Real Estate Assets Department
SDC003

SDG&E

E901PM-017-B00

Document Type

LEGAL DOCUMENTS

Sub - Category

(18)

The City of
SAN DIEGO
Department of Real Estate and Airport Management

August 15, 2022

Ali Atoui
SDG&E
8335 Century Park Ct. Suite 100, CP11D
San Diego, CA 92123

RE: Consent for Temporary Roof Mounted Sled, Tripod and Antennas
Lease Agreement between the City of San Diego ("City") and San Diego Gas and Electric ("SDG&E") effective October 1, 2009 – Telecommunications Facility on Mount Woodson
Lease ID: E901PM-017-B00

Dear Ali:

SDG&E has requested the City's consent to place a non-penetrating sled, a non-penetrating tripod and a 3ft microwave dish roof mounted on the City's shelter located on the Mount Woodson communications site. SDG&E has confirmed the following:

- No additional penetration or holes will be made.
- Should the sled or install result in damage to the shelter, roof, or any equipment, SDG&E shall bear responsibility for repairs or replacement.
- City of San Diego reserves the right to request relocation of the temporary sled and supporting equipment, if necessary.
- The new dish will use the same conduit the current dish uses to get inside the shelter.

Pursuant to Section 9.12 Site Plans/Locations, City provides its consent with the following conditions:

- Modifications are temporary and City reserves the right to request the removal of the equipment based on its operational needs.
- City will evaluate its operational needs every 90 days to determine if modifications can remain on the shelter.
- This consent does not provide SDG&E with the right and/or consent to relocate microwave dish to City's tower at any time.

The City's consent to the modifications is subject to SDG&E obtaining all necessary permits and approvals deemed necessary under applicable laws. The City's IT Department acknowledges that the plans have been reviewed and accepted, as shown in Attachment A: Plans.

The City provides its consent providing that the above conditions are agreed to by SDG&E. Please have an authorized SDG&E representative sign below and return to Cgresham@sandiego.gov. Please contact me at (619) 236-6729 should you have any questions or require additional information. Thank you for your assistance in this matter.

Sincerely,

Carla Gresham
Supervising Property Agent

ACKNOWLEDGEMENT AND CONSENT

CITY OF SAN DIEGO

By: _____
Name: CARLA GRESHAM
Title: SUPERVISING PROPERTY AGENT
Date: 8/29/2022

SAN DIEGO GAS & ELECTRIC COMPANY

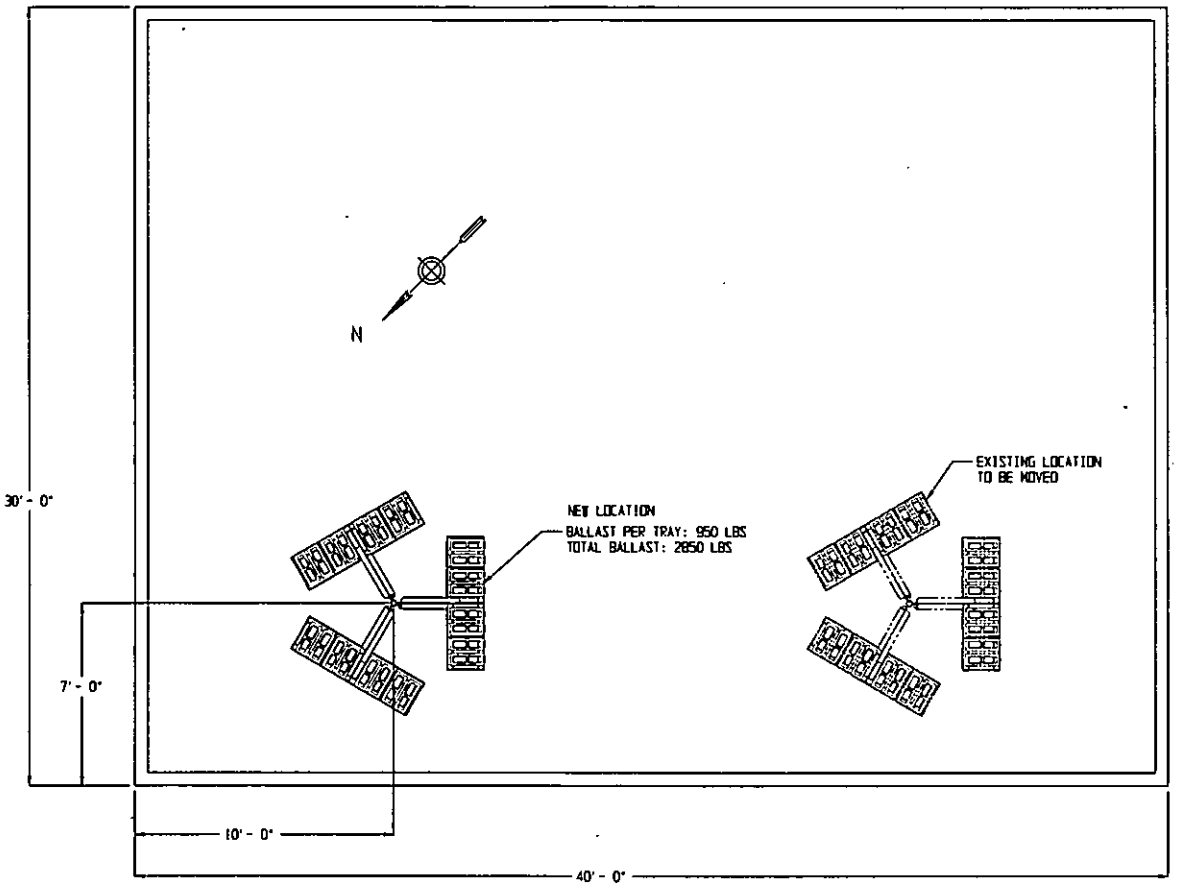
By: _____
Name: Ali Atoui
Title: Prin Domain Engineer
Date: 08/25/2022

Attachment A

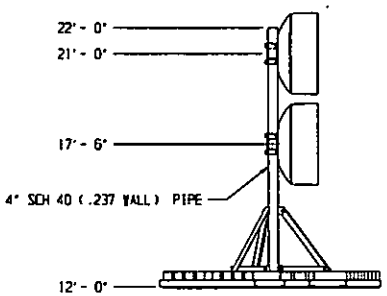
Plans

ANTENNA INFORMATION				
ITEM #	ELEVATION	QUANTITY	ANT. TYPE	PROJ'D AREA
①	21'-0"	1 EA.	COMMSCOPE #SHPX-11W	7.07 SQ FT
②	17'-6"	1 EA.	COMMSCOPE #SHPX-11W	7.07 SQ FT

** PROPOSED ANTENNA



PLAN VIEW



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
KARL KEVIN TASHJIAN
No. C 35542
EXP. 9-30-2023
6/17/2022
CIVIL
STATE OF CALIFORNIA

ENGINEER:
TASHJIAN TOWERS CORP.
KARL K. TASHJIAN
2765 S. TEMPERANCE AVE.
FOWLER, CA. 93625
(559) 834-4300 OFFICE
(559) 834-4377 FAX

CONTRACTOR:
AVIAT NETWORKS
5200 GREAT AMERICA PARKWAY
SANTA CLARA, CA 95054

SITE LOCATION:
MOUNT WOODSON
17130 MT WOODSON RD.
RAMONA, CA 92065
SAN DIEGO COUNTY

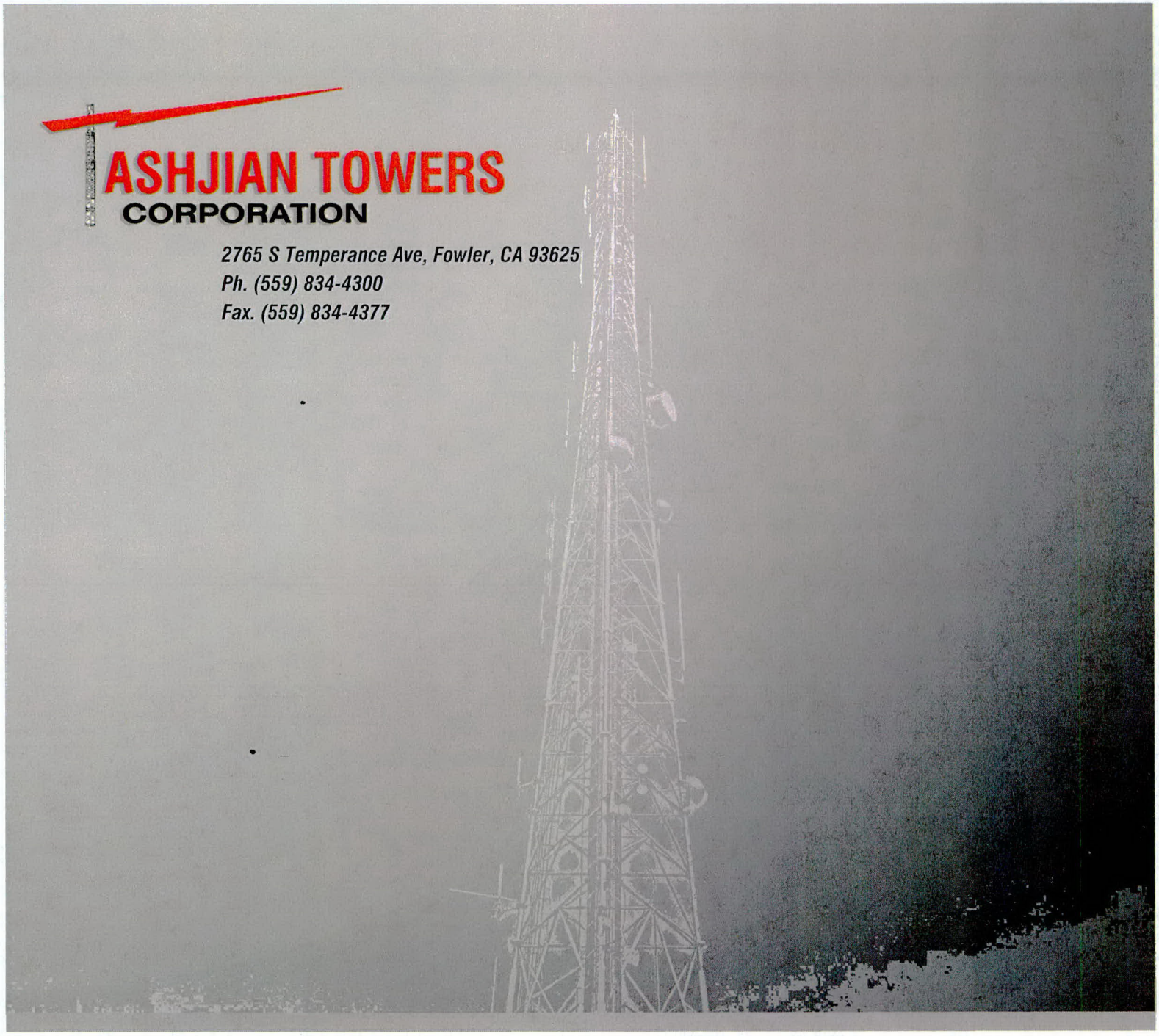
LAT.: 33° 0' 32.4" N
LONG.: 116° 58' 24.1" W

PROJ NO.		
APPROVALS	DATE	
DRAWN	TAK	05/17/22
CHECKED		
ENG. APPD.		
DO NOT SCALE DRAWING		

TASHJIAN TOWER CORPORATION
2765 S. TEMPERANCE AVENUE, FOWLER, CALIF. 93625

TITLE: ROOF MOUNTED TRI-POD
MOUNT WOODSON
AVIAT

SIZE	CAGE CODE	DRAWING NO.	REV.
D		S-1	-
SCALE NONE		SHEET 1 OF	



ASHJIAN TOWERS
CORPORATION

2765 S Temperance Ave, Fowler, CA 93625
Ph. (559) 834-4300
Fax. (559) 834-4377

Structural Analysis Report

Project Name: Mount Woodson – Roof Mounted Tripod

Prepared for: Aviat Networks, Inc.

Date of Report: May 31, 2022

Prepared by: Mauricio Calderon, EIT

Reviewed: Karl Tashjian, PE

Job No.: 10049-22

REGISTERED PROFESSIONAL ENGINEER
KARL KEVIN TASHJIAN
No. C 35542
EXP. 9-30-2023
5/31/2022
CIVIL
STATE OF CALIFORNIA

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TASHJIAN TOWERS CORPORATION
2765 S. TEMPERANCE AVE.
FOWLER, CA 93625
Telephone: (559) 834-4300

AUTHORIZATION/PURPOSE

As authorized by Aviat Networks, Inc., a structural analysis was performed to a Commscope Non-Penetrating Roof MT-416 Tripod that is mounted on at the rooftop of a masonry shelter. This shelter/building is located at the Mount Woodson site in San Diego County, CA. The purpose of this analysis was to determine if the tripod and the roof are structurally sound to support the minimum design loads specified in the ASCE 7-16 and ANSI/TIA-222-H Standards.

BUILDING DESCRIPTION

The masonry shelter is 40-ft by 30-ft and is approximately 13-ft tall. Figures 1 through 8 are photos of the building and tripod that were taken on May 24, 2022.

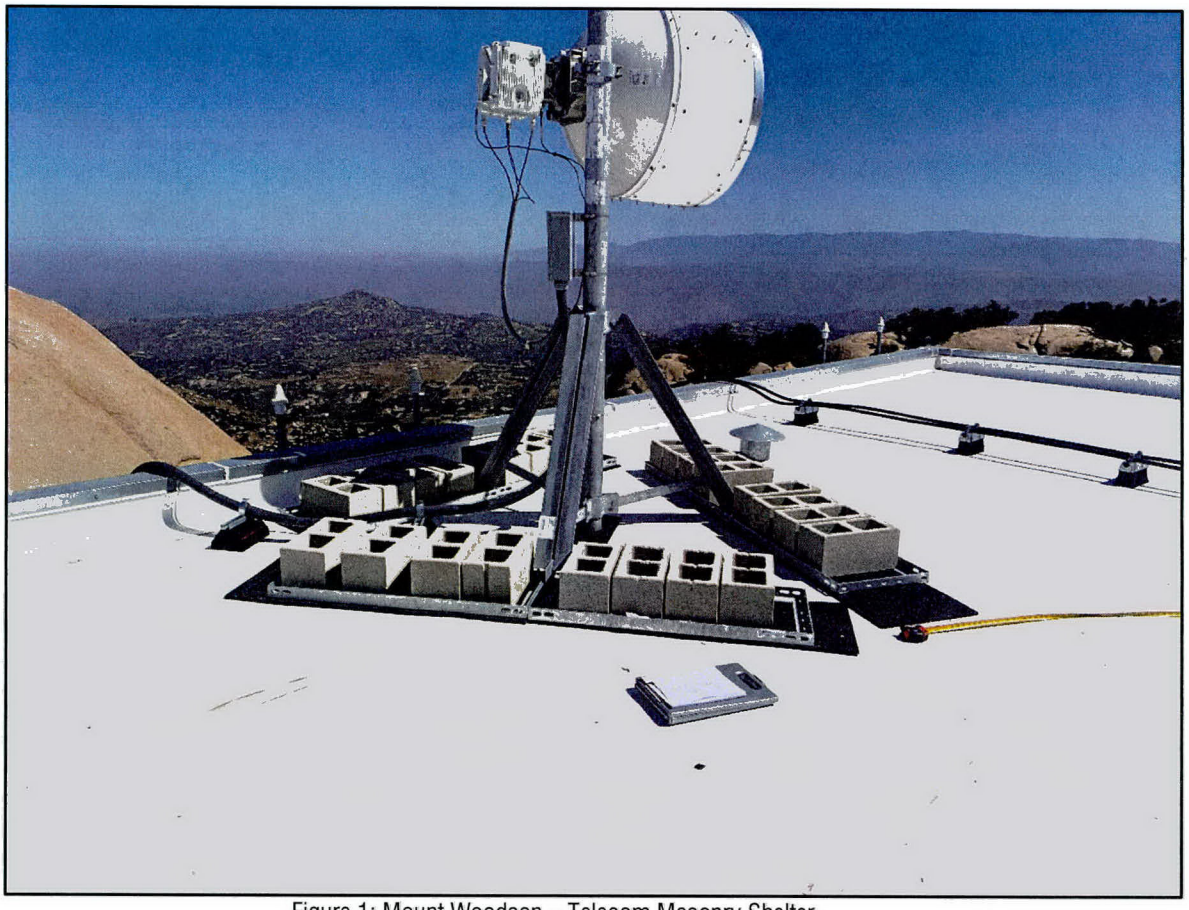


Figure 1: Mount Woodson – Telecom Masonry Shelter



Figure 2: Mount Woodson – Telecom Masonry Shelter

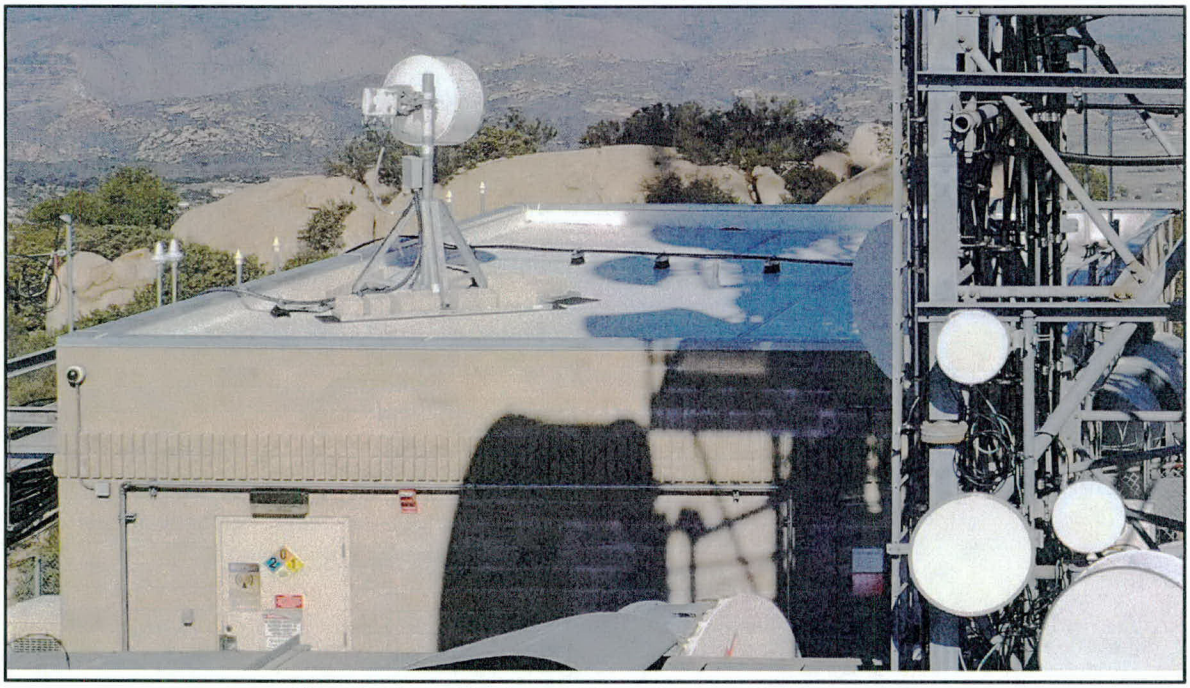


Figure 3: Mount Woodson – Telecom Masonry Shelter



Figure 4: Mount Woodson – Telecom Masonry Shelter

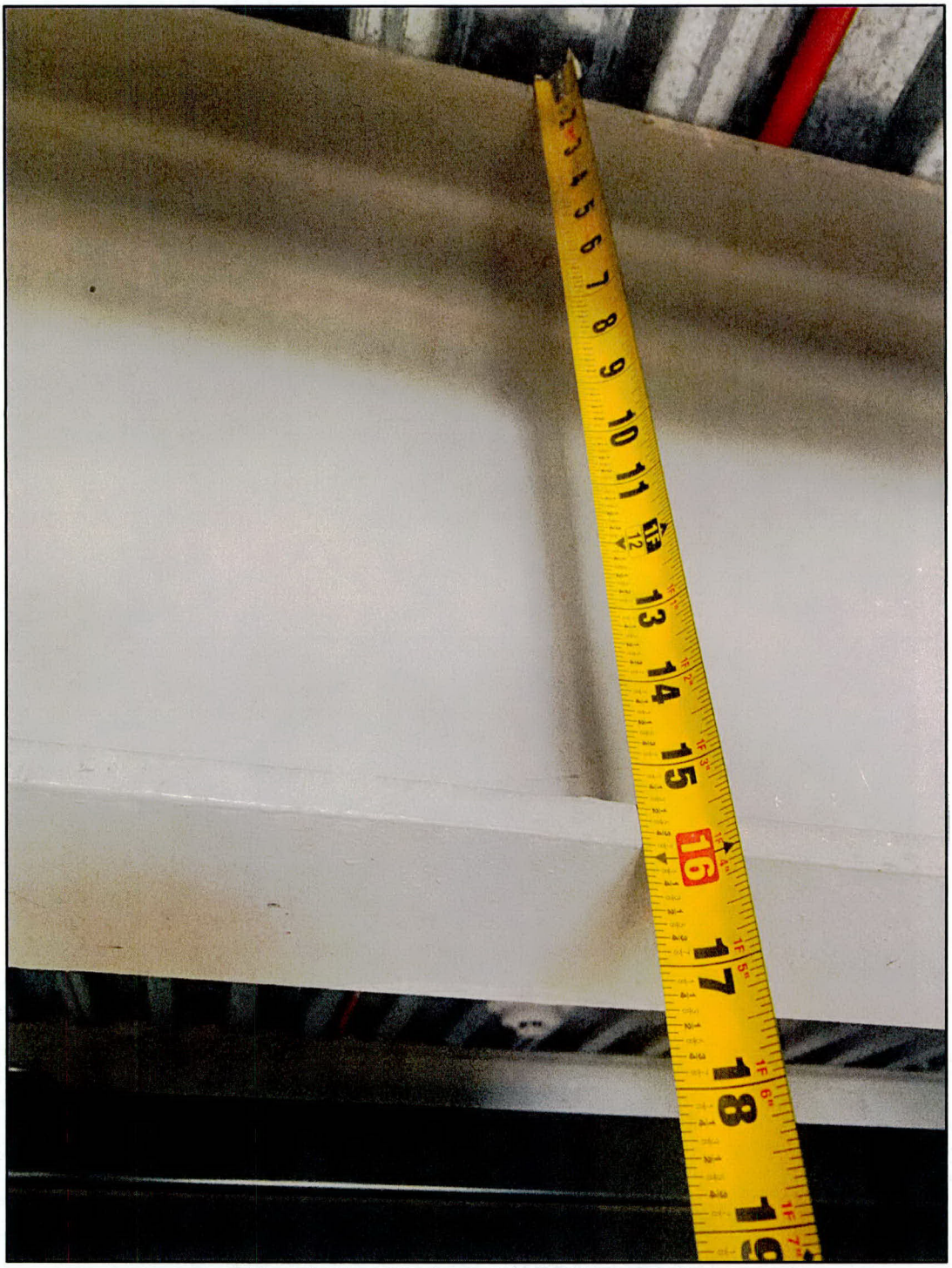


Figure 5: Mount Woodson – Telecom Masonry Shelter

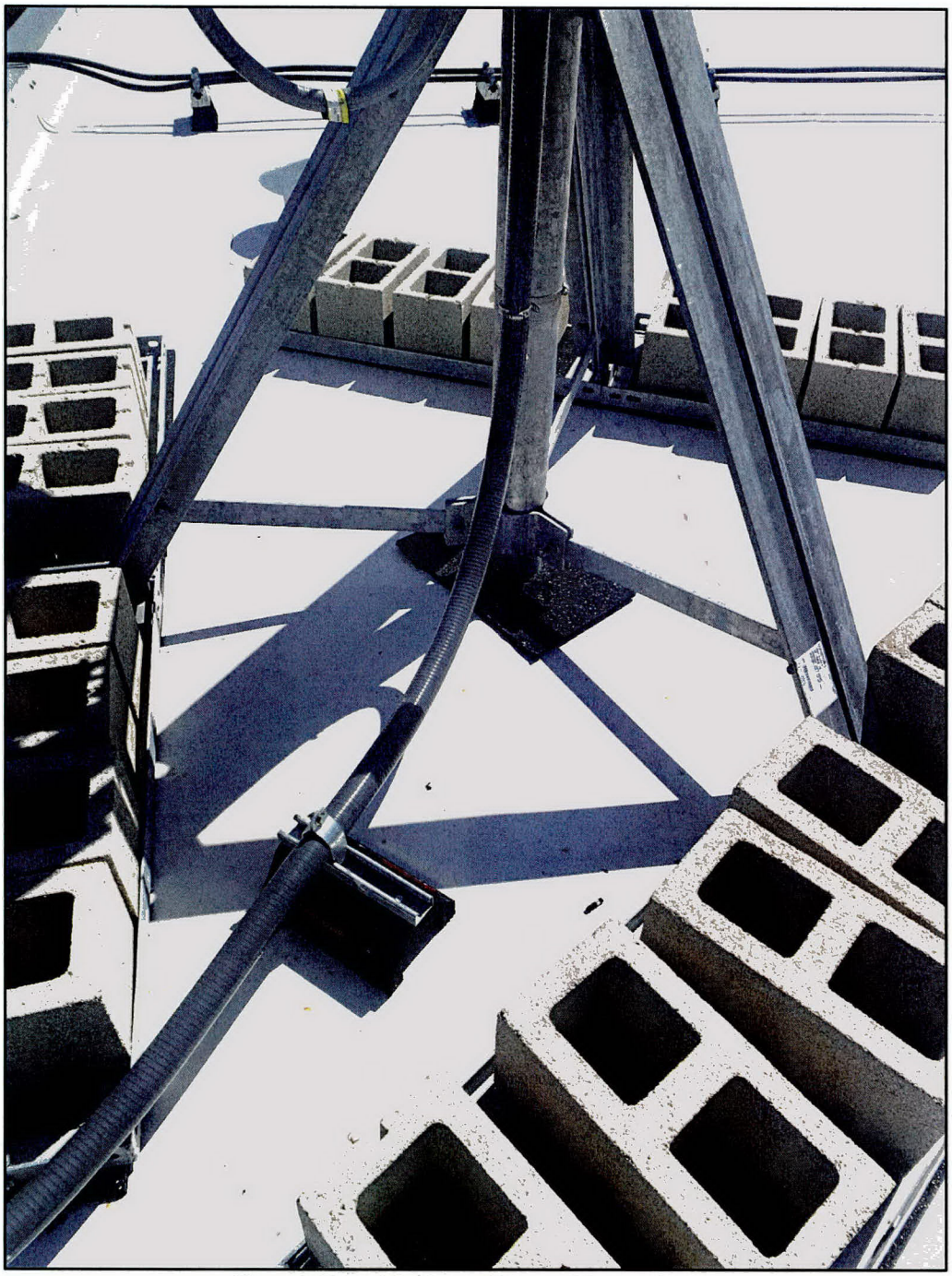


Figure 6: Mount Woodson – Telecom Masonry Shelter



Figure 7: Mount Woodson – Telecom Masonry Shelter



Figure 8: Mount Woodson – Telecom Masonry Shelter

EXISTING AND PROPOSED APPURTENANCES

The analysis was performed to determine the feasibility of the tripod and rooftop to support the following appurtenance loading:

Table 1: Existing and proposed appurtenances loading

DESCRIPTION	CLASSIFICATION CATEGORY	QTY	EPA (ft^2)	APERTURE AREA (ft^2)
SHPX3-11W	EXISTING	1	-	7.07
SHPX3-11W	PROPOSED	1	-	7.07

ANALYSIS CRITERIA

The structural analysis was conducted in accordance with the ANSI/TIA-222-H Standard (*Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures)* and ASCE 7-16. This analysis was performed using the following parameters:

Table 2: Wind analysis data

		Reference
Basic Wind Speed	103-mph	TIA-222-H, ANNEX B & ASCE 7-16 HAZARD TOOL
Exposure Category	C	TIA-222-H, SEC. 2.6.5.1.2
Topographic Category	3	TIA-222-H, SEC. 2.6.6
Crest height	1100-ft	
Topographic Feature	Hill	
Slope Distance	N/A	
Distance from Crest	N/A	
Risk Category	III	TIA-222-H, Table 2-1

Table 3: Seismic analysis data

		Reference
Site Class	D	ASCE 7-16, SEC. 11.4.3
Importance Factor, I_e	1.25	TIA-222-H, Table 2-3
S_S	0.839g	ASCE 7-16 HAZARD TOOL
S_1	0.306g	
S_{D1}	0.408g	
S_{DS}	0.671g	
Response Modification Coefficient, R	3	TIA-222-H, SEC. 2.7.7.1.1
Risk Category	III	TIA-222-H, Table 2-1
Analysis Procedure	ELF	TIA-222-H, SEC. 2.7.7.2 & ASCE 7-16, CH. 12

ANALYSIS PROCEDURE

A Tashjian Towers site visit provided the geometry and member sizes information of the rooftop and tripod. It is assumed that there are no damaged members and/or connections. In addition, the structural connections are assumed to have enough capacity to develop at least the member's structural capacity in tension and compression unless determined otherwise and stated in this report. Based on this information and assumptions, the structure was modeled and analyzed using 3-dimensional analysis software: tnxTower and Risa 3D, Versions 8.1.1.0 and 20.0.1, respectively. This software is created specifically to analyze communication towers and is the latest program commercially available. **The rooftop and tripod were analyzed supporting the equipment listed in Table 1.**

ANALYSIS RESULTS

Based on the analysis results, it has been determined that the rooftop I-beams and tripod **are structurally adequate** to support the existing and proposed equipment; however, the required ballast shall be as specified in Table 4.

Table 4: Ballast Requirements

BALLAST PER TRAY	TOTAL BALLAST
950-lbs	2850-lbs

CONCLUSION AND RECOMMENDATIONS

It was concluded that the rooftop is structurally adequate to support the Commscope Non-Penetrating Roof MT-416 Tripod with (2) 3-ft microwave dish antennas; however, the tripod shall meet the ballast requirement specified above. This analysis was performed in accordance with TIA-222-H and ASCE 7-16.

PROVISIONS OF ANALYSIS

The analysis performed, and the conclusions contained herein are based on the assumption that the structure has been properly built and maintained.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae, and the engineer assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will the engineer have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of engineer if any, pursuant to this Report shall be limited to the total funds actually received by the engineer for preparation of this Report.

Customer has requested the engineer to prepare and submit to Customer an engineering analysis with respect to the subject structure and has further requested the engineer to make appropriate recommendations regarding suggested structural modifications and changes to the subject structure. In making such request of the engineer, Customer has informed the engineer that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by the engineer and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that the engineer shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than the engineer in connection with the implementation of any structural changes or modifications recommended by the engineer including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that the engineer shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor and that Customer and rigger, erector, or subcontractor will provide the engineer with a Certificate of Insurance naming the engineer additionally insured.

REFERENCES

"ASCE 7 Hazard Tool." ASCE 7 Hazard Tool. Accessed Mar 02, 2022. https://asce7hazardtool.online/.

Structural standard for antenna supporting structures and antennas and small wind turbine support structures. Arlington, VA: Telecommunications Industry Association, 2017.

APPENDIX A: ANALYSIS

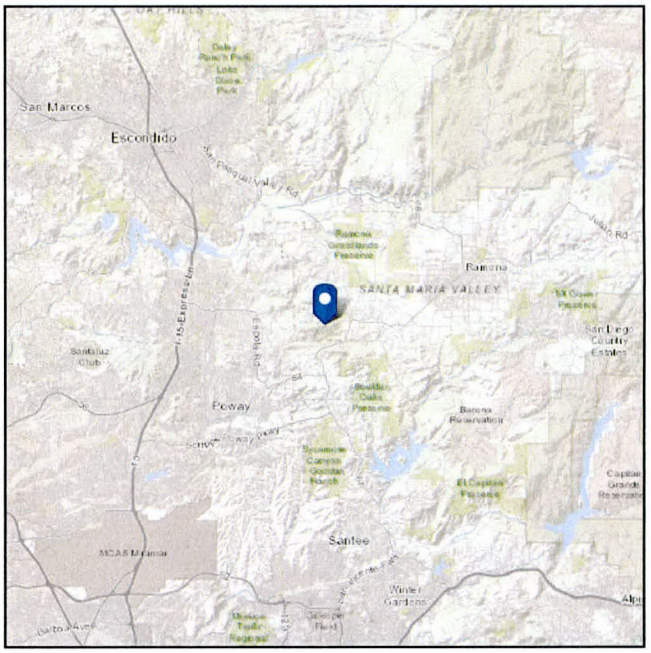
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: D - Default (see Section 11.4.3)

Elevation: 2788.53 ft (NAVD 88)
Latitude: 33.009042
Longitude: -116.973569





Wind

Results:

Wind Speed	103 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Mar 02 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	0.839	S_{D1} :	N/A
S_1 :	0.306	T_L :	8
F_a :	1.2	PGA :	0.36
F_v :	N/A	PGA_M :	0.447
S_{MS} :	1.007	F_{PGA} :	1.24
S_{M1} :	N/A	I_e :	1.25
S_{DS} :	0.671	C_v :	1.219

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Mar 02 2022

Date Source: USGS Seismic Design Maps

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

ASHJIAN TOWERS CORPORATION
2765 S. TEMPERANCE AVE.
FOWLER, CA. 93625
Phone: (559) 834-4300
FAX: (559) 834-4377

Job	Page
10049-22_MOUNT WOODSON	1 of 3
Project	**Date**
ROOF MOUNTED TRIPOD	13:35:11 05/31/22
Client	**Designed by**
AVIAT NETWORKS, INC.	M.C.

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 2800.00 ft.
Basic wind speed of 103 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 3.
Crest Height: 1100.00 ft.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Pole Size*	*Pole Grade*	*Socket Length* ft
L1	22.00-12.00	10.00	HSS4.5x.237	A500-42 (42 ksi)	

Dishes

Description	*Face or Leg*	*Dish Type*	*Offset Type*	*Offsets: Horz Lateral Vert* ft	*Azimuth Adjustment* °	*3 dB Beam Width* °	*Elevation* ft	*Outside Diameter* ft		*Aperture Area* ft²	*Weight* K
SHPX3-11W	D	Paraboloid w/Shroud (HP)	From Face	0.50 0.00 0.00	0.0000		21.00	3.00	No Ice	7.07	0.06
SHPX3-11W	D	Paraboloid w/Shroud (HP)	From Face	0.50 0.00 0.00	0.0000		17.50	3.00	No Ice	7.07	0.06

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Job	Page
10049-22_MOUNT WOODSON	2 of 3
Project	**Date**
ROOF MOUNTED TRIPOD	13:35:11 05/31/22
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AVIAT NETWORKS, INC.	M.C.

222-H Verification Constants

Constant	Value
K_d	0.95
Ice Thickness Importance Factor	1.15
Z_g	900
a	9.5
K_{zmin}	0.85
K_c	1
K_t	0.53
f	2
K_e	0.904

222-H Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
L1 22.00-12.00	17.00		0.872	1.031	2.292		47		1	3.750

Tower Pressures - No Ice

$G_H = 1.000$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 22.00-12.00	17.00	0.872	47	3.750	A	0.000	3.750	3.750	100.00	0.000	0.000
					B	0.000	3.750		100.00	0.000	0.000
					C	0.000	3.750		100.00	0.000	0.000
					D	0.000	3.750		100.00	0.000	0.000

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Job	Page
10049-22_MOUNT WOODSON	3 of 3
Project	**Date**
ROOF MOUNTED TRIPOD	13:35:11 05/31/22
Client	**Designed by**
AVIAT NETWORKS, INC.	M.C.

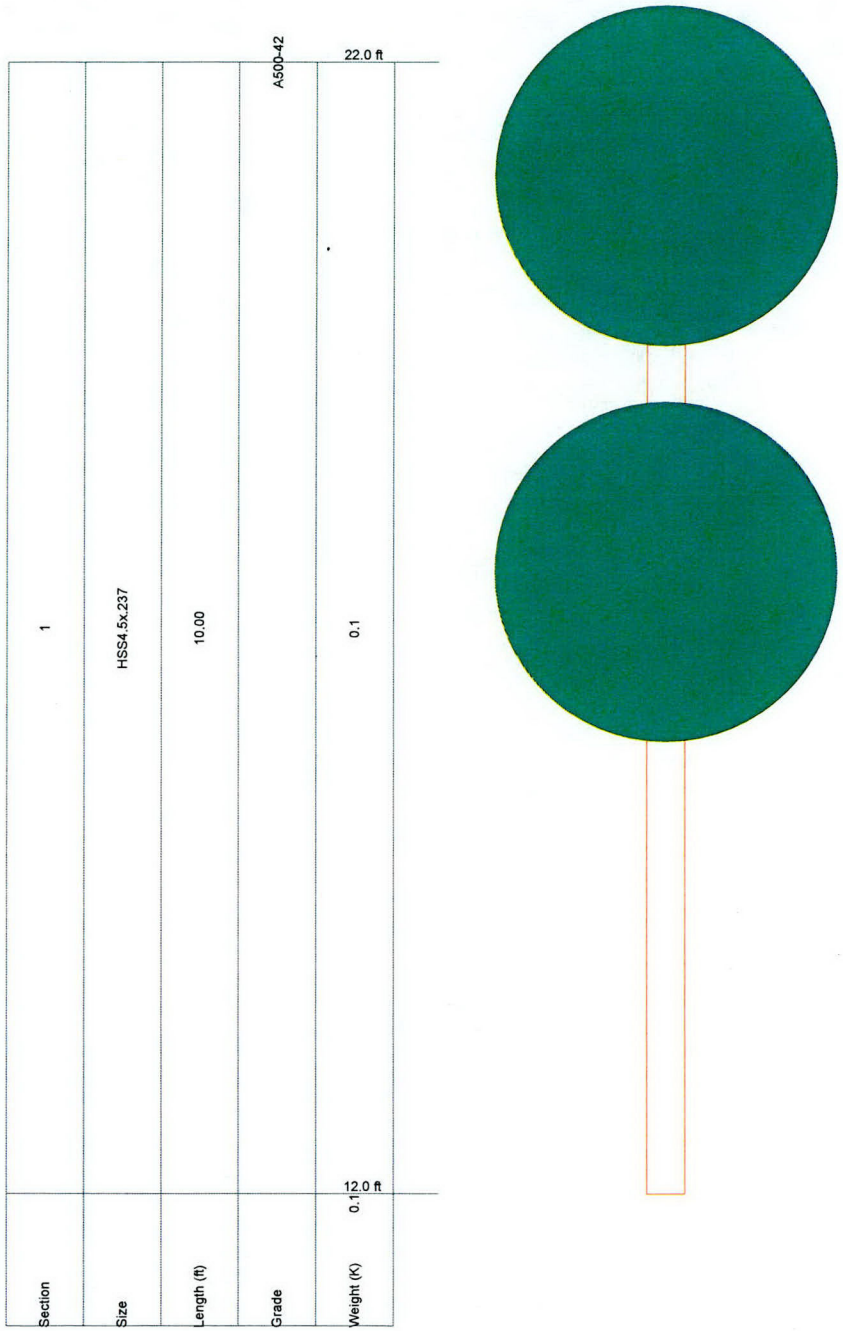
Dish Vectors - No Ice

SHPX3-11W - Elevation 21 - From Face D

Wind Azimuth °	C_A	C_S	C_M	F_A K	F_S K	F_M kip-ft	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.003230	0.000000	0.000000	0.43	0.00	0.00	0.00	-0.43	-3.85	0.00	0.00
45	0.002870	0.000750	-0.000104	0.38	0.10	-0.04	0.10	-0.38	-3.42	-0.90	0.03
90	-0.000280	0.001600	0.000251	-0.04	0.21	0.10	0.21	0.04	0.38	-1.93	0.25
135	-0.002295	0.000695	0.000218	-0.31	0.09	0.09	0.09	0.31	2.81	-0.84	0.15
180	-0.002600	0.000000	0.000000	-0.35	0.00	0.00	0.00	0.35	3.17	0.00	0.00
225	-0.002295	-0.000695	-0.000218	-0.31	-0.09	-0.09	-0.09	0.31	2.81	0.84	-0.15
270	-0.000280	-0.001600	-0.000251	-0.04	-0.21	-0.10	-0.21	0.04	0.38	1.93	-0.25
315	0.002870	-0.000750	0.000104	0.38	-0.10	0.04	-0.10	-0.38	-3.42	0.90	-0.03

SHPX3-11W - Elevation 17.5 - From Face D

Wind Azimuth °	C_A	C_S	C_M	F_A K	F_S K	F_M kip-ft	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.003230	0.000000	0.000000	0.42	0.00	0.00	0.00	-0.42	-2.26	0.00	0.00
45	0.002870	0.000750	-0.000104	0.37	0.10	-0.04	0.10	-0.37	-2.00	-0.53	0.03
90	-0.000280	0.001600	0.000251	-0.04	0.21	0.10	0.21	0.04	0.24	-1.14	0.24
135	-0.002295	0.000695	0.000218	-0.30	0.09	0.08	0.09	0.30	1.67	-0.49	0.15
180	-0.002600	0.000000	0.000000	-0.34	0.00	0.00	0.00	0.34	1.89	0.00	0.00
225	-0.002295	-0.000695	-0.000218	-0.30	-0.09	-0.08	-0.09	0.30	1.67	0.49	-0.15
270	-0.000280	-0.001600	-0.000251	-0.04	-0.21	-0.10	-0.21	0.04	0.24	1.14	-0.24
315	0.002870	-0.000750	0.000104	0.37	-0.10	0.04	-0.10	-0.37	-2.00	0.53	-0.03



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
SHPX3-11W	21	SHPX3-11W	17.5

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-42	42 ksi	58 ksi			

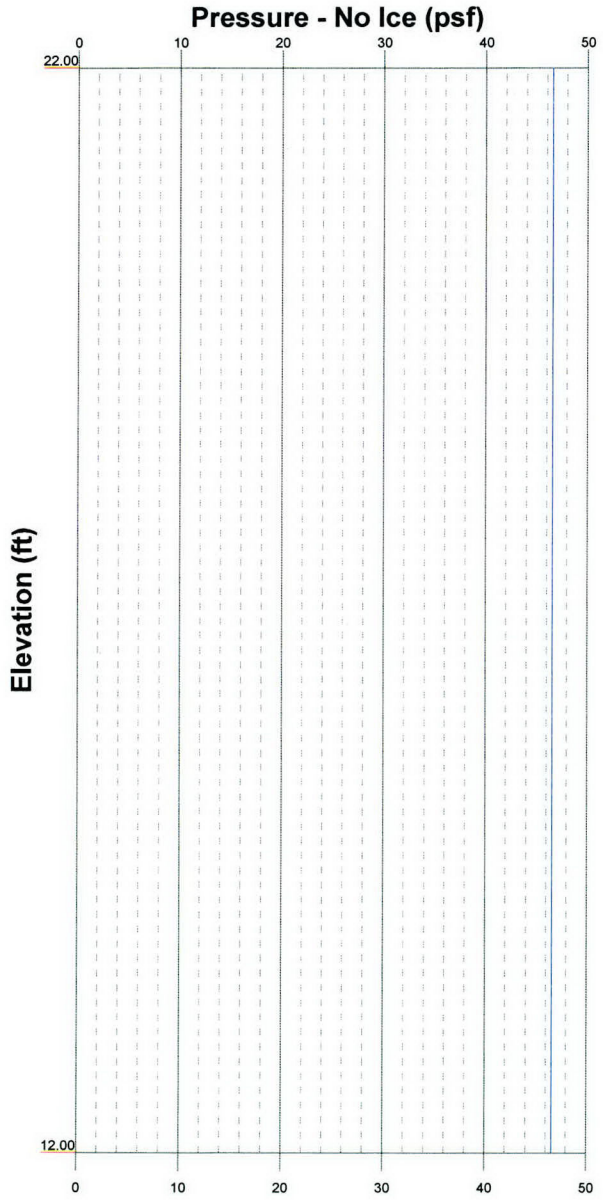
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 103 mph basic wind in accordance with the TIA-222-H Standard.
3. Deflections are based upon a 60 mph wind.
4. Tower Risk Category III.
5. Topographic Category 3 with Crest Height of 1100.00 ft

TASHJIAN TOWERS CORP.
2765 S. TEMPERANCE AVE.
FOWLER, CA. 93625
Phone: (559) 834-4300
FAX: (559) 834-4377

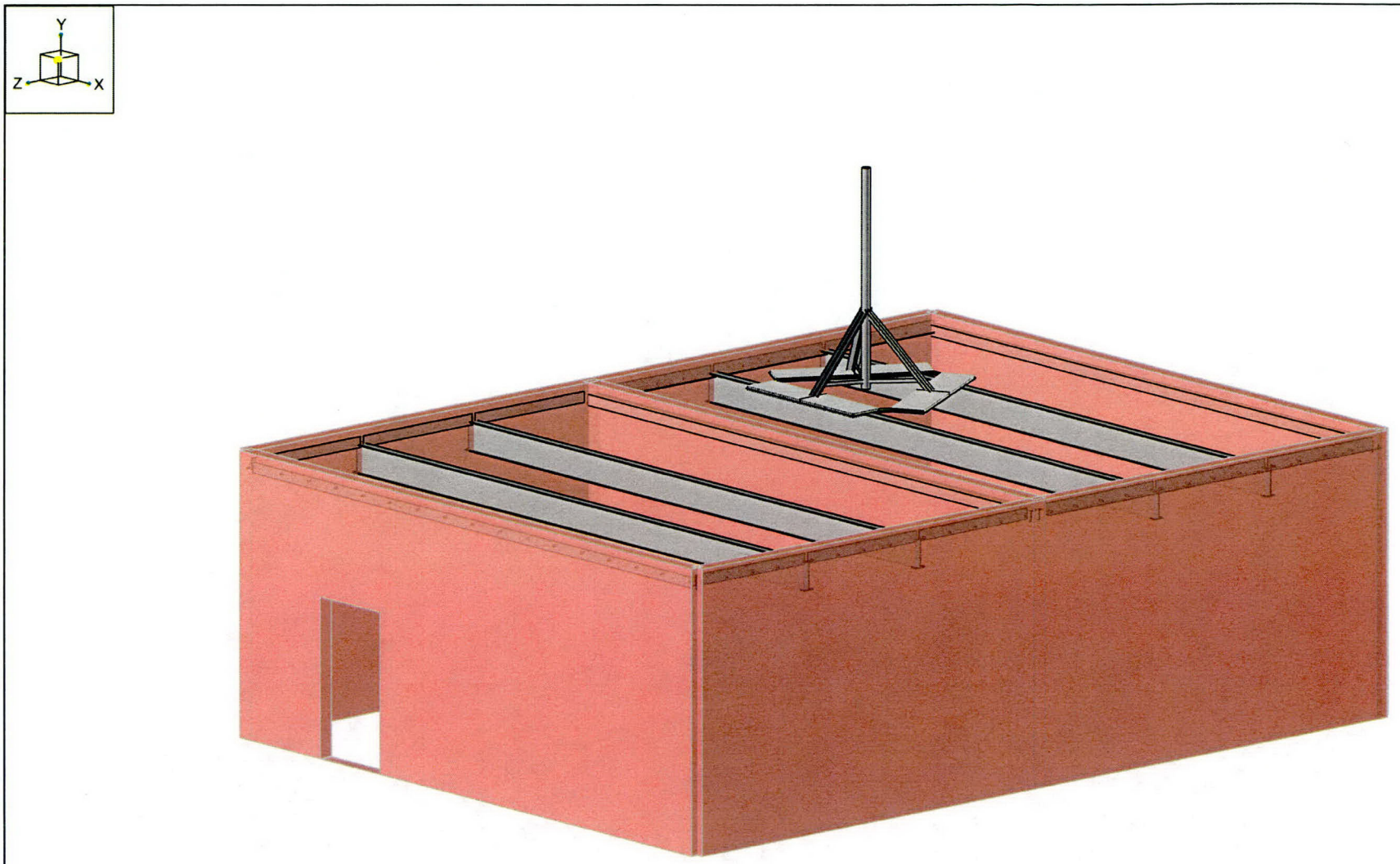
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Project: ROOF MOUNTED TRIPOD			
Client: AVIAT NETWORKS, INC.	Drawn by: M.C.	App'd:	
Code: TIA-222-H	Date: 05/31/22	Scale: NTS	
Path: S:\Mauricio\tnxTower\10049-22_ROOF TOP MOUNTED TRIPOD - MOUNT WOODSON.eri		Dwg No. E-1	

Wind Pressures
TIA-222-H - 103 mph Exposure C

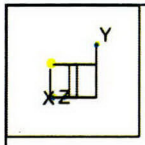


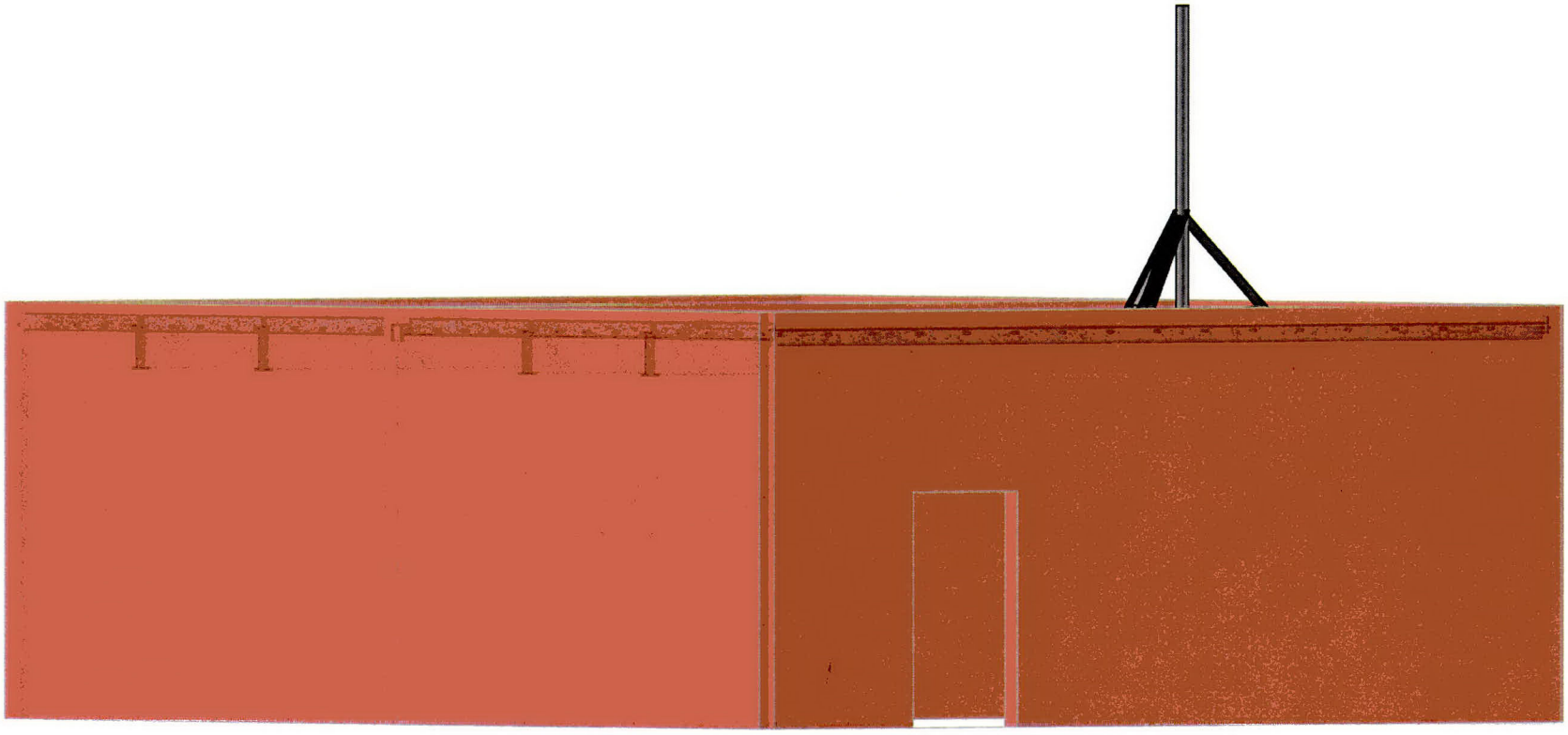
TASHJIAN TOWERS CORP.
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Job: 10049-22_MOUNT WOODSON		
Project: ROOF MOUNTED TRIPOD		
Client: AVIAT NETWORKS, INC.	Drawn by: M.C.	App'd:
Code: TIA-222-H	Date: 05/31/22	Scale: NTS
Path: S:\Mauricio\tnxTower\10049-22_ROOF TOP MOUNTED TRIPOD - MOUNT WOODSON.eri		Dwg No. E-9

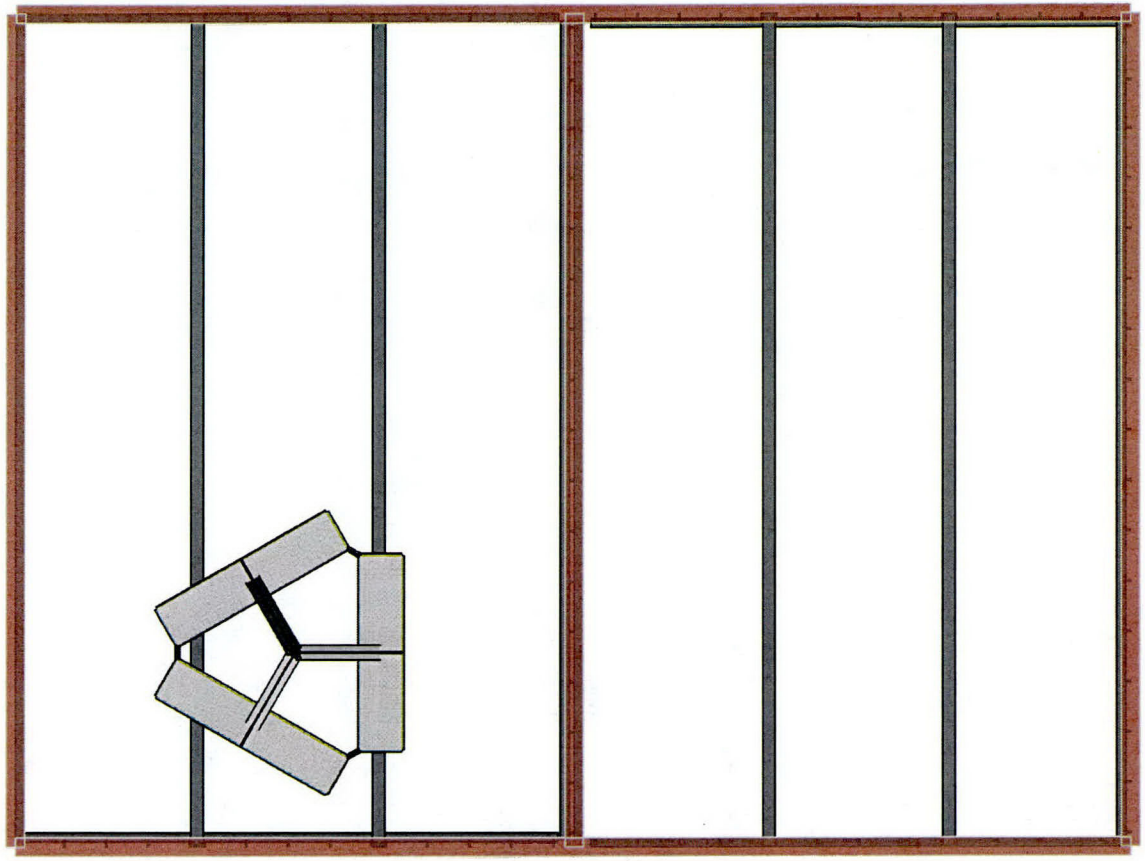


TASHJIAN TOWERS CORP.	MOUNT WOODSON - ROOF MOUNTED TRIPOD	SK-4
M.C.		May 31, 2022
		10049-22_ROOF TOP MOUNTED TRIPOD - ...





TASHJIAN TOWERS CORP.	MOUNT WOODSON - ROOF MOUNTED TRIPOD	SK-6
M.C.		May 31, 2022
		10049-22_ROOF TOP MOUNTED TRIPOD - ...



TASHJIAN TOWERS CORP.	MOUNT WOODSON - ROOF MOUNTED TRIPOD	SK-5
M.C.		May 31, 2022
		10049-22_ROOF TOP MOUNTED TRIPOD - ...

Wind Load Generator

WIND GENERATION DETAIL RESULTS

Exposure Constant Alpha: **9.5** Exposure Constant, zg: **900** Gust Effect Factor, G: **0.85**

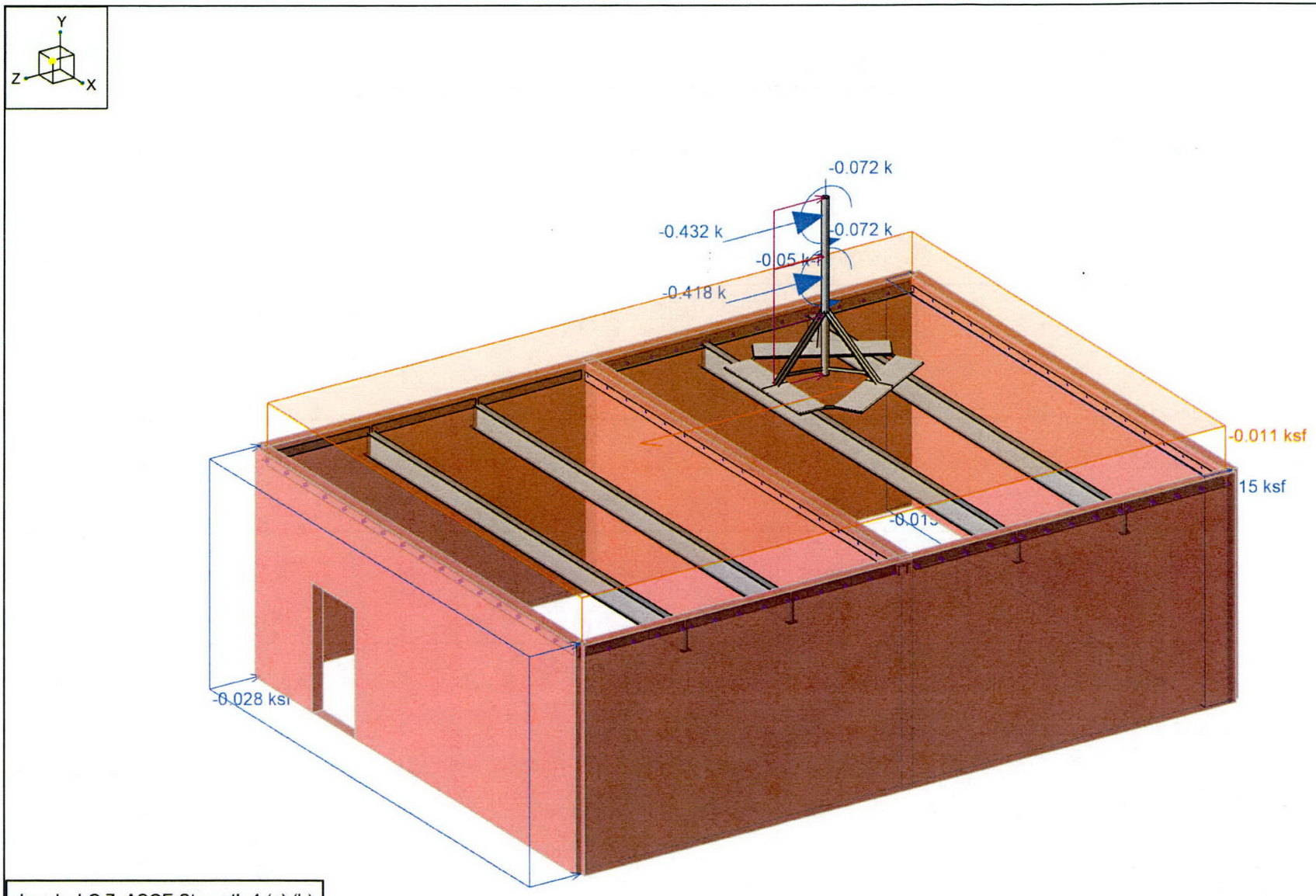
K_{zt}: **2.341** h: **12.292** ft K_h: **0.849** Windward C_p: **0.8** q_h: **0.041** ksf

WIND GENERATION FLOOR GEOMETRY RESULTS

Floor Level	Height (ft)	Kz	Width (Z) (ft)	Length (X) (ft)	Leeward Cp (Z)	Leeward Cp (X)
Diaphragm : 1	12.292	0.849	40	30	0.433	0.5

WIND GENERATION FLOOR FORCE RESULTS

Floor Level	qz (ksf)	Windward Pressure (ksf)	Leeward Pressure (Z) (ksf)	Leeward Pressure (X) (ksf)	Force (Z) (kips)	Force (X) (kips)
Diaphragm : 1	0.041	0.028	0.015	0.018	8.016	11.265



Loads: LC 7, ASCE Strength 4 (a) (b)
Envelope Only Solution

TASHJIAN TOWERS CORP.	MOUNT WOODSON - ROOF MOUNTED TRIPOD	SK-8
M.C.		May 31, 2022
10049-22		10049-22_ROOF TOP MOUNTED TRIPOD -...

Wall Panel Surface Loads (BLC 10 : WLX)

	Wall Panel Label	Direction	Top Magnitude [ksf, F]	Bottom Magnitude [ksf, F]	Start Location [ft]	Height [ft]
1	WP3	X	0.028	0.028	0	0
2	WP4	X	0.018	0.018	0	0

Wall Panel Surface Loads (BLC 11 : WLZ)

	Wall Panel Label	Direction	Top Magnitude [ksf, F]	Bottom Magnitude [ksf, F]	Start Location [ft]	Height [ft]
1	WP2	Z	-0.015	-0.015	0	0
2	WP1	Z	-0.028	-0.028	0	0

Member Area Loads (BLC 1 : DL)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N275_1	N233_1	N169_1	N197_1	Y	A-B	-0.001

Member Area Loads (BLC 18 : RLL)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N275_1	N233_1	N169_1	N197_1	Y	A-B	-0.02

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL	Yes	Y	DL	1								
2	ASCE Strength 3 (b) (a)	Yes	Y	DL	1.2	RLL	1.6	WLX	0.5				
3	ASCE Strength 3 (b) (b)	Yes	Y	DL	1.2	RLL	1.6	WLZ	0.5				
4	ASCE Strength 3 (d) (a)	Yes	Y	DL	1.2	WLX	0.5						
5	ASCE Strength 3 (d) (b)	Yes	Y	DL	1.2	WLZ	0.5						
6	ASCE Strength 4 (a) (a)	Yes	Y	DL	1.2	WLX	1	LL	0.5	LLS	1	RLL	0.5
7	ASCE Strength 4 (a) (b)	Yes	Y	DL	1.2	WLZ	1	LL	0.5	LLS	1	RLL	0.5
8	ASCE Strength 4 (b) (a)	Yes	Y	DL	1.2	WLX	1	LL	0.5	LLS	1		
9	ASCE Strength 4 (b) (b)	Yes	Y	DL	1.2	WLZ	1	LL	0.5	LLS	1		
10	ASCE Strength 5 (a)	Yes	Y	DL	0.9	WLX	1						
11	ASCE Strength 5 (b)	Yes	Y	DL	0.9	WLZ	1						
12	ASCE Strength 6 (a)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX	1	LL	0.5	LLS	1
13	ASCE Strength 6 (b)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX+Z	1	LL	0.5	LLS	1
14	ASCE Strength 6 (c)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX-Z	1	LL	0.5	LLS	1
15	ASCE Strength 6 (d)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ	1	LL	0.5	LLS	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
16	ASCE Strength 6 (e)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ+X	1	LL	0.5	LLS	1
17	ASCE Strength 6 (f)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ-X	1	LL	0.5	LLS	1
18	ASCE Strength 6 (g)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX	-1	LL	0.5	LLS	1
19	ASCE Strength 6 (h)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX+Z	-1	LL	0.5	LLS	1
20	ASCE Strength 6 (i)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX-Z	-1	LL	0.5	LLS	1
21	ASCE Strength 6 (j)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ	-1	LL	0.5	LLS	1
22	ASCE Strength 6 (k)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ+X	-1	LL	0.5	LLS	1
23	ASCE Strength 6 (l)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ-X	-1	LL	0.5	LLS	1
24	ASCE Strength 7 (a)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX	1				
25	ASCE Strength 7 (b)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX+Z	1				
26	ASCE Strength 7 (c)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX-Z	1				
27	ASCE Strength 7 (d)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ	1				
28	ASCE Strength 7 (e)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ+X	1				
29	ASCE Strength 7 (f)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ-X	1				
30	ASCE Strength 7 (g)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX	-1				
31	ASCE Strength 7 (h)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX+Z	-1				
32	ASCE Strength 7 (i)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX-Z	-1				
33	ASCE Strength 7 (j)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ	-1				
34	ASCE Strength 7 (k)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ+X	-1				
35	ASCE Strength 7 (l)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ-X	-1				

Spectra Scaling Factor

Seismic Generation Input

Seismic Code:	ASCE 7-16				
C_tZ:	0.02	T Z (sec):	Not Entered	R Z:	2
C_tX:	0.02	T X (sec):	Not Entered	R X:	2
C_tExp. Z:	0.75	C_tExp. X:	0.75	Seismic Weight LC:	1 DL
Risk Category:	III	T_L(sec):	12		
SD_1(g):	0.408	SD_s(g):	0.671	S_1(g):	0.306

Seismic Generation Detail Results

T Z Used (sec):	0.131	T Z Method A:	0.131	T Z Upper Limit:	0.184
T X Used (sec):	0.131	T X Method A:	0.131	T X Upper Limit:	0.184
Importance Fac.:	1.25	Design Cat:	D		
V Z (k):	27.081	Gov. Eqn.:	ASCE Eqn 12.8-2		
V X (k):	27.081	Gov. Eqn.:	ASCE Eqn 12.8-2		

Total Seismic

Weight (k):	64.574

Static Base Shear Z (k):	27.081	Unscaled Base Shear Z (k):	-1	Multiplier Z:	1
Static Base Shear X (k):	27.081	Unscaled Base Shear X (k):	-1	Multiplier X:	1

Scaling Factor Z:	1	Scaling Factor X:	1		

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	HSS4.5X.237	0.263	3.542	11	0.06	3.542		6	112.299	112.299	12.758	12.758	1	H1-1b
2	M2	LL3X3X3X3	0.075	3.939	11	0.011	3.989	y	7	47.763	70.632	5.543	2.977	1	H1-1b
3	M5	FLATBAR2X3/8	0.184	2.595	7	0	2.595	y	23	2.048	24.3	0.19	1.012	1.136	H1-1b*
4	M12	LL2X2X3X3	0.004	0.75	11	0.006	0.75	y	11	44.923	54.432	3.11	1.746	1	H1-1b
5	M15	LL2X2X3X3	0.004	0.75	7	0.003	0.672	y	7	44.923	54.432	3.11	1.746	1	H1-1b
6	M20	LL2X2X3X3	0.014	1.508	3	0.019	1.508	y	2	44.921	54.432	3.11	1.746	1	H1-1b
7	M23	FLATBAR2X3/8	0.021	2.595	16	0	2.595	y	19	2.048	24.3	0.19	1.012	1.136	H1-1b*
8	M24	LL3X3X3X3	0.034	3.939	11	0.008	4.727	y	11	47.763	70.632	5.543	3.751	1	H1-1b
9	M25	FLATBAR2X3/8	0.106	2.595	6	0	0	y	20	2.048	24.3	0.19	1.012	1.136	H1-1b*
10	M26	LL3X3X3X3	0.04	3.939	6	0.008	4.727	y	11	47.763	70.632	5.543	2.977	1	H1-1b
11	M1_1	W16X31	0.443	15	3	0.028	0	y	2	21.615	410.85	26.363	40.669	1.259	H1-1b
12	M2_1	W16X31	0.456	15	3	0.029	30	y	3	21.615	410.85	26.363	40.534	1.255	H1-1b
13	M3	W16X31	0.335	16.25	2	0.044	30	y	3	21.615	410.85	26.363	46.736	1.447	H1-1b
14	M4	W16X31	0.372	17.5	2	0.043	30	y	2	21.615	410.85	26.363	47.271	1.464	H1-1b
15	M22_1	L6X4X5	0.022	9.206	7	0.018	3.682	y	11	4.184	98.172	3.645	5.279	1.302	H2-1
16	M40	L6X4X5	0.012	28.271	2	0.006	0.307	y	2	4.173	98.172	4.311	7.002	1.5	H2-1
17	M58	L6X4X5	0.011	28.271	2	0.007	29.193	y	3	4.173	98.172	4.311	7.002	1.5	H2-1
18	M76	L6X4X5	0.012	2.762	2	0.012	27.31	y	7	4.184	98.172	4.311	7.009	1.5	H2-1
19	M77	L6X4X5	0.004	3.76	9	0.011	3.167	y	8	61.308	98.172	3.645	9.953	1.218	H2-1
20	M85	L6X4X5	0.007	3.167	6	0.004	1.649	y	3	61.308	98.172	4.311	12.521	1.199	H2-1
21	M91	L6X4X5	0.003	4.684	2	0.011	4.684	y	6	61.308	98.172	4.311	12.879	1.437	H2-1
22	M98	L6X4X5	0.004	1.649	2	0.011	1.649	y	6	61.308	98.172	4.311	12.72	1.323	H2-1
23	M103	L6X4X5	0.009	3.167	6	0.005	4.684	y	3	61.308	98.172	4.311	12.502	1.188	H2-1
24	M109	L6X4X5	0.004	4.684	2	0.011	4.684	y	6	61.308	98.172	4.311	12.801	1.38	H2-1
25	M119	L6X4X5	0.004	3.76	9	0.008	4.618	y	6	61.308	98.172	3.645	9.981	1.228	H2-1
26	M124	L6X4X5	0.004	3.167	3	0.003	1.649	y	3	61.308	98.172	4.311	12.452	1.16	H2-1
27	M130	L6X4X5	0.003	4.684	3	0.007	3.167	y	6	61.308	98.172	4.311	12.502	1.188	H2-1
28	M137	L6X4X5	0.003	3.167	3	0.008	4.618	y	6	61.308	98.172	4.311	12.496	1.185	H2-1
29	M141	L6X4X5	0.005	3.167	3	0.004	4.684	y	3	61.308	98.172	4.311	12.446	1.157	H2-1
30	M147	L6X4X5	0.003	4.684	3	0.007	3.167	y	6	61.308	98.172	4.311	12.553	1.218	H2-1