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

December 6, 2019

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **PE1133-VER-20191104** - Cellco Partnership d/b/a Verizon Wireless sub-petition for a declaratory ruling for approval of an eligible facility request for modifications to an existing telecommunications facility located off Andrews Road, Wolcott, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) is in receipt of your correspondence of December 2, 2019 submitted in response to the Council's November 13, 2019 notification of an incomplete sub-petition for the above-referenced facility.

The submission renders the sub-petition complete and the Council will process the sub-petition in accordance with Regulations of Connecticut State Agencies Section 16-50j-40.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/laf

Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

December 2, 2019

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **PE1133-VER-155-2019104 – Cellco Partnership d/b/a Verizon Wireless sub-petition for a declaratory ruling for approval on an eligible facility request for modifications to an existing telecommunications facility located off Andrews Road, Wolcott, Connecticut**

Dear Ms. Bachman:

In response to your November 13, 2019 letter regarding the above-referenced sub-petition, attached is a Mount Analysis dated November 21, 2019, prepared by Hudson Design Group.

If you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Enclosures

HUDSON
Design Group LLC

September 9, 2019
November 21, 2019 (Rev. 1)

verizon

99 East River Road, 9th Floor
East Hartford, CT 06108

RE: Site Name: Wolcott NW CT
Site Address: 107/109 Andrews Road
Wolcott, CT 06716

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by VERIZON to perform a mount analysis on the proposed VERIZON antenna mount to determine its capability of supporting the following equipment loading:

- **(4) NNHH-65B-R4 Antennas (72.0"x19.6"x7.8" – Wt. 79 lbs. /each)**
- **(2) B2/B66A RRH-BR049 RRH's (15.0"x15.0"x10.0" – Wt. = 98 lbs. /each)**
- **(2) B5/B13 RRH-BR04C RRH's (15.0"x15.0"x8.1" – Wt. = 82 lbs. /each)**
- **(1) Junction Box (28.93"x15.73"x10.31" – Wt. 32 lbs. /each)**

**Proposed equipment shown in bold.*

Based on our analysis, we have determined that the New SitePro1 P/N 5R-216 mounts **ARE CAPABLE** of supporting the proposed installation.

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	6	LC1	29%	**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 2015. (See the attached analysis).

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

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 proposed mounts will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to Verizon'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 structure.

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/9/2019
Project Name: Wolcott NW CT
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

K_z= **0.881**

z= 67 (ft)
z_g= 1200 (ft)
α= 7.0

$K_{zmin} \le K_z \le 2.01$

Table 2-4

Exposure	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}= **1.00**

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

Category= **1**

K_h= 0
K_e= 0 (from Table 2-4)
K_t= 0 (from Table 2-5)
f= 0 (from Table 2-5)
z= 67
H= 0 (Ht. of the crest above surrounding terrain)
K_{zt}= 1.00
K_{Iz} = 1.07 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = **0.75** in

Importance Factor, I_{ice} = I_{ice}= **1.00** (from Table 2-3)

$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$

t_{Iz} = **1.61** in

Date: 9/9/2019
Project Name: Wolcott NW CT
Designed By: RL 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=	83	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

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

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

q_z=	25.36	K_z=	0.881	
$q_{z\,(ice)}$=	4.79	K_{zt}=	1.0	
		K_d=	0.85	(from Table 2-2)
		V_{max}=	115	
		$V_{max\,(ice)}$=	50	
		I=	1.0	(from Table 2-3)
		I_{wice}=	1.0	(from Table 2-3)

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: 9/10/2019
Project Name: Wolcott NW CT
Designed By: RL 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, and the section length considered to have uniform wind load).

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

Ice Thickness = **1.61 in**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/Ice)
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.67	1.25	311	72
B2/B66A RRH-BR049 RRH	15.0	15.0	10.0	1.56	1.00	1.20	48	13
B2/B66A RRH-BR049 RRH (Shielded)	15.0	0.0	10.0	0.00	0.00	1.20	0	2
B5/B13 RRH-BR04C RRH	15.0	15.0	8.1	1.56	1.00	1.20	48	13
B5/B13 RRH-BR04C RRH (Shielded)	15.0	0.0	8.1	0.00	0.00	1.20	0	2
Junction Box	28.9	15.3	10.4	3.07	1.89	1.20	93	24
Junction Box (Shielded)	28.9	0.0	10.4	0.00	0.00	1.20	0	4

Date: 9/9/2019
Project Name: Wolcott NW CT
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.61 in.
Density of ice: 56 pcf

NNHH-65B-R4 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	19.6	
Depth (in):	7.8	
Total weight of ice on object:		268 lbs
Weight of object:	79.0 lbs	
Combined weight of ice and object:		347 lbs

B2/B66A RRH-BR049 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	10.0	
Total weight of ice on object:		48 lbs
Weight of object:	98.0 lbs	
Combined weight of ice and object:		146 lbs

B5/B13 RRH-BR04C RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	8.1	
Total weight of ice on object:		46 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		128 lbs

Junction Box

Weight of ice based on total radial SF area:

Height (in):	28.9	
Width (in):	15.7	
Depth (in):	10.3	
Total weight of ice on object:		97 lbs
Weight of object:	32.0 lbs	
Combined weight of ice and object:		129 lbs

4" pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		12 plf

3-1/2" pipe

Per foot weight of ice:

diameter (in):	4	
Per foot weight of ice on object:		11 plf

2" pipe

Per foot weight of ice:

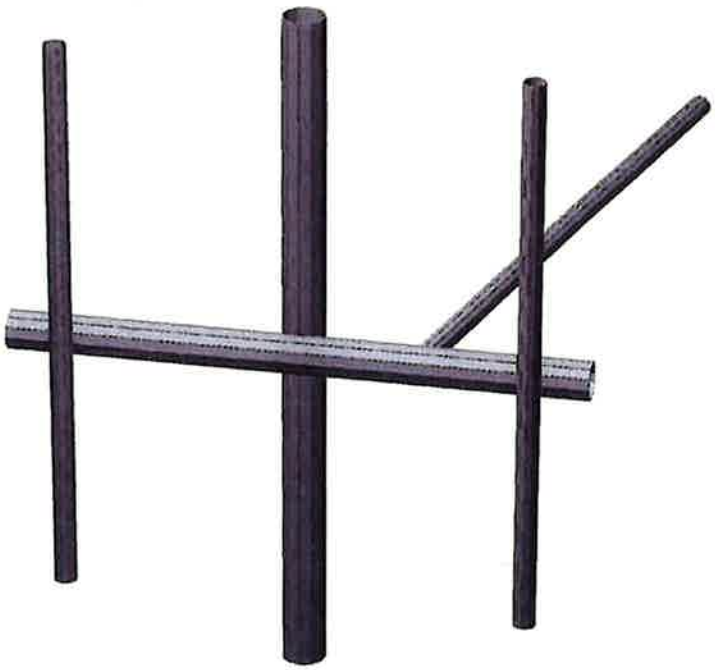
diameter (in):	2.375	
Per foot weight of ice on object:		8 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

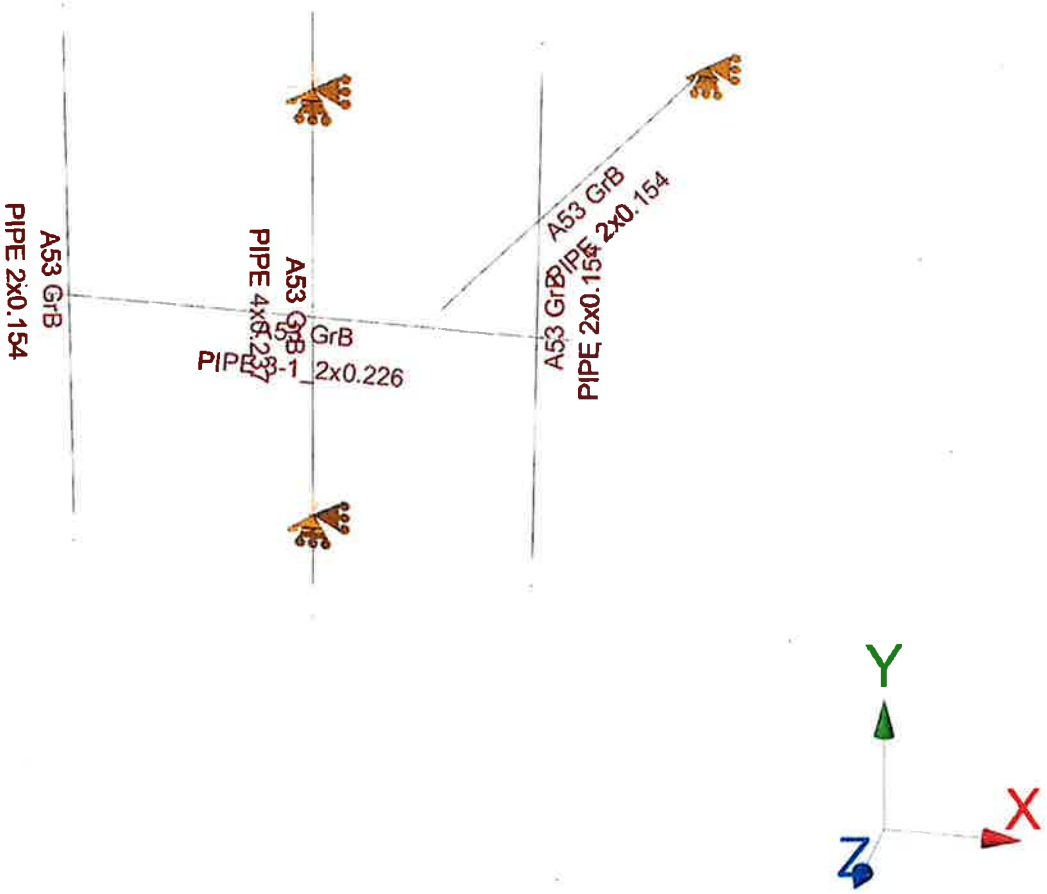
Bentley

Current Date: 9/9/2019 5:30 PM
Units system: English



Bentley

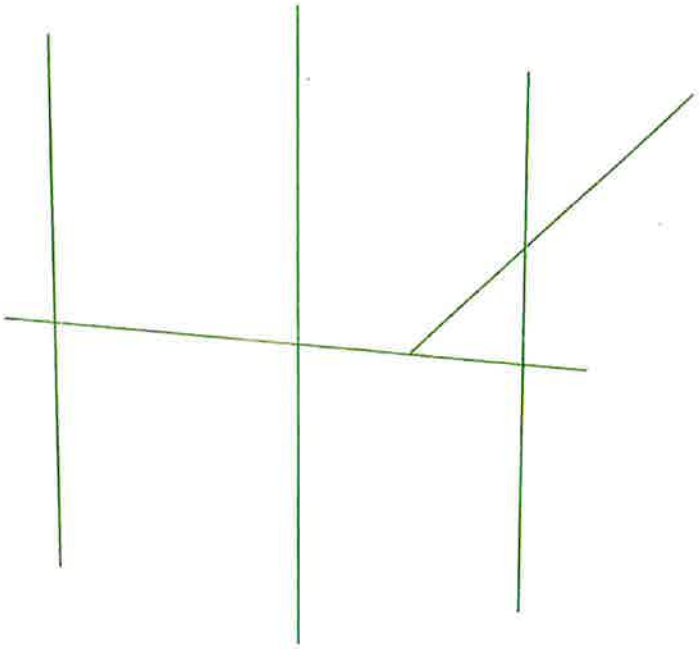
Current Date: 9/9/2019 5:30 PM
Units system: English

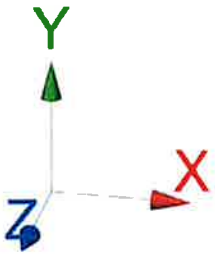


Bentley

Current Date: 9/9/2019 5:30 PM
Units system: English

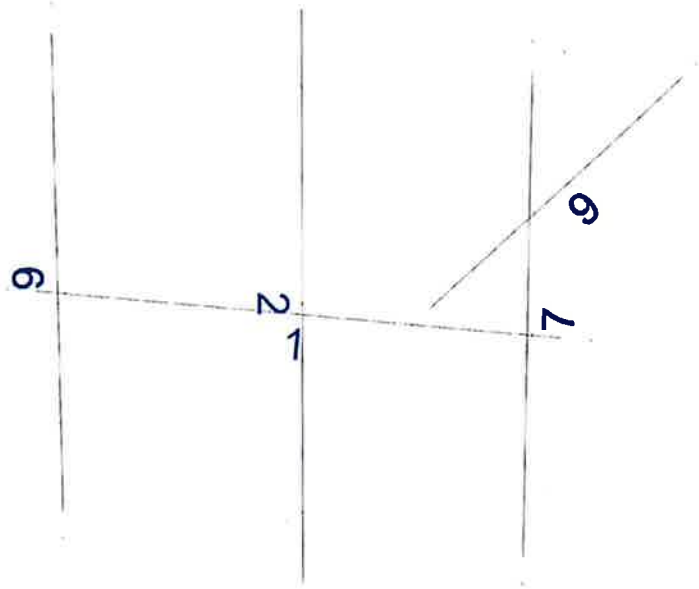
Not designed
Error on design
Design O.K.
With warnings

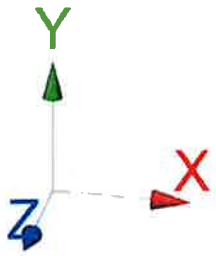




Bentley

Current Date: 9/9/2019 5:30 PM
Units system: English





Bentley

Current Date: 9/10/2019 11:56 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Wolcott NW CT\Wolcott NW CT.ret

Load data

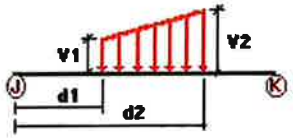
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

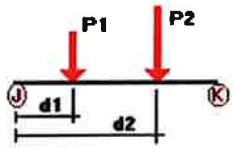
Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Di	6	y	-0.008	-0.008	0.00	No	100.00	Yes
	7	y	-0.008	-0.008	0.00	No	100.00	Yes
	1	y	-0.011	-0.011	0.00	No	100.00	Yes
	2	y	-0.012	-0.012	0.00	No	100.00	Yes
	9	y	-0.008	-0.008	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	6	y	-0.04	0.50	No
		y	-0.04	4.50	No
		y	-0.098	1.50	No
		y	-0.032	3.50	No
	7	y	-0.04	0.50	No

		y	-0.04	4.50	No
		y	-0.082	1.50	No
Wo	6	z	-0.156	0.50	No
		z	-0.156	4.50	No
	7	z	-0.156	0.50	No
		z	-0.156	4.50	No
Wi	6	z	-0.036	0.50	No
		z	-0.036	4.50	No
		z	-0.002	1.50	No
		z	-0.004	3.50	No
	7	z	-0.036	0.50	No
		z	-0.036	4.50	No
		z	-0.002	1.50	No
Di	6	y	-0.134	0.50	No
		y	-0.134	4.50	No
		y	-0.048	1.50	No
		y	-0.097	3.50	No
	7	y	-0.134	0.50	No
		y	-0.134	4.50	No
		y	-0.046	1.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

Bentley

Current Date: 9/10/2019 11:56 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Wolcott NW CT\Wolcott NW CT.ret

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**6**	LC1 at 53.13%	**0.29**	**OK**	
		7	LC1 at 53.13%	0.29	OK	
		9	LC3 at 0.00%	0.06	OK	
	PIPE 3-1_2x0.226	**1**	LC3 at 48.75%	**0.19**	**OK**	
	PIPE 4x0.237	**2**	LC2 at 48.44%	**0.05**	**OK**	

Bentley

Current Date: 9/9/2019 5:32 PM
Units system: English

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
2	2.50	0.00	0.00	0
3	-2.50	0.00	0.00	0
4	0.00	3.00	-0.20	0
5	0.00	-3.00	-0.20	0
11	2.00	2.75	0.20	0
12	-2.00	2.75	0.20	0
13	-2.00	-2.25	0.20	0
14	2.00	-2.25	0.20	0
15	0.00	2.00	-0.20	0
16	0.00	-2.00	-0.20	0
21	1.00	0.00	0.00	0
22	2.50	0.00	-5.80	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	1	1	1
16	1	1	1	1	1	1
22	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	3	2		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
2	4	5		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
6	12	13		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	11	14		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	21	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00