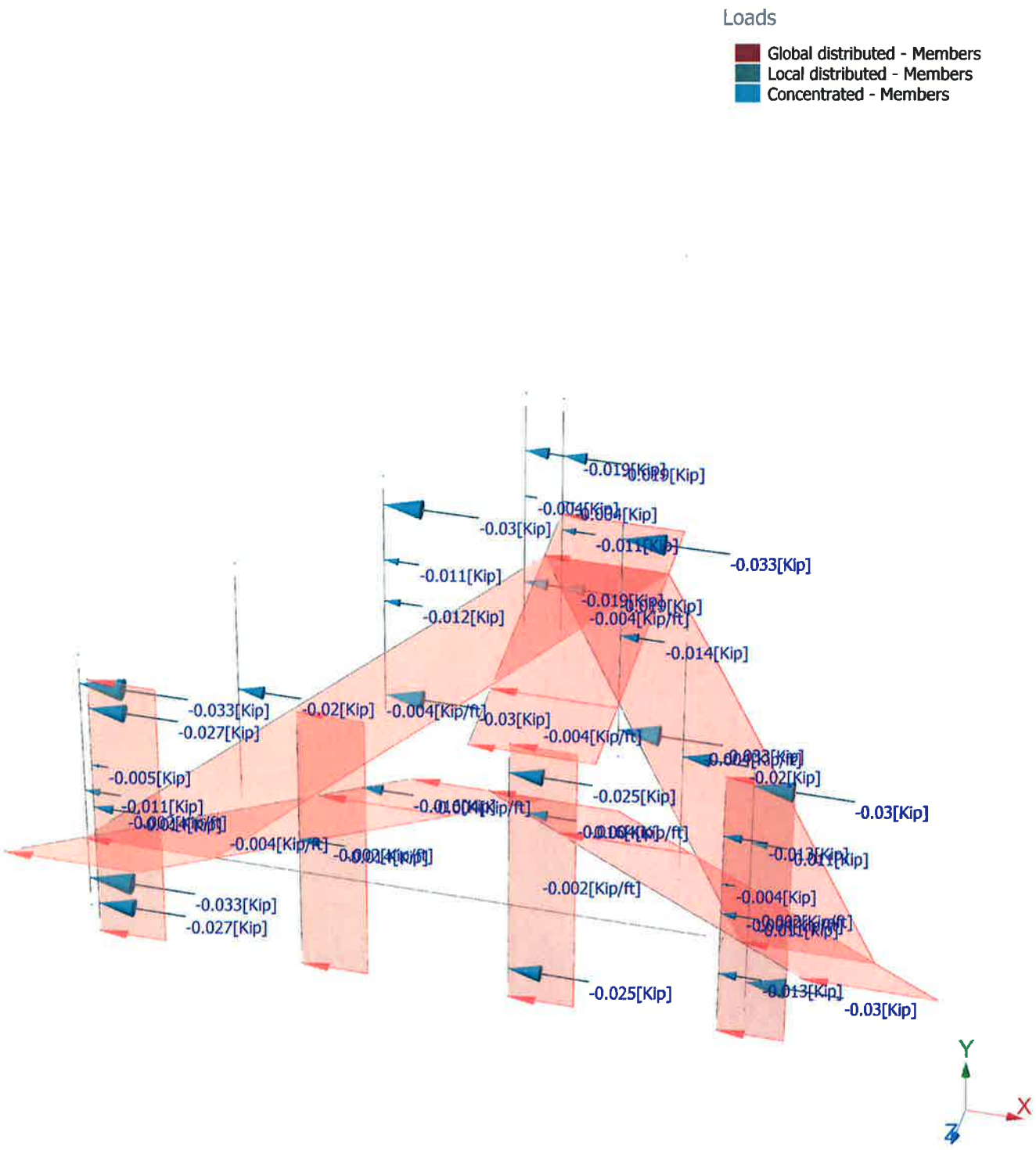
Load condition: Wi30=Ice Wind Load 30/90deg



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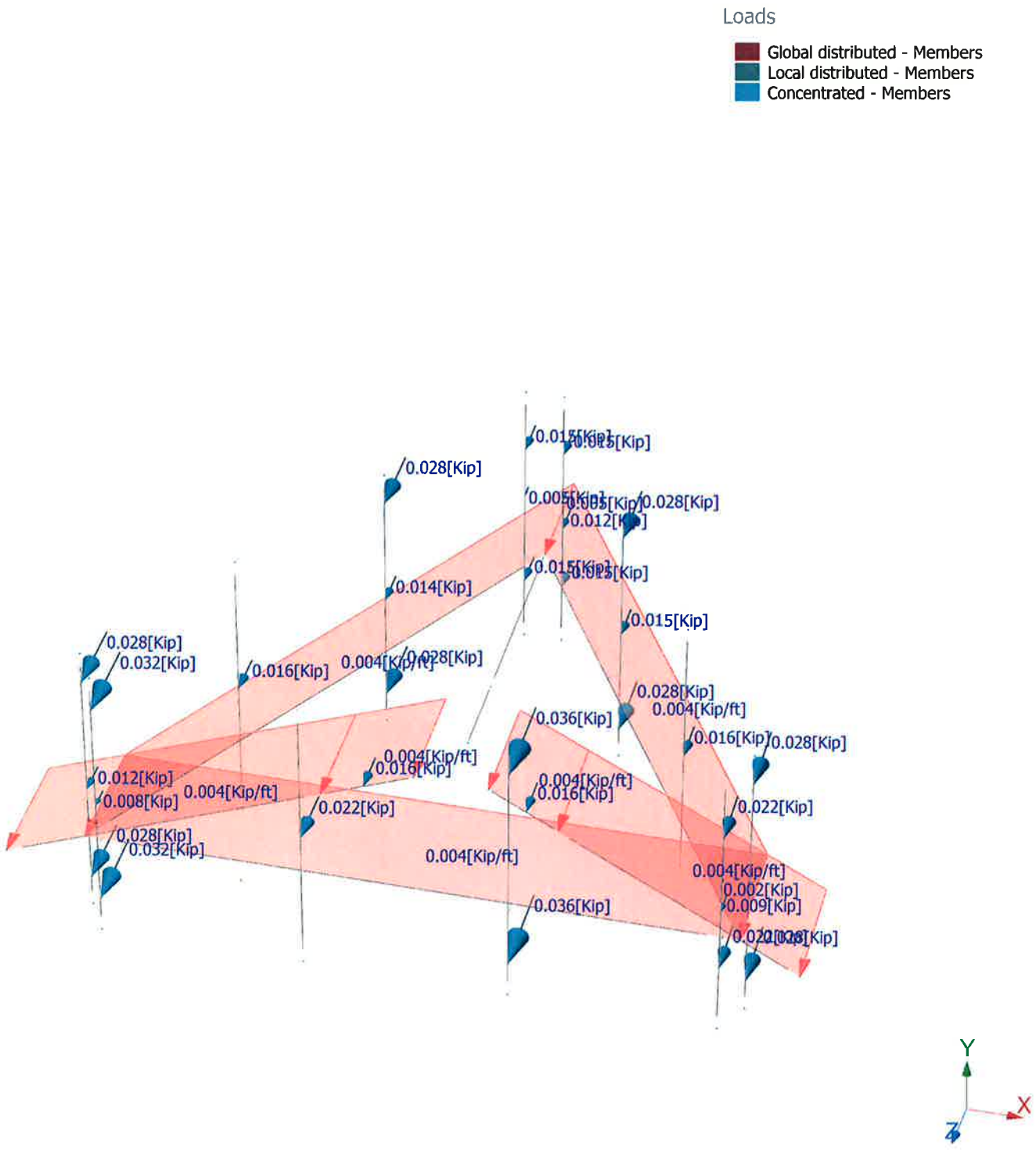

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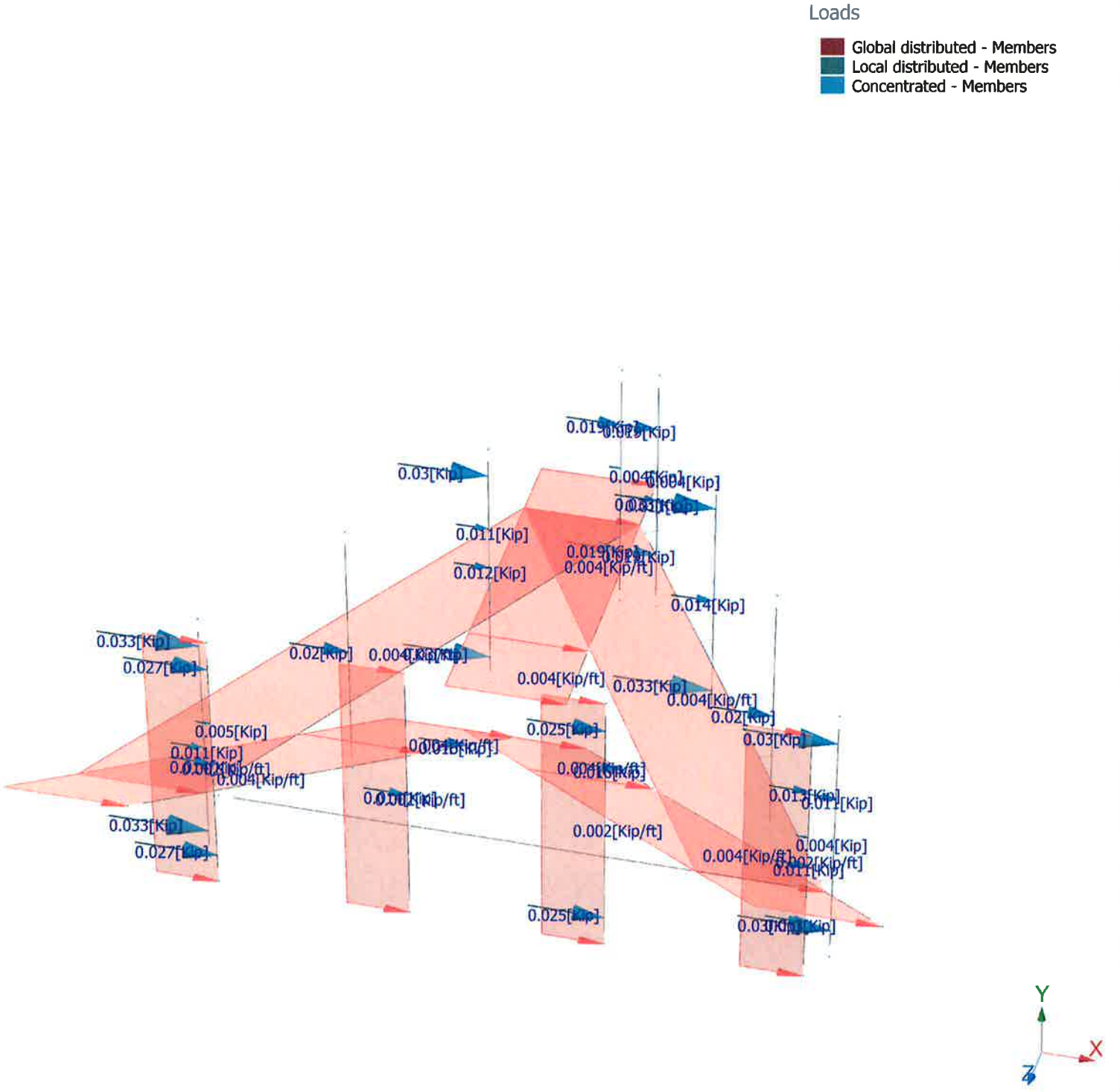
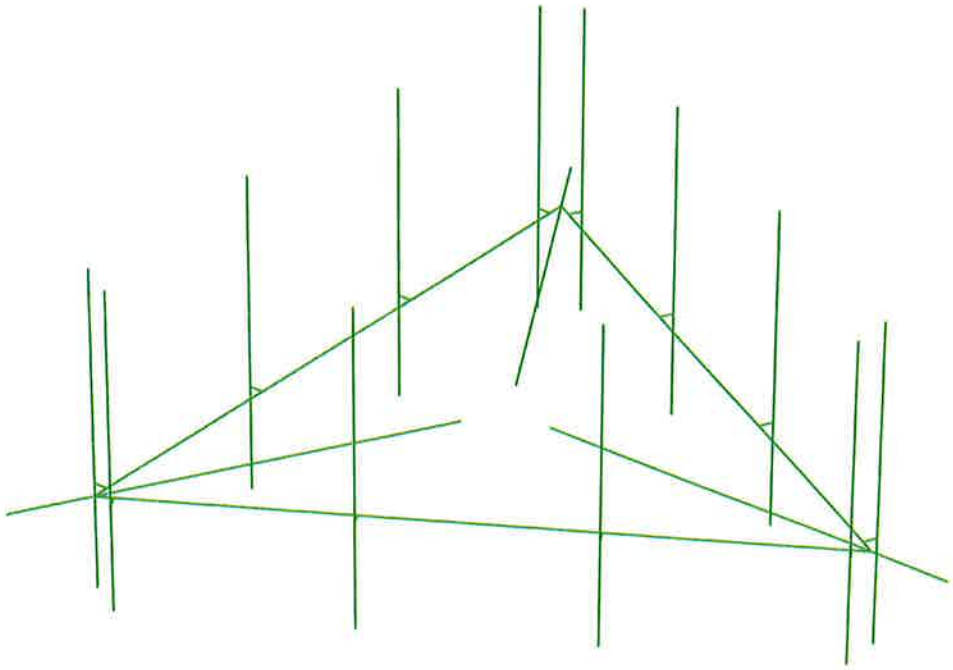


Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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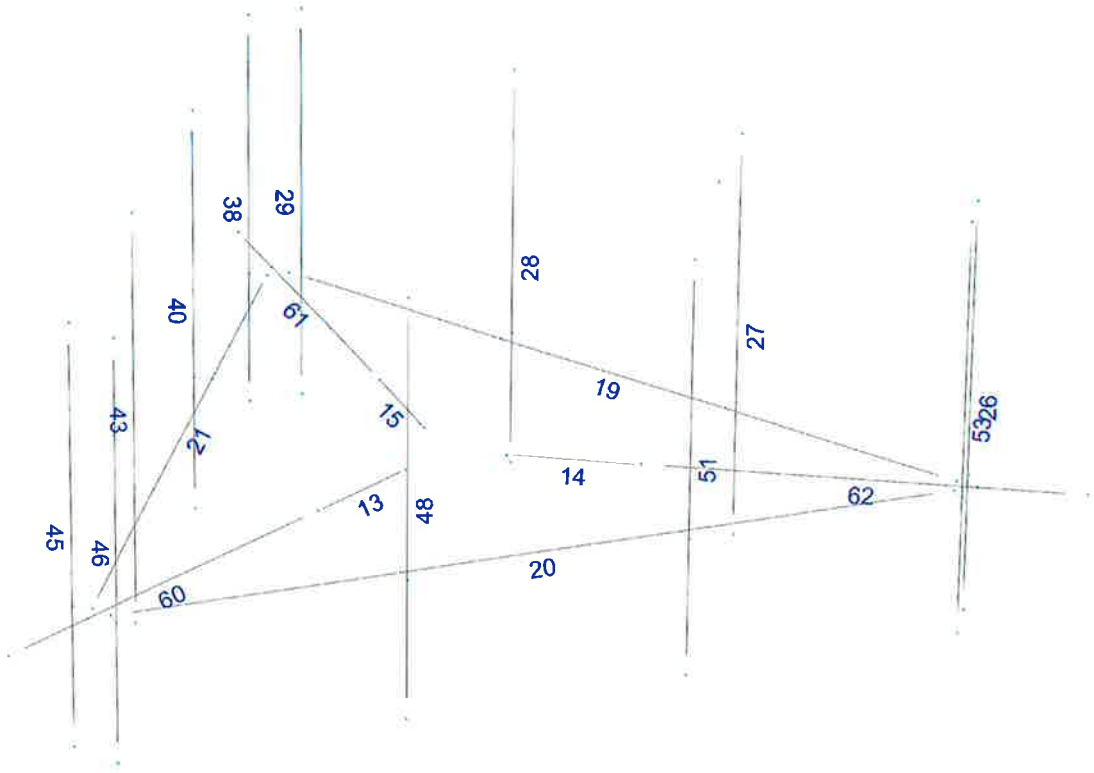

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Units system: English
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Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	13	LC1 at 0.00%	0.42	OK	Eq. H1-1b
			LC10 at 0.00%	**0.64**	**OK**	Eq. H1-1b
			LC11 at 0.00%	0.64	OK	Eq. H1-1b
			LC12 at 0.00%	0.59	OK	Eq. H1-1b
			LC13 at 0.00%	0.42	OK	Sec. F1
			LC14 at 0.00%	0.31	OK	Sec. F1
			LC2 at 0.00%	0.56	OK	Eq. H1-1b
			LC3 at 0.00%	0.55	OK	Eq. H1-1b
			LC4 at 0.00%	0.30	OK	Eq. H1-1b
			LC5 at 0.00%	0.31	OK	Eq. H1-1b
			LC6 at 0.00%	0.46	OK	Eq. H1-1b
			LC7 at 0.00%	0.45	OK	Eq. H1-1b
			LC8 at 0.00%	0.20	OK	Eq. H1-1b
			LC9 at 0.00%	0.61	OK	Eq. H1-1b
		14	LC1 at 0.00%	0.35	OK	Eq. H1-1b
			LC10 at 0.00%	0.52	OK	Eq. H1-1b
			LC11 at 0.00%	0.57	OK	Eq. H1-1b
			LC12 at 0.00%	**0.57**	**OK**	Eq. H1-1b
			LC13 at 0.00%	0.38	OK	Sec. F1
			LC14 at 0.00%	0.28	OK	Sec. F1
			LC2 at 0.00%	0.26	OK	Eq. H1-1b
			LC3 at 0.00%	0.49	OK	Eq. H1-1b
			LC4 at 0.00%	0.51	OK	Eq. H1-1b
			LC5 at 0.00%	0.26	OK	Eq. H1-1b
			LC6 at 0.00%	0.17	OK	Eq. H1-1b
			LC7 at 0.00%	0.40	OK	Eq. H1-1b
			LC8 at 0.00%	0.42	OK	Eq. H1-1b
			LC9 at 0.00%	0.54	OK	Eq. H1-1b
		15	LC1 at 0.00%	0.55	OK	Eq. H1-1b
			LC10 at 0.00%	0.58	OK	Eq. H1-1b
			LC11 at 0.00%	0.54	OK	Eq. H1-1b
			LC12 at 0.00%	0.58	OK	Eq. H1-1b
			LC13 at 0.00%	0.39	OK	Sec. F1

	LC14 at 0.00%	0.29	OK	Sec. F1
	LC2 at 0.00%	0.48	OK	Eq. H1-1b
	LC3 at 0.00%	0.27	OK	Eq. H1-1b
	LC4 at 0.00%	0.48	OK	Eq. H1-1b
	LC5 at 0.00%	0.45	OK	Eq. H1-1b
	LC6 at 0.00%	0.38	OK	Eq. H1-1b
	LC7 at 0.00%	0.17	OK	Eq. H1-1b
	LC8 at 0.00%	0.38	OK	Eq. H1-1b
	LC9 at 0.00%	**0.60**	**OK**	Eq. H1-1b
19	LC1 at 0.00%	**0.26**	**OK**	Eq. H1-1b
	LC10 at 0.00%	0.22	OK	Eq. H1-1b
	LC11 at 0.00%	0.21	OK	Eq. H1-1b
	LC12 at 100.00%	0.21	OK	Eq. H1-1b
	LC13 at 0.00%	0.14	OK	Sec. F1
	LC14 at 0.00%	0.10	OK	Sec. F1
	LC2 at 0.00%	0.24	OK	Eq. H1-1b
	LC3 at 96.25%	0.20	OK	Eq. H1-1b
	LC4 at 100.00%	0.24	OK	Eq. H1-1b
	LC5 at 0.00%	0.22	OK	Eq. H1-1b
	LC6 at 0.00%	0.20	OK	Eq. H1-1b
	LC7 at 96.25%	0.17	OK	Eq. H1-1b
	LC8 at 100.00%	0.21	OK	Eq. H1-1b
	LC9 at 0.00%	0.22	OK	Eq. H1-1b
20	LC1 at 100.00%	**0.23**	**OK**	Eq. H1-1b
	LC10 at 0.00%	0.21	OK	Eq. H1-1b
	LC11 at 0.00%	0.21	OK	Eq. H1-1b
	LC12 at 100.00%	0.20	OK	Eq. H1-1b
	LC13 at 0.00%	0.14	OK	Sec. F1
	LC14 at 0.00%	0.10	OK	Eq. H1-1b
	LC2 at 3.75%	0.23	OK	Eq. H1-1b
	LC3 at 100.00%	0.23	OK	Eq. H1-1b
	LC4 at 100.00%	0.22	OK	Eq. H1-1b
	LC5 at 100.00%	0.20	OK	Eq. H1-1b
	LC6 at 3.75%	0.20	OK	Eq. H1-1b
	LC7 at 100.00%	0.20	OK	Eq. H1-1b
	LC8 at 100.00%	0.19	OK	Eq. H1-1b
	LC9 at 0.00%	0.21	OK	Eq. H1-1b
21	LC1 at 100.00%	**0.27**	**OK**	Eq. H1-1b
	LC10 at 0.00%	0.24	OK	Eq. H1-1b
	LC11 at 100.00%	0.23	OK	Eq. H1-1b
	LC12 at 100.00%	0.24	OK	Eq. H1-1b
	LC13 at 100.00%	0.15	OK	Sec. F1
	LC14 at 100.00%	0.11	OK	Sec. F1
	LC2 at 0.00%	0.26	OK	Eq. H1-1b
	LC3 at 3.75%	0.21	OK	Eq. H1-1b
	LC4 at 100.00%	0.24	OK	Eq. H1-1b
	LC5 at 100.00%	0.23	OK	Eq. H1-1b
	LC6 at 0.00%	0.22	OK	Eq. H1-1b
	LC7 at 3.75%	0.18	OK	Eq. H1-1b
	LC8 at 100.00%	0.20	OK	Eq. H1-1b
	LC9 at 100.00%	0.24	OK	Eq. H1-1b
60	LC1 at 75.00%	0.30	OK	Eq. H1-1b
	LC10 at 75.00%	0.36	OK	Eq. H1-1b
	LC11 at 75.00%	**0.36**	**OK**	Eq. H1-1b
	LC12 at 75.00%	0.34	OK	Eq. H1-1b
	LC13 at 75.00%	0.24	OK	Sec. F1
	LC14 at 75.00%	0.18	OK	Sec. F1
	LC2 at 0.00%	0.33	OK	Eq. H1-1b
	LC3 at 75.00%	0.33	OK	Eq. H1-1b

		LC4 at 75.00%	0.24	OK	Eq. H1-1b
		LC5 at 75.00%	0.24	OK	Eq. H1-1b
		LC6 at 0.00%	0.28	OK	Eq. H1-1b
		LC7 at 75.00%	0.27	OK	Eq. H1-1b
		LC8 at 75.00%	0.18	OK	Eq. H1-1b
		LC9 at 75.00%	0.35	OK	Eq. H1-1b
	61	LC1 at 0.00%	0.31	OK	Eq. H1-1b
		LC10 at 75.00%	0.37	OK	Eq. H1-1b
		LC11 at 75.00%	0.34	OK	Eq. H1-1b
		LC12 at 75.00%	**0.37**	**OK**	Eq. H1-1b
		LC13 at 75.00%	0.24	OK	Sec. F1
		LC14 at 75.00%	0.18	OK	Sec. F1
		LC2 at 75.00%	0.35	OK	Eq. H1-1b
		LC3 at 75.00%	0.22	OK	Eq. H1-1b
		LC4 at 75.00%	0.35	OK	Eq. H1-1b
		LC5 at 0.00%	0.26	OK	Eq. H1-1b
		LC6 at 75.00%	0.29	OK	Eq. H1-1b
		LC7 at 75.00%	0.16	OK	Eq. H1-1b
		LC8 at 75.00%	0.29	OK	Eq. H1-1b
		LC9 at 75.00%	0.35	OK	Eq. H1-1b
	62	LC1 at 25.00%	0.29	OK	Eq. H1-1b
		LC10 at 25.00%	0.31	OK	Eq. H1-1b
		LC11 at 25.00%	**0.33**	**OK**	Eq. H1-1b
		LC12 at 25.00%	0.33	OK	Eq. H1-1b
		LC13 at 25.00%	0.22	OK	Sec. F1
		LC14 at 25.00%	0.16	OK	Sec. F1
		LC2 at 25.00%	0.22	OK	Eq. H1-1b
		LC3 at 25.00%	0.31	OK	Eq. H1-1b
		LC4 at 100.00%	0.30	OK	Eq. H1-1b
		LC5 at 25.00%	0.23	OK	Eq. H1-1b
		LC6 at 25.00%	0.16	OK	Eq. H1-1b
		LC7 at 25.00%	0.26	OK	Eq. H1-1b
		LC8 at 100.00%	0.25	OK	Eq. H1-1b
		LC9 at 25.00%	0.32	OK	Eq. H1-1b
PIPE 2x0.154	**26**	LC1 at 65.63%	0.57	OK	Eq. H1-1b
		LC10 at 65.63%	0.14	OK	Eq. H1-1b
		LC11 at 65.63%	0.10	OK	Eq. H1-1b
		LC12 at 65.63%	0.14	OK	Eq. H1-1b
		LC13 at 65.63%	0.01	OK	Sec. E1
		LC14 at 65.63%	0.01	OK	Sec. E1
		LC2 at 65.63%	**0.62**	**OK**	Eq. H1-1b
		LC3 at 65.63%	0.57	OK	Eq. H1-1b
		LC4 at 65.63%	0.62	OK	Eq. H1-1b
		LC5 at 65.63%	0.57	OK	Eq. H1-1b
		LC6 at 65.63%	0.62	OK	Eq. H1-1b
		LC7 at 65.63%	0.57	OK	Eq. H1-1b
		LC8 at 65.63%	0.62	OK	Eq. H1-1b
		LC9 at 65.63%	0.10	OK	Eq. H1-1b
	27	LC1 at 65.63%	0.03	OK	Eq. H1-1b
		LC10 at 65.63%	0.03	OK	Eq. H1-1b
		LC11 at 65.63%	0.02	OK	Eq. H1-1b
		LC12 at 65.63%	0.03	OK	Eq. H1-1b
		LC13 at 65.63%	0.01	OK	Sec. E1
		LC14 at 65.63%	0.00	OK	Sec. E1
		LC2 at 65.63%	0.07	OK	Eq. H1-1b
		LC3 at 65.63%	0.03	OK	Eq. H1-1b
		LC4 at 65.63%	**0.07**	**OK**	Eq. H1-1b
		LC5 at 65.63%	0.03	OK	Eq. H1-1b
		LC6 at 65.63%	0.07	OK	Eq. H1-1b

	LC7 at 65.63%	0.03	OK	Eq. H1-1b
	LC8 at 65.63%	0.07	OK	Eq. H1-1b
	LC9 at 65.63%	0.02	OK	Eq. H1-1b
28	LC1 at 65.63%	0.66	OK	Eq. H1-1b
	LC10 at 65.63%	0.14	OK	Eq. H1-1b
	LC11 at 65.63%	0.12	OK	Eq. H1-1b
	LC12 at 65.63%	0.14	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	**0.77**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.66	OK	Eq. H1-1b
	LC4 at 65.63%	0.77	OK	Eq. H1-1b
	LC5 at 65.63%	0.66	OK	Eq. H1-1b
	LC6 at 65.63%	0.77	OK	Eq. H1-1b
	LC7 at 65.63%	0.66	OK	Eq. H1-1b
	LC8 at 65.63%	0.77	OK	Eq. H1-1b
	LC9 at 65.63%	0.12	OK	Eq. H1-1b
29	LC1 at 65.63%	0.31	OK	Eq. H1-1b
	LC10 at 65.63%	0.08	OK	Eq. H1-1b
	LC11 at 65.63%	0.06	OK	Eq. H1-1b
	LC12 at 65.63%	0.08	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	**0.39**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.31	OK	Eq. H1-1b
	LC4 at 65.63%	0.39	OK	Eq. H1-1b
	LC5 at 65.63%	0.31	OK	Eq. H1-1b
	LC6 at 65.63%	0.39	OK	Eq. H1-1b
	LC7 at 65.63%	0.31	OK	Eq. H1-1b
	LC8 at 65.63%	0.39	OK	Eq. H1-1b
	LC9 at 65.63%	0.06	OK	Eq. H1-1b
38	LC1 at 65.63%	0.26	OK	Eq. H1-1b
	LC10 at 65.63%	0.06	OK	Eq. H1-1b
	LC11 at 65.63%	0.05	OK	Eq. H1-1b
	LC12 at 65.63%	0.06	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.00	OK	Sec. E1
	LC2 at 65.63%	0.34	OK	Eq. H1-1b
	LC3 at 65.63%	0.26	OK	Eq. H1-1b
	LC4 at 65.63%	**0.34**	**OK**	Eq. H1-1b
	LC5 at 65.63%	0.26	OK	Eq. H1-1b
	LC6 at 65.63%	0.34	OK	Eq. H1-1b
	LC7 at 65.63%	0.26	OK	Eq. H1-1b
	LC8 at 65.63%	0.34	OK	Eq. H1-1b
	LC9 at 65.63%	0.05	OK	Eq. H1-1b
40	LC1 at 65.63%	0.66	OK	Eq. H1-1b
	LC10 at 65.63%	0.16	OK	Eq. H1-1b
	LC11 at 65.63%	0.11	OK	Eq. H1-1b
	LC12 at 65.63%	0.16	OK	Eq. H1-1b
	LC13 at 65.63%	0.02	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	0.69	OK	Eq. H1-1b
	LC3 at 65.63%	0.66	OK	Eq. H1-1b
	LC4 at 65.63%	**0.69**	**OK**	Eq. H1-1b
	LC5 at 65.63%	0.65	OK	Eq. H1-1b
	LC6 at 65.63%	0.69	OK	Eq. H1-1b
	LC7 at 65.63%	0.65	OK	Eq. H1-1b
	LC8 at 65.63%	0.69	OK	Eq. H1-1b
	LC9 at 65.63%	0.11	OK	Eq. H1-1b

43	LC1 at 65.63%	0.03	OK	Eq. H1-1b
	LC10 at 65.63%	0.03	OK	Eq. H1-1b
	LC11 at 65.63%	0.02	OK	Eq. H1-1b
	LC12 at 65.63%	0.03	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.00	OK	Sec. E1
	LC2 at 65.63%	**0.07**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.03	OK	Eq. H1-1b
	LC4 at 65.63%	0.07	OK	Eq. H1-1b
	LC5 at 65.63%	0.03	OK	Eq. H1-1b
	LC6 at 65.63%	0.07	OK	Eq. H1-1b
	LC7 at 65.63%	0.03	OK	Eq. H1-1b
	LC8 at 65.63%	0.07	OK	Eq. H1-1b
	LC9 at 65.63%	0.02	OK	Eq. H1-1b
45	LC1 at 65.63%	0.63	OK	Eq. H1-1b
	LC10 at 65.63%	0.13	OK	Eq. H1-1b
	LC11 at 65.63%	0.11	OK	Eq. H1-1b
	LC12 at 65.63%	0.13	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	**0.75**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.63	OK	Eq. H1-1b
	LC4 at 65.63%	0.75	OK	Eq. H1-1b
	LC5 at 65.63%	0.63	OK	Eq. H1-1b
	LC6 at 65.63%	0.75	OK	Eq. H1-1b
	LC7 at 65.63%	0.63	OK	Eq. H1-1b
	LC8 at 65.63%	0.75	OK	Eq. H1-1b
	LC9 at 65.63%	0.11	OK	Eq. H1-1b
46	LC1 at 65.63%	0.49	OK	Eq. H1-1b
	LC10 at 65.63%	0.11	OK	Eq. H1-1b
	LC11 at 65.63%	0.10	OK	Eq. H1-1b
	LC12 at 65.63%	0.11	OK	Eq. H1-1b
	LC13 at 65.63%	0.02	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	**0.53**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.49	OK	Eq. H1-1b
	LC4 at 65.63%	0.53	OK	Eq. H1-1b
	LC5 at 65.63%	0.49	OK	Eq. H1-1b
	LC6 at 65.63%	0.53	OK	Eq. H1-1b
	LC7 at 65.63%	0.49	OK	Eq. H1-1b
	LC8 at 65.63%	0.53	OK	Eq. H1-1b
	LC9 at 65.63%	0.10	OK	Eq. H1-1b
48	LC1 at 65.63%	0.10	OK	Eq. H1-1b
	LC10 at 65.63%	0.03	OK	Eq. H1-1b
	LC11 at 65.63%	0.02	OK	Eq. H1-1b
	LC12 at 65.63%	0.03	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.00	OK	Sec. E1
	LC2 at 65.63%	**0.10**	**OK**	Eq. H1-1b
	LC3 at 65.63%	0.10	OK	Eq. H1-1b
	LC4 at 65.63%	0.10	OK	Eq. H1-1b
	LC5 at 65.63%	0.10	OK	Eq. H1-1b
	LC6 at 65.63%	0.10	OK	Eq. H1-1b
	LC7 at 65.63%	0.10	OK	Eq. H1-1b
	LC8 at 65.63%	0.10	OK	Eq. H1-1b
	LC9 at 65.63%	0.02	OK	Eq. H1-1b
51	LC1 at 65.63%	0.56	OK	Eq. H1-1b
	LC10 at 65.63%	0.08	OK	Eq. H1-1b

	LC11 at 65.63%	0.09	OK	Eq. H1-1b
	LC12 at 65.63%	0.08	OK	Eq. H1-1b
	LC13 at 65.63%	0.00	OK	Sec. E1
	LC14 at 65.63%	0.00	OK	Sec. E1
	LC2 at 65.63%	0.41	OK	Eq. H1-1b
	LC3 at 65.63%	**0.56**	**OK**	Eq. H1-1b
	LC4 at 65.63%	0.41	OK	Eq. H1-1b
	LC5 at 65.63%	0.56	OK	Eq. H1-1b
	LC6 at 65.63%	0.41	OK	Eq. H1-1b
	LC7 at 65.63%	0.56	OK	Eq. H1-1b
	LC8 at 65.63%	0.41	OK	Eq. H1-1b
	LC9 at 65.63%	0.09	OK	Eq. H1-1b
53	LC1 at 65.63%	**0.28**	**OK**	Eq. H1-1b
	LC10 at 65.63%	0.06	OK	Eq. H1-1b
	LC11 at 65.63%	0.06	OK	Eq. H1-1b
	LC12 at 65.63%	0.06	OK	Eq. H1-1b
	LC13 at 65.63%	0.01	OK	Sec. E1
	LC14 at 65.63%	0.01	OK	Sec. E1
	LC2 at 65.63%	0.23	OK	Eq. H1-1b
	LC3 at 65.63%	0.28	OK	Eq. H1-1b
	LC4 at 65.63%	0.23	OK	Eq. H1-1b
	LC5 at 65.63%	0.28	OK	Eq. H1-1b
	LC6 at 65.63%	0.23	OK	Eq. H1-1b
	LC7 at 65.63%	0.28	OK	Eq. H1-1b
	LC8 at 65.63%	0.23	OK	Eq. H1-1b
	LC9 at 65.63%	0.06	OK	Eq. H1-1b

Bentley

Current Date: 3/28/2018 4:07 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1029\CT1029 (3C).etz\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
18	-0.0012	0.00	-7.312	0
19	0.0036	0.00	-0.8677	0
24	-0.7533	0.00	0.4307	0
26	-6.3318	0.00	3.657	0
28	0.7497	0.00	0.437	0
30	6.333	0.00	3.655	0
32	2.3449	0.00	1.3564	0
41	-2.3472	0.00	1.3525	0
47	0.0022	0.00	-2.709	0
48	6.1665	0.00	3.3666	0
51	0.1665	0.00	-7.0257	0
52	6.3942	0.00	3.2351	0
55	0.3942	0.00	-7.1572	0
56	0.3942	4.00	-7.1572	0
57	2.3942	4.00	-3.6931	0
58	4.3942	4.00	-0.229	0
59	6.3942	4.00	3.2351	0
60	6.3942	-2.00	3.2351	0
62	4.3942	-2.00	-0.229	0
63	2.3942	-2.00	-3.6931	0
64	0.3942	-2.00	-7.1572	0
81	-0.1677	0.00	-7.0237	0

84	-0.3954	4.00	-7.1551	0
85	-0.3954	-2.00	-7.1551	0
86	-0.3954	0.00	-7.1551	0
87	-2.3954	4.00	-3.691	0
88	-2.3954	-2.00	-3.691	0
91	-4.3954	4.00	-0.2269	0
92	-4.3954	-2.00	-0.2269	0
93	-6.1677	0.00	3.3687	0
94	-6.3954	0.00	3.2372	0
95	-6.3954	4.00	3.2372	0
96	-6.3954	-2.00	3.2372	0
102	-5.9988	0.00	3.657	0
105	-5.9988	4.00	3.92	0
106	-5.9988	-2.00	3.92	0
107	-5.9988	0.00	3.92	0
108	-1.9988	4.00	3.92	0
109	-1.9988	-2.00	3.92	0
112	2.0012	4.00	3.92	0
113	2.0012	-2.00	3.92	0
114	6.0012	0.00	3.657	0
115	6.0012	0.00	3.92	0
116	6.0012	4.00	3.92	0
117	6.0012	-2.00	3.92	0
118	-7.6309	0.00	4.407	0
121	7.632	0.00	4.405	0
122	-0.0012	0.00	-8.812	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
19	1	1	1	1	1	1
24	1	1	1	1	1	1
28	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
13	24	41		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
14	28	32		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
15	19	47		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
19	18	30		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
20	26	30		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
21	26	18		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
22	48	52		RndBar 1-1_2	A36	0.00	0.00	0.00
25	51	55		RndBar 1-1_2	A36	0.00	0.00	0.00
26	59	60		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	58	62		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
28	57	63		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	56	64		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	84	85		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

39	81	86	RndBar 1-1_2	A36	0.00	0.00	0.00
40	87	88	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	91	92	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
44	93	94	RndBar 1-1_2	A36	0.00	0.00	0.00
45	95	96	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
46	105	106	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	102	107	RndBar 1-1_2	A36	0.00	0.00	0.00
48	108	109	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	112	113	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
52	114	115	RndBar 1-1_2	A36	0.00	0.00	0.00
53	116	117	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
60	41	118	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
61	47	122	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
62	121	32	HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
26	0.00	2	-0.50	0.00	-0.866
27	0.00	2	-0.50	0.00	-0.866
28	0.00	2	-0.50	0.00	-0.866
29	0.00	2	-0.50	0.00	-0.866
38	0.00	2	-0.50	0.00	0.866
40	0.00	2	-0.50	0.00	0.866
43	0.00	2	-0.50	0.00	0.866
45	0.00	2	-0.50	0.00	0.866