



Mount Analysis Report

ATC Asset Name : Unity Village MO 2
ATC Asset Number : 306035
Engineering Number : 14861224_C8_01
Mount Elevation : 150 ft
Proposed Carrier : AT&T Mobility
Carrier Site Name : UNITY VILLAGE
Carrier Site Number : WSKSL0042322
Site Location : 1097 NW Black Twig Ln
Lees Summit, MO 64081-1905
38.9336, -94.4175
County : Jackson
Date : August 16, 2024
Max Usage : 49%
Analysis Result : Contingent Pass

Prepared By:
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Structural Engineer I

Sarah D. Kramer



COA: 2006031326

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Introduction

The purpose of this report is to summarize results of the mount analysis performed for AT&T Mobility at 150 ft.

Supporting Documents

Specifications Sheet:	Sabre C10857007C, dated October 19, 2016
Previous Analysis:	ATC Project #13619563_C8_01, dated May 20, 2021
Radio Frequency Data Sheet:	RFDS ID #10000434, dated August 8, 2024
Reference Photos:	Site photos from 2023

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	109 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 1.50" radial ice concurrent
Codes:	ANSI/TIA-222-H / 2018 IBC
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.099, S1 = 0.068
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

*Live Load(s) reduction is confirmed to either not govern or not be applicable

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above provided the modifications listed below are completed:

- Install P2 (2.375" x 120") in mount pipe position MA2. Connect with Site Pro 1 SCX7-U (or approved equivalent) crossover plate kits.
- Remove existing mount pipe P1 from all sectors. Evenly space remaining mount pipes across face.
- Rotate sector frames as necessary to achieve RFDS with no antenna skew.
- No structural failures were addressed with the noted contingencies. Contingencies address Carrier's antenna spacing requirements.
- The rough cost estimate, pre-MOD design, is estimated to be ≤\$10k.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact MountAnalysis@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

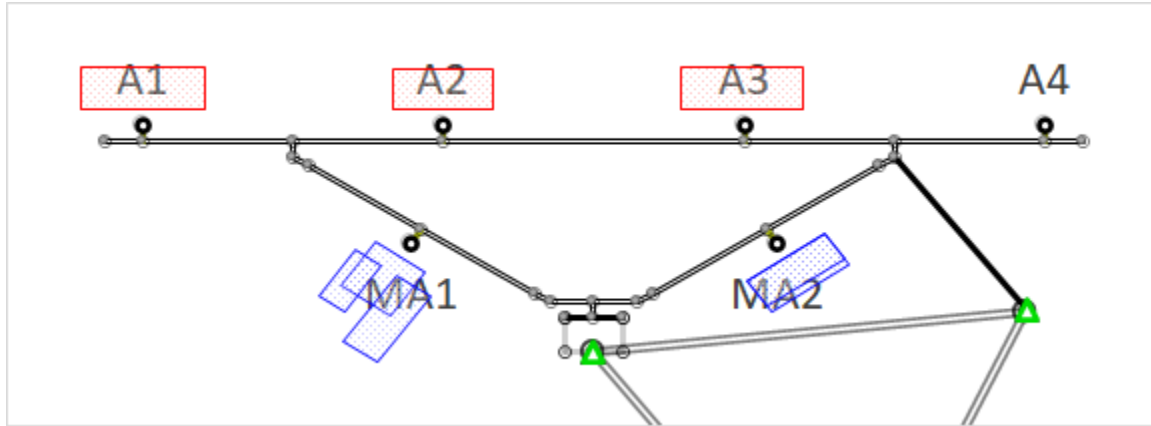
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
162.0	162.0	1	Andrew Microwaves UHX6-105
150.0	151.0	3	Ericsson AIR 6472 B77G B77M (92.6lbs)
		6	Commscope NNH4-65C-R6-V4
		1	Raycap DC6-48-60-18-8F
		1	Raycap DC6-48-60-18-8F ("Squid")
		1	Raycap DC9-48-60-24-8C-EV (Enclosure)
		3	Ericsson Radio 4471 B30
		3	Ericsson Radio 4490HP 44B5 44B12A C (68.3lbs)
		3	Ericsson Radio 4494 44B14 20B29 M01
		3	Ericsson Radio 4890HP 48B2/B25 48B66 M01 (68.3lbs)

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	49%	Pass
Verticals	16%	Pass
Diagonals	14%	Pass
Tie-Backs	3%	Pass
Mount Pipes	43%	Pass
Tower Leg Check	27%	Pass
Clamp Connection Check	19%	Pass

Mount Layout

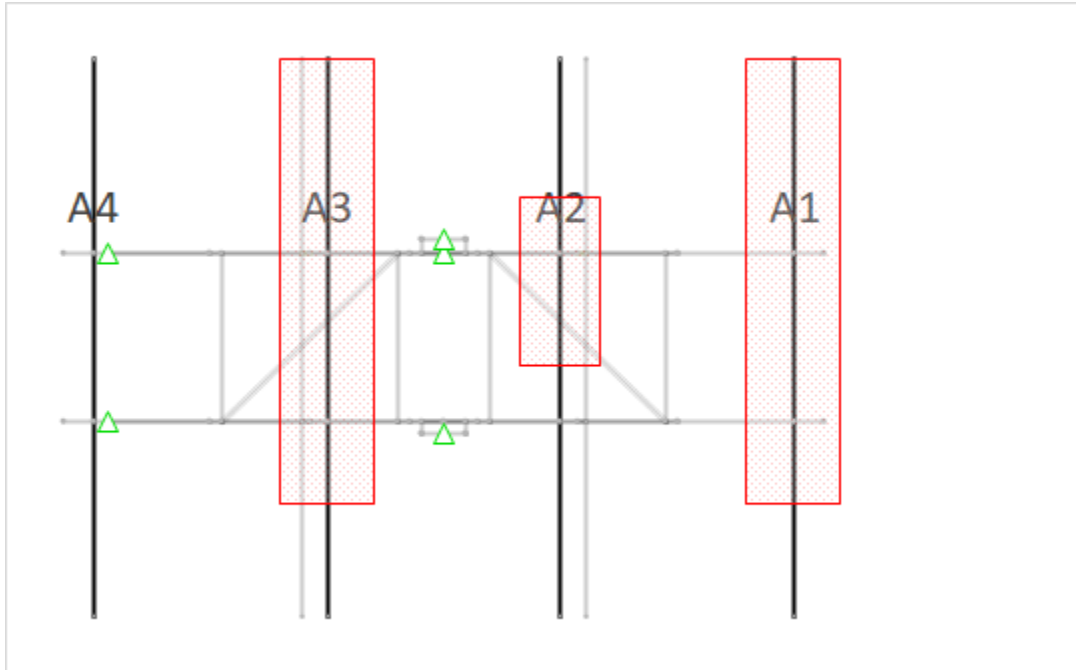


Equipment Position Table

MP	RAD Center (ft)	Qty.	Antenna Model	Max Width (in)	Left (in)	Right (in)
A1	151.0	1	Commscope NNH4-65C-R6-V4	19.6	N/A	30.15
A2	151.0	1	Ericsson AIR 6472 B77G B77M (92.6lbs)	16.1	30.15	30.15
A3	151.0	1	Commscope NNH4-65C-R6-V4	19.6	30.15	N/A
A4	-	-	Empty	-	-	-
MA1	151.0	1	Raycap DC6-48-60-18-8F	-	-	-
	151.0	1	Ericsson Radio 4471 B30			
	151.0	1	Ericsson Radio 4490HP 44B5 44B12A C (68.3lbs)			
MA2	151.0	1	Ericsson Radio 4890HP 48B2/B25 48B66 M01 (68.3lbs)	-	-	-
	151.0	1	Ericsson Radio 4494 44B14 20B29 M01			

Equipment Layout

Front View - Alpha





Standard Conditions

All engineering services performed by ATC Tower Services are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of ATC Tower Services

It is the responsibility of the client to ensure that the information provided to ATC Tower Services and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and ATC Tower Services, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Site Number: 306035
 Project Number: 14861224_C8_01
 Carrier: AT&T Mobility
 Mount Elevation: 150 ft
 Date: 8/16/2024

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.38	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.97	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	109	mph
Velocity Pressure	q_z	38.4	psf
Height Escalation Factor	K_{iz}	1.16	
Thickness of Radial Glaze Ice	T_{iz}	1.75	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.079	
1 Second DSRAP	S_{D1}	0.109	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_s	0.040	
Amplification Factor	A	1.0	
Total Weight	W	1079.7	lbs
Total Shear Force	V_s	42.8	lbs
Horizontal Seismic Load	E_h	42.8	lbs
Vertical Seismic Load	E_v	17.1	lbs

Antenna Calculations (Elevations per Application/RFDS)*								
Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6472 B77G B77M (92.6lbs)	36.4	16.1	7.5	92.6	4.88	1.62	6.51	2.61
Commscope NNH4-65C-R6-V4	96.0	19.6	7.8	93.7	17.07	3.12	20.84	4.68
Raycap DC6-48-60-18-8F	23.5	9.7	9.7	20.0	1.90	1.90	2.97	2.97
Raycap DC6-48-60-18-8F ("Squid")	24.0	11.0	11.0	18.9	N/A	N/A	N/A	N/A
Raycap DC9-48-60-24-8C-EV (Enclosure)	25.9	12.4	9.7	18.5	N/A	N/A	N/A	N/A
Ericsson Radio 4471 B30	14.2	10.3	5.1	28.7	1.22	0.61	2.03	1.28
Ericsson Radio 4490HP 44B5 44B12A C (68.3lbs)	17.5	15.1	6.8	68.3	2.20	0.99	3.25	1.80
Ericsson Radio 4494 44B14 20B29 M01	17.5	15.1	5.6	57.3	2.20	0.84	3.25	1.63
Ericsson Radio 4890HP 48B2/B25 48B66 M01 (68.3lbs)	17.5	15.1	6.9	68.3	2.20	1.01	3.25	1.82

* Equipment with EPA values N/A were not considered in the mount analysis

**Equipment EPA has been adjusted per wind tunnel and CFD testing

Mount-to-Tower Connection Analysis

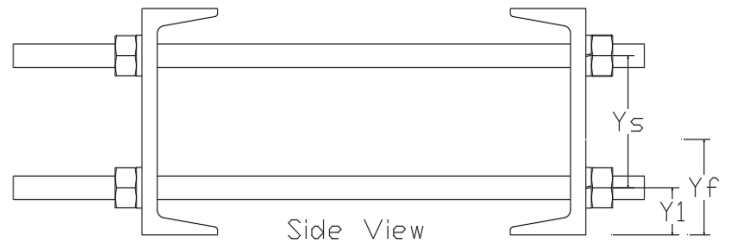
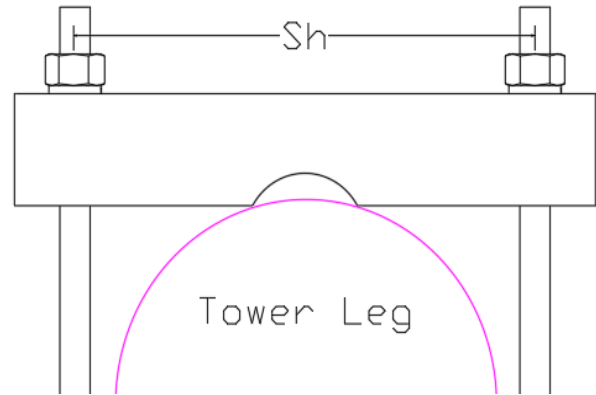
Applied Loads from RISA 3D

Controlling Load Combination		26	
Node Label / Orientation (Degrees)		N050	66
Force in X	F _x	626.0	lbs
Force in Y	F _y	1957.1	lbs
Force in Z	F _z	2429.0	lbs
Moment about X	M _x	-978.5	lb-ft
Moment about Y	M _y	0.0	lb-ft
Moment about Z	M _z	-5.3	lb-ft

Bolt Capacity

Bolt Type		Threaded Rod(s)	
Threaded Rod(s) Quantity	n	4	
Bolt Diameter	D _B	5/8	in
Vertical Bolt Spacing	Y _s	2	in
Lower Bolt Edge Distance	Y ₁	1	in
Horizontal Bolt Spacing	S _h	6.5	in
Clamp Height	H	4	in
Load Eccentricity	Y _f	1.46875	in
Bolt Grade		A307	
Bolt F _y	F _{yB}	50	ksi
Bolt F _u	F _{uB}	60	ksi
Max Applied Tension	T _u	1.97	k
Tensile Strength	φT _n	10.2	k
Connection Capacity	T _u /φT _n	19%	Pass

Top View



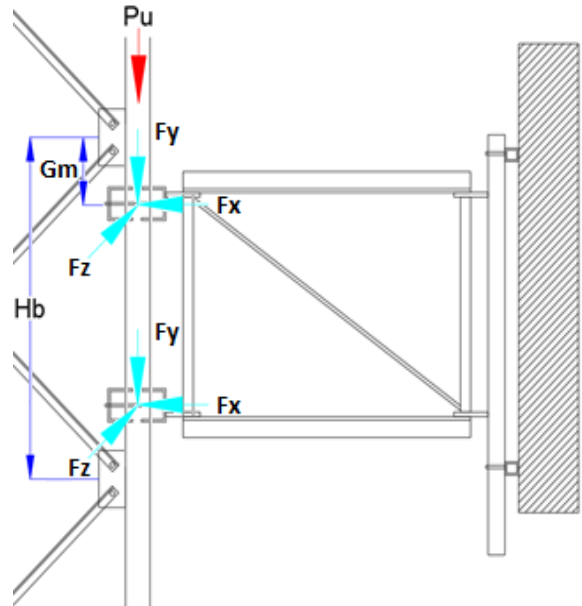
Tower Leg Reaction Analysis

Applied Loads from RISA 3D

Controlling Load Combination/ Leg Orient.	8	330	deg
Leg Node Label(s)	N049		
Force in X, F_x	-356.4		lbs
Force in Y, F_y	1656.0		lbs
Force in Z, F_z	-2769.1		lbs
Moment about X, M_x	-828.0		lb-ft
Moment about Y, M_y	0.0		lb-ft
Moment about Z, M_z	-82.2		lb-ft

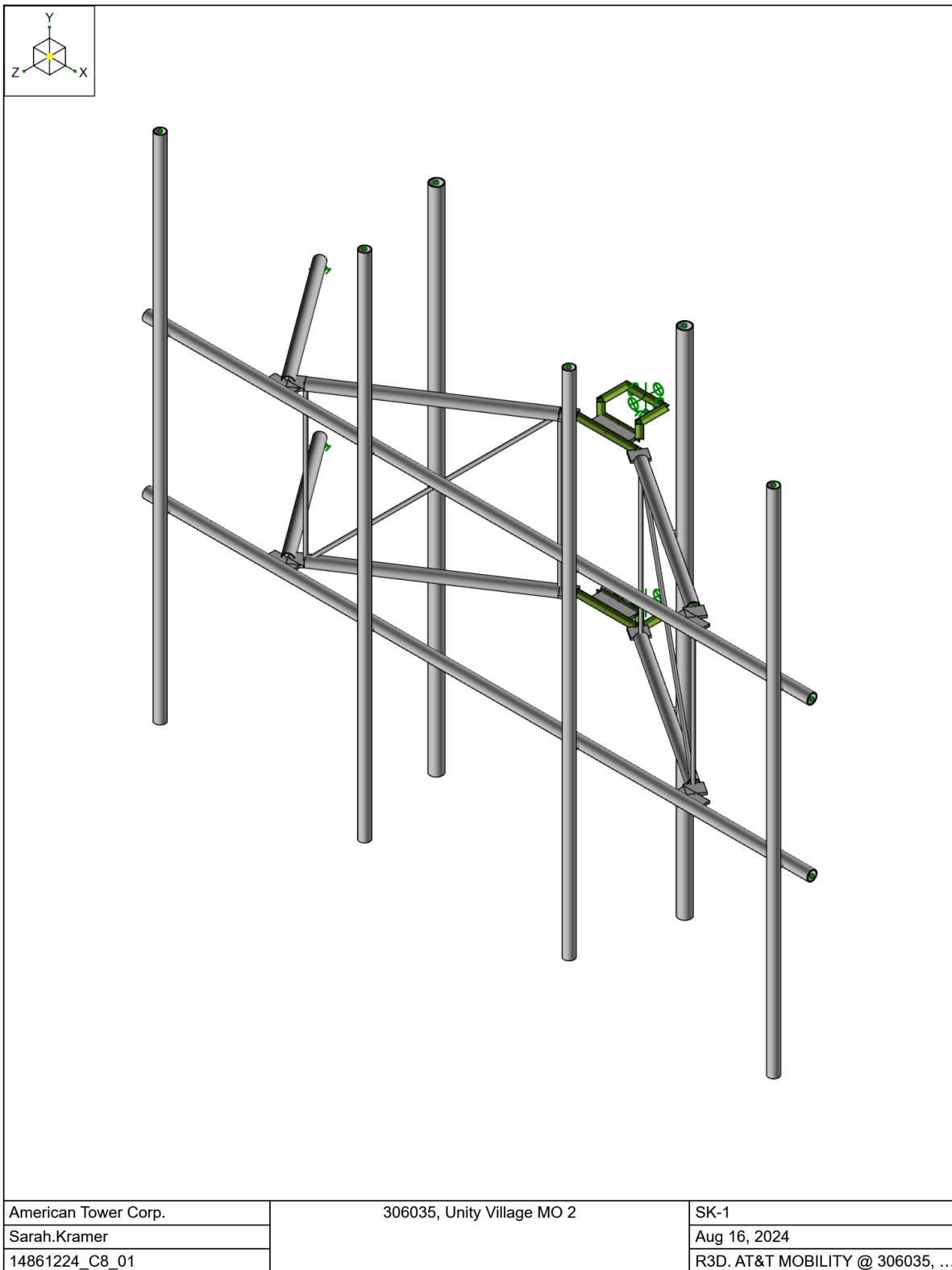
Tower Leg Properties

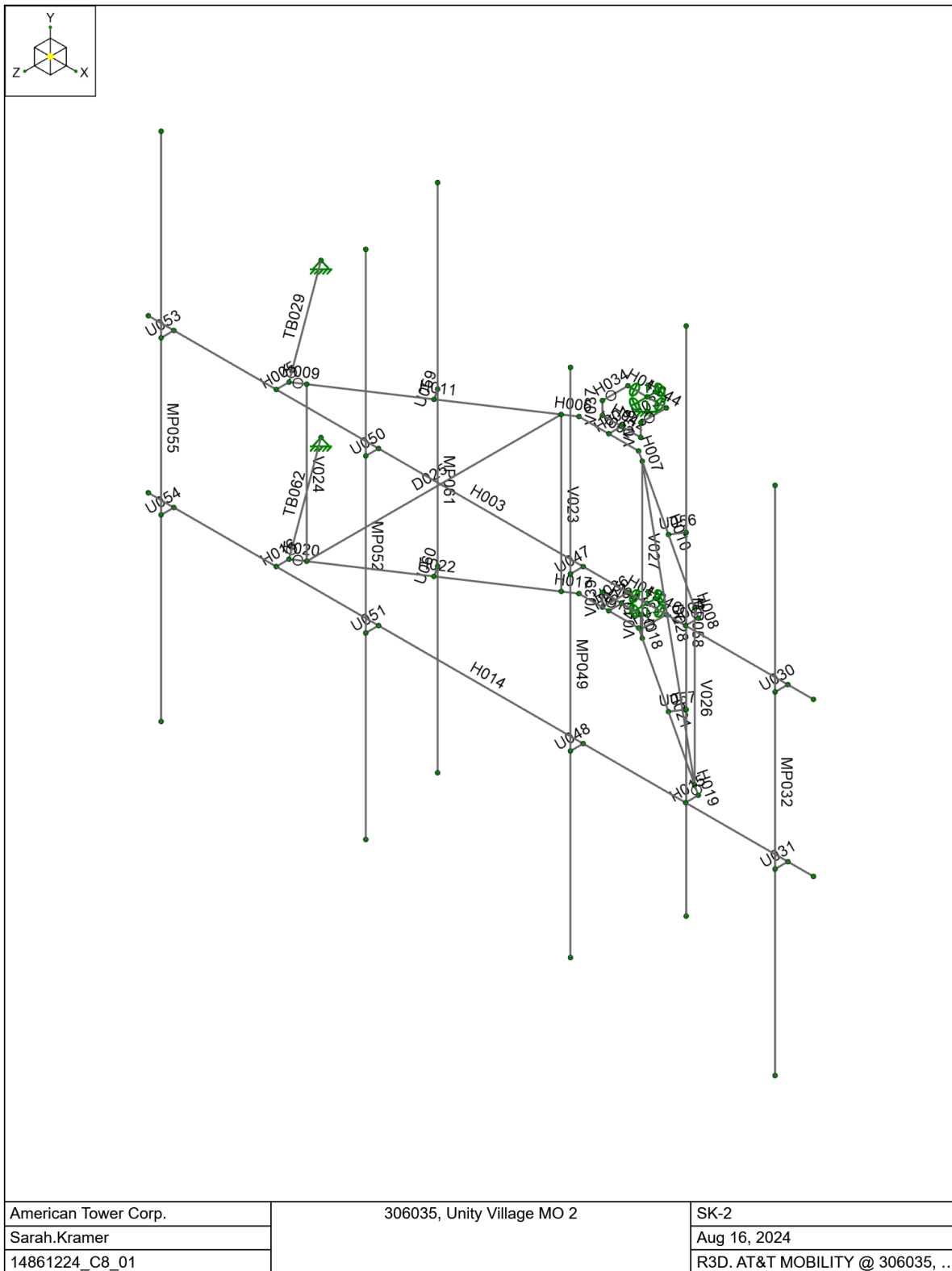
Leg Type		Solid Round	Mods
Leg Member		SR_2.5	N
Leg Bay Height	H_b	4.88	ft
Upper Mount Offset	G_m	22.00	in
Tower Axial Load	P_{U_T}		k
Leg Grade		A572-50	
Leg Yield Strength	F_y	50	ksi
Cross Sectional Area	A_g	4.909	in ²
Radius of Gyration	r	0.625	in
Moment of Inertia	I	1.917	in ⁴
Major Section Modulus	S_{max}	1.534	in ³
Minimum Section Modulus	S_{min}	1.534	in ³
Plastic Modulus	Z_{min}	3.068	in ³
Torsional Constant	J	3.835	in ⁴
Elastic Modulus	E	29,000	ksi
Shear Modulus	G	11,200	ksi
Slenderness Limit	N/A	N/A	-
Member Slenderness	KL/r	93.7	-
Rotation of Leg	Θ	N/A	rads
Leg Torsional Stiffness	k	N/A	k-in/rad

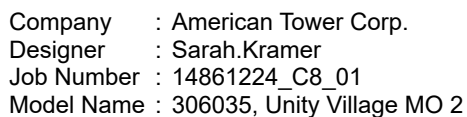


Tower Leg Analysis

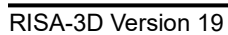
Critical Stress	F_{cr}	26.3	ksi
Axial Stress	σ_a	0.34	ksi
Shear Stress	τ_b	0.68	ksi
Maj. Bending Stress	σ_{bw}	8.94	ksi
Min. Bending Stress	σ_{bz}	16.14	ksi
Torsional Stress	τ_t	0.00	ksi
Normal Stress Limit State	F_{un}	45.0	ksi
Shear Stress Limit State	F_{uv}	27.0	ksi
Maj. Bend. Stress Limit State	F_{cbw}	100.0	ksi
Min. Bend. Stress Limit State	F_{cbz}	100.0	ksi
Buckling Limit State	F_{ca}	23.7	ksi
Torsional/Shear Impact	$\Sigma \tau / F_{uv}$	3%	Pass
Buckling/Axial Impact	$\Sigma \sigma / F_{un}$	27%	Pass

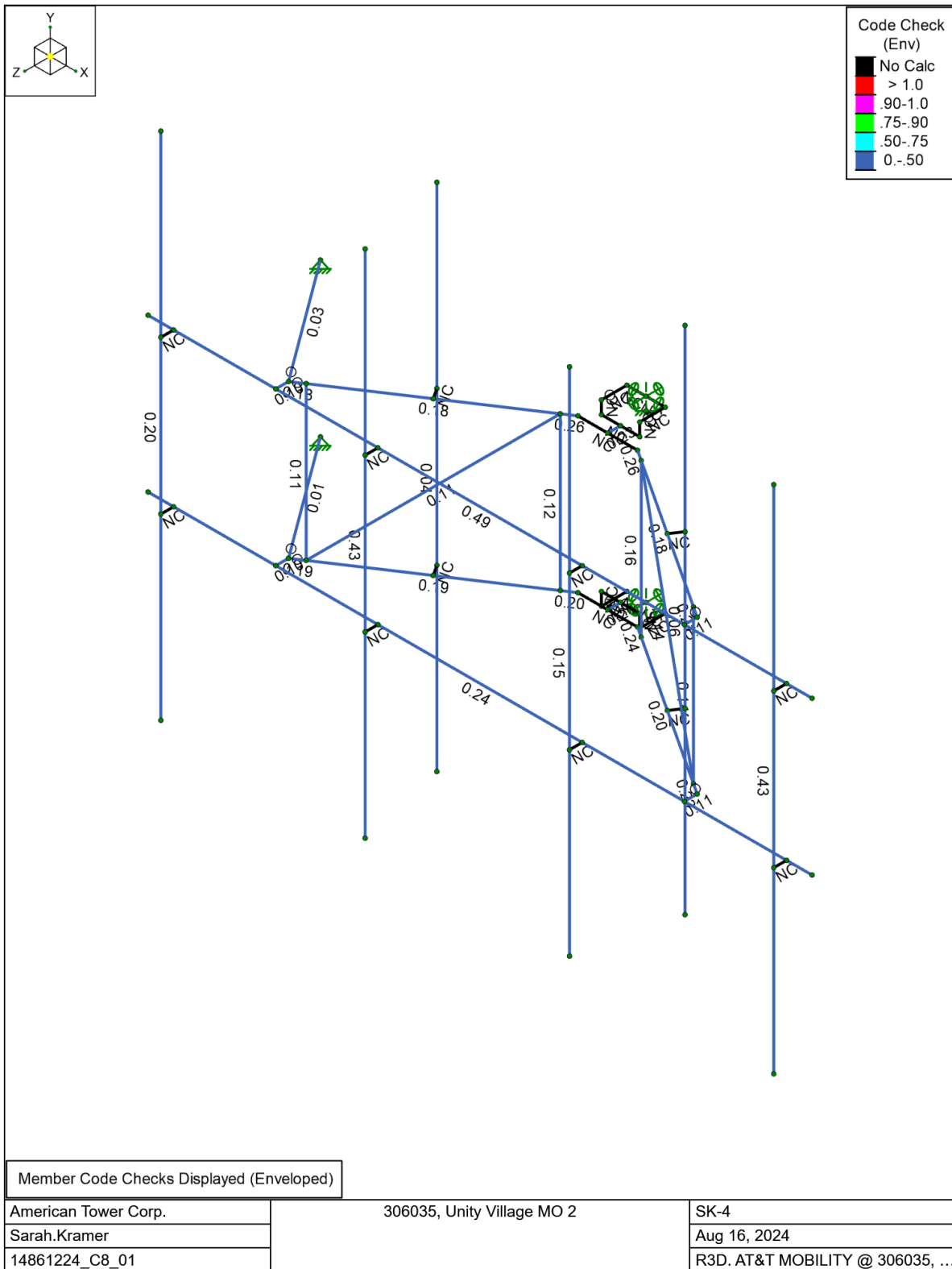


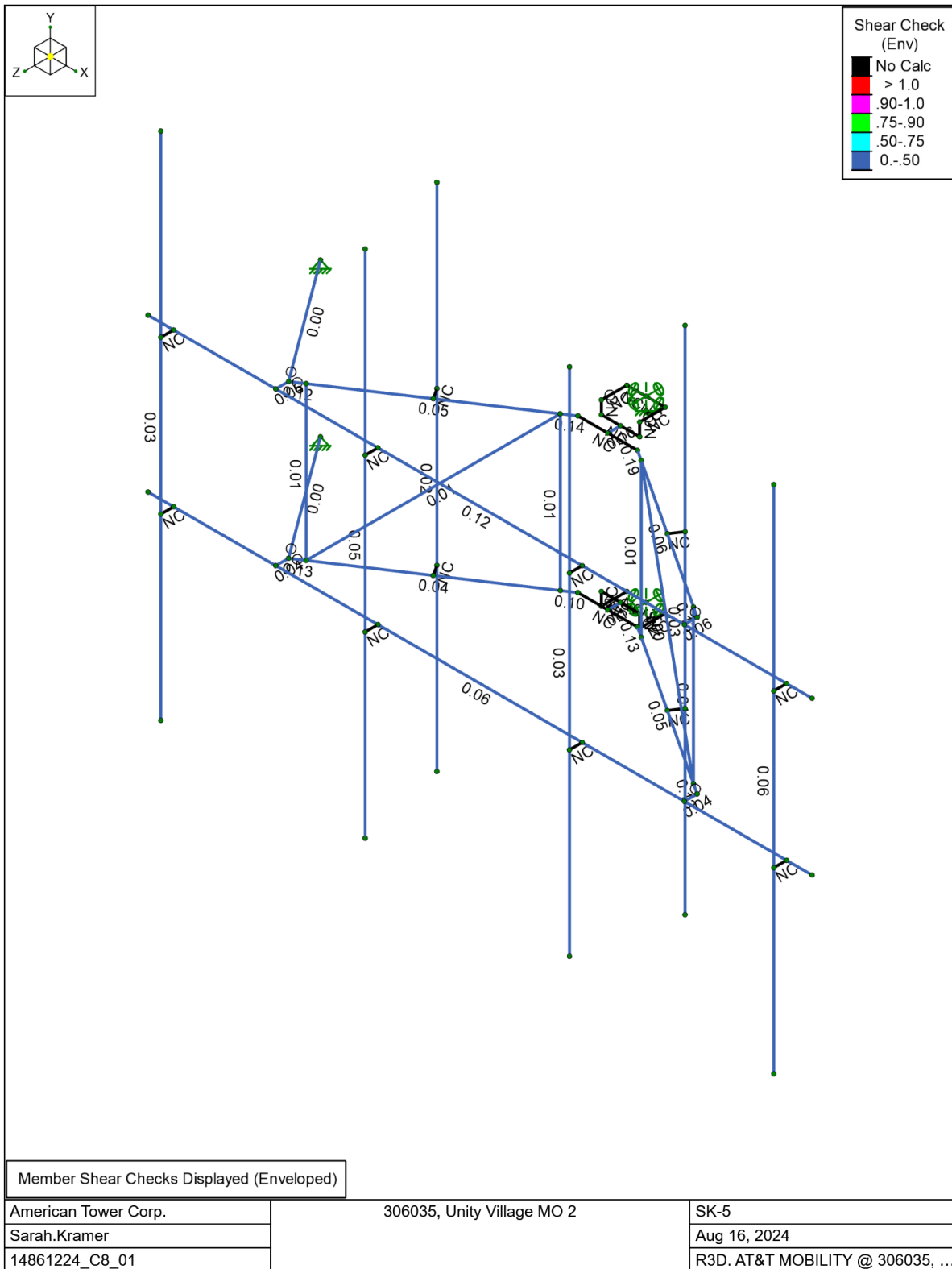




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Company : American Tower Corp.
 Designer : Sarah.Kramer
 Job Number : 14861224_C8_01
 Model Name : 306035, Unity Village MO 2

8/16/2024
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Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	D	DL		-1			11	
2	Di	IL					11	34
3	W 0	WL					11	35
4	W 30	WL					22	69
5	W 60	WL					22	69
6	W 90	WL					11	35
7	W 120	WL					22	69
8	W 150	WL					22	69
9	W 180	WL					11	35
10	W 210	WL					22	69
11	W 240	WL					22	69
12	W 270	WL					11	35
13	W 300	WL					22	69
14	W 330	WL					22	69
15	Wi 0	WL					11	35
16	Wi 30	WL					22	69
17	Wi 60	WL					22	69
18	Wi 90	WL					11	35
19	Wi 120	WL					22	69
20	Wi 150	WL					22	69
21	Wi 180	WL					11	35
22	Wi 210	WL					22	69
23	Wi 240	WL					22	69
24	Wi 270	WL					11	35
25	Wi 300	WL					22	69
26	Wi 330	WL					22	69
27	Ws 0	WL					11	35
28	Ws 30	WL					22	69
29	Ws 60	WL					22	69
30	Ws 90	WL					11	35
31	Ws 120	WL					22	69
32	Ws 150	WL					22	69
33	Ws 180	WL					11	35
34	Ws 210	WL					22	69
35	Ws 240	WL					22	69
36	Ws 270	WL					11	35
37	Ws 300	WL					22	69
38	Ws 330	WL					22	69
39	Ev -Y	ELY		-0.016			11	
40	Eh -Z	ELZ			-0.04		11	
41	Eh -X	ELX	-0.04				11	
42	Lv (1)	LL					1	
43	Lv (2)	LL					1	
44	Lv (3)	LL					1	
45	Lv (4)	LL					1	
46	Lv (5)	LL					1	
47	Lv (6)	LL					1	
48	Lv (7)	LL				1		
49	Lv (8)	LL				1		
50	Lv (9)	LL				1		
51	Lv (10)	LL				1		
52	Lm (1)	LL				1		
53	Lm (2)	LL				1		
54	Lm (3)	LL				1		
55	Lm (4)	LL				1		



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Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
56	Lm (5)	LL				1		
57	Lm (6)	LL				1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001



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Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lv(4)	Yes	Y	DL	1.2	45	1.5				
66	1.2D + 1.5Lv(5)	Yes	Y	DL	1.2	46	1.5				
67	1.2D + 1.5Lv(6)	Yes	Y	DL	1.2	47	1.5				
68	1.2D + 1.5Lv(7)	Yes	Y	DL	1.2	48	1.5				
69	1.2D + 1.5Lv(8)	Yes	Y	DL	1.2	49	1.5				
70	1.2D + 1.5Lv(9)	Yes	Y	DL	1.2	50	1.5				
71	1.2D + 1.5Lv(10)	Yes	Y	DL	1.2	51	1.5				
72	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	52	1.5	27	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	52	1.5	28	1		
74	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	52	1.5	29	1		
75	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	52	1.5	30	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	52	1.5	31	1		
77	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	52	1.5	32	1		
78	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	52	1.5	33	1		
79	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	52	1.5	34	1		
80	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	52	1.5	35	1		
81	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	52	1.5	36	1		
82	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	52	1.5	37	1		
83	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	52	1.5	38	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	53	1.5	27	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	53	1.5	28	1		
86	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	53	1.5	29	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	53	1.5	30	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	53	1.5	31	1		
89	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	53	1.5	32	1		
90	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	53	1.5	33	1		
91	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	53	1.5	34	1		
92	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	53	1.5	35	1		
93	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	53	1.5	36	1		
94	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	53	1.5	37	1		
95	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	53	1.5	38	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	54	1.5	27	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	54	1.5	28	1		
98	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	54	1.5	29	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	54	1.5	30	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	54	1.5	31	1		
101	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	54	1.5	32	1		
102	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	54	1.5	33	1		
103	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	54	1.5	34	1		
104	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	54	1.5	35	1		
105	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	54	1.5	36	1		



Company : American Tower Corp.
 Designer : Sarah.Kramer
 Job Number : 14861224_C8_01
 Model Name : 306035, Unity Village MO 2

8/16/2024
 9:32:25 AM
 Checked By : -

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
106	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	54	1.5	37	1		
107	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	54	1.5	38	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
110	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
113	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
114	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
115	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
116	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
117	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		
118	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
119	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
120	1.2D + 1.5Lm(5) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
121	1.2D + 1.5Lm(5) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
122	1.2D + 1.5Lm(5) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
123	1.2D + 1.5Lm(5) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
124	1.2D + 1.5Lm(5) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
125	1.2D + 1.5Lm(5) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
126	1.2D + 1.5Lm(5) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
127	1.2D + 1.5Lm(5) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
128	1.2D + 1.5Lm(5) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
129	1.2D + 1.5Lm(5) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		
130	1.2D + 1.5Lm(5) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
131	1.2D + 1.5Lm(5) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		
132	1.2D + 1.5Lm(6) + 1.0Wm [0°]	Yes	Y	DL	1.2	57	1.5	27	1		
133	1.2D + 1.5Lm(6) + 1.0Wm [30°]	Yes	Y	DL	1.2	57	1.5	28	1		
134	1.2D + 1.5Lm(6) + 1.0Wm [60°]	Yes	Y	DL	1.2	57	1.5	29	1		
135	1.2D + 1.5Lm(6) + 1.0Wm [90°]	Yes	Y	DL	1.2	57	1.5	30	1		
136	1.2D + 1.5Lm(6) + 1.0Wm [120°]	Yes	Y	DL	1.2	57	1.5	31	1		
137	1.2D + 1.5Lm(6) + 1.0Wm [150°]	Yes	Y	DL	1.2	57	1.5	32	1		
138	1.2D + 1.5Lm(6) + 1.0Wm [180°]	Yes	Y	DL	1.2	57	1.5	33	1		
139	1.2D + 1.5Lm(6) + 1.0Wm [210°]	Yes	Y	DL	1.2	57	1.5	34	1		
140	1.2D + 1.5Lm(6) + 1.0Wm [240°]	Yes	Y	DL	1.2	57	1.5	35	1		
141	1.2D + 1.5Lm(6) + 1.0Wm [270°]	Yes	Y	DL	1.2	57	1.5	36	1		
142	1.2D + 1.5Lm(6) + 1.0Wm [300°]	Yes	Y	DL	1.2	57	1.5	37	1		
143	1.2D + 1.5Lm(6) + 1.0Wm [330°]	Yes	Y	DL	1.2	57	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N035	90	PL8X0.625	Beam	None	A572-50	Typical
2	H002	N003	N004		RIGID	None	None	RIGID	Typical
3	H003	N005	N006		PIPE 2.0X	Beam	None	A53 Gr. B	Typical
4	H004	N007	N009	90	PL6X0.5	Beam	None	A572-50	Typical
5	H005	N008	N010	90	PL6X0.5	Beam	None	A572-50	Typical
6	H006	N004	N011	90	PL3.5X0.5	Beam	None	A572-50	Typical
7	H007	N012	N003	90	PL3.5X0.5	Beam	None	A572-50	Typical
8	H008	N009	N013	90	PL3.5X0.5	Beam	None	A572-50	Typical
9	H009	N010	N014	90	PL3.5X0.5	Beam	None	A572-50	Typical
10	H010	N013	N012		PIPE 2.0X	Beam	None	A53 Gr. B	Typical
11	H011	N014	N011		PIPE 2.0X	Beam	None	A53 Gr. B	Typical
12	H012	N015	N036	90	PL8X0.625	Beam	None	A572-50	Typical
13	H013	N016	N017		RIGID	None	None	RIGID	Typical
14	H014	N018	N019		PIPE 2.0X	Beam	None	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
15	H015	N020	N022	90	PL6X0.5	Beam	None	A572-50	Typical
16	H016	N021	N023	90	PL6X0.5	Beam	None	A572-50	Typical
17	H017	N017	N024	90	PL3.5X0.5	Beam	None	A572-50	Typical
18	H018	N025	N016	90	PL3.5X0.5	Beam	None	A572-50	Typical
19	H019	N022	N026	90	PL3.5X0.5	Beam	None	A572-50	Typical
20	H020	N023	N027	90	PL3.5X0.5	Beam	None	A572-50	Typical
21	H021	N026	N025		PIPE 2.0X	Beam	None	A53 Gr. B	Typical
22	H022	N027	N024		PIPE 2.0X	Beam	None	A53 Gr. B	Typical
23	V023	N011	N024		SR 0.75	Column	None	A572-50	Typical
24	V024	N014	N027		SR 0.75	Column	None	A572-50	Typical
25	D025	N027	N011		SR 0.75	Column	None	A572-50	Typical
26	V026	N013	N026		SR 0.75	Column	None	A572-50	Typical
27	V027	N012	N025		SR 0.75	Column	None	A572-50	Typical
28	D028	N026	N012		SR 0.75	Column	None	A572-50	Typical
29	TB029	N010	N028		PIPE 2.0	Beam	None	A53 Gr. B	Typical
30	U030	N029	N030		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
31	U031	N031	N032		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
32	MP032	N033	N034		PIPE 2.0	Column	None	A53 Gr. B	Typical
33	H033	N037	N041		RIGID	None	None	RIGID	Typical
34	H034	N038	N042		RIGID	None	None	RIGID	Typical
35	H035	N039	N043		RIGID	None	None	RIGID	Typical
36	H036	N040	N044		RIGID	None	None	RIGID	Typical
37	V037	N046	N042		RIGID	None	None	RIGID	Typical
38	V038	N045	N041		RIGID	None	None	RIGID	Typical
39	V039	N044	N048		RIGID	None	None	RIGID	Typical
40	V040	N043	N047		RIGID	None	None	RIGID	Typical
41	H041	N047	N048		RIGID	None	None	RIGID	Typical
42	H042	N045	N046		RIGID	None	None	RIGID	Typical
43	H043	N049	N038		RIGID	None	None	RIGID	Typical
44	H044	N037	N049		RIGID	None	None	RIGID	Typical
45	H045	N050	N040		RIGID	None	None	RIGID	Typical
46	H046	N050	N039		RIGID	None	None	RIGID	Typical
47	U047	N051	N054		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
48	U048	N055	N056		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
49	MP049	N057	N058		PIPE 2.0	Column	None	A53 Gr. B	Typical
50	U050	N052	N059		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
51	U051	N060	N061		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
52	MP052	N062	N063		PIPE 2.0	Column	None	A53 Gr. B	Typical
53	U053	N053	N064		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
54	U054	N065	N066		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
55	MP055	N067	N068		PIPE 2.0	Column	None	A53 Gr. B	Typical
56	U056	N069	N071		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
57	U057	N072	N073		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
58	MP058	N074	N075		PIPE 2.5	Column	None	A53 Gr. B	Typical
59	U059	N070	N076		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
60	U060	N077	N078		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
61	MP061	N079	N080		PIPE 2.5	Column	None	A53 Gr. B	Typical
62	TB062	N023	N081		PIPE 2.0	Beam	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	PL8X0.625	3			Lbyy		1	1	Lateral
2	H003	PIPE 2.0X	156			Lbyy		1	1	Lateral
3	H004	PL6X0.5	3			Lbyy		2.1	2.1	Lateral
4	H005	PL6X0.5	3			Lbyy		2.1	2.1	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
5	H006	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
6	H007	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
7	H008	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
8	H009	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
9	H010	PIPE 2.0X	43.092			Lbyy		0.8	0.8	Lateral
10	H011	PIPE 2.0X	43.092			Lbyy		0.8	0.8	Lateral
11	H012	PL8X0.625	3			Lbyy		1	1	Lateral
12	H014	PIPE 2.0X	156			Lbyy		1	1	Lateral
13	H015	PL6X0.5	3			Lbyy		2.1	2.1	Lateral
14	H016	PL6X0.5	3			Lbyy		2.1	2.1	Lateral
15	H017	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
16	H018	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
17	H019	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
18	H020	PL3.5X0.5	3			Lbyy		2.1	2.1	Lateral
19	H021	PIPE 2.0X	43.092			Lbyy		0.8	0.8	Lateral
20	H022	PIPE 2.0X	43.092			Lbyy		0.8	0.8	Lateral
21	V023	SR 0.75	36			Lbyy		0.65	0.65	Lateral
22	V024	SR 0.75	36			Lbyy		0.65	0.65	Lateral
23	D025	SR 0.75	56.151			Lbyy		0.65	0.65	Lateral
24	V026	SR 0.75	36			Lbyy		0.65	0.65	Lateral
25	V027	SR 0.75	36			Lbyy		0.65	0.65	Lateral
26	D028	SR 0.75	56.151			Lbyy		0.65	0.65	Lateral
27	TB029	PIPE 2.0	35.401			Lbyy		1	1	Lateral
28	U030	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
29	U031	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
30	MP032	PIPE 2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
31	U047	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
32	U048	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
33	MP049	PIPE 2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	U050	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
35	U051	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
36	MP052	PIPE 2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
37	U053	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
38	U054	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
39	MP055	PIPE 2.0	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
40	U056	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
41	U057	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
42	MP058	PIPE 2.5	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
43	U059	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
44	U060	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
45	MP061	PIPE 2.5	120	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
46	TB062	PIPE 2.0	35.401			Lbyy		1	1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N028	Reaction	Reaction	Reaction			
3	N049	Reaction	Reaction	Reaction	Reaction		Reaction
4	N050	Reaction	Reaction	Reaction	Reaction		Reaction
5	N081	Reaction	Reaction	Reaction			



Company : American Tower Corp.
Designer : Sarah.Kramer
Job Number : 14861224_C8_01
Model Name : 306035, Unity Village MO 2

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Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	** NA **		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	H007			Yes	N/A		None
8	H008	BenPIN		Yes	N/A		None
9	H009	BenPIN		Yes	N/A		None
10	H010			Yes	N/A		None
11	H011			Yes	N/A		None
12	H012			Yes	N/A		None
13	H013			Yes	** NA **		None
14	H014			Yes	N/A		None
15	H015			Yes	N/A		None
16	H016			Yes	N/A		None
17	H017			Yes	N/A		None
18	H018			Yes	N/A		None
19	H019	BenPIN		Yes	N/A		None
20	H020	BenPIN		Yes	N/A		None
21	H021			Yes	N/A		None
22	H022			Yes	N/A		None
23	V023			Yes	** NA **		None
24	V024			Yes	** NA **		None
25	D025			Yes	** NA **		None
26	V026			Yes	** NA **		None
27	V027			Yes	** NA **		None
28	D028			Yes	** NA **		None
29	TB029	BenPIN		Yes	N/A		None
30	U030			Yes	N/A	Exclude	None
31	U031			Yes	N/A	Exclude	None
32	MP032			Yes	** NA **		None
33	H033		BenPIN	Yes	** NA **		None
34	H034		BenPIN	Yes	** NA **		None
35	H035		BenPIN	Yes	** NA **		None
36	H036		BenPIN	Yes	** NA **		None
37	V037			Yes	** NA **		None
38	V038			Yes	** NA **		None
39	V039			Yes	** NA **		None
40	V040			Yes	** NA **		None
41	H041			Yes	** NA **		None
42	H042			Yes	** NA **		None
43	H043			Yes	** NA **		None
44	H044			Yes	** NA **		None
45	H045			Yes	** NA **		None
46	H046			Yes	** NA **		None
47	U047			Yes	N/A	Exclude	None
48	U048			Yes	N/A	Exclude	None
49	MP049			Yes	** NA **		None
50	U050			Yes	N/A	Exclude	None
51	U051			Yes	N/A	Exclude	None
52	MP052			Yes	** NA **		None
53	U053			Yes	N/A	Exclude	None
54	U054			Yes	N/A	Exclude	None
55	MP055			Yes	** NA **		None



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Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
56	U056			Yes	N/A	Exclude	None
57	U057			Yes	N/A	Exclude	None
58	MP058			Yes	** NA **		None
59	U059			Yes	N/A	Exclude	None
60	U060			Yes	N/A	Exclude	None
61	MP061			Yes	** NA **		None
62	TB062	BenPIN		Yes	N/A		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e ⁶ F ⁻¹]	Density [lb/ft ³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A572-50	2.9e+07	1.115e+07	0.3	0.65	490	50000	1.1	65000	1.1
2	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
3	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	0	143	0	143	0	143	0	143	0	143	0	143
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N028	max	473.963	18	19.273	36	623.574	18	0	143	0	143	0	143
4		min	-500.869	12	4.258	18	-658.964	12	0	1	0	1	0	1
5	N049	max	1138.765	110	2045.853	31	1462.147	14	275.147	25	0	143	210.37	16
6		min	-1443.099	80	-550.294	25	-2769.063	8	-1022.927	31	0	1	-216.184	10
7	N050	max	1393.461	74	1960.573	37	2440.871	37	283.041	19	0	143	164.605	130
8		min	-1088.252	116	-566.081	19	-334.031	19	-980.287	37	0	1	-170.444	136
9	N081	max	251.921	7	19.087	36	324.812	7	0	143	0	143	0	143
10		min	-224.47	25	4.411	19	-287.51	25	0	1	0	1	0	1
11	Totals:	max	1754.761	4	3586.467	26	2487.292	14						
12		min	-1754.761	22	949.719	20	-2487.292	20						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	PL8X0.625	0.225	3	8	0.156	3	y	82	241168.799	246093.75	3204.346	44860.84	1.154	H1-1b
2	H003	PIPE_2.0X	0.486	102.375	7	0.122	125.125	2	7677.082	44100	2530.5	2530.5	3	H1-1a	
3	H004	PL6X0.5	0.107	0	2	0.058	3	y	8	117445.877	135000	1406.25	16875	1.667	H1-1b
4	H005	PL6X0.5	0.097	0	109	0.058	3	y	7	117445.877	135000	1406.25	16875	1.667	H1-1b
5	H006	PL3.5X0.5	0.259	0	7	0.137	0	y	2	68510.095	78750	820.312	5742.188	1.035	H1-1b
6	H007	PL3.5X0.5	0.264	3	8	0.192	3	y	13	68510.095	78750	820.312	5742.188	1.068	H1-1b
7	H008	PL3.5X0.5	0.207	3	26	0.13	3	y	90	68510.095	78750	820.312	5742.188	1.665	H1-1b
8	H009	PL3.5X0.5	0.179	3	109	0.124	3	y	101	68510.095	78750	820.312	5742.188	1.666	H1-1b
9	H010	PIPE_2.0X	0.178	21.546	120	0.064	43.092	2	39785.011	44100	2530.5	2530.5	1.319	H1-1b	
10	H011	PIPE_2.0X	0.178	21.546	134	0.047	43.092	2	39785.011	44100	2530.5	2530.5	1.319	H1-1b	
11	H012	PL8X0.625	0.202	3	37	0.147	0.156	y	83	241168.799	246093.75	3204.346	44860.84	1.154	H1-1b
12	H014	PIPE_2.0X	0.243	100.75	19	0.062	126.75	113	7677.082	44100	2530.5	2530.5	1.798	H1-1b	
13	H015	PL6X0.5	0.107	0	79	0.043	0.094	y	95	117445.877	135000	1406.25	16875	1.667	H1-1b
14	H016	PL6X0.5	0.099	0	115	0.04	3	y	107	117445.877	135000	1406.25	16875	1.667	H1-1b
15	H017	PL3.5X0.5	0.202	0	26	0.096	0	y	2	68510.095	78750	820.312	5742.188	1.014	H1-1b
16	H018	PL3.5X0.5	0.244	3	26	0.13	3	y	2	68510.095	78750	820.312	5742.188	1.042	H1-1b
17	H019	PL3.5X0.5	0.218	3	33	0.131	3	y	94	68510.095	78750	820.312	5742.188	1.666	H1-1b
18	H020	PL3.5X0.5	0.186	3	115	0.125	0.031	y	99	68510.095	78750	820.312	5742.188	1.666	H1-1b
19	H021	PIPE_2.0X	0.197	21.546	131	0.047	21.546	131	39785.011	44100	2530.5	2530.5	1.317	H1-1b	
20	H022	PIPE_2.0X	0.195	21.546	143	0.039	21.546	132	39785.011	44100	2530.5	2530.5	1.318	H1-1b	
21	V023	SR 0.75	0.118	36	2	0.009	36	82	6408.009	19880.391	248.505	248.505	2.205	H1-1b*	



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Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

Member	Shape	Code	Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
22	V024	SR	0.75	0.108	36	109	0.01	0		80	6408.009	19880.391	248.505	248.505	2.276	H1-1b*
23	D025	SR	0.75	0.109	56.151	113	0.006	0		12	2634.014	19880.391	248.505	248.505	2.301	H1-1b*
24	V026	SR	0.75	0.143	36	27	0.01	0		81	6408.009	19880.391	248.505	248.505	1.644	H1-1b*
25	V027	SR	0.75	0.155	36	37	0.009	0		82	6408.009	19880.391	248.505	248.505	2.221	H1-1b*
26	D028	SR	0.75	0.141	56.151	37	0.004	0		5	2634.014	19880.391	248.505	248.505	1.993	H1-1b*
27	TB029	PIPE	2.0	0.027	35.401	18	0.002	35.401		36	28946.264	32130	1871.625	1871.625	1.136	H1-1b*
28	MP032	PIPE	2.0	0.43	41.25	8	0.063	77.5		8	16811.605	32130	1871.625	1871.625	1.701	H1-1b
29	MP049	PIPE	2.0	0.146	42.5	8	0.033	61.25		8	19963.662	32130	1871.625	1871.625	2.096	H1-1b
30	MP052	PIPE	2.0	0.43	41.25	8	0.049	77.5		8	16811.605	32130	1871.625	1871.625	1.701	H1-1b
31	MP055	PIPE	2.0	0.203	77.5	117	0.034	77.5		119	19963.662	32130	1871.625	1871.625	3	H1-1b
32	MP058	PIPE	2.5	0.062	41.25	2	0.028	42.5		9	32594.036	50715	3596.25	3596.25	2.847	H1-1b
33	MP061	PIPE	2.5	0.035	41.25	10	0.018	77.5		80	32594.036	50715	3596.25	3596.25	2.572	H1-1b
34	TB062	PIPE	2.0	0.015	0	7	0.002	35.401		36	28946.264	32130	1871.625	1871.625	1.136	H1-1b*