Robinson+Cole

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Also admitted in New York
and Massachusetts

April 11, 2023

Via Hand Delivery

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

Re: **Notice of Exempt Modification - Temporary Telecommunications Facility to be Installed on the Roof of Phelps Hall 344 College Street, New Haven, Connecticut**

2023 Yale University Commencement Ceremony

Dear Attorney Bachman:

Pursuant to R.C.S.A. Section 16-50j-72(d), this letter will serve as notice that Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to install a temporary wireless facility on the roof of Phelps Hall, 344 College Street in New Haven. Included in Attachment 1 is a letter from Connor Fray at Yale University authorizing the filing of this notice with the Council.

The temporary wireless facility will consist of two (2) antennas attached to a single steel antenna mast and ballast-mount support structure on the roof of the Phelps Hall building. The top antenna will be installed at an antenna centerline height of 104.5 feet above ground level ("AGL"). The lower antenna will be installed at an antenna centerline height of 102 feet AGL. Electric service for the temporary telecommunications facility will extend from a basement utility room, along the south side of the building to the roof and the antenna installation. A set of project Plans, including a building elevation drawing and roof plan showing the proposed temporary facility is included in Attachment 2. Also, included in Attachment 3 is a Structural Analysis

Report confirming that the proposed antenna frames and the host building have sufficient capacity to support the temporary telecommunications facility.

The proposed temporary telecommunications facility satisfies the criteria set forth in R.C.S.A. Section 16-50j-72(d), as a facility that will provide temporary wireless service for an event of State-wide significance. The temporary facility will provide additional network capacity needed to accommodate the large crowds and the anticipated need for increased wireless voice and data services during Yale's 2023 Commencement activities. Cellco expects that the temporary installation will be installed on or about May 11, 2023 and will be removed on or about May 29, 2023.

The operation of the temporary wireless facility will not result in a total radio frequency (RF) emissions levels that exceed the Federal Communications Commission (FCC) safety standard. Included in Attachment 4 are Far Field Approximation Tables for the frequencies Cellco intends to deploy at this temporary facility. These tables demonstrate that the temporary facility will operate well within the FCC emissions standards. Finally, in Attachment 5 is a copy of the Town Assessor's parcel map including owner information for the Property.

In accordance with R.C.S.A. Section 16-50j-73, a copy of this filing has been sent to Justin Elicker, Mayor of the City of New Haven, Laura Brown, Executive Director of the Office of the City Plan and the Property owner. (*See* Attachment 6).

Based on the foregoing, Cellco respectfully requests acknowledgement of this notice for the installation of a temporary wireless facility at the Property. Please feel free to contact me if you have any questions or need any additional information.

Sincerely,

Kenneth C. Baldwin

Attachments
Copy to:
Justin Elicker, Mayor
Laura Brown, Executive Director of City Plan
Connor Fray, Property Owner
Ziad Cheiban, RF Engineer

ATTACHMENT 1

April 5, 2023

Daniel Fitzpatrick
Cellco Partnership d/b/a Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: Letter of Authorization – Cellco Partnership d/b/a Verizon Wireless
Yale Commencement – Temporary Telecommunications Facility
New Haven, CT

Dear Mr. Fitzpatrick:

Yale University hereby authorizes Verizon Wireless and/or its authorized agents, to file all necessary permit applications for the installation of a temporary wireless facility for use prior to and during this year's Commencement.

Sincerely,

By: _____
Name: _____
Title: _____
Date: _____

Digitally signed by Connor Fray
Date: 2023.04.10 15:15:28 -04'00'

ATTACHMENT 2

PRELIM. SITE COORDINATES:	41° 18' 30.50"N 72° 55' 41.68"W
GROUND ELEVATION:	39.12'± A.M.S.L.

COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 2C LETTER BY CENTEK ENGINEERING, INC. DATED 3/9/2023.

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.

1 / L-1 SITE LOCATION MAP
SCALE: 1" = 100'
NORTH

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
E	04/04/23	ARC	LJA	LEASE EXHIBIT - REVISED PER NEW/VZ ISSUED RFDS
D	03/28/23	ARC	LJA	LEASE EXHIBIT - REVISED PER VZ COMMENTS RFDS
C	03/28/23	ARC	LJA	LEASE EXHIBIT - REVISED PER NEW/VZ ISSUED RFDS
B	03/14/23	ARC	LJA	LEASE EXHIBIT - REVISED PER NEW/VZ ISSUED RFDS
A	03/09/23	LJA	LJA	LEASE EXHIBIT - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

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(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

Cellco Partnership d/b/a Verizon Wireless
YALE COMMENCEMENT SPOT CT
344 COLLEGE STREET
NEW HAVEN, CT 06511

DATE:	03/09/23
SCALE:	AS SHOWN
JOB NO.	23010.06

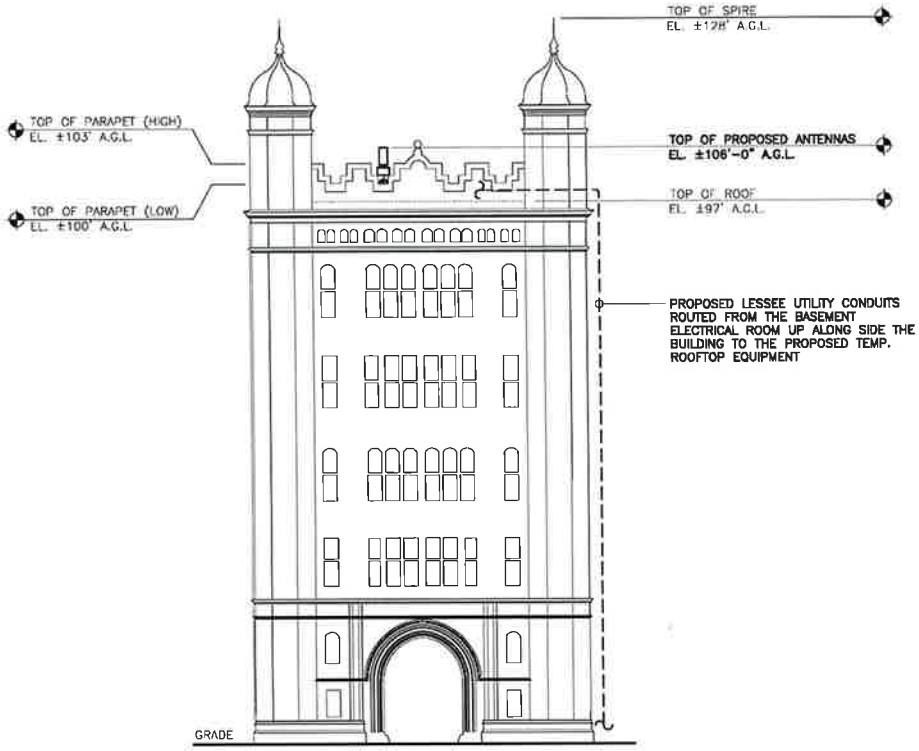
SHEET NO.
L-1

NOTES:

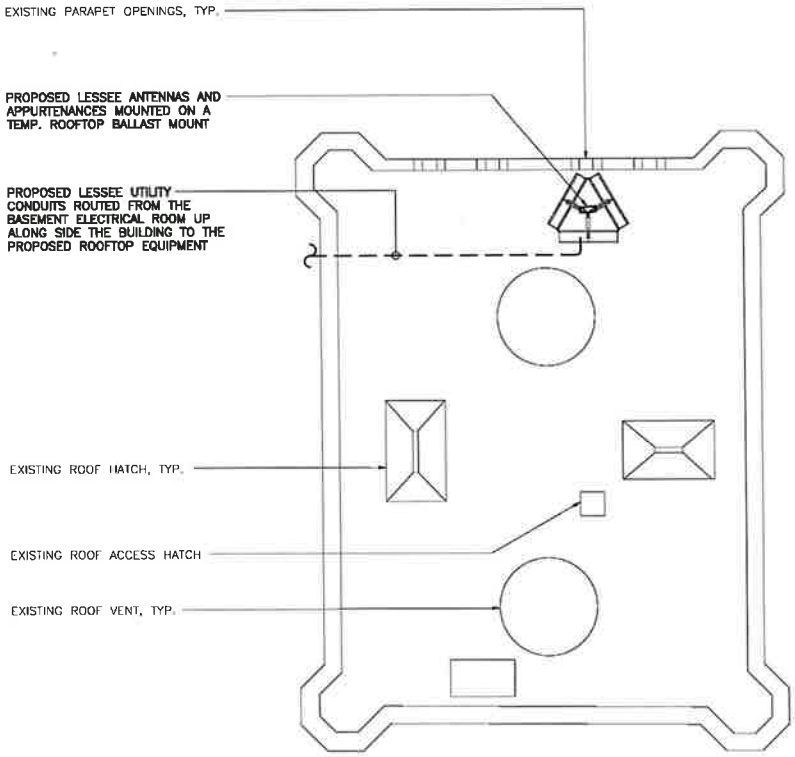
1. THE PROPOSED LESSEE ANTENNA INSTALLATION TO CONSIST OF A TEMPORARY ROOFTOP BALLAST FRAME WITH A TOTAL OF (2) PANEL ANTENNAS, ASSOCIATED RRH APPURTENANCES AND CABLING.
2. LESSEE POWER AND TELCO UTILITIES SHALL BE ROUTED FROM EXISTING DEMARCS LOCATED WITHIN OR ADJACENT TO THE PROPOSED COMMUNICATIONS FACILITY.

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.



1 / L-2 **BUILDING ELEVATION**
SCALE: 1" = 20'-0"



2 / L-2 **PROPOSED ROOF PLAN**
SCALE: 1" = 10'-0"

NORTH

REV'S	DATE	BY	DESCRIPTION
E	04/04/23	AGC	REVISED PER MONTY ISSUED RFDS
D	03/30/23	AGC	REVISED PER RF COMMENTS
C	03/29/23	AGC	REVISED PER MONTY ISSUED RFDS
B	03/14/23	AGC	REVISED PER MONTY ISSUED RFDS
A	03/09/23	CA	ISSUED FOR CLIENT REVIEW

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Cellco Partnership d/b/a Verizon Wireless
YALE COMMENCEMENT SPOT CT
344 COLLEGE STREET
NEW HAVEN, CT 06511

DATE: 03/09/23
SCALE: AS SHOWN
JOB NO.: 23010.00

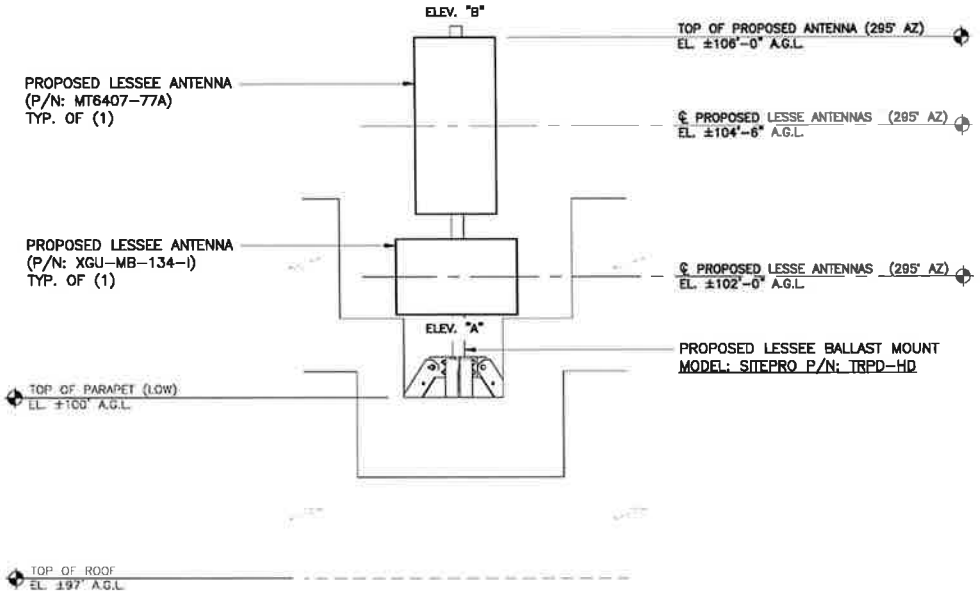
SHEET NO.
L-2

NOTES:

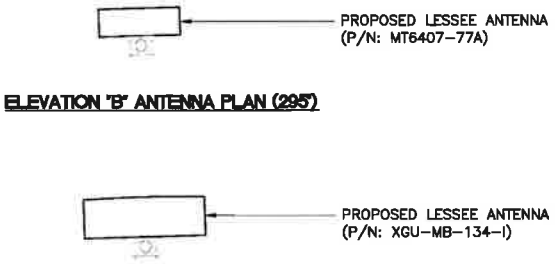
1. THE PROPOSED LESSEE ANTENNA INSTALLATION TO CONSIST OF A TEMPORARY ROOFTOP BALLAST FRAME WITH A TOTAL OF (2) PANEL ANTENNAS, ASSOCIATED RRH APPURTENANCES AND CABLING.
2. LESSEE POWER AND TELCO UTILITIES SHALL BE ROUTED FROM EXISTING DEMARCS LOCATED WITHIN OR ADJACENT TO THE PROPOSED COMMUNICATIONS FACILITY.

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.



1 / L-3 **PROPOSED ANTENNA ELEVATION**
SCALE: 1/2" = 1'-0"



ELEVATION 'B' ANTENNA PLAN (295')

ELEVATION 'A' ANTENNA PLAN (295')

2 / L-3 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

NORTH

NO.	DATE	ISSUED BY	DESCRIPTION
E	04/04/23	AGC	LEASE DOCSET – REVISED PER MDFNY ISSUED RFDS
D	03/29/23	AGC	LEASE DOCSET – REVISED PER MDFNY ISSUED RFDS
C	03/20/23	AGC	LEASE DOCSET – REVISED PER MDFNY ISSUED RFDS
B	03/14/23	AGC	LEASE DOCSET – REVISED PER MDFNY ISSUED RFDS
A	03/09/23	CJL	LEASE DOCSET – ISSUED FOR CLIENT REVIEW

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NEW HAVEN, CT 06511

DATE: 03/09/23
SCALE: AS SHOWN
JOB NO. 23010.05

SHEET NO. L-3

ATTACHMENT 3

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Frames

Proposed Temporary Verizon
Wireless Communications Facility

Site Ref: Yale Commencement Spot CT

344 College Street
New Haven, CT

CENTEK Project No. 23010.05

Date: April 04, 2023

Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

This structural analysis report (SAR) was prepared to address the structural viability of installing Verizon's proposed ballast mounted antenna configuration on the roof of the host Yale building located at 344 College Street, New Haven, Connecticut.

The host building is a concrete and masonry building with steel beams encased in concrete that span across the roof. The roof slab is 3-1/2" thick reinforced concrete slab. The antennas are to be supported by a ballast frame consisting of a pipe mast and the pipe mast's base frame (SitePro1 P/N: TRPD-HD).

The host structure geometry and member size information were obtained from the provided host building architectural/structural drawings prepared by Milliken Bros dated 07/03/1895. A site visit to confirm the existing conditions and consistency with the documents provided was performed by Centek personnel on 02/23/2023. Proposed/existing antenna and appurtenance information was taken from an RF data sheet provided by Verizon.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The proposed antenna support frame carries the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coating are in good condition.

Antenna Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Per Sector	**(1) Samsung MT6407-77A Antennas**	±104'-6"	Ballast Frame
	(1) JMA XGU-MB-134-I Antennas	±102'-0"	
	(1) Samsung B5/B13 RF4442d-13A RRU	N.A.	
	(1) Samsung B2/B66A RF4439d-25A RRU	N.A.	
	(1) Samsung MT6407-77A RRH	N.A.	

Analysis

The antenna ballast frame was analyzed using a comprehensive computer program titled Risa3D. The program considers the worst-case code prescribed loading condition in its analysis. The antenna and ballast frames were considered as being loaded by concentric forces. The model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2021 International Building Code amended by the 2022 CSBC and ASCE 7-16 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	V_{ult} = 130 mph	*Appendix P of the 2022 CT State Building Code*
Risk Category:	III	*2021 IBC; Table 1604.05*
Exposure Category:	Surface Roughness B	*ASCE 7-16; Section 26.7.2*
Equipment Dead Load	Equipment & ballast framing self-weight	*Identified within SAR design calculations*
Roof Live Load	20 psf	*ASCE 7-16; Table 4-1 "Roofs – All Other Construction"*
Snow Load	30 psf	*Appendix P of the 2022 CT State Building Code*

Reference Standards

2021 International Building Code:

1. ACI 318-14, *Building Code Requirements for Structural Concrete.*
2. ACI 530-13, *Building Code Requirements for Masonry Structures.*

Results

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D.

Calculated stresses for the antenna mounts & existing host structure members were found to **BE WITHIN ALLOWABLE** limits.

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	Pipe 4.0 STD (Proposed Pipe Mast)	12%	**PASS**
	3-1/2" Concrete Deck (Existing Host Building Roof Structure)	84%	**PASS**
Equipment Area	B15x41 (Existing Concrete Encased Steel Roof Beams)	31%	**PASS**

Conclusion

This analysis shows that the subject proposed antenna frames and host building **have sufficient capacity** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore
Principle ~ Structural Engineer

Prepared by:

Pablo Perez-Gomez
Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

CENTEK engineering
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63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject: Wind Load on Equipment per ASCE 7-10

Location: New Haven, CT

Date: 01/20/2022

Prepared by: PPG; Checked by: CFC
Job No. 23010.05

Design Wind Load on Other Structures:

(Based on IBC 2021, CSBC 2022 and ASCE 7-16)

Wind Speed =	$V := 130$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := III$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 109$	ft	(User Input)	
Structure Type =	$Structuretype := Square\_Chimney$			
Structure Height =	$Height := 3$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 1.333$	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 1.2 \cdot 10^3$$

(Table 26.9-1)

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 7$$

(Table 26.9-1)

Integral Length Scale Factor =

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 320$$

(Table 26.9-1)

Integral Length Scale Power Law Exponent =

$$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.333$$

(Table 26.9-1)

Turbulence Intensity Factor =

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.3$$

(Table 26.9-1)

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Subject:

Location:

Date: 01/20/2022

Wind Load on Equipment per ASCE 7-10

New Haven, CT

Prepared by: PPG; Checked by: CFC
Job No. 23010.05

Exposure Constant =	$Z_{min} := \begin{cases} \text{if } Exp = B \\ \quad 30 \\ \text{if } Exp = C \\ \quad 15 \\ \text{if } Exp = D \\ \quad 7 \end{cases} = 30$	(Table 26.9-1)
Exposure Coefficient =	$K_z := \begin{cases} \text{if } 15 \le Z \le zg \\ \quad 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \\ \text{if } Z < 15 \\ \quad 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \end{cases} = 1.01$	(Table 29.3-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 39.44$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} \text{if } Z_{min} > 0.6 \cdot Height \\ \quad Z_{min} \\ \text{else} \\ \quad 0.6 \cdot Height \end{cases} = 30$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.305$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{\varepsilon} = 309.993$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.979$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.913$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.321$	(Fig 29.5-1 - 29.5-3)
Wind Force =	$F := q_z \cdot G \cdot C_f = 48$	psf

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Subject:

Location:

Date: 01/20/2022

Wind Load on Equipment per ASCE 7-10

New Haven, CT

Prepared by: PPG; Checked by: CFC
Job No. 23010.05

Delopment of Wind on Antennas

Antenna Data:

Antenna Model =	Samsung MT6407-77A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 35.1$	in	(User Input)
Antenna Width =	$W_{ant} := 16.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.5$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 187$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.3$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.3$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 64$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 87$	lbs

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Subject:

Location:

Date: 01/20/2022

Wind Load on Equipment per ASCE 7-10

New Haven, CT

Prepared by: PPG; Checked by: CFC
Job No. 23010.05

Delopment of Wind on Antennas

Antenna Data:

Antenna Model =	JMA XGU-MB-134-I		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 15.0$	in	(User Input)
Antenna Width =	$W_{ant} := 24.0$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.0$	in	(User Input)
Antenna Weight =	$WT_{ant} := 20$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

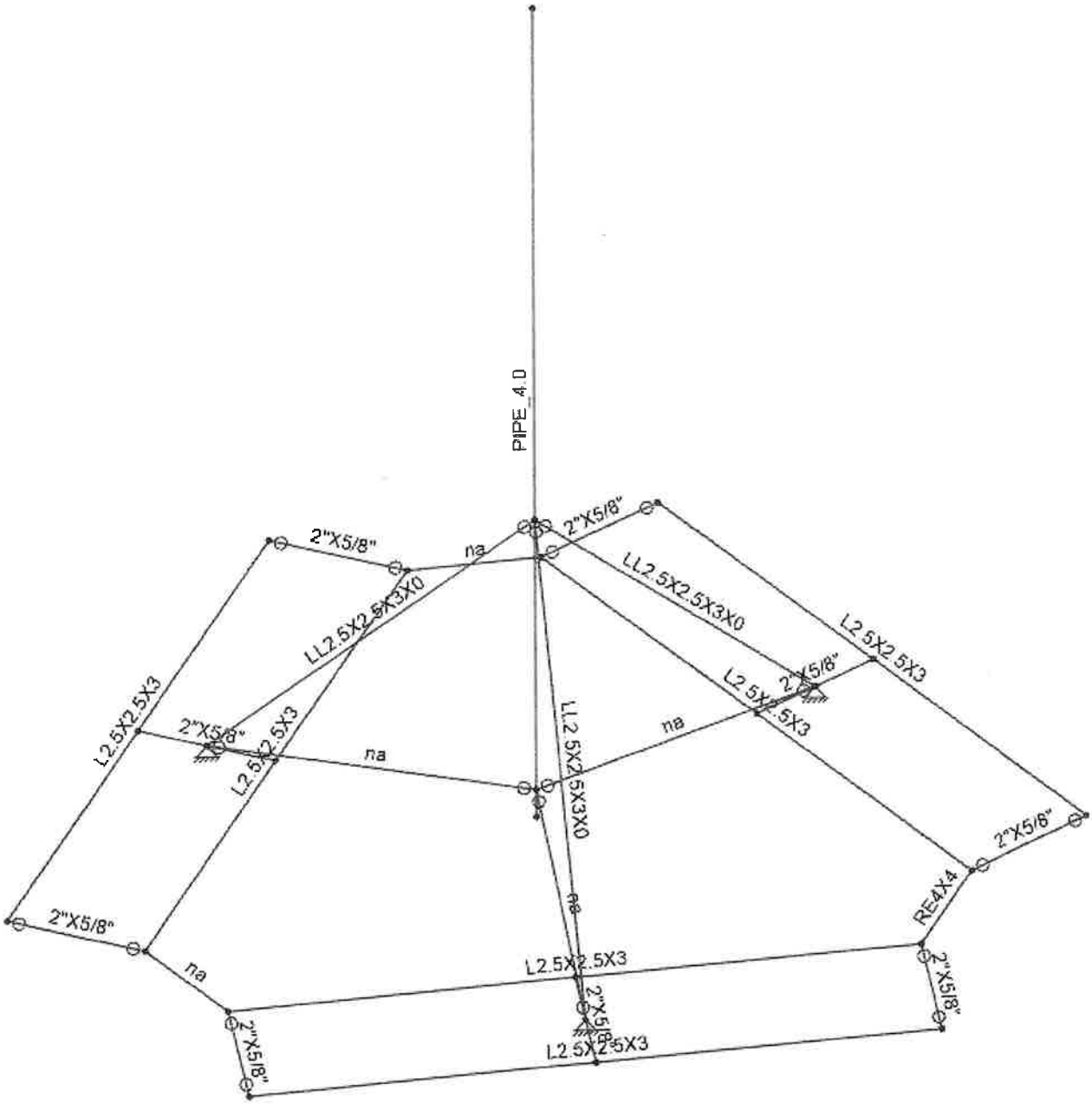
Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 2.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2.5$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 119$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 0.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 40$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 20$	lbs



Envelope Only Solution

Centek Engineering	Yale Commencement Spot CT	SK-2
PPG		Apr 04, 2023
23010.05		Ballast - (2) Sectors.r3d

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	85	0	0	
3	N3	42.5	0	0	
4	N4	42.5	0	18	
5	N5	0	0	18	
6	N6	85	0	18	
7	N7	42.5	0	52	
8	N8	18.716679	0	114.80608	
9	N9	-23.783321	0	41.19392	
10	N10	-2.533321	0	78	
11	N11	13.055136	0	69	
12	N12	34.305136	0	105.80608	
13	N13	-8.194864	0	32.19392	
14	N14	108.783321	0	41.19392	
15	N15	66.283321	0	114.80608	
16	N16	87.533321	0	78	
17	N17	71.944864	0	69	
18	N18	93.194864	0	32.19392	
19	N19	50.694864	0	105.80608	
20	N20	42.5	0	9	
21	N21	79.739092	0	73.5	
22	N22	5.260908	0	73.5	
23	N23	42.5	44	52	
24	N24	42.5	4	52	
25	N25	42.5	120	52	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N22	Reaction	Reaction	Reaction
2	N21	Reaction	Reaction	Reaction
3	N20	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	Y	-0.02	72
2	M25	Y	-0.087	96

Member Point Loads (BLC 3 : Wind X-Direction (22 psf))

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	X	0.04	72
2	M25	X	0.064	96

Member Point Loads (BLC 4 : Wind Z-Direction (22psf))

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	Z	0.119	66
2	M25	Z	0.187	96

Member Distributed Loads (BLC 3 : Wind X-Direction (22 psf))

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M25	X	0.018	0.018	0	%100
2	M21	X	0.01	0.01	0	%100
3	M20	X	0.01	0.01	0	%100
4	M19	X	0.01	0.01	0	%100

Member Distributed Loads (BLC 4 : Wind Z-Direction (22psf))

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M25	Z	0.018	0.018	0	%100
2	M19	Z	0.01	0.01	0	%100
3	M20	Z	0.01	0.01	0	%100
4	M21	Z	0.01	0.01	0	%100

Member Area Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Weight of Equipment	DL		2	
3	Wind X-Direction (22 psf)	WLX		2	4
4	Wind Z-Direction (22psf)	WLZ		2	4

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 16-8	Yes	Y	DL	1										
2	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1						
3	IBC 16-10 (a)	Yes	Y	DL	1	RLL	1								
4	IBC 16-10 (b)	Yes	Y	DL	1	SL	1	SLN	1						
5	IBC 16-10 (c)	Yes	Y	DL	1	RL	1								
6	IBC 16-11 (a)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RLL	0.75				
7	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
8	IBC 16-11 (c)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RL	0.75				
9	IBC 16-12 (a) (a)	Yes	Y	DL	1	WLX	0.6								
10	IBC 16-12 (a) (b)	Yes	Y	DL	1	WLZ	0.6								
11	IBC 16-12 (a) (c)	Yes	Y	DL	1	WLX	-0.6								
12	IBC 16-12 (a) (d)	Yes	Y	DL	1	WLZ	-0.6								
13	IBC 16-13 (a) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RLL	0.75		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
14	IBC 16-13 (a) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RLL	0.75		
15	IBC 16-13 (a) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
16	IBC 16-13 (a) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
17	IBC 16-13 (b) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
18	IBC 16-13 (b) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
19	IBC 16-13 (b) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
20	IBC 16-13 (b) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
21	IBC 16-13 (c) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RL	0.75		
22	IBC 16-13 (c) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RL	0.75		
23	IBC 16-13 (c) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RL	0.75		
24	IBC 16-13 (c) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RL	0.75		
25	IBC 16-15 (a)	Yes	Y	DL	0.6	WLX	0.6								
26	IBC 16-15 (b)	Yes	Y	DL	0.6	WLZ	0.6								
27	IBC 16-15 (c)	Yes	Y	DL	0.6	WLX	-0.6								
28	IBC 16-15 (d)	Yes	Y	DL	0.6	WLZ	-0.6								

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N22	max	0.665	11	0.35	11	-0.116	28	0	28	0	28	0	28
2		min	0.202	25	-0.089	25	-0.385	10	0	1	0	1	0	1
3	N21	max	-0.202	27	0.35	9	-0.116	28	0	28	0	28	0	28
4		min	-0.665	9	-0.089	27	-0.385	10	0	1	0	1	0	1
5	N20	max	0.016	27	0.536	12	0.865	12	0	28	0	28	0	28
6		min	-0.016	25	-0.274	26	0.136	26	0	1	0	1	0	1
7	Totals:	max	0.263	27	0.49	9	0.384	28						
8		min	-0.263	25	0.294	27	-0.384	26						

Envelope Node Displacements

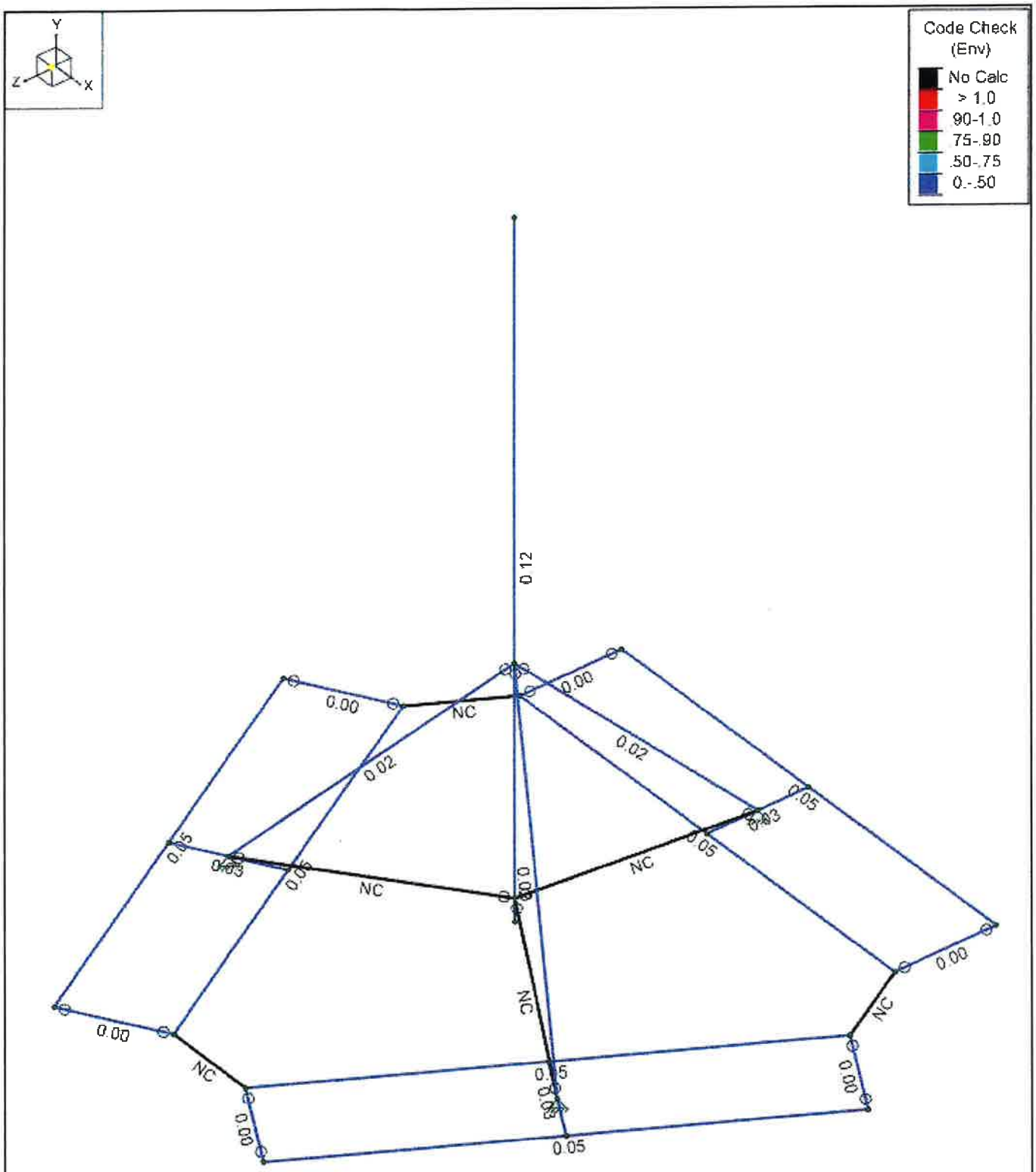
	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0.001	11	-0.004	27	0.001	26	1.76e-4	10	6.954e-5	10	5.916e-4	9
2		min	-0.001	9	-0.019	9	-0.001	12	-1.503e-4	28	-2.23e-5	28	1.767e-4	27
3	N2	max	0.001	11	-0.004	25	0.001	26	1.76e-4	10	2.23e-5	28	-1.767e-4	25
4		min	-0.001	9	-0.019	11	-0.001	12	-1.503e-4	28	-6.954e-5	10	-5.916e-4	11
5	N3	max	0.001	11	0.002	10	0	10	1.76e-4	10	2.605e-5	9	1.078e-4	9
6		min	-0.001	9	-0.001	28	0	28	-1.503e-4	28	-2.605e-5	11	-1.078e-4	11
7	N4	max	0.001	9	0	28	0	28	4.204e-4	10	3.892e-5	9	1.094e-4	9
8		min	-0.001	11	-0.003	10	0	10	-8.623e-6	28	-3.892e-5	11	-1.094e-4	11
9	N5	max	0.001	9	-0.006	27	0.001	10	-1.352e-4	27	5.351e-5	10	5.657e-4	10
10		min	-0.001	11	-0.021	9	-0.001	12	-3.172e-4	9	-5.352e-5	12	2.177e-4	28
11	N6	max	0.001	9	-0.006	25	0.001	10	-1.352e-4	25	5.353e-5	12	-2.177e-4	28
12		min	-0.001	11	-0.021	11	-0.001	12	-3.172e-4	11	-5.351e-5	10	-5.657e-4	10
13	N7	max	0.001	9	0	28	0.001	10	3.501e-4	12	0	10	1.753e-4	9
14		min	-0.001	11	0	1	-0.001	12	-3.501e-4	10	0	28	-1.753e-4	11
15	N8	max	0.002	12	-0.002	26	0.001	12	5.246e-4	11	5.465e-5	12	6.979e-6	26
16		min	-0.002	10	-0.022	12	-0.001	10	1.279e-4	25	-7.422e-6	26	-4.133e-4	12
17	N9	max	0.001	28	0	28	0.001	12	-1.362e-4	28	5.655e-6	27	3.868e-4	10
18		min	-0.001	10	-0.024	10	-0.001	10	-5.421e-4	10	-5.288e-5	9	-2.484e-5	28
19	N10	max	0.001	12	0.002	9	0.002	12	1.175e-4	28	3.193e-5	12	1.547e-4	26
20		min	-0.001	26	-0.001	27	-0.002	10	-1.304e-4	10	-3.193e-5	10	-1.769e-4	12
21	N11	max	0.001	26	0	27	0.002	10	3.512e-5	27	5.632e-5	12	1.824e-5	26
22		min	-0.001	12	-0.003	9	-0.002	12	-2.411e-4	9	-5.632e-5	10	-3.75e-4	12
23	N12	max	0.001	9	-0.003	26	0.002	10	7.26e-4	12	3.925e-5	9	1.041e-5	25
24		min	-0.001	11	-0.024	12	-0.002	12	1.787e-4	26	-3.925e-5	11	-1.041e-5	27

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
25	N13	max	0.001	9	-0.006	27	0.002	10	-1.352e-4	27	5.351e-5	10	5.657e-4	10
26		min	-0.001	11	-0.021	9	-0.002	12	-3.172e-4	9	-5.352e-5	12	2.177e-4	28
27	N14	max	0.001	10	0	28	0.001	12	-1.362e-4	28	5.288e-5	11	2.484e-5	28
28		min	-0.001	28	-0.024	10	-0.001	10	-5.421e-4	10	-5.655e-6	25	-3.868e-4	10
29	N15	max	0.002	10	-0.002	26	0.001	12	5.246e-4	9	7.421e-6	26	4.133e-4	12
30		min	-0.002	12	-0.022	12	-0.001	10	1.279e-4	27	-5.465e-5	12	-6.979e-6	26
31	N16	max	0.001	26	0.002	11	0.002	12	1.175e-4	28	3.193e-5	10	1.769e-4	12
32		min	-0.001	12	-0.001	25	-0.002	10	-1.304e-4	10	-3.193e-5	12	-1.547e-4	26
33	N17	max	0.001	12	0	25	0.002	10	3.512e-5	25	5.632e-5	10	3.75e-4	12
34		min	-0.001	26	-0.003	11	-0.002	12	-2.411e-4	11	-5.632e-5	12	-1.824e-5	26
35	N18	max	0.001	9	-0.006	25	0.002	10	-1.352e-4	25	5.35e-5	12	-2.177e-4	28
36		min	-0.001	11	-0.021	11	-0.002	12	-3.172e-4	11	-5.352e-5	10	-5.658e-4	10
37	N19	max	0.001	9	-0.003	26	0.002	10	7.26e-4	12	3.925e-5	9	1.041e-5	25
38		min	-0.001	11	-0.024	12	-0.002	12	1.787e-4	26	-3.925e-5	11	-1.041e-5	27
39	N20	max	0	25	0	26	0	26	2.982e-4	10	2.778e-4	9	1.494e-4	9
40		min	0	27	0	12	0	12	-7.704e-5	28	-2.778e-4	11	-1.494e-4	11
41	N21	max	0	9	0	27	0	10	1.509e-4	28	3.717e-4	10	3.232e-4	12
42		min	0	27	0	9	0	28	-2.617e-4	10	-3.717e-4	12	-1.316e-4	26
43	N22	max	0	25	0	25	0	10	1.509e-4	28	3.717e-4	12	1.316e-4	26
44		min	0	11	0	11	0	28	-2.617e-4	10	-3.717e-4	10	-3.232e-4	12
45	N23	max	0.001	9	0	28	0.001	10	8.653e-4	10	0	10	4.497e-4	11
46		min	-0.001	11	0	1	-0.001	12	-8.653e-4	12	0	28	-4.497e-4	9
47	N24	max	0	11	0	28	0	12	3.5e-4	12	0	10	1.753e-4	9
48		min	0	9	0	1	0	10	-3.5e-4	10	0	28	-1.753e-4	11
49	N25	max	0.082	9	0	28	0.155	10	2.354e-3	10	0	10	1.256e-3	11
50		min	-0.082	11	0	1	-0.155	12	-2.354e-3	12	0	28	-1.256e-3	9

Envelope AISC 14TH (360-10): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M4	L2.5X2.5X3	0.053	42.5	12	0.005	42.5	y	12	4.355	19.423	0.581	1.071	1.431	H2-1
2	M5	L2.5X2.5X3	0.051	42.5	12	0.002	42.5	z	12	4.355	19.423	0.581	1.068	1.418	H2-1
3	M6	L2.5X2.5X3	0.053	42.5	12	0.005	42.5	z	12	4.355	19.423	0.581	1.071	1.431	H2-1
4	M7	L2.5X2.5X3	0.051	42.5	12	0.002	42.5	y	12	4.355	19.423	0.581	1.068	1.418	H2-1
5	M8	L2.5X2.5X3	0.052	42.5	10	0.005	42.5	z	10	4.355	19.423	0.581	1.07	1.425	H2-1
6	M9	L2.5X2.5X3	0.051	42.5	9	0.002	42.5	y	10	4.355	19.423	0.581	1.068	1.419	H2-1
7	M10	2"X5/8"	0	18	9	0.002	18	y	9	15.956	26.946	0.351	1.123	1.136	H1-1b*
8	M11	2"X5/8"	0.029	9	12	0.009	9	y	12	15.956	26.946	0.351	1.123	1.331	H1-1b
9	M12	2"X5/8"	0	18	12	0.004	18	y	12	15.956	26.946	0.351	1.123	1.136	H1-1b*
10	M13	2"X5/8"	0	18	10	0.003	18	y	10	15.956	26.946	0.351	1.123	1.136	H1-1b*
11	M14	2"X5/8"	0.027	9	11	0.005	9	y	11	15.956	26.946	0.351	1.123	1.332	H1-1b
12	M15	2"X5/8"	0	18	10	0.003	18	y	10	15.956	26.946	0.351	1.123	1.136	H1-1b*
13	M16	2"X5/8"	0	18	12	0.004	18	y	12	15.956	26.946	0.351	1.123	1.136	H1-1b*
14	M17	2"X5/8"	0	18	11	0.002	18	y	11	15.956	26.946	0.351	1.123	1.136	H1-1b*
15	M18	2"X5/8"	0.029	9	12	0.009	9	y	12	15.956	26.946	0.351	1.123	1.331	H1-1b
16	M19	LL2.5X2.5X3X0	0.022	30.12	9	0.003	0	y	12	27.751	38.802	2.196	1.696	1	H1-1b
17	M20	LL2.5X2.5X3X0	0.022	30.12	11	0.003	0	y	12	27.751	38.802	2.196	1.696	1	H1-1b
18	M21	LL2.5X2.5X3X0	0.023	30.761	10	0.003	61.522	z	11	27.751	38.802	2.196	1.696	1	H1-1b
19	M25	PIPE 4.0	0.119	43.75	10	0.015	43.75		12	45.053	62.036	7.073	7.073	1	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering	Yale Commencement Spot CT	SK-1
PPG		Apr 04, 2023
23010.05		Ballast - (2) Sectors.r3d

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	66	0	0	
3	N3	132	0	0	
4	N4	198	0	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]
1	N2	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction
3	N3	Reaction	Reaction	Reaction	Reaction
4	N4	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M2	Y	-1	%50

Member Distributed Loads (BLC 5 : Snow Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.03	-0.03	0	%100
2	M2	Y	-0.03	-0.03	0	%100
3	M3	Y	-0.03	-0.03	0	%100

Member Distributed Loads (BLC 6 : Live Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.02	-0.02	0	%100
2	M2	Y	-0.02	-0.02	0	%100
3	M3	Y	-0.02	-0.02	0	%100

Member Distributed Loads (BLC 7 : Slab Self Dead Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.042	-0.042	0	%100
2	M2	Y	-0.042	-0.042	0	%100
3	M3	Y	-0.042	-0.042	0	%100

Member Area Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Weight of Equipment	DL		1	
3	Wind X-Direction (22 psf)	WLX			
4	Wind Z-Direction (22psf)	WLZ			
5	Snow Load	SL			3
6	Live Load	None			3
7	Slab Self Dead Load	None			3

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Deflection 1	Yes	Y	DL	1								
2	Deflection 2	Yes	Y	LL	1								
3	Deflection 3	Yes	Y	DL	1	LL	1						
4	IBC 16-1	Yes	Y	DL	1.4								
5	IBC 16-2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	RLL	0.5		
6	IBC 16-2 (b)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	SL	0.5	SLN	0.5
7	IBC 16-2 (c)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6				
8	IBC 16-3 (a)	Yes	Y	DL	1.2	RLL	1.6	LL	0.5	LLS	1		
9	IBC 16-3 (c)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	LL	0.5	LLS	1

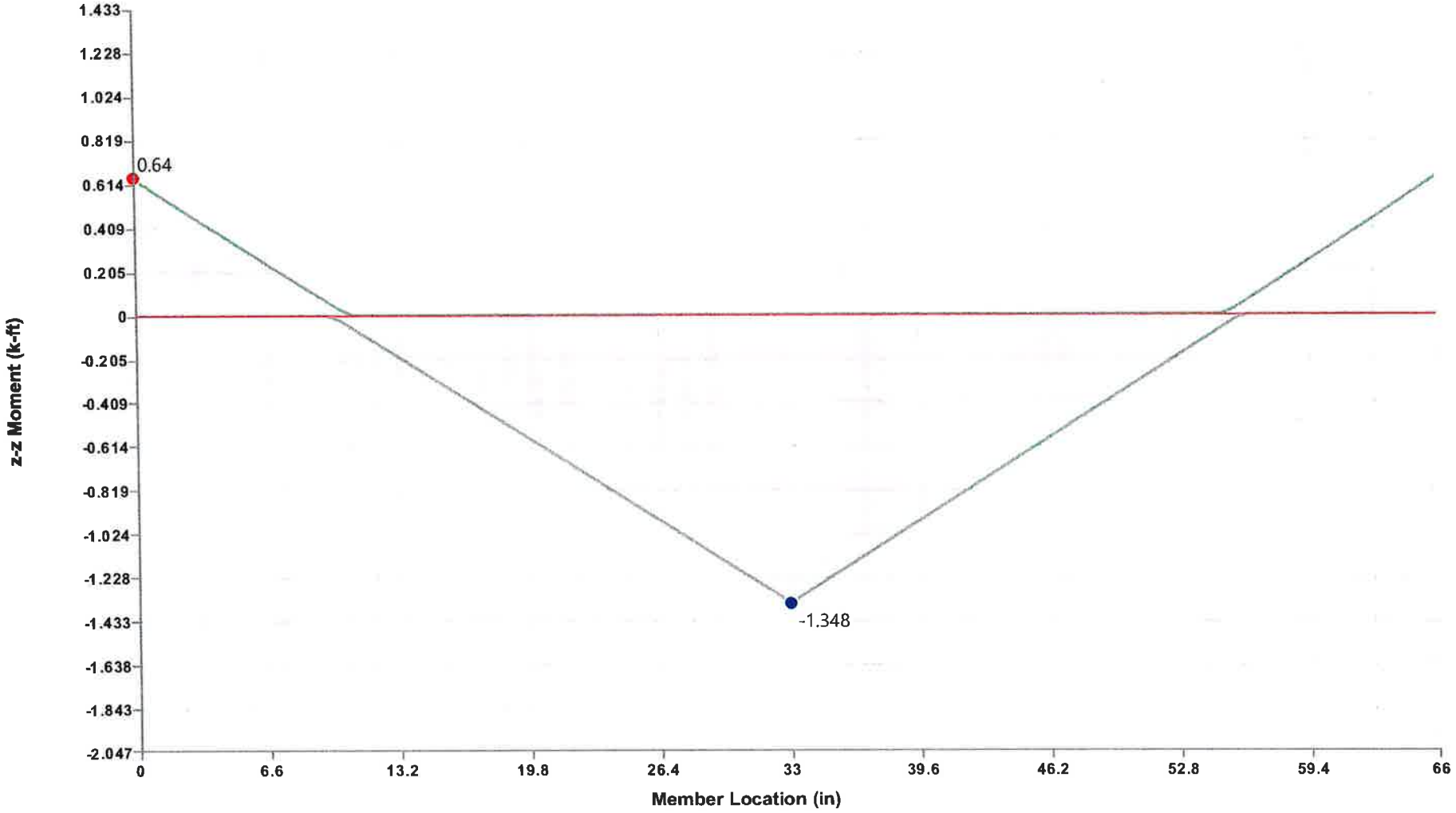
Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	0	9	0.98	9	0	9	0	9	0	9	0	9
2		min	0	1	0	2	0	1	0	1	0	1	0	1
3	N1	max	0	9	0.016	9	0	9	0	9	0	9	0	9
4		min	0	1	-0.105	4	0	1	0	1	0	1	0	1
5	N3	max	0	9	0.98	9	0	9	0	9	0	9	0	9
6		min	0	1	0	2	0	1	0	1	0	1	0	1
7	N4	max	0	9	0.016	9	0	9	0	9	0	9	0	9
8		min	0	1	-0.105	4	0	1	0	1	0	1	0	1
9	Totals:	max	0	9	1.992	9	0	9						
10		min	0	1	0	2	0	1						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	9	0	4	0	9	0	9	0	9	0	4
2		min	0	1	0	9	0	1	0	1	0	1	0	2
3	N2	max	0	9	0	2	0	9	0	9	0	9	0	2
4		min	0	1	0	9	0	1	0	1	0	1	0	4
5	N3	max	0	9	0	2	0	9	0	9	0	9	0	4
6		min	0	1	0	9	0	1	0	1	0	1	0	2
7	N4	max	0	9	0	4	0	9	0	9	0	9	0	2
8		min	0	1	0	9	0	1	0	1	0	1	0	4

Member M2, Envelope



Tekla Tedds Centek Engineering	Project Yale Commencement Spot CT				Job Ref. 23010.05	
	Section				Sheet no./rev. 1	
	Calc. by PPG	Date 3/29/2023	Chk'd by CFC	Date 3/16/2023	App'd by	Date

RC ONE-WAY SLAB DESIGN (ACI 318)

In accordance with ACI318-19

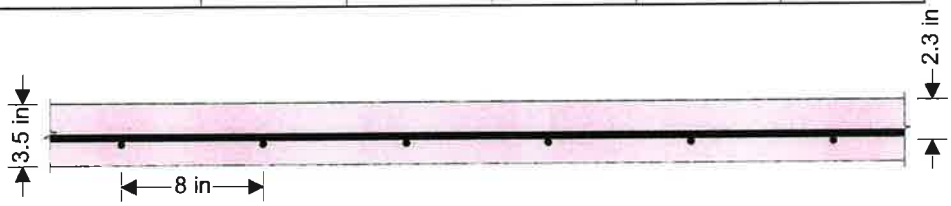
Tedds calculation version 1.2.03

Design summary

Overall design status PASS

Overall design utilization 0.841

Description	Unit	Capacity	Maximum	Utilization	Result
Moment	kip_ft/ft	1.603	1.348	0.841	PASS
Shear	kips/ft	1.654	0.732	0.442	PASS
Minimum thickness requirements are met					PASS



Slab definition

Slab type	**One-way continuous**
Overall thickness of slab	h = **3.500** in
Span of slab	l_n = **5.50** ft
Clear cover to tension reinforcement	c_c = **1.00** in

Materials

Specified compressive strength of concrete	f'_c = **3000** psi
Specified yield strength of reinforcement	f_y = **60000** psi
Modulus of elasticity	E_{SACI} = **29000000** psi
Compression-controlled strain limit - 21.2.2.1	ε_{ty} = **0.002**
Minimum tensile strain - 7.3.3.1	$\varepsilon_{min} = \varepsilon_{ty} + 0.003$ = **0.005**
Concrete modification factor	λ = **1.00**

Maximum design moment and shear in span(per 12 in width of slab)

Maximum ultimate positive moment	M_{us} = **1.348** kip_ft/ft
Maximum ultimate shear force	V_u = **0.732** kips/ft

Reinforcement calculation - positive moments

Tension steel provided	**No. 3 @ 8 in o.c.**
Depth to tension steel	d = (h – c_c – D / 2) = **2.31** in
β_1 = if(f'_c <= 4 ksi, 0.85, max(0.65, 0.85 - 0.05 × (f'_c - 4 ksi) / 1 ksi)) = **0.85**	
Stress block depth factor	β_1 = 0.85
Reinforcement ratio at strain of ε_{min}	$\rho_b = 0.85 \times \beta_1 \times f'_c / f_y \times (0.003 / (0.003 + \varepsilon_{min}))$ = **0.014**
Maximum reinforcement ratio	$\rho_{max} = \rho_b$ = **0.014**
Maximum area of tension steel	$A_{s\_max} = \rho_{max} \times d$ = **0.376** in²/ft
Min ratio of transverse reinforcement – cl. 7.6.1.1	ρ_t =**0.0018**

Min area tension steel req'd – cl. 7.6.1.1	$A_{s\_min} = \rho_t \times h =$ **0.076** in²/ft
Area required for bending	$A_{s\_req} =$ **0.138** in²/ft
Area of tension steel provided	$A_{s\_prov} =$ **0.166** in²/ft

PASS - Area of steel provided - OK

Steel stress – cl. 24.3.2.1	$f_s = 2/3 \times f_y =$ **40000** psi
Max allowable spacing – cl. 7.7.2.3 & cl. 24.3.2	$s_{max} = \min(3\times h, 18in, 15in\times(40000\ psi/f_s) - 2.5\times c_c, 12in\times(40000\ psi/f_s))$
$s_{max} =$ **10.500** in	
Actual tensile bar spacing provided	$s =$ **8.000** in

PASS - Spacing of bars (+ve moment steel) less than maximum allowable

Library item: Steel Calcs - SAGGING

Check for section - positive moments

Depth of equivalent rectangular stress block	$a = (A_{s\_prov} \times f_y) / (0.85 \times f'_c) =$ **0.32** in
Depth of neutral axis	$c = a / \beta_1 =$ **0.382** in
Net tensile strain in long. steel at nominal strength	$\varepsilon_t = 0.003 \times [(d - c) / c] =$ **0.0152**

Tensile strain exceeds minimum required, design OK

Required nominal flexural strength	$M_{us} =$ **1.348** kip_ft/ft
Strength reduction factor	$\phi =$**0.9**
Nominal flexural strength	$M_{ns\_prov} = A_{s\_prov} \times f_y \times (d - a / 2) =$ **1.781** kip_ft/ft
Design flexural strength	$\phi M_{ns\_prov} = \phi \times M_{ns\_prov} =$ **1.603** kip_ft/ft

PASS - Design flexural strength exceeds required flexural strength

Transverse reinforcement - (for shrinkage and temperature)

Transverse reinforcement provided	**No. 3 @ 12 in o.c.**
Area of reinforcement provided	$A_{t\_prov} =$ **0.110** in²/ft
Min ratio of transverse reinforcement – cl. 7.6.1.1	$\rho_t =$**0.0018**
Minimum area of transverse reinforcement required	$A_{t\_req} = \rho_t \times h =$ **0.076** in²/ft

PASS - Area of transverse steel provided OK

Maximum allowable spacing of bars	$s_{max\_t} = \min (5 \times h, 18\ in) =$ **17.500** in
Actual transverse bar spacing provided	$s_t =$ **12.000** in

PASS - Spacing of transverse bars is less than allowable

Library item: Transverse steel calcs

Check for shear

Required shear strength	$V_u =$ **0.732** kips/ft
Size effect factor – cl. 22.5.5.1.3	$\lambda_s = \min(\sqrt{(2 / (1 + (d / 1\ in) / 10))}, 1.0) =$ **1.00**
Ratio of longitudinal reinforcement	$\rho_w = A_{s\_prov} / d =$ **0.006**
Shear strength provided by concrete	$V_c = \min(8 \times \lambda_s \times \lambda \times (\rho_w)^{1/3}, 5 \times \lambda) \times \sqrt{(f'_c \times 1\ psi)} \times d =$ **2.206** kips/ft
Shear strength provided by shear steel (assumed)	$V_s = 0$ kips/ft
Shear capacity of section	$V = V_c + V_s =$ **2.206** kips/ft
Design shear capacity of section	$\phi V = 0.75 \times V =$ **1.654** kips/ft

PASS - One-way shear capacity

Check of clear cover – cl. 20.5.1.1

Permissible min nominal cover to all reinforcement	$c_{min} = 0.75$ in
Clear cover to tension reinforcement (+ve mnt)	$c_c = h - d - D/2 =$ **1.000** in

PASS - Cover to steel resisting positive moment exceeds allowable minimum cover

Deflection

Support condition	**Both ends continuous**
Basic span-to-thickness ratio - Table 7.3.1.1	$ratio_{basic}$ = **28**
Type of concrete	**Normal weight**
Concrete density factor - Table 7.3.1.1	$f_{density}$ = **1.00**
Allowable span-to-thickness ratio	$ratio_{allow} = ratio_{basic} / (f_{density} \times (0.4 + f_y / 100000\ psi))$ = **28.000**
Actual span-to-thickness ratio	$ratio_{actual} = l_n / h$ = **18.857**

PASS - The slab thickness is adequate to control deflection

Design summary

Slab is 3.5 in thick in 3000 psi concrete
Tension steel provided - positive moment, No. 3 @ 8 in o.c. in 60000 psi steel
Transverse steel provided , No. 3 @ 12 in o.c. in 60000 psi steel

(TRPD-HD) Non-Penetrating Ballast Requirement

Job No.: 23010.05

Date: 04/04/2023

(Total Ballast *0.66* Moment Arm * .9) = (Antenna Load * Height * 1.6) + (Mast Load * L/2 * 1.6) - (Tripod Weight * MA * .9) - (Antenna Weight * MA * .9)

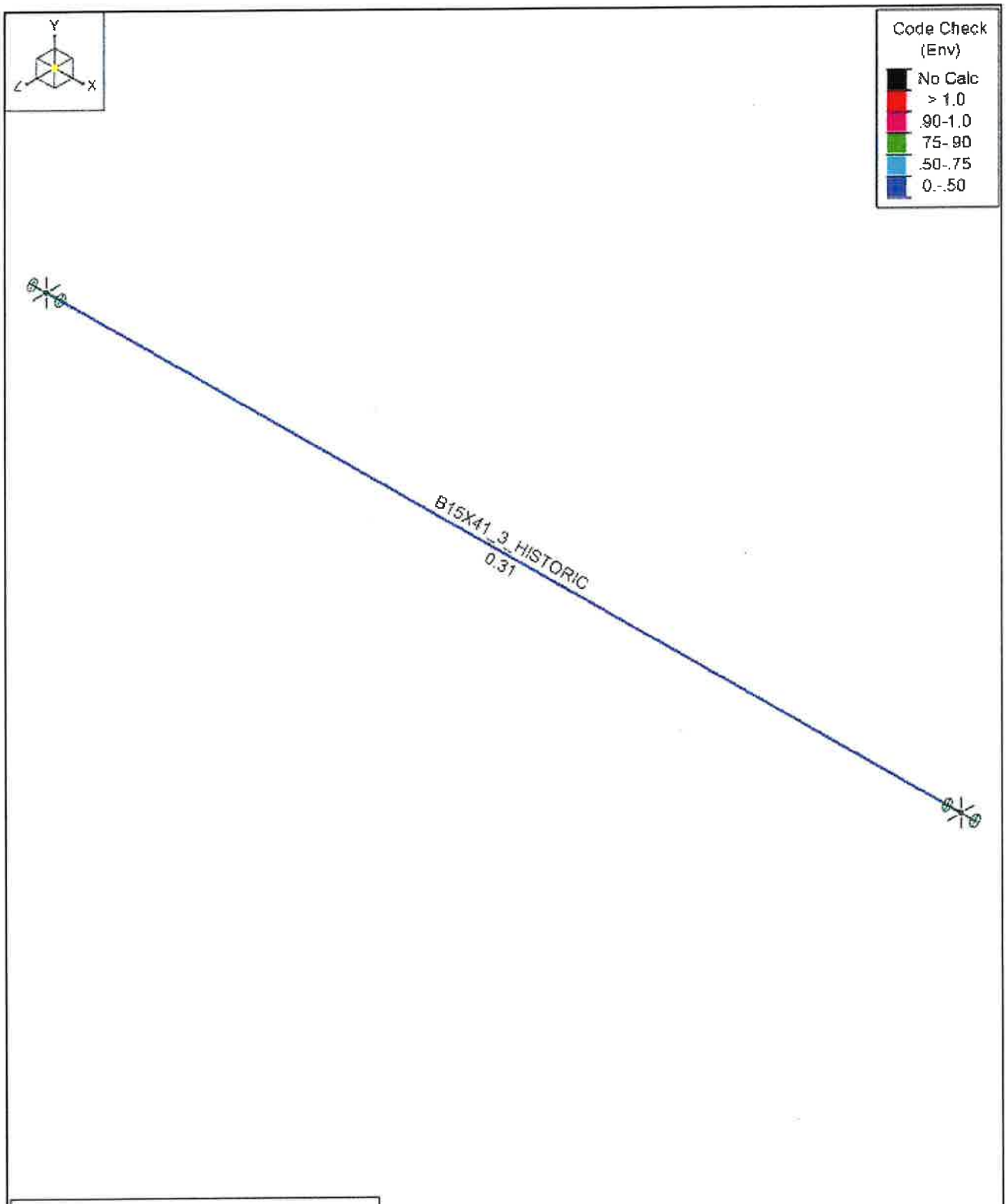
Antenna Load	A_L		306	lbs
Antenna Weight	Aw		110	lbs
Height	H		8	ft
Mast Load	M_L	9	180	lbs
Mast Length	L		10	ft
Tripod Weight	Tw		442	lbs

$$W = \frac{(A_L * H * 1.6) + (M_L * L/2 * 1.6) - (Tw * 2.92 * .9) - (Aw * 2.92 * .9)}{(.66 * 4.42 * .9)}$$ REV G Equation

$$W = [(A_L * H) + (M_L * L/2) - (Tw * 2.92) - (Aw * 2.92)] * 0.515$$ 1.5 Safety Factor Equation

		REV G	1.5 SF	0 SF	
Total Ballast	W	1488	894	595	lbs
Ballast Per Tray	W/3	496	298	198	lbs
Roof Load		63	44	35	psf
# of blocks per tray	(w/3)/35		9		

MOUNT CAPACITY GOOD



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering	Yale Commencement Spot CT	SK-3
PPG		Apr 04, 2023
23010.05		Existing Steel Beam Check.r3d

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	290	0	0	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]
1	N2	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M1	Y	-0.5	%50

Member Distributed Loads (BLC 5 : Snow Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.164	-0.164	0	%100

Member Distributed Loads (BLC 6 : Live Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.109	-0.109	0	%100

Member Distributed Loads (BLC 7 : Slab Self Dead Load)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.273	-0.273	0	%100

Member Area Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Weight of Equipment	DL		1	
3	Wind X-Direction (22 psf)	WLX			
4	Wind Z-Direction (22psf)	WLZ			
5	Snow Load	SL			1
6	Live Load	RLL			1

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
7	Slab Self Dead Load	DL			1

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	IBC 16-8	Yes	Y	DL	1										
2	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1						
3	IBC 16-10 (a)	Yes	Y	DL	1	RLL	1								
4	IBC 16-10 (b)	Yes	Y	DL	1	SL	1	SLN	1						
5	IBC 16-10 (c)	Yes	Y	DL	1	RL	1								
6	IBC 16-11 (a)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RLL	0.75				
7	IBC 16-11 (b)	Yes	Y	DL	1	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75		
8	IBC 16-11 (c)	Yes	Y	DL	1	LL	0.75	LLS	0.75	RL	0.75				
9	IBC 16-12 (a) (a)	Yes	Y	DL	1	WLX	0.6								
10	IBC 16-12 (a) (b)	Yes	Y	DL	1	WLZ	0.6								
11	IBC 16-12 (a) (c)	Yes	Y	DL	1	WLX	-0.6								
12	IBC 16-12 (a) (d)	Yes	Y	DL	1	WLZ	-0.6								
13	IBC 16-13 (a) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RLL	0.75		
14	IBC 16-13 (a) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RLL	0.75		
15	IBC 16-13 (a) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
16	IBC 16-13 (a) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RLL	0.75		
17	IBC 16-13 (b) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
18	IBC 16-13 (b) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
19	IBC 16-13 (b) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
20	IBC 16-13 (b) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	SL	0.75	SLN	0.75
21	IBC 16-13 (c) (a)	Yes	Y	DL	1	WLX	0.45	LL	0.75	LLS	0.75	RL	0.75		
22	IBC 16-13 (c) (b)	Yes	Y	DL	1	WLZ	0.45	LL	0.75	LLS	0.75	RL	0.75		
23	IBC 16-13 (c) (c)	Yes	Y	DL	1	WLX	-0.45	LL	0.75	LLS	0.75	RL	0.75		
24	IBC 16-13 (c) (d)	Yes	Y	DL	1	WLZ	-0.45	LL	0.75	LLS	0.75	RL	0.75		
25	IBC 16-15 (a)	Yes	Y	DL	0.6	WLX	0.6								
26	IBC 16-15 (b)	Yes	Y	DL	0.6	WLZ	0.6								
27	IBC 16-15 (c)	Yes	Y	DL	0.6	WLX	-0.6								
28	IBC 16-15 (d)	Yes	Y	DL	0.6	WLZ	-0.6								

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	0	28	6.025	4	0	28	0	28	0	28	0	28
2		min	0	1	2.426	25	0	1	0	1	0	1	0	1
3	N1	max	0	28	6.025	4	0	28	0	28	0	28	0	28
4		min	0	1	2.426	25	0	1	0	1	0	1	0	1
5	Totals:	max	0	28	12.049	4	0	28						
6		min	0	1	4.852	25	0	1						

Envelope Node Displacements

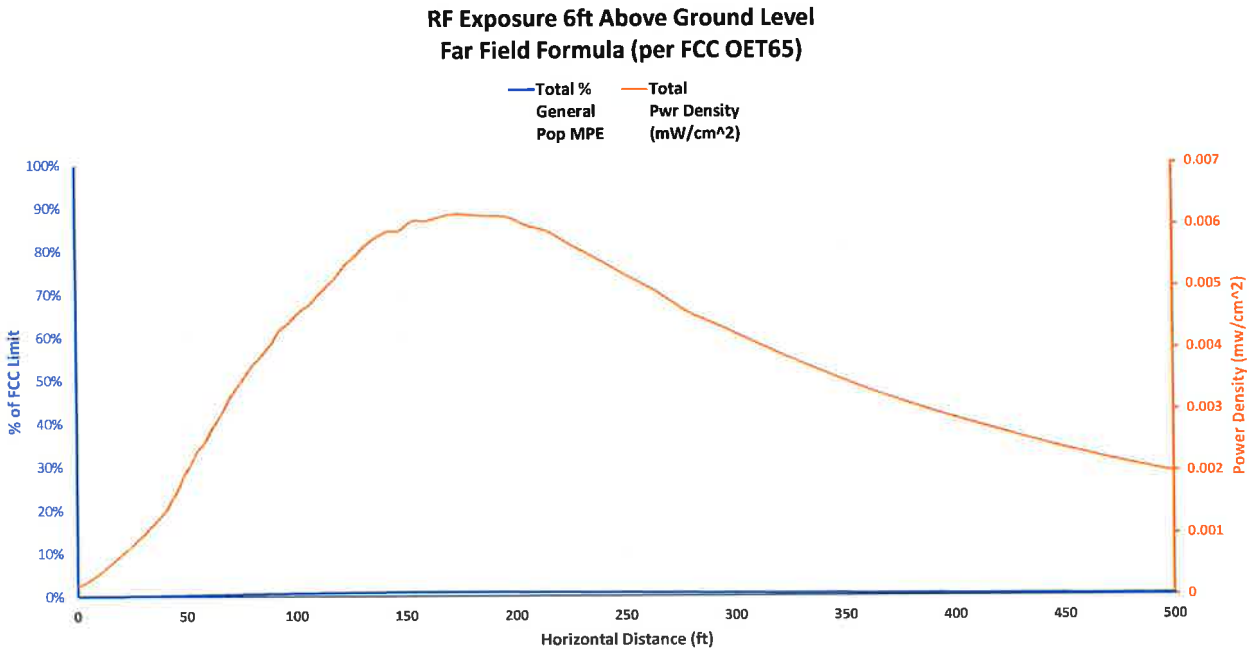
	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	28	0	28	0	28	0	28	0	28	-1.654e-3	28
2		min	0	1	0	4	0	1	0	1	0	1	-4.068e-3	4
3	N2	max	0	28	0	28	0	28	0	28	0	28	4.068e-3	4
4		min	0	1	0	4	0	1	0	1	0	1	1.654e-3	25

Envelope AISC 14TH (360-10): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om [k-ft]	Mnzz/om [k-ft]	Cb	Eqn
1	M1	B15X41_3_HISTORIC	0.305	145	4	0.082	290	y	4	168.192	259.114	20.561	124.132	1	H1-1b

ATTACHMENT 4

Location	Yale Campus SPOT CT - Part 1 of 2			
Date	4/6/2023			
Band	AWS	PCS	850-LTE	700
Operating Frequency (MHz)	2,145	1,970	880	746
General Population MPE (mW/cm^2)	1	1	0.586666667	0.497333333
ERP Per Transmitter (Watts)	168	126	88	77
Number of Transmitters	4	4	4	4
Antenna Centerline (feet)	102	102	102	102
Total ERP (Watts)	672	505	352	307
Total ERP (dBm)	58	57	55	55
Maximum % of General Population Limit	0.9%			

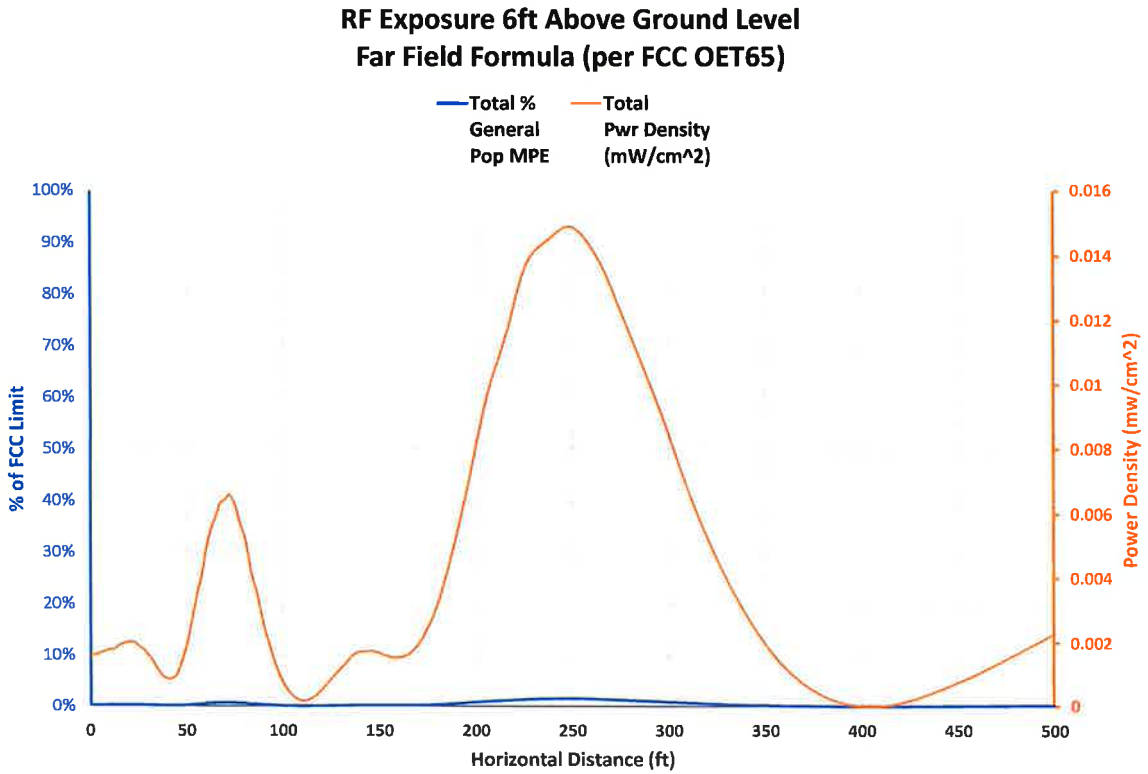


Angle Below Horizon	Power Density (mW/cm^2)				Percent of General Population MPE									Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
	AWS	PCS	850-LTE	700 MHz	39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz			
90	2.23028E-05	0.000118795	1.5429E-05	1.2257E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0	0.000168784	0.02%
89	3.29783E-05	0.000121525	2.12914E-05	1.54259E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	1.675686233	0.000191221	0.02%
88	4.76246E-05	0.000124242	2.80419E-05	1.94023E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	3.352393871	0.000219311	0.03%
87	6.87336E-05	0.000124053	3.69102E-05	2.38337E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.00%	5.031146811	0.000253531	0.03%
86	9.25213E-05	0.000123789	4.63681E-05	2.92594E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.01%	6.712973947	0.000291937	0.04%

85	0.000118864	0.000123449	5.68887E-05	3.5081E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.01%	8.398911698	0.000334282	0.04%
84	0.000149138	0.000120234	6.66141E-05	4.20351E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.01%	10.09000659	0.000378022	0.05%
83	0.000182752	0.000117031	7.61796E-05	4.91909E-05	0.00%	0.00%	0.00%	0.00%	0.02%	0.01%	0.01%	0.00%	0.01%	11.78731785	0.000425153	0.05%
82	0.000218709	0.000113843	8.70648E-05	5.75292E-05	0.00%	0.00%	0.00%	0.00%	0.02%	0.01%	0.01%	0.00%	0.01%	13.49192013	0.000477145	0.06%
81	0.000255623	0.000110672	9.71801E-05	6.57087E-05	0.00%	0.00%	0.00%	0.00%	0.03%	0.01%	0.02%	0.00%	0.01%	15.20490627	0.000529184	0.07%
80	0.000291785	0.000107523	0.000108403	7.50043E-05	0.00%	0.00%	0.00%	0.00%	0.03%	0.01%	0.02%	0.00%	0.02%	16.92739015	0.000582715	0.07%
79	0.000332854	9.96993E-05	0.000118095	8.55611E-05	0.00%	0.00%	0.00%	0.00%	0.03%	0.01%	0.02%	0.00%	0.02%	18.66050968	0.000636209	0.08%
78	0.000370825	9.23864E-05	0.000125645	9.53217E-05	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.02%	0.00%	0.02%	20.40542992	0.000684178	0.09%
77	0.000412865	8.95874E-05	0.000133593	0.000106128	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.02%	0.00%	0.02%	22.16334635	0.000742174	0.09%
76	0.00044892	8.29101E-05	0.00014526	0.000115396	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.02%	0.00%	0.02%	23.93548827	0.000792486	0.10%
75	0.000487807	8.2165E-05	0.00015425	0.000128313	0.00%	0.00%	0.00%	0.00%	0.05%	0.01%	0.03%	0.00%	0.03%	25.72312247	0.000852535	0.11%
74	0.000529717	8.71932E-05	0.000163689	0.000139337	0.00%	0.00%	0.00%	0.00%	0.05%	0.01%	0.03%	0.00%	0.03%	27.52755703	0.000919936	0.12%
73	0.000561763	9.24681E-05	0.000165779	0.00015473	0.00%	0.00%	0.00%	0.00%	0.06%	0.01%	0.03%	0.00%	0.03%	29.35014542	0.00097474	0.12%
72	0.000595351	0.000105005	0.000171692	0.000167801	0.00%	0.00%	0.00%	0.00%	0.06%	0.01%	0.03%	0.00%	0.03%	31.19229084	0.00103985	0.13%
71	0.000630522	0.000121938	0.000181835	0.000181854	0.00%	0.00%	0.00%	0.00%	0.06%	0.01%	0.03%	0.00%	0.04%	33.05545088	0.001116149	0.14%
70	0.000652127	0.000135136	0.000188065	0.000201537	0.00%	0.00%	0.00%	0.00%	0.07%	0.01%	0.03%	0.00%	0.04%	34.94114249	0.001176865	0.15%
69	0.000689706	0.000156712	0.000194375	0.000218116	0.00%	0.00%	0.00%	0.00%	0.07%	0.02%	0.03%	0.00%	0.04%	36.85094736	0.001258908	0.16%
68	0.000712348	0.000173433	0.000205432	0.000241388	0.00%	0.00%	0.00%	0.00%	0.07%	0.02%	0.04%	0.00%	0.05%	38.78651768	0.0013326	0.17%
67	0.000752337	0.000191801	0.0002072	0.000260877	0.00%	0.00%	0.00%	0.00%	0.08%	0.02%	0.04%	0.00%	0.05%	40.74958236	0.001412215	0.18%
66	0.000812495	0.0002169	0.000218674	0.000288299	0.00%	0.00%	0.00%	0.00%	0.08%	0.02%	0.04%	0.00%	0.06%	42.74195379	0.001536368	0.20%
65	0.000876823	0.000239525	0.000230616	0.000311125	0.00%	0.00%	0.00%	0.00%	0.09%	0.02%	0.04%	0.00%	0.06%	44.76553518	0.001658088	0.21%
64	0.000945542	0.000264314	0.000243029	0.000343323	0.00%	0.00%	0.00%	0.00%	0.09%	0.03%	0.04%	0.00%	0.07%	46.8223285	0.001796208	0.23%
63	0.00104261	0.000298237	0.000255917	0.000369952	0.00%	0.00%	0.00%	0.00%	0.10%	0.03%	0.04%	0.00%	0.07%	48.91444315	0.001966716	0.25%
62	0.001097059	0.000313812	0.000269282	0.000398339	0.00%	0.00%	0.00%	0.00%	0.11%	0.03%	0.05%	0.00%	0.08%	51.04410544	0.002078492	0.27%
61	0.00115345	0.000345492	0.000289718	0.000438553	0.00%	0.00%	0.00%	0.00%	0.12%	0.03%	0.05%	0.00%	0.09%	53.21366894	0.002227213	0.29%
60	0.001211774	0.000380067	0.000311457	0.00047146	0.00%	0.00%	0.00%	0.00%	0.12%	0.04%	0.05%	0.00%	0.09%	55.42562584	0.002374758	0.31%
59	0.001214763	0.000408254	0.000334556	0.000506424	0.00%	0.00%	0.00%	0.00%	0.12%	0.04%	0.06%	0.00%	0.10%	57.68261943	0.002463997	0.32%
58	0.001245092	0.000448374	0.000367433	0.000543531	0.00%	0.00%	0.00%	0.00%	0.12%	0.04%	0.06%	0.00%	0.11%	59.98745778	0.002604429	0.34%
57	0.001275097	0.00050348	0.000394022	0.000582862	0.00%	0.00%	0.00%	0.00%	0.13%	0.05%	0.07%	0.00%	0.12%	62.34312895	0.00275546	0.36%
56	0.001274996	0.000552011	0.000432002	0.000624499	0.00%	0.00%	0.00%	0.00%	0.13%	0.06%	0.07%	0.00%	0.13%	64.75281762	0.002883507	0.38%
55	0.001303435	0.000604684	0.000462452	0.000668517	0.00%	0.00%	0.00%	0.00%	0.13%	0.06%	0.08%	0.00%	0.13%	67.21992367	0.003039087	0.40%
54	0.001331299	0.000661781	0.000506119	0.000714987	0.00%	0.00%	0.00%	0.00%	0.13%	0.07%	0.09%	0.00%	0.14%	69.74808269	0.003214187	0.43%
53	0.00132757	0.000707125	0.000553394	0.000763977	0.00%	0.00%	0.00%	0.00%	0.13%	0.07%	0.09%	0.00%	0.15%	72.34118881	0.003352067	0.45%
52	0.001322588	0.000754855	0.000604507	0.00079698	0.00%	0.00%	0.00%	0.00%	0.13%	0.08%	0.10%	0.00%	0.16%	75.00342014	0.00347893	0.47%
51	0.001316332	0.000805016	0.000644677	0.00084994	0.00%	0.00%	0.00%	0.00%	0.13%	0.08%	0.11%	0.00%	0.17%	77.73926719	0.003615965	0.49%
50	0.001308785	0.000838122	0.000702822	0.000905505	0.00%	0.00%	0.00%	0.00%	0.13%	0.08%	0.12%	0.00%	0.18%	80.55356459	0.003755234	0.52%
49	0.00129993	0.000871683	0.000747992	0.000941766	0.00%	0.00%	0.00%	0.00%	0.13%	0.09%	0.13%	0.00%	0.19%	83.45152683	0.003861372	0.53%
48	0.001289755	0.00090562	0.000813737	0.000978431	0.00%	0.00%	0.00%	0.00%	0.13%	0.09%	0.14%	0.00%	0.20%	86.43878825	0.003987543	0.55%
47	0.001278248	0.00093984	0.000864156	0.001039054	0.00%	0.00%	0.00%	0.00%	0.13%	0.09%	0.15%	0.00%	0.21%	89.52144827	0.004121299	0.58%
46	0.001325039	0.000974243	0.000938006	0.001077088	0.00%	0.00%	0.00%	0.00%	0.13%	0.10%	0.16%	0.00%	0.22%	92.70612238	0.004314375	0.61%
45	0.001310178	0.000985755	0.000993819	0.001115201	0.00%	0.00%	0.00%	0.00%	0.13%	0.10%	0.17%	0.00%	0.22%	96	0.004404953	0.62%
44	0.001324045	0.000996189	0.001051671	0.001153256	0.00%	0.00%	0.00%	0.00%	0.13%	0.10%	0.18%	0.00%	0.23%	99.41091012	0.004525161	0.64%
43	0.001336371	0.001005462	0.001111486	0.001191104	0.00%	0.00%	0.00%	0.00%	0.13%	0.10%	0.19%	0.00%	0.24%	102.9473962	0.004644423	0.66%
42	0.001347045	0.001013493	0.00114646	0.001228584	0.00%	0.00%	0.00%	0.00%	0.13%	0.10%	0.20%	0.00%	0.25%	106.6188014	0.004735583	0.68%
41	0.001387542	0.001020199	0.001208434	0.00126552	0.00%	0.00%	0.00%	0.00%	0.14%	0.10%	0.21%	0.00%	0.25%	110.4353671	0.004881696	0.70%
40	0.001427234	0.001025496	0.001271957	0.001301722	0.00%	0.00%	0.00%	0.00%	0.14%	0.10%	0.22%	0.00%	0.26%	114.4083449	0.005026409	0.72%
39	0.001500044	0.001029302	0.001306414	0.001336986	0.00%	0.00%	0.00%	0.00%	0.15%	0.10%	0.22%	0.00%	0.27%	118.550127	0.005172745	0.74%
38	0.001574143	0.00105556	0.001370949	0.001371094	0.00%	0.00%	0.00%	0.00%	0.16%	0.11%	0.23%	0.00%	0.28%	122.8743967	0.005371746	0.77%
37	0.00164925	0.001056149	0.001403665	0.001403813	0.00%	0.00%	0.00%	0.00%	0.16%	0.11%	0.24%	0.00%	0.28%	127.3963029	0.005512876	0.79%
36	0.001765215	0.001054961	0.001468164	0.001402234	0.00%	0.00%	0.00%	0.00%	0.18%	0.11%	0.25%	0.00%	0.28%	132.1326644	0.005690575	0.81%
35	0.001843075	0.001051918	0.001498028	0.001430757	0.00%	0.00%	0.00%	0.00%	0.18%	0.11%	0.26%	0.00%	0.29%	137.1022086	0.005823777	0.83%
34	0.001920807	0.001046941	0.00152567	0.001423988	0.00%	0.00%	0.00%	0.00%	0.19%	0.10%	0.26%	0.00%	0.29%	142.325853	0.005917406	0.84%
33	0.001952441	0.001016288	0.001550796	0.001414493	0.00%	0.00%	0.00%	0.00%	0.20%	0.10%	0.26%	0.00%	0.28%	147.8270365	0.005934017	0.85%
32	0.002073861	0.001007438	0.001573101	0.001434837	0.00%	0.00%	0.00%	0.00%	0.21%	0.10%	0.27%	0.00%	0.29%	153.6321148	0.006089238	0.86%
31	0.002099128	0.000973818	0.001592267	0.00141926	0.00%	0.00%	0.00%	0.00%	0.21%	0.10%	0.27%	0.00%	0.29%	159.7708303	0.006084473	0.86%
30	0.002219731	0.000961035	0.001571366	0.001400629	0.00%	0.00%	0.00%	0.00%	0.22%	0.10%	0.27%	0.00%	0.28%	166.2768775	0.006152761	0.87%
29	0.002288246	0.00094611	0.001582996	0.001378877	0.00%	0.00%	0.00%	0.00%	0.23%	0.09%	0.27%	0.00%	0.28%	173.1885845	0.006196229	0.87%
28	0.002352767	0.000950643	0.001554375	0.001323128	0.00%	0.00%	0.00%	0.00%	0.24%	0.10%	0.26%	0.00%	0.27%	180.5497407	0.006180913	0.86%
27	0.002412425	0.000930878	0.001522057	0.001295617	0.00%	0.00%	0.00%	0.00%	0.24%	0.09%	0.26%	0.00%	0.26%	188.4106085	0.006160977	0.85%
26	0.002466291	0.00093	0.001486008	0.001264932	0.00%	0.00%	0.00%	0.00%	0.25%	0.09%	0.25%	0.00%	0.25%	196.8291688	0.006147231	0.85%
25	0.002456161	0.000905098	0.001446218	0.001203039	0.00%	0.00%	0.00%	0.00%	0.25%	0.09%	0.25%	0.00%	0.24%	205.8726644	0.006010516	0.82%
24	0.002437737	0.000898309	0.001402697	0.001166836	0.00%	0.00%	0.00%	0.00%	0.24%	0.09%	0.24%	0.00%	0.23%	215.6195303	0.005905579	0.81%
23	0.00235568	0.000868071	0.001355481	0.001101892	0.00%	0.00%	0.00%	0.00%	0.24%	0.09%	0.23%	0.00%	0.22%	226.1618271	0.005681124	0.77%
22	0.002267311	0.000854968	0.001304632	0.001036416	0.00%	0.00%	0.00%	0.00%	0.23%	0.09%	0.22%	0.00%	0.21%	237.6083379	0.005463327	0.74%
21	0.002172794	0.000819327	0.001221787	0.000993211	0.00%	0.00%	0.00%	0.00%	0.22%	0.08%	0.21%	0.00%	0.20%	250.0885502	0.00520712	0.71%
20	0.002072353	0.000781452	0.001165308	0.000925735	0.00%	0.00%	0.00%	0.00%	0.21%	0.08%	0.20%	0.00%	0.19%	263.7578323	0.004944848	0.67%
19	0.001921517	0.000741452	0.001080491	0.000858355	0.00%	0.00%	0.00%	0.00%	0.19%	0.07%	0.18%	0.00%	0.17%	278.8042443	0.004601814	0.62%

18	0.001812696	0.000715754	0.0010193	0.000791312	0.00%	0.00%	0.00%	0.00%	0.18%	0.07%	0.17%	0.00%	0.16%	295.4576196	0.004339063	0.59%
17	0.001699147	0.000670919	0.000933701	0.00072486	0.00%	0.00%	0.00%	0.00%	0.17%	0.07%	0.16%	0.00%	0.15%	314.0018514	0.004028626	0.54%
16	0.001545384	0.000638962	0.000849207	0.00067462	0.00%	0.00%	0.00%	0.00%	0.15%	0.06%	0.14%	0.00%	0.14%	334.7917866	0.003708173	0.50%
15	0.001394289	0.000603659	0.000766178	0.000608661	0.00%	0.00%	0.00%	0.00%	0.14%	0.06%	0.13%	0.00%	0.12%	358.2768775	0.003372787	0.45%
14	0.001246553	0.000552267	0.000700951	0.000544169	0.00%	0.00%	0.00%	0.00%	0.12%	0.06%	0.12%	0.00%	0.11%	385.0349696	0.00304394	0.41%
13	0.001102901	0.000511653	0.000620174	0.000481459	0.00%	0.00%	0.00%	0.00%	0.11%	0.05%	0.11%	0.00%	0.10%	415.8216839	0.002716186	0.36%
12	0.000964091	0.000457675	0.000529779	0.000420863	0.00%	0.00%	0.00%	0.00%	0.10%	0.05%	0.09%	0.00%	0.08%	451.6444905	0.002372409	0.32%
11	0.000812004	0.000403642	0.000456599	0.000362728	0.00%	0.00%	0.00%	0.00%	0.08%	0.04%	0.08%	0.00%	0.07%	493.8771855	0.002034973	0.27%
10	0.000688178	0.000358212	0.00038697	0.000300416	0.00%	0.00%	0.00%	0.00%	0.07%	0.04%	0.07%	0.00%	0.06%	544.4430547	0.001733776	0.23%
9	0.000558503	0.000304414	0.000321368	0.000249487	0.00%	0.00%	0.00%	0.00%	0.06%	0.03%	0.05%	0.00%	0.05%	606.1201454	0.001433771	0.19%
8	0.000452346	0.000258172	0.000254359	0.000202066	0.00%	0.00%	0.00%	0.00%	0.05%	0.03%	0.04%	0.00%	0.04%	683.0754933	0.001166944	0.16%
7	0.000354935	0.000207295	0.000199584	0.000158552	0.00%	0.00%	0.00%	0.00%	0.04%	0.02%	0.03%	0.00%	0.03%	781.8572571	0.000920366	0.12%
6	0.000267196	0.000163406	0.000146827	0.000119358	0.00%	0.00%	0.00%	0.00%	0.03%	0.02%	0.03%	0.00%	0.02%	913.3789876	0.000696787	0.09%
5	0.000190087	0.000121728	0.000102077	8.29803E-05	0.00%	0.00%	0.00%	0.00%	0.02%	0.01%	0.02%	0.00%	0.02%	1097.285021	0.000496873	0.07%
4	0.000124603	8.16522E-05	6.69124E-05	5.43941E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.01%	1372.863961	0.000327562	0.04%
3	7.01392E-05	4.81282E-05	3.7665E-05	3.06185E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.01%	0.00%	0.01%	1831.789122	0.000186551	0.02%
2	3.19153E-05	2.24098E-05	1.67485E-05	1.39323E-05	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2749.080315	8.50058E-05	0.01%
1	7.98125E-06	5.73469E-06	4.1884E-06	3.48413E-06	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5499.836317	2.13885E-05	0.00%

Location	Yale Campus SPOT CT - Part 2 of 2
Date	4/6/2023
Band	C-Band
Operating Frequency (MHz)	3,700
General Population MPE (mW/cm^2)	1
ERP Per Transmitter (Watts)	11,092
Number of Transmitters	2
Antenna Centerline (feet)	104.5
Total ERP (Watts)	22,184
Total ERP (dBm)	73
Maximum % of General Population Limit	1.5%



Angle Below Horizon	er Density (mW/c C-Band	Percent of General Population MPE 39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz	Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
90	0.001603251	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0.001603251	0.16%
89	0.001602787	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.675686233	0.001602787	0.16%
88	0.001638697	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.352393871	0.001638697	0.16%
87	0.001674441	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.031146811	0.001674441	0.17%
86	0.001709972	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.712973947	0.001709972	0.17%
85	0.00174524	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.398911698	0.00174524	0.17%
84	0.001780197	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.09000659	0.001780197	0.18%
83	0.00177348	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.78731785	0.00177348	0.18%
82	0.001848965	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13.49192013	0.001848965	0.18%
81	0.001926523	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	15.20490627	0.001926523	0.19%
80	0.001960474	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.92739015	0.001960474	0.20%
79	0.001993828	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.66050968	0.001993828	0.20%
78	0.002026526	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.40542992	0.002026526	0.20%
77	0.002011649	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	22.16334635	0.002011649	0.20%
76	0.001950228	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	23.93548827	0.001950228	0.20%
75	0.001846501	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.72312247	0.001846501	0.18%
74	0.001787893	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	27.52755703	0.001787893	0.18%
73	0.001652185	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	29.35014542	0.001652185	0.17%
72	0.0015258	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	31.19229084	0.0015258	0.15%
71	0.001344791	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.05545088	0.001344791	0.13%
70	0.001157515	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	34.94114249	0.001157515	0.12%
69	0.000995656	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	36.85094736	0.000995656	0.10%
68	0.000896186	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	38.78651768	0.000896186	0.09%
67	0.000863753	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	40.74958236	0.000863753	0.09%
66	0.00089141	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.74195379	0.00089141	0.09%
65	0.001007994	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	44.76553518	0.001007994	0.10%
64	0.00130775	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	46.8223285	0.00130775	0.13%
63	0.001695402	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	48.91444315	0.001695402	0.17%
62	0.002196318	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	51.04410544	0.002196318	0.22%
61	0.002843061	0.00%	0.00%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	53.21366894	0.002843061	0.28%
60	0.003511871	0.00%	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	55.42562584	0.003511871	0.35%
59	0.004045247	0.00%	0.00%	0.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	57.68261943	0.004045247	0.40%
58	0.004875262	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	59.98745778	0.004875262	0.49%
57	0.005478846	0.00%	0.00%	0.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	62.34312895	0.005478846	0.55%
56	0.005875026	0.00%	0.00%	0.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	64.75281762	0.005875026	0.59%
55	0.006294349	0.00%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	67.21992367	0.006294349	0.63%
54	0.006434317	0.00%	0.00%	0.64%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	69.74808269	0.006434317	0.64%
53	0.006571344	0.00%	0.00%	0.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	72.34118881	0.006571344	0.66%
52	0.006257417	0.00%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	75.00342014	0.006257417	0.63%
51	0.005684778	0.00%	0.00%	0.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	77.73926719	0.005684778	0.57%
50	0.005159372	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	80.55356459	0.005159372	0.52%
49	0.004169	0.00%	0.00%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	83.45152683	0.004169	0.42%
48	0.003523746	0.00%	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	86.43878825	0.003523746	0.35%
47	0.002651551	0.00%	0.00%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	89.52144827	0.002651551	0.27%
46	0.001947609	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	92.70612238	0.001947609	0.19%
45	0.001303146	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	96	0.001303146	0.13%
44	0.000812747	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.41091012	0.000812747	0.08%
43	0.0004512	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	102.9473962	0.0004512	0.05%
42	0.000244463	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	106.6188014	0.000244463	0.02%

41	0.000159025	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	110.4353671	0.000159025	0.02%
40	0.000236647	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	114.4083449	0.000236647	0.02%
39	0.000432607	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	118.550127	0.000432607	0.04%
38	0.000736912	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	122.8743967	0.000736912	0.07%
37	0.001042406	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	127.3963029	0.001042406	0.10%
36	0.001342528	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	132.1326644	0.001342528	0.13%
35	0.001648315	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	137.1022086	0.001648315	0.16%
34	0.001719286	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	142.325853	0.001719286	0.17%
33	0.001709246	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	147.8270365	0.001709246	0.17%
32	0.001582572	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	153.6321148	0.001582572	0.16%
31	0.001530996	0.00%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	159.7708303	0.001530996	0.15%
30	0.001696604	0.00%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	166.2768775	0.001696604	0.17%
29	0.002254869	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	173.1885845	0.002254869	0.23%
28	0.003277395	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	180.5497407	0.003277395	0.33%
27	0.004974251	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	188.4106085	0.004974251	0.50%
26	0.007188432	0.00%	0.00%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	196.8291688	0.007188432	0.72%
25	0.009663947	0.00%	0.00%	0.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	205.8726644	0.009663947	0.97%
24	0.011539413	0.00%	0.00%	1.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	215.6195303	0.011539413	1.15%
23	0.01372787	0.00%	0.00%	1.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	226.1618271	0.01372787	1.37%
22	0.014497015	0.00%	0.00%	1.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	237.6083379	0.014497015	1.45%
21	0.014895562	0.00%	0.00%	1.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	250.0885502	0.014895562	1.49%
20	0.013891931	0.00%	0.00%	1.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	263.7578323	0.013891931	1.39%
19	0.011754205	0.00%	0.00%	1.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	278.8042443	0.011754205	1.18%
18	0.009228127	0.00%	0.00%	0.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	295.4576196	0.009228127	0.92%
17	0.006126999	0.00%	0.00%	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	314.0018514	0.006126999	0.61%
16	0.003437717	0.00%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	334.7917866	0.003437717	0.34%
15	0.001354539	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	358.2768775	0.001354539	0.14%
14	0.000201068	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	385.0349696	0.000201068	0.02%
13	5.75903E-05	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	415.8216839	5.75903E-05	0.01%
12	0.000798178	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	451.6444905	0.000798178	0.08%
11	0.00207824	0.00%	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	493.8771855	0.00207824	0.21%
10	0.003681133	0.00%	0.00%	0.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	544.4430547	0.003681133	0.37%
9	0.005193211	0.00%	0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	606.1201454	0.005193211	0.52%
8	0.006081328	0.00%	0.00%	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	683.0754933	0.006081328	0.61%
7	0.006588404	0.00%	0.00%	0.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	781.8572571	0.006588404	0.66%
6	0.006245256	0.00%	0.00%	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	913.3789876	0.006245256	0.62%
5	0.005102105	0.00%	0.00%	0.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1097.285021	0.005102105	0.51%
4	0.003840511	0.00%	0.00%	0.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1372.863961	0.003840511	0.38%
3	0.002263961	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1831.789122	0.002263961	0.23%
2	0.001030248	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2749.080315	0.001030248	0.10%
1	0.000263654	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5499.836317	0.000263654	0.03%

ATTACHMENT 5

330 COLLEGE ST

Sales Print Map It

Location	330 COLLEGE ST	**Mblu**	261/ 0252/ 00400/ /
Acct#	261 0252 00400	**Owner**	YALE UNIVERSITY
Assessment	$44,160,760	**Appraisal**	$63,086,800
PID	15027	**Building Count**	2

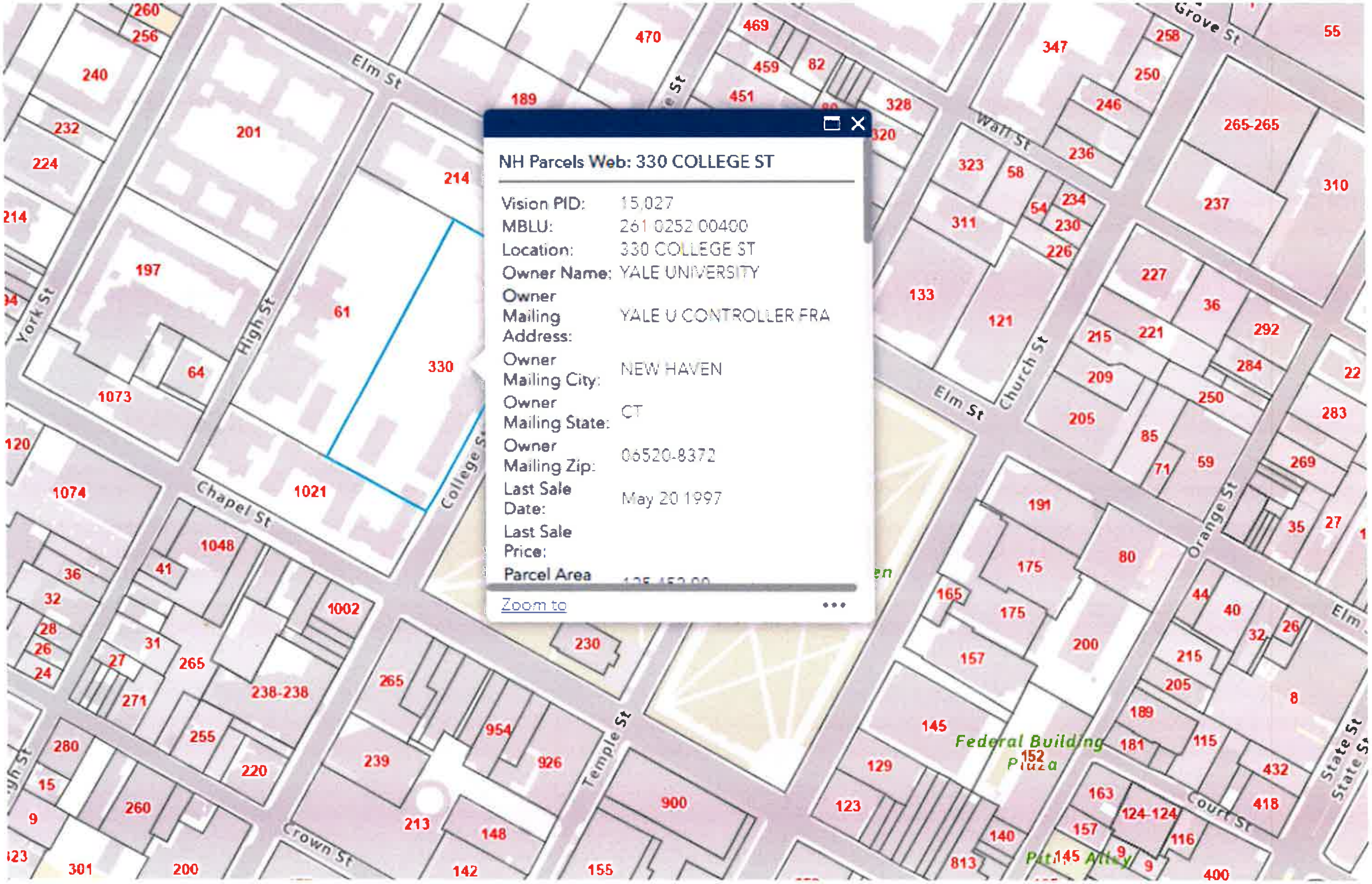
Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$58,548,600	$4,538,200	$63,086,800
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$40,984,020	$3,176,740	$44,160,760

Owner of Record

Owner	YALE UNIVERSITY	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	YALE U CONTROLLER FRA PO BOX 208372 NEW HAVEN, CT 06520-8372	**Book & Page**	5150/0001
		Sale Date	05/21/1997
		Instrument	8

Ownership History


NH Parcels Web: 330 COLLEGE ST
Vision PID: 15,027
MBLU: 261 0252 00400
Location: 330 COLLEGE ST
Owner Name: YALE UNIVERSITY
Owner Mailing Address: YALE U CONTROLLER FRA
Owner Mailing City: NEW HAVEN
Owner Mailing State: CT
Owner Mailing Zip: 06520-8372
Last Sale Date: May 20 1997
Last Sale Price:
Parcel Area
Zoom to
Elm St
High St
York St
Chapel St
College St
Temple St
Crown St
Wall St
Church St
Orange St
Grove St
Court St
State St
Federal Building Plaza
Pitt Alley

ATTACHMENT 6

Yale Campus Spot CT 2023

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 04/11/2023 US POSTAGE $003.19⁰ ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		OLD STATE HOUSE STATION 06103 APR 11 2023 USPS

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Justin Elicker, Mayor City of New Haven 165 Church Street New Haven, CT 06510				
2.	Laura Brown, Executive Director of City Plan City of New Haven 165 Church Street New Haven, CT 06510				
3.	Connor Fray 330 College Street New Haven, CT 06511				
4.					
5.					
6.					

See Reverse for Instructions