Robinson+Cole

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Also admitted in New York
and Massachusetts

April 5, 2024

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**

2024 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 on the Yale University Campus, 344 College Street in New Haven. Included in Attachment 1 is a letter from Gina Costa at Yale University authorizing the filing of this notice with the Council.

The temporary wireless facility will consist of six (6) antennas and five (5) remote radio heads ("RRHs") attached to pipe masts on two (2) ballast-mount support structures on the roof of the Phelps Hall building. Two (2) antennas will be installed at a centerline height of 101.5 feet above ground level ("AGL"); two (2) antennas will be installed at a centerline height of 101 feet AGL; and two (2) antennas will be installed at a centerline height of 98 feet AGL. Electric service for the temporary telecommunications facility will extend from existing service inside Phelps Hall. A set of Project Plans, including a building elevation drawing and roof plan showing the proposed temporary facility as well as specification sheets for the antennas and RRHs are included in Attachment 2. 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 2024 Commencement activities. Cellco expects that the temporary installation will be installed on or about May 5, 2024 and will be removed on or about May 23, 2024.

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 City 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
Gina Costa, Yale University
Daniel Fitzpatrick, Verizon Wireless
Shiva Gadasu, Verizon Wireless

ATTACHMENT 1

April 3, 2024

Daniel Fitzpatrick
Cellco Partnership d/b/a Verizon Wireless
51 Alder Way
Medway, MA 02053

Re: Letter of Authorization – Cellco Partnership d/b/a Verizon Wireless
Yale Commencement – Temporary Telecommunications Facility at 344 College Street
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: Gina Costa Digitally signed by Gina Costa Date: 2024.04.03 16:19:43 -04'00'

Name: Gina Costa

Title: Associate Controller, Operations

Date: ____________________

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
D	04/03/24	DMW	TJR	LEASE EXHIBIT - REV. PER CLIENT COMMENTS
C	03/07/24	DRA	TJR	LEASE EXHIBIT - REV. PER CONSTRUCTION COMMENTS
B	02/28/24	DRA	TJR	LEASE EXHIBIT - REVISED PER STRUCTURAL DETAILS
A	02/13/24	LDL	TJR	LEASE EXHIBIT - ISSUED FOR CLIENT REVIEW

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www.CentekEng.com

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

DATE: 02/06/24
SCALE: AS SHOWN
JOB NO. 24008.01

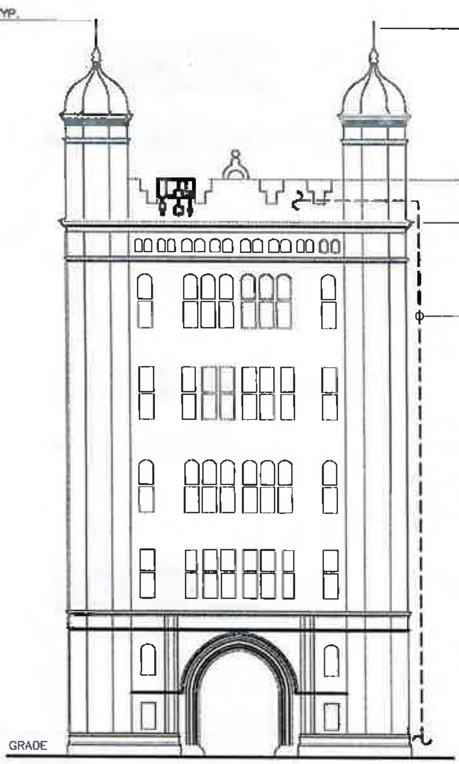
SHEET NO.
L-1

NOTES:

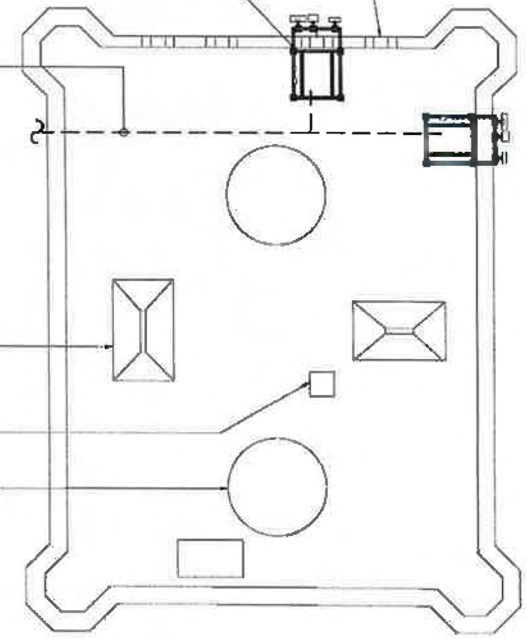
1. THE PROPOSED LESSEE ANTENNA INSTALLATION TO CONSIST OF (2) TEMPORARY ROOFTOP CANTILEVER BALLAST FRAME WITH A TOTAL OF (6) PANEL ANTENNAS, ASSOCIATED RRH APPURTENANCES AND CABLING.
2. LESSEE POWER AND TELCO UTILITIES SHALL BE ROUTED FROM EXISTING DEMARCS LOCATED WITHIN OR ADJACENT TO THE PROPOSED COMMUNICATIONS 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"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
D	04/03/24	DRA	TJR	LEASE EXHIBIT - REV. PER CLIENT COMMENTS
C	03/07/24	DRA	TJR	LEASE EXHIBIT - REV. PER CONSTRUCTION COMMENTS
B	02/28/24	DRA	TJR	LEASE EXHIBIT - REVISED PER STRUCTURAL DETAILS
A	02/23/24	LOL	TJR	LEASE EXHIBIT - ISSUED FOR CLIENT REVIEW

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DATE	02/08/24
SCALE	AS SHOWN
JOB NO.	24008.01

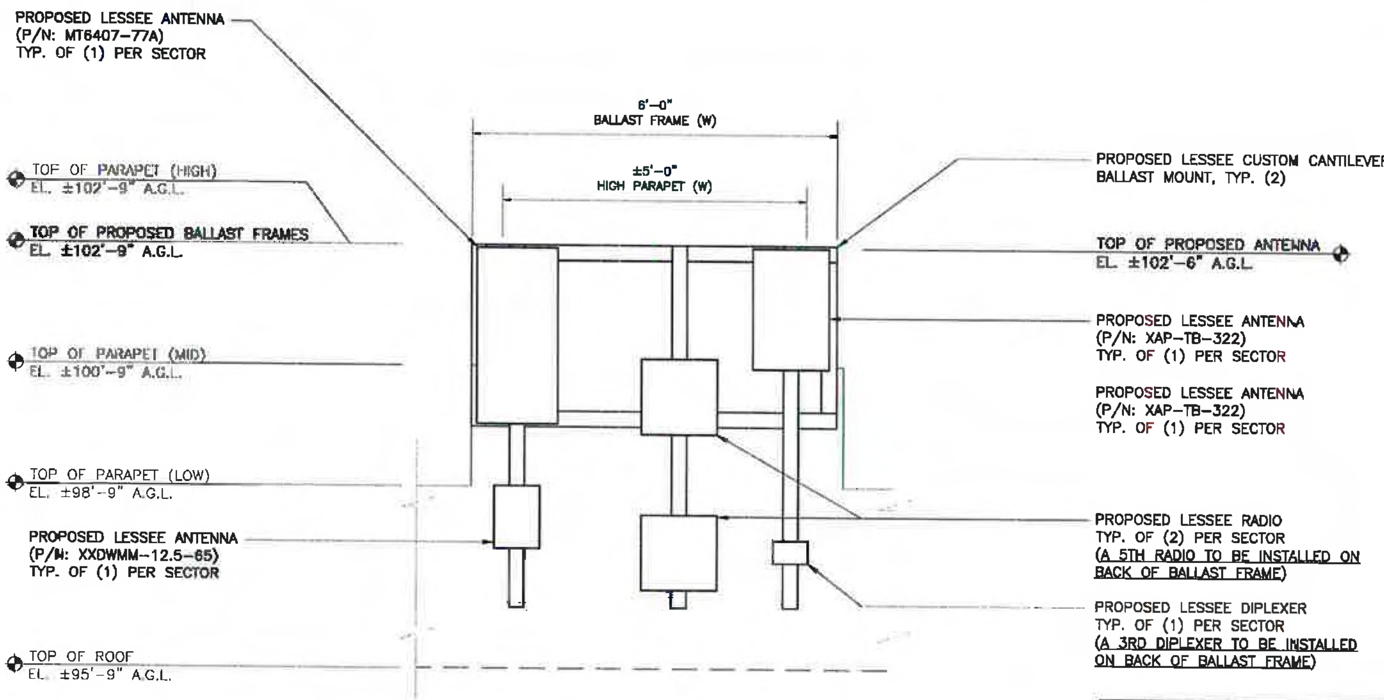
SHEET NO.
L-2

NOTES:

1. THE PROPOSED LESSEE ANTENNA INSTALLATION TO CONSIST OF (2) TEMPORARY ROOFTOP CANTILEVER BALLAST FRAME WITH A TOTAL OF (6) 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.



EQUIPMENT NOTE:

1. (1) RADIO AND (1) DIPLEXER TO BE MOUNTED ON BACK OF (1) BALLAST FRAME, SHARED BY BOTH SECTORS.

1 / L-3 PROPOSED ANTENNA ELEVATION, TYP.
SCALE: 1/2" = 1'-0"

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
D	04/03/24	DWA	TJR	LEASE EXHIBIT - REV. PER CLIENT COMMENTS
C	03/07/24	DWA	TJR	LEASE EXHIBIT - REV. PER CONSTRUCTION COMMENTS
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A	02/23/24	LOL	TJR	LEASE EXHIBIT - ISSUED FOR CLIENT REVIEW

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SHEET NO.
L-3

DESIGN BASIS

GOVERNING CODE: 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CT STATE BUILDING CODE.

1. TIA–222–H, "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES, ANTENNAS AND SMALL WIND TURBINE SUPPORT STRUCTURES"

2. DESIGN CRITERIA

   WIND LOAD:
   ULTIMATE DESIGN WIND SPEED (Vult) = 130 MPH (2022 CSBC: APPENDIX 'P')

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS DESIGN PREPARED BY CENTEK ENGINEERING, INC., MARKED REV 0 DATED 2/27/24.
2. ALL WORK SHALL BE IN ACCORDANCE WITH TIA–222–H "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES". AND THE 2022 CT STATE BUILDING CODE.
3. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE HOST STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION.
4. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
5. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
6. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
8. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/03/24	CBA	TJR	LEASE EXHIBIT – REV. PER CLIENT COMMENTS
C	03/07/24	CBA	TJR	LEASE EXHIBIT – REV. PER CONSTRUCTION COMMENTS
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SHEET NO.
N–1

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD).

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL STEEL (TOWER REINF. PLATES)--- ASTM A572 GR50 (FY = 50 KSI)
   D. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   E. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   F. PIPE ---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B. U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.
   E. BLIND BOLTS---AS1252 PROPERTY CLASS 8.8 (FU=120 KSI).

4. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 14TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

19. FABRICATE BEAMS WITH MILL CAMBER UP.

20. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

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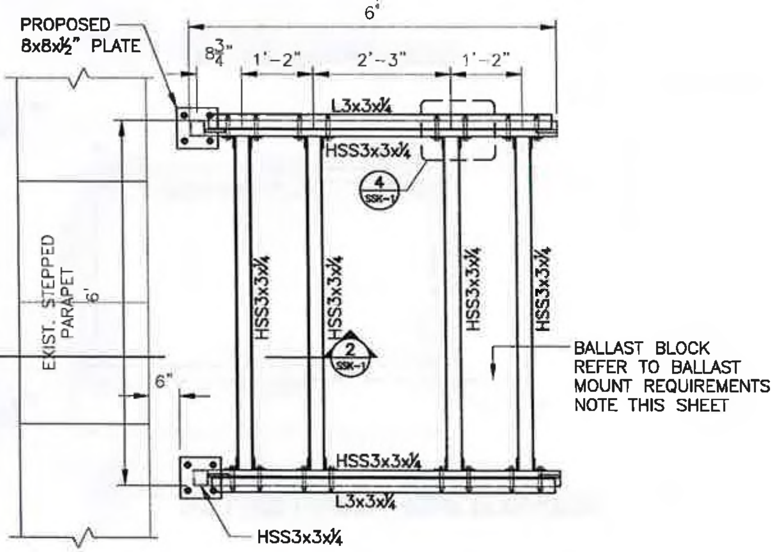
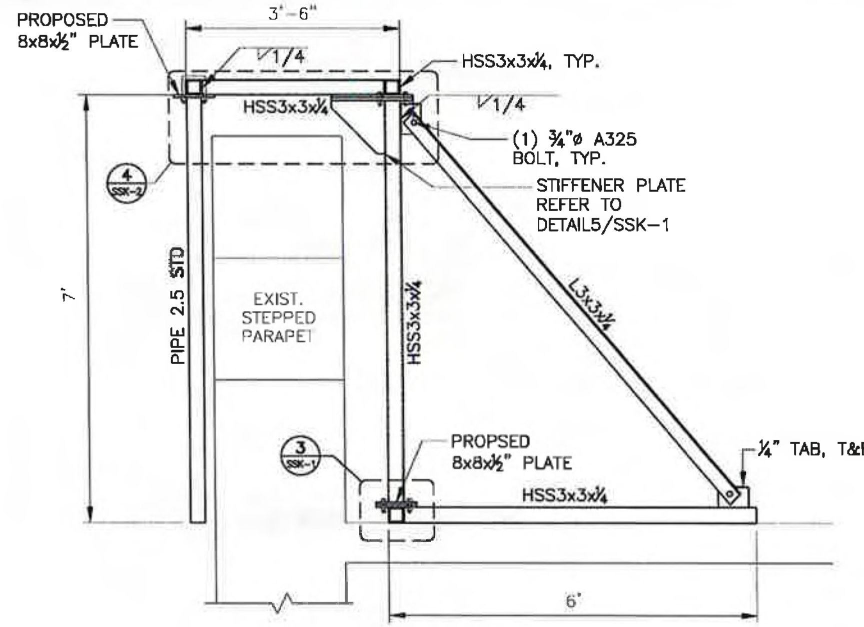
SHEET NO.
N-2



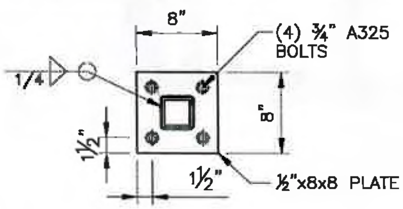
1 SSK-1 **BALLAST FRAME BASE**
SCALE: 1/2" = 1'-0"



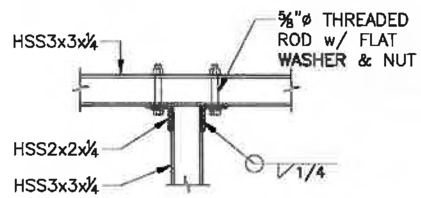
2 SSK-1 **BALLAST FRAME SIDE**
SCALE: 1/2" = 1'-0"

BALLAST MOUNT REQUIREMENTS

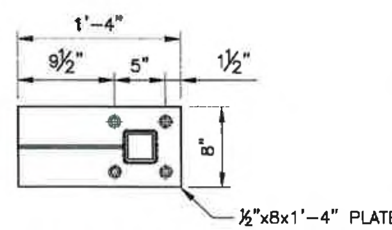
1. PROVIDE 700 LBS BALLAST (20 BLOCKS) IS ADEQUATE FOR THE PROPOSED ANTENNA CONFIGURATION AT EACH SECTOR. TYPICAL BALLAST IS COMPRISED OF 4"X8"X16" SOLID CONCRETE MASONRY BLOCKS (WEIGHT = ±35 LBS). BALLAST WEIGHT MUST BE SPLIT EVENLY (10 BLOCKS EACH) BETWEEN THE FRONT TRAY AND THE REAR TRAY.



3 SSK-1 **BALLAST FRAME BASE CONNECTION DETAIL**
SCALE: 1" = 1'-0"



4 SSK-1 **HSS BASE CONNECTION DETAIL**
SCALE: 1" = 1'-0"



5 SSK-1 **STIFFENER CAP PLATE DETAIL**
SCALE: 1" = 1'-0"

REV.	DATE	DESCRIPTION
D	04/03/24	LEASE EXHIBIT - REV. PER CLIENT COMMENTS
C	03/07/24	LEASE EXHIBIT - REV. PER CONSTRUCTION COMMENTS
B	02/29/24	LEASE EXHIBIT - REVISED PER STRUCTURAL DETAILS
A	02/23/24	LEASE EXHIBIT - ISSUED FOR CLIENT REVIEW

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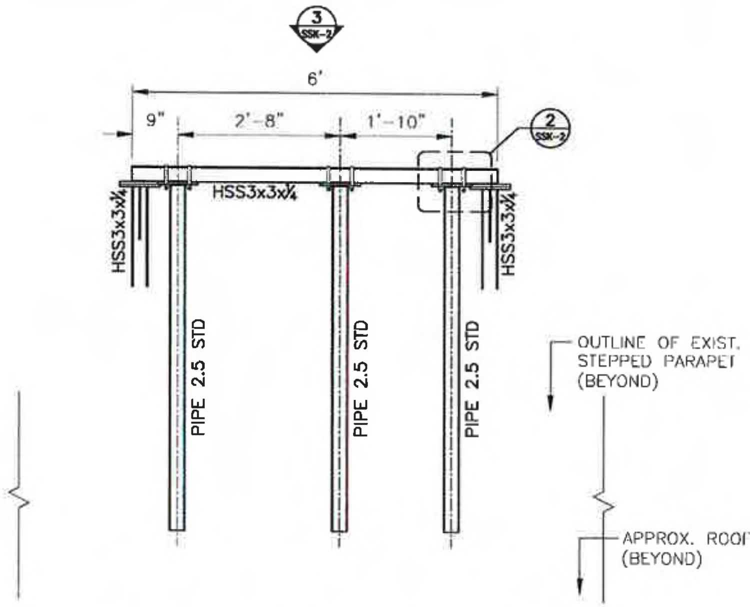
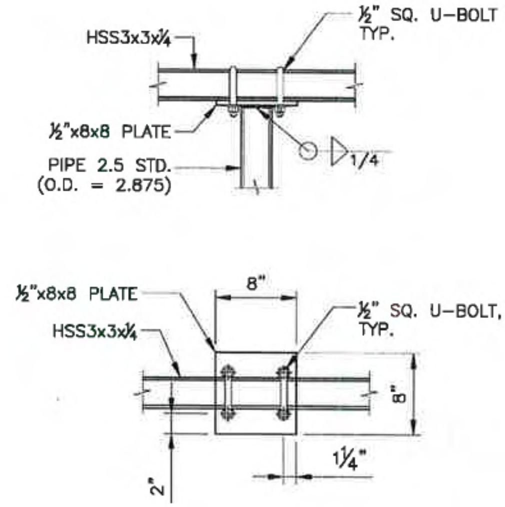
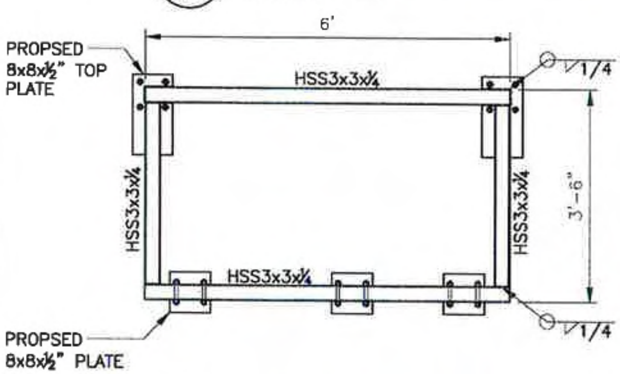


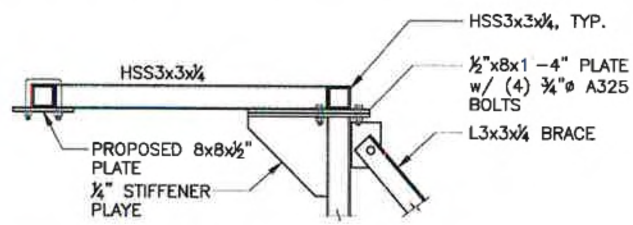
1 SSK-2 **BALLAST FRAME FRONT ELEVATION**
SCALE: 1/2" = 1'-0"



2 SSK-2 **PIPE MAST CONNECTION**
SCALE: 1" = 1'-0"



3 SSK-2 **BALLAST FRAME FRONT**
SCALE: 1/2" = 1'-0"



4 SSK-2 **SECTION AT STIFFENER PLATE**
SCALE: 1" = 1'-0"

REV.	DATE	DRAWN BY	CHECKED BY	DESCRIPTION
0	04/03/24	DWL	TJR	LEASE EXHIBIT – REV. PER CLIENT COMMENTS
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SHEET NO.
SSK-2

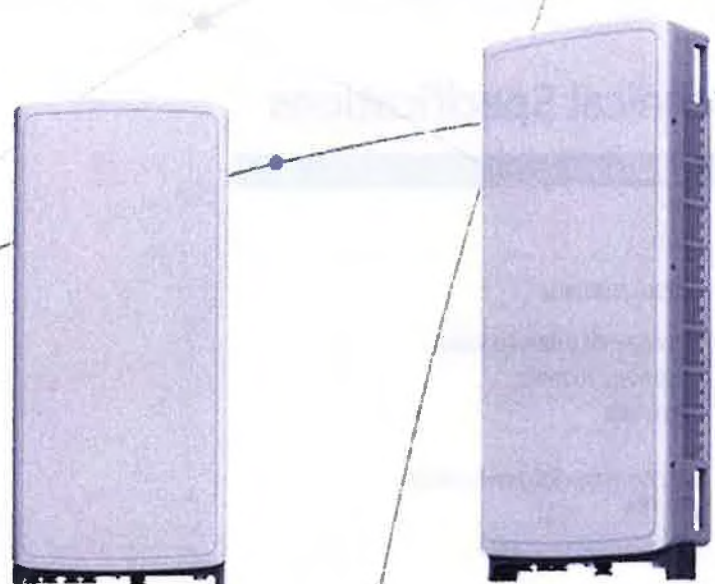
SAMSUNG

SAMSUNG C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A

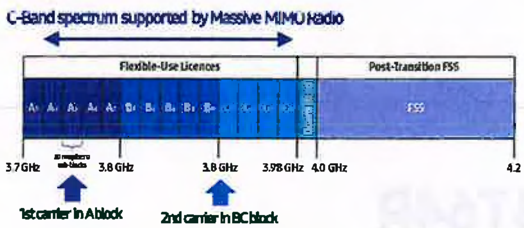


Points of Differentiation

Wide Bandwidth

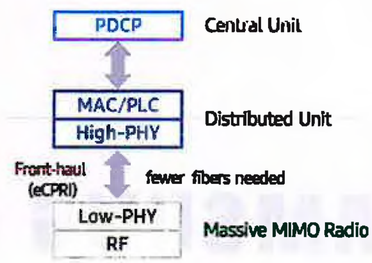
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO), it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment.

Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

SAMSUNG

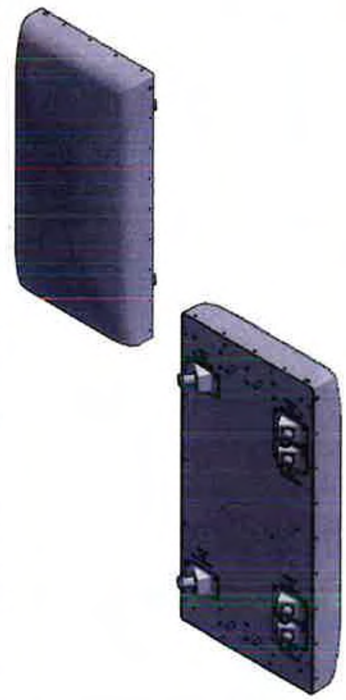
About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

XAP-TB-322

X-Pol Antenna, 1710-2170 MHz, 36", 22° Azimuth, 3 Beam Antenna

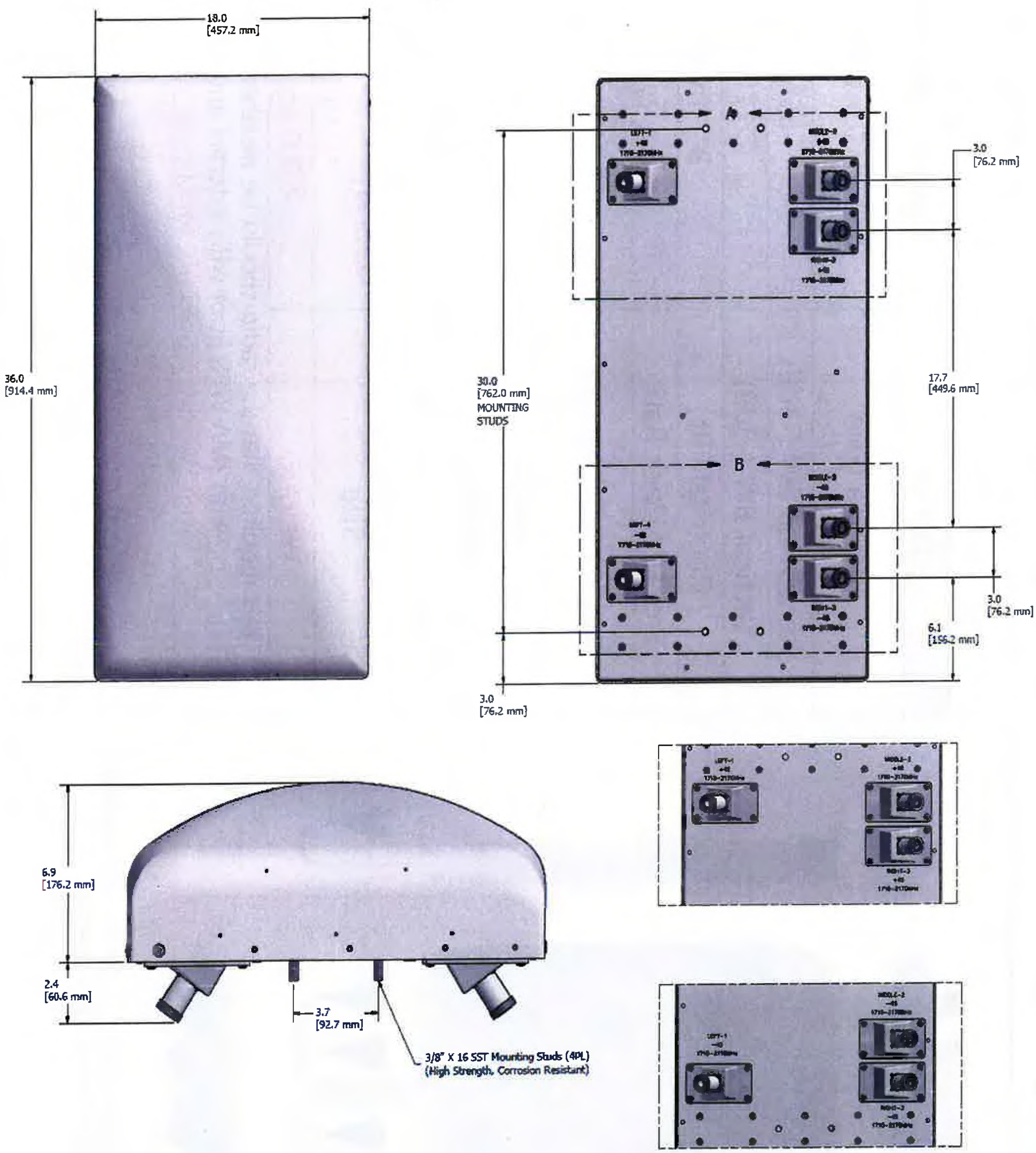


- Special Event Antenna
- 3 Beam Array
- Deep Nulls Between Beams
- Low Side Lobes

ELECTRICAL SPECIFICATIONS

Frequency Band, MHz	1710-1850	1850-1990	1990-2170
Horizontal Beamwidth, 3dB points	22°	21°	20°
Gain, dBi	20.3	20.8	21.0
Vertical Beamwidth, 3dB points	11.2°	10.4°	9.7°
Front-to-Back at 180°, dB	30	30	30
Polarization	+/-45°		
Electrical Downtilt	0°		
VSWR/Return Loss, dB, Maximum	1.7:1/-11.7dB		
Intermodulation (2x20w), IM3, dBc, Maximum	-150		
Impedance, ohms	50		
Maximum Power Per Connector, CW (w)	200		
Lightning Protection	DC Ground		

Mechanical Outline Drawing



[CBRS] Clip-on Antenna Specifications

VzW accepted IP45 in FLD, but IP55 is Samsung Spec.

Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D) mm (*) (8.7 x 12.3 x 1.4 inch.)
Weight	< **2.0** kg [Typ. 1.3 kg]
It is required that the radio should be weatherproofed properly with JMA WPS Boot with external antenna or with Weatherproof Boot for clip-on antennas.	

Antenna includes integrated cable with connector
* Design is subject to minor change

** Ant. spec. follows NGMN recommendations on Base Station Antenna Standards (BASTA). For example, 'mean ± tolerance of 86.6%' is applied to double-sided specification of statistical RF parameters.

SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4439d-25A

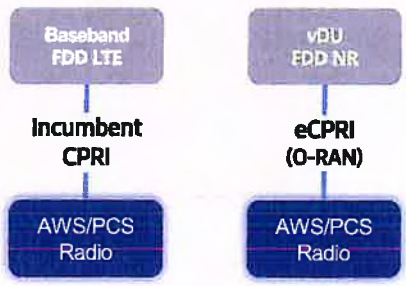
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

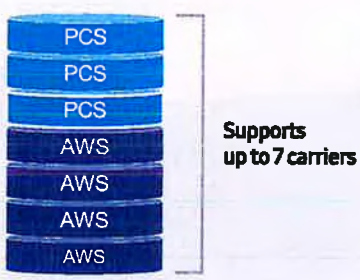
A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.

Optimum Spectrum Utilization

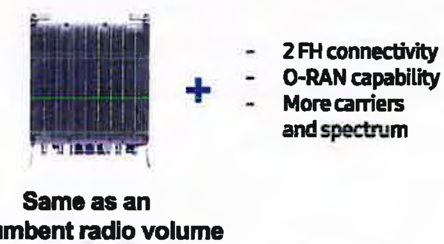
The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

Specifications

The table below outlines the main specifications of the RRH.

Table 1. Specifications

Item	RT4401-48A
Air Technology	LTE
Band	Band 48 (3.5 GHz)
Operating Frequency (MHz)	3550 to 3700
RF Chain	4TX/4RX
Input Power	-48 V DC (-38 to -57 V DC, 1 SKU), with clip-on AC-DC converter (Option)
Dimension (W × D × H) (mm)	8.55 in. (217.4) × 4.15 in. (105.5) × 13.91 in. (353.5) * RRH only 11.39 in. (289.4) × 5.45 in. (138.5) × 16.16 in. (410.5) * with Clip-on antenna, AC-DC power unit
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A
	[B48]: FCC 47 CFR 96.41 e)
Spectrum Analyzer	TX/RX Support
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
Operating Humidity	5 to 100 [%] (RH), condensing, not to exceed 30 g/m³ absolute humidity
Altitude	-60 to 1,800 m
Earthquake	Telcordia Earthquake Risk Zone4 (Telcordia GR-63-CORE)
Vibration in Use Transportation Vibration	Office Vibration Transportation Vibration
Noise	Fanless (natural convection cooling)
Wind Resistance	Telcordia GR-487-CORE, Section 3.34
EMC	FCC Title 47, CFR Part 96
Safety	UL 60950-1 2nd ED

Item	RT4401-48A
	UL 62368-1 UL 60950-22
RF	FCC Title 47, CFR Part 96

The table below outlines the AC/DC power unit specifications of the RRH system.

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. 24008.01

Date: February 27, 2024

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

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 a 3-1/2" thick reinforced concrete slab. The antennas are to be supported by a custom ballast frame consisting of pipe masts and the pipe mast's base frame.

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 01/31/2024. 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.

Reference Standards

2021 International Building Code:

1. ACI 318 – 19: *Building Code Requirements for Structural Concrete*
2. ACI 530 – 13: *Building Code Requirements for Masonry Structures.*
3. ANSI/AISC 360 – 16: Specification for Structural Steel Buildings
4. ASCE/SEI 7 – 16: Minimum Design Loads and Associated Criteria for Buildings and Other 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 2.5 STD (Pipe Masts)	16%	PASS
	HSS3X3X4 (Ballast Frame Member)	35%	PASS
Equipment Area	B15x50 (Existing Concrete Encased Steel Roof Beams)	55%	PASS
	C15x33 (Existing Concrete Encased Channel)	55%	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:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER

CENTEK engineering
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P: (203) 488-0580
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Subject: Wind Load on Equipment per ASCE 7-16

Location: New Haven,CT

Rev. 0: 02/27/2024

Prepared by: C.M.T..; Checked by: T.J.L.
Job No. 24008.01

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-P)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 94$	ft	(User Input)	
Structure Type =	$Structuretype := Square\_Chimney$		(User Input)	
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 = $zg := \text{if } Exp = B \; 1200; \text{ if } Exp = C \; 900; \text{ if } Exp = D \; 700 \quad = 1.2 \cdot 10^3$ (Table 26.9-1)

3-Sec Gust Speed Power Law Exponent = $\alpha := \text{if } Exp = B \; 7; \text{ if } Exp = C \; 9.5; \text{ if } Exp = D \; 11.5 \quad = 7$ (Table 26.9-1)

Integral Length Scale Factor = $l := \text{if } Exp = B \; 320; \text{ if } Exp = C \; 500; \text{ if } Exp = D \; 650 \quad = 320$ (Table 26.9-1)

Integral Length Scale Power Law Exponent = $E := \text{if } Exp = B \; \frac{1}{3}; \text{ if } Exp = C \; \frac{1}{5}; \text{ if } Exp = D \; \frac{1}{8} \quad = 0.333$ (Table 26.9-1)

Turbulence Intensity Factor = $c := \text{if } Exp = B \; 0.3; \text{ if } Exp = C \; 0.2; \text{ if } Exp = D \; 0.15 \quad = 0.3$ (Table 26.9-1)

Development 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 =	$F_{ant} := F \cdot A_{ant} = 179$	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 =	$F_{ant} := F \cdot A_{ant} = 61$	lbs

Gravity Load (without ice)

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

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Branford, CT 06405 F: (203) 488-8587

Development of Wind on Antennas

Antenna Data:

Antenna Model =	SAMSUNG XXDWMM-12.5-65		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 8.7$	in	(User Input)
Antenna Width =	$W_{ant} := 12.3$	in	(User Input)
Antenna Thickness =	$T_{ant} := 1.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 2.9$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 0.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 0.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 34$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 8.5 \cdot 10^{-2}$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 8.5 \cdot 10^{-2}$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 4$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 3$	lbs

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Development of Wind on RRU

RRU Data:

RRU Model =	SAMSUNG B2/B66A (RF4439d-25A)		
RRU Shape =	Flat		(User Input)
RRU Height =	$L_{ant} := 15$	in	(User Input)
RRU Width =	$W_{ant} := 15$	in	(User Input)
RRU Thickness =	$T_{ant} := 10$	in	(User Input)
RRU Weight =	$WT_{ant} := 74.7$	lbs	(User Input)
Number of RRU =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

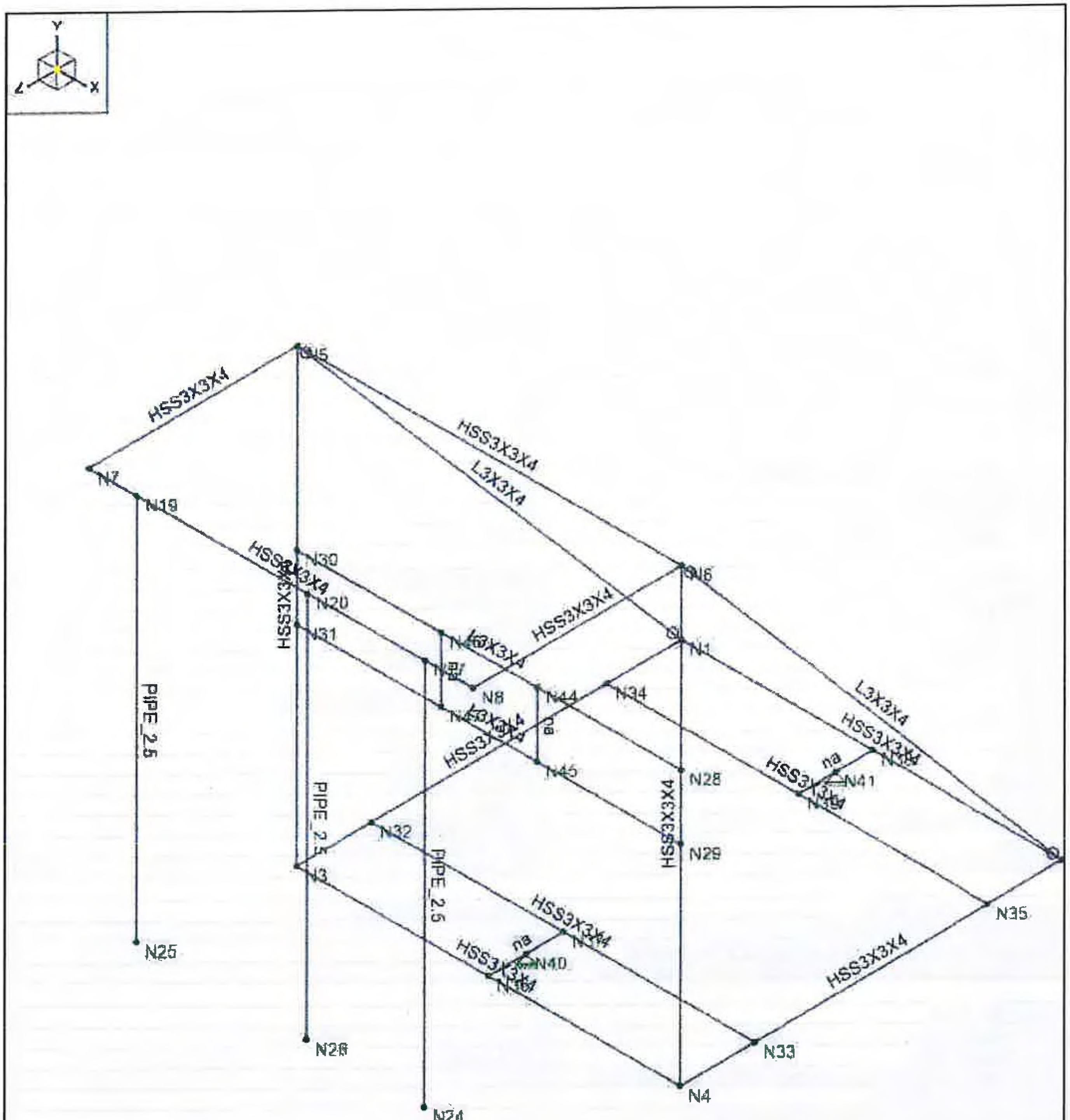
Surface Area for One RRU =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.6$	sf
RRU Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1.6$	sf
Total RRU Wind Force =	$F_{ant} := F \cdot A_{ant} = 71$	lbs

Wind Load (Side)

Surface Area for One RRU =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 1$	sf
RRU Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 1$	sf
Total RRU Wind Force =	$F_{ant} := F \cdot A_{ant} = 47$	lbs

Gravity Load (without ice)

Weight of All RRU=	$WT_{ant} \cdot N_{ant} = 75$	lbs



RISA	Centek Engineering	Ballast Frame	SK-1
	CMT		Ballast Frame.r3d
	24008.01		

Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): ASD
Cold Formed Steel	AISI S100-16: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-15 ASD
Temperature	< 100F
Concrete	ACI 318-19
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	HR1	W10X33	Beam	Wide Flange	A992	Typical	9.71	36.6	171	0.583

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Channel Conn.	a [in]	Function
1	M1	L3X3X4	110.635	Lbyy	N/A	N/A	Lateral
2	M2	L3X3X4	110.635	Lbyy	N/A	N/A	Lateral
3	M3	HSS3X3X4	84	Lbyy	N/A	N/A	Lateral
4	M4	HSS3X3X4	84	Lbyy	N/A	N/A	Lateral
5	M5	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
6	M6	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
7	M8	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
8	M9	HSS3X3X4	39	Lbyy	N/A	N/A	Lateral
9	M10	HSS3X3X4	39	Lbyy	N/A	N/A	Lateral
10	M16	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
11	M17	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
12	M18	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
13	M25	PIPE 2.5	72	Lbyy	N/A	N/A	Lateral
14	M26	PIPE 2.5	72	Lbyy	N/A	N/A	Lateral
15	M27	PIPE 2.5	72	Lbyy	N/A	N/A	Lateral
16	M28	L3X3X4	72	Lbyy	N/A	N/A	Lateral
17	M29	L3X3X4	72	Lbyy	N/A	N/A	Lateral
18	M30	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral
19	M31	HSS3X3X4	72	Lbyy	N/A	N/A	Lateral

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N5	N1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N6	N2	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N4	N6	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
4	M4	N3	N5	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
5	M5	N3	N1	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
6	M6	N4	N2	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
7	M8	N5	N6	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
8	M9	N6	N8	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
9	M10	N5	N7	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
10	M16	N4	N3	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
11	M17	N2	N1	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical
12	M18	N7	N8	HSS3X3X4	Beam	Tube	A500 Gr.B RECT	Typical

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	Y	-0.087	18
2	M27	Y	-0.02	%50
3	M26	Y	-0.075	18
4	M26	Y	-0.075	49
5	M25	Y	-0.003	54
6	M27	Y	-0.006	18
7	M34	Y	-0.022	%50
8	M35	Y	-0.006	%50

Member Point Loads (BLC 3 : Wind X)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	X	0.061	18
2	M27	X	0.038	%50
3	M25	X	0.004	54
4	M34	X	0.018	%50
5	M26	X	0.047	18
6	M26	X	0.047	49
7	M35	X	0.006	%50
8	M27	X	0.006	18

Member Point Loads (BLC 4 : Wind Z)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(in, %)]
1	M25	Z	-0.179	18
2	M27	Z	-0.114	%50
3	M25	Z	-0.034	54
4	M34	Z	-0.038	%50
5	M26	Z	-0.071	18
6	M26	Z	-0.071	49
7	M35	Z	-0.009	%50
8	M27	Z	-0.009	18

Member Distributed Loads (BLC 3 : Wind X)

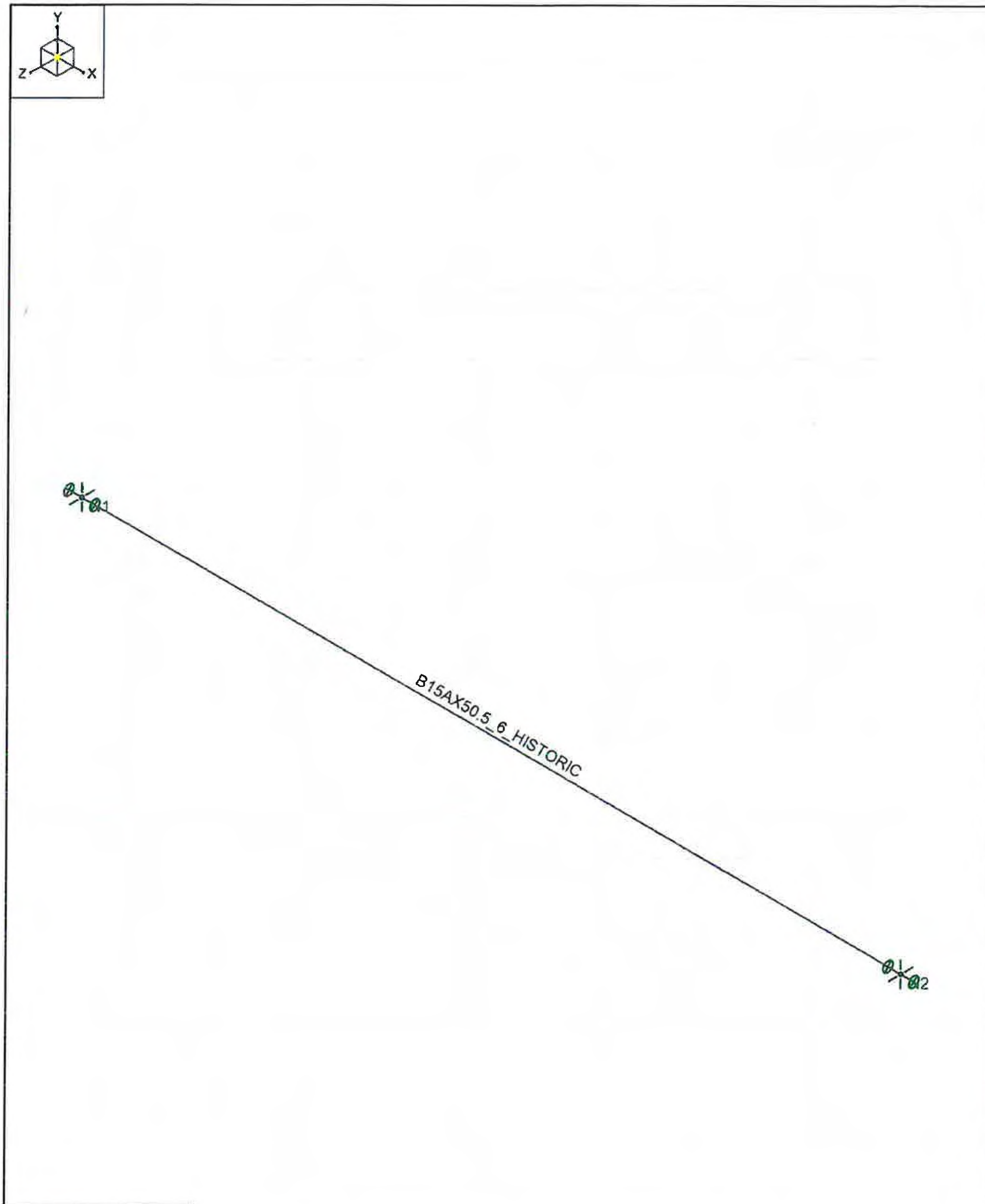
	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M25	X	0.012	0.012	0	%100
2	M26	X	0.012	0.012	0	%100
3	M27	X	0.012	0.012	0	%100
4	M10	X	0.012	0.012	0	%100
5	M9	X	0.012	0.012	0	%100
6	M5	X	0.012	0.012	0	%100
7	M6	X	0.012	0.012	0	%100
8	M1	X	0.012	0.012	0	%100
9	M2	X	0.012	0.012	0	%100

Member Distributed Loads (BLC 4 : Wind Z)

	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	-0.012	-0.012	0	%100
2	M26	Z	-0.012	-0.012	0	%100
3	M27	Z	-0.012	-0.012	0	%100
4	M18	Z	-0.012	-0.012	0	%100

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
0	N1	max	0.002	16	0.159	6	0.012	6	1.81e-3	9	3.063e-4	6	4.082e-3	16
1		min	-0.002	14	-0.148	16	-0.012	16	-1.409e-4	15	-3.048e-4	16	-4.162e-3	6
2	N2	max	0.002	16	0.172	8	0.012	8	1.716e-3	8	3.034e-4	14	4.532e-3	8
3		min	-0.002	14	-0.14	14	-0.012	14	-7.512e-5	14	-3.077e-4	8	-3.861e-3	14
4	N3	max	0.002	6	0.052	14	0.012	14	2.181e-3	9	4.035e-4	6	3.878e-3	8
5		min	-0.002	16	-0.13	8	-0.012	8	-1.539e-3	15	-3.987e-4	16	-2.11e-3	14
6	N4	max	0.002	14	0.06	16	0.012	16	2.076e-3	9	3.998e-4	14	2.363e-3	16
7		min	-0.002	8	-0.116	6	-0.012	6	-1.441e-3	15	-4.078e-4	8	-3.511e-3	6
8	N5	max	0.21	14	0.051	14	0.163	6	5.287e-3	7	2.864e-3	6	0	8
9		min	-0.236	8	-0.13	8	-0.056	16	0	2	-2.85e-3	16	0	14
10	N6	max	0.21	14	0.059	16	0.162	8	5.29e-3	7	2.871e-3	6	2.635e-3	8
11		min	-0.236	8	-0.116	6	-0.056	14	0	2	-2.851e-3	16	-2.096e-3	14
12	N7	max	0.336	14	0	2	0.163	6	1.127e-2	7	3.07e-3	6	6.822e-5	16
13		min	-0.361	8	-0.361	7	-0.056	16	-1.597e-3	17	-3.051e-3	16	-1.029e-3	6
14	N8	max	0.336	14	0	2	0.162	8	1.125e-2	7	3.059e-3	6	2.356e-3	8
15		min	-0.361	8	-0.345	7	-0.056	14	-1.789e-3	17	-3.036e-3	16	-5.851e-4	14
16	N17	max	0.336	14	0	2	0.149	9	1.229e-2	7	2.808e-3	6	2.131e-3	8
17		min	-0.361	8	-0.355	7	-0.043	15	-2.822e-3	17	-2.784e-3	16	-3.135e-4	14
18	N19	max	0.336	14	0	2	0.159	9	1.227e-2	7	2.815e-3	6	9.663e-5	16
19		min	-0.361	8	-0.367	7	-0.051	15	-2.636e-3	17	-2.796e-3	16	-1.039e-3	6
20	N20	max	0.336	14	0	2	0.16	9	1.326e-2	7	2.497e-3	6	1.124e-3	8
21		min	-0.361	8	-0.373	7	-0.053	15	-3.752e-3	17	-2.474e-3	16	-3.571e-4	14
22	N24	max	0.427	6	0	2	0.466	17	1.469e-2	7	2.808e-3	6	1.692e-3	6
23		min	-0.322	16	-0.355	7	-1.04	7	-5.264e-3	17	-2.784e-3	16	0	2
24	N25	max	0.355	14	0	2	0.463	17	1.467e-2	7	2.815e-3	6	5.888e-4	14
25		min	-0.447	8	-0.367	7	-1.044	7	-5.126e-3	17	-2.796e-3	16	-1.51e-3	8
26	N26	max	0.442	6	0	2	0.56	17	1.592e-2	7	2.497e-3	6	2.059e-3	6
27		min	-0.413	16	-0.374	7	-1.132	7	-6.547e-3	17	-2.474e-3	16	-1.322e-3	16
28	N28	max	0.146	14	0.06	16	0.093	9	1.618e-3	8	1.753e-3	6	2.42e-3	8
29		min	-0.162	8	-0.116	6	-0.088	15	-6.118e-4	14	-1.741e-3	16	-2.125e-3	14
30	N29	max	0.118	14	0.06	16	0.076	17	1.506e-3	9	1.304e-3	6	2.991e-3	8
31		min	-0.13	8	-0.116	6	-0.077	7	-1.353e-3	15	-1.278e-3	16	-2.425e-3	14
32	N30	max	0.147	14	0.051	14	0.1	9	1.63e-3	6	1.682e-3	14	2.845e-3	8
33		min	-0.163	8	-0.13	8	-0.095	15	-6.15e-4	16	-1.698e-3	8	-2.515e-3	14
34	N31	max	0.117	14	0.051	14	0.081	17	1.634e-3	9	1.238e-3	14	2.716e-3	8
35		min	-0.13	8	-0.13	8	-0.083	7	-1.477e-3	15	-1.271e-3	8	-2.645e-3	14
36	N32	max	0.002	8	0.069	14	0.012	14	2.009e-3	9	1.888e-4	6	4.263e-3	8
37		min	-0.002	14	-0.134	8	-0.012	16	-9.32e-4	15	-1.819e-4	16	-2.052e-3	14
38	N33	max	0.002	16	0.078	16	0.012	16	1.884e-3	9	1.811e-4	14	2.298e-3	16
39		min	-0.002	6	-0.12	6	-0.012	14	-8.294e-4	15	-1.896e-4	8	-3.892e-3	6
40	N34	max	0.002	14	0.136	14	0.012	6	1.806e-3	6	1.704e-4	6	3.908e-3	8
41		min	-0.002	16	-0.149	8	-0.012	16	-2.806e-4	16	-1.707e-4	16	-3.76e-3	14
42	N35	max	0.002	14	0.147	8	0.012	8	1.788e-3	8	1.701e-4	14	4.113e-3	8
43		min	-0.002	16	-0.137	14	-0.012	14	-2.817e-4	14	-1.713e-4	16	-3.643e-3	14
44	N36	max	0.002	14	0.008	15	0	17	2.212e-3	9	3.124e-4	14	2.432e-3	8
45		min	-0.002	16	-0.015	9	0	7	-1.123e-3	15	-3.137e-4	16	-2.113e-3	14
46	N37	max	0.002	16	0.015	9	0	17	2.212e-3	9	3.124e-4	14	2.432e-3	8
47		min	-0.002	14	-0.008	15	0	7	-1.123e-3	15	-3.137e-4	16	-2.113e-3	14
48	N38	max	0.002	16	0.011	9	0	9	1.569e-3	9	2.607e-4	14	4.311e-3	8
49		min	-0.002	14	0	15	0	15	-5.484e-5	15	-2.619e-4	16	-4.004e-3	14
50	N39	max	0.002	14	0	15	0	9	1.569e-3	9	2.607e-4	14	4.311e-3	8
51		min	-0.002	16	-0.011	9	0	15	-5.484e-5	15	-2.619e-4	16	-4.004e-3	14
52	N40	max	0	14	0	2	0	17	2.212e-3	9	3.124e-4	14	2.432e-3	8
53		min	0	16	0	9	0	7	-1.123e-3	15	-3.137e-4	16	-2.113e-3	14
54	N41	max	0	16	0	9	0	9	1.569e-3	9	2.607e-4	14	4.311e-3	8



Envelope Only Solution

RISA	Centek Engineering	Existing Beam Check	SK-1
	CMT		Feb 26, 2024 at 10:54 AM
	24008.01	Nodes and Members	Existing Steel Beam Check.r3d

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	313	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. [1e⁵°F⁻¹]	Density [k/ft³]	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	-1.86	12
2	M1	Y	-1.86	84

Member Distributed Loads (BLC 3 : 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	PY	-0.16	-0.16	0	%100

Member Distributed Loads (BLC 4 : Roof Live Load)

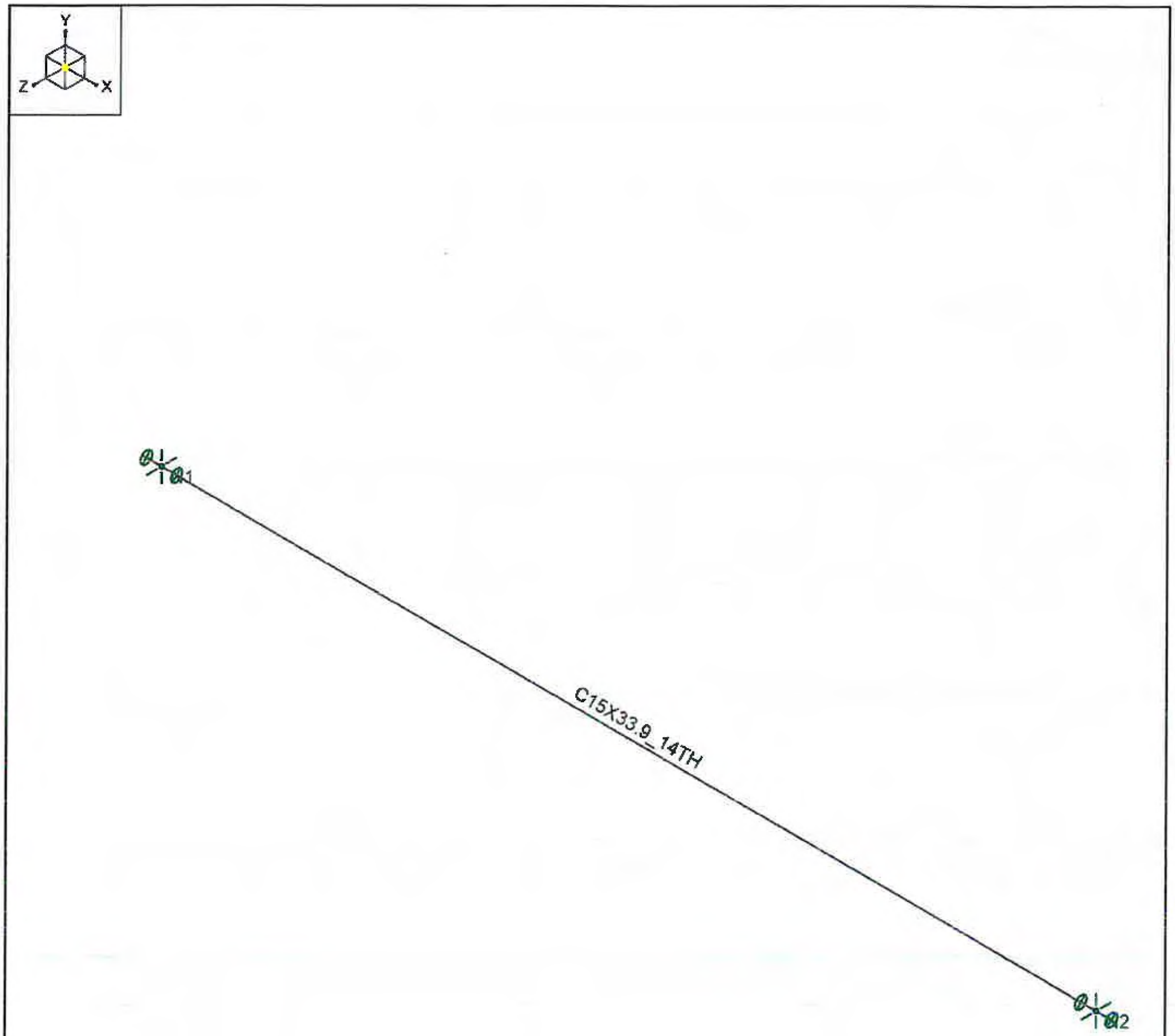
	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/in]	End Magnitude [k/ft, F, ksf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-0.107	-0.107	0	%100

Member Distributed Loads (BLC 5 : Dead Load (slab))

	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	-0.24	-0.24	0	%100

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Weight of Equipment	DL		2	
3	Snow Load	SL			1
4	Roof Live Load	RLL			1
5	Dead Load (slab)	DL			1



Envelope Only Solution

RISA	Centek Engineering	Existing Beam Check	SK-1
	CMT		Feb 26, 2024 at 10:57 AM
	24008.01	Nodes and Members	Existing Steel Beam Check (...

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	222	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. [1e⁵°F⁻¹]	Density [k/ft³]	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	-1.86	%50
2	M1	Y	-1.86	39

Member Distributed Loads (BLC 3 : 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	PY	-0.083	-0.083	0	%100

Member Distributed Loads (BLC 4 : Roof 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	-0.055	-0.055	0	%100

Member Distributed Loads (BLC 5 : Dead Load (slab))

	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	-0.12	-0.12	0	%100

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Self Weight	DL	-1		
2	Weight of Equipment	DL		2	
3	Snow Load	SL			1
4	Roof Live Load	RLL			1
5	Dead Load (slab)	DL			1

ATTACHMENT 4

Location	YALE GRADUATION TEMP 2024			
Date	4/4/2024			
Band	C-Band	CBRS	AWS	PCS
Operating Frequency (MHz)	3,700	3,550	2,145	1,970
General Population MPE (mW/cm^2)	1	1	1	1
ERP Per Transmitter (Watts)	59,609	279	12,282	12,282
Number of Transmitters	2	1	1	1
Antenna Centerline (CL) (feet)	94	94	94	94
Total ERP (Watts)	119,218	279	12,282	12,282
Total ERP (dBm)	81	54	71	71
Maximum % of General Population Limit	14.5%			

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.1310 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period;
3. calculation takes into account a point of interest of 2m or 6.56ft

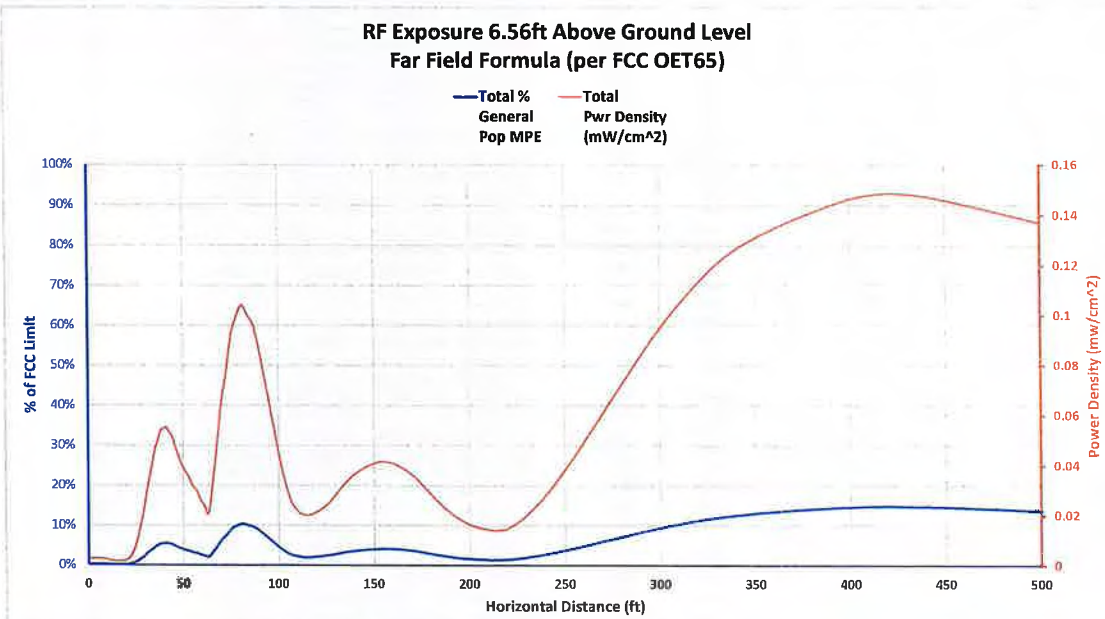
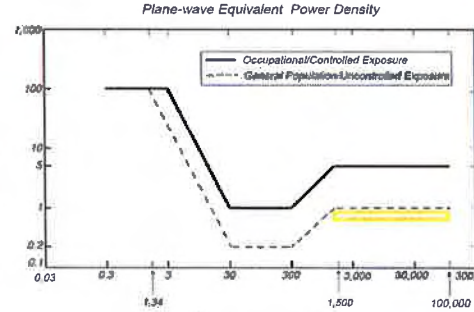
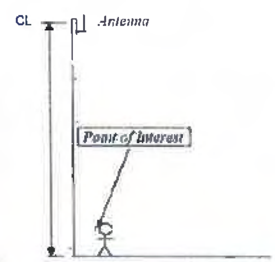


Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)

Plane-wave Equivalent Power Density

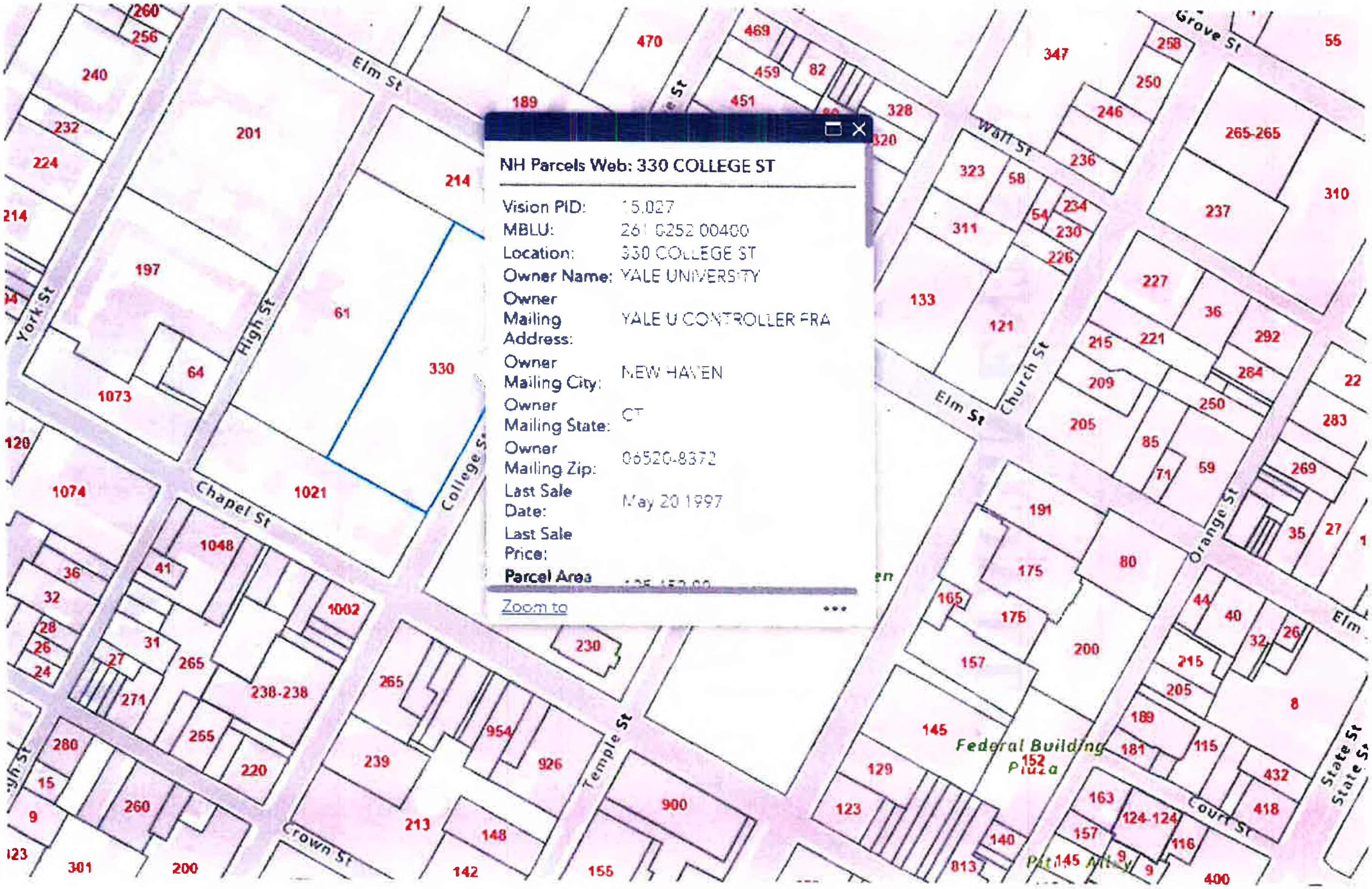




Angle Below Horizon	Power Density (mW/cm^2) C-Band	CBRS	AWS	PCS	Percent of General Population MPE [illegible]	[illegible]	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz	Distance	Total Pwr Density (mW/cm^2)	Total % General Pop MPE
90	0.002622799	1.28413E-06	0.000145111	3.10241E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0	0.002800218	0.28%
89	0.002622436	2.08233E-06	0.000141788	3.17424E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	1.029848831	0.002798048	0.28%
88	0.002621344	3.70142E-06	0.000141729	3.32245E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	2.0603254	0.002799999	0.28%
87	0.002619524	5.48361E-06	0.000141631	3.5576E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	3.092058978	0.002802214	0.28%
86	0.002616973	6.89674E-06	0.000141493	3.89703E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	4.125681905	0.002804333	0.28%
85	0.002554196	9.70731E-06	0.000138098	4.36706E-05	0.00%	0.00%	0.26%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	5.161831148	0.002745673	0.27%
84	0.002492219	1.467E-05	0.000128683	5.00635E-05	0.00%	0.00%	0.25%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	6.201149881	0.002685636	0.27%
83	0.002431052	1.80152E-05	0.000119875	5.60698E-05	0.00%	0.00%	0.24%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	7.244289093	0.002625012	0.26%
82	0.002370703	2.06406E-05	0.000104187	6.42409E-05	0.00%	0.00%	0.24%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	8.291909247	0.002559771	0.26%
81	0.002207156	2.41923E-05	8.64505E-05	7.02696E-05	0.00%	0.00%	0.22%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	9.344681979	0.002388069	0.24%
80	0.002054284	2.77016E-05	6.8485E-05	7.50923E-05	0.00%	0.00%	0.21%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	10.40329186	0.002225563	0.22%
79	0.001867918	3.17104E-05	5.17955E-05	8.02218E-05	0.00%	0.00%	0.19%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	11.46843824	0.002031645	0.20%
78	0.00165929	3.54623E-05	3.57155E-05	8.18195E-05	0.00%	0.00%	0.17%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	12.54083714	0.001812287	0.18%
77	0.00157889	3.69996E-05	2.19425E-05	8.15242E-05	0.00%	0.00%	0.16%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	13.62122328	0.001719357	0.17%
76	0.001572694	3.68543E-05	1.12093E-05	8.12043E-05	0.00%	0.00%	0.16%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	14.71035217	0.001701962	0.17%
75	0.001602492	3.84273E-05	3.61186E-06	8.08594E-05	0.00%	0.00%	0.16%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	15.80900235	0.001725391	0.17%
74	0.001632316	4.1942E-05	5.44175E-07	7.68668E-05	0.00%	0.00%	0.16%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	16.91797776	0.001751669	0.18%
73	0.001700849	4.68285E-05	4.2034E-07	7.30466E-05	0.00%	0.00%	0.17%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	18.03811021	0.001821144	0.18%

72	0.001771644	5.22662E-05	4.37836E-06	6.78127E-05	0.00%	0.00%	0.18%	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%	19.17026208	0.001896102	0.19%
71	0.002118034	5.569E-05	1.22707E-05	6.29314E-05	0.00%	0.00%	0.21%	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%	20.31532518	0.002248926	0.22%
70	0.002712256	5.93165E-05	2.43369E-05	5.57526E-05	0.00%	0.00%	0.27%	0.01%	0.00%	0.01%	0.00%	0.00%	0.00%	21.47424382	0.002851662	0.29%
69	0.003806845	6.46264E-05	4.01328E-05	4.7152E-05	0.00%	0.00%	0.38%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	22.64797607	0.003958757	0.40%
68	0.00559283	6.87822E-05	5.89612E-05	3.63552E-05	0.00%	0.00%	0.56%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	23.83754732	0.005756929	0.58%
67	0.008026471	6.98826E-05	8.08089E-05	2.67583E-05	0.00%	0.00%	0.80%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	25.04401416	0.008203921	0.82%
66	0.011252234	7.26245E-05	0.000100966	1.88007E-05	0.00%	0.00%	1.13%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	26.26849243	0.011444625	1.14%
65	0.01540877	7.89973E-05	0.000120421	1.23226E-05	0.00%	0.00%	1.54%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	27.51215183	0.015620511	1.56%
64	0.019683662	8.01586E-05	0.00013398	8.0731E-06	0.00%	0.00%	1.97%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	28.77622273	0.019905874	1.99%
63	0.025133085	8.12999E-05	0.000135888	6.06988E-06	0.00%	0.00%	2.51%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	30.06200152	0.025356343	2.54%
62	0.031345876	7.69174E-05	0.000128563	6.4434E-06	0.00%	0.00%	3.13%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	31.37085647	0.031557799	3.16%
61	0.036467166	7.10798E-05	0.000113458	9.22224E-06	0.00%	0.00%	3.65%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	32.70423404	0.036660926	3.67%
60	0.041438346	6.41574E-05	8.91943E-05	1.44656E-05	0.00%	0.00%	4.14%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	34.06366588	0.041606163	4.16%
59	0.047062268	6.20179E-05	6.1039E-05	2.06827E-05	0.00%	0.00%	4.71%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	35.45077652	0.047206007	4.72%
58	0.049854462	6.4202E-05	3.55336E-05	2.75828E-05	0.00%	0.00%	4.99%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	36.86729176	0.04998178	5.00%
57	0.054011477	6.95553E-05	1.64218E-05	3.51092E-05	0.00%	0.00%	5.40%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	38.315048	0.054132563	5.41%
56	0.054576837	7.35958E-05	9.33132E-06	3.98055E-05	0.00%	0.00%	5.46%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	39.79600249	0.054699569	5.47%
55	0.055113722	6.62375E-05	1.30075E-05	4.30719E-05	0.00%	0.00%	5.51%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	41.31224475	0.055236039	5.52%
54	0.053116354	4.62458E-05	3.22228E-05	4.44798E-05	0.00%	0.00%	5.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.86600915	0.053239302	5.32%
53	0.051156542	2.81025E-05	6.94762E-05	4.38365E-05	0.00%	0.00%	5.12%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	44.45968896	0.051297957	5.13%
52	0.04701809	1.78694E-05	0.000118905	4.12287E-05	0.00%	0.00%	4.70%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	46.09585196	0.047196093	4.72%
51	0.043182247	1.42939E-05	0.000177109	3.6161E-05	0.00%	0.00%	4.32%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	47.77725796	0.043409811	4.34%
50	0.039628405	1.37357E-05	0.000234931	3.097E-05	0.00%	0.00%	3.96%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	49.50687824	0.039908042	3.99%
49	0.037183705	1.38101E-05	0.00028398	2.30827E-05	0.00%	0.00%	3.72%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	51.28791753	0.037504577	3.75%
48	0.034859888	1.52114E-05	0.000320082	1.49713E-05	0.00%	0.00%	3.49%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	53.12383851	0.035210152	3.52%
47	0.031182286	1.56226E-05	0.00033639	6.71186E-06	0.00%	0.00%	3.12%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	55.01839008	0.03154101	3.15%
46	0.029859234	1.42864E-05	0.000314784	3.2962E-06	0.00%	0.00%	2.99%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	56.97563771	0.030191601	3.02%
45	0.026050551	1.49852E-05	0.000262272	7.92048E-06	0.00%	0.00%	2.61%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	59	0.026335728	2.63%
44	0.023773875	2.21791E-05	0.000190123	3.15526E-05	0.00%	0.00%	2.38%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	61.09628851	0.02401773	2.40%
43	0.020225703	3.43359E-05	0.000102056	9.30761E-05	0.00%	0.00%	2.02%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	63.26975339	0.02045517	2.05%
42	0.032003822	4.84224E-05	2.61901E-05	0.000212881	0.00%	0.00%	3.20%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	65.52613837	0.032291315	3.23%
41	0.047202699	6.2203E-05	9.05527E-06	0.000413906	0.00%	0.00%	4.72%	0.01%	0.00%	0.04%	0.00%	0.00%	0.00%	67.87173603	0.047687863	4.77%
40	0.054888649	8.1849E-05	3.27419E-05	0.000732999	0.00%	0.00%	6.49%	0.01%	0.00%	0.07%	0.00%	0.00%	0.00%	70.31346136	0.065736239	6.57%
39	0.07581856	0.000112362	0.000178941	0.001155341	0.00%	0.00%	7.58%	0.01%	0.02%	0.12%	0.00%	0.00%	0.00%	72.85893224	0.077265204	7.73%
38	0.090521717	0.000133843	0.000467399	0.001697022	0.00%	0.00%	9.05%	0.01%	0.05%	0.17%	0.00%	0.00%	0.00%	75.5165563	0.092819981	9.28%
37	0.096175279	0.000135803	0.000903645	0.002322727	0.00%	0.00%	9.62%	0.01%	0.09%	0.23%	0.00%	0.00%	0.00%	78.29564418	0.099537454	9.95%
36	0.099693679	0.000117088	0.001484575	0.002962117	0.00%	0.00%	9.97%	0.01%	0.15%	0.30%	0.00%	0.00%	0.00%	81.20653331	0.104257459	10.43%
35	0.094085393	9.62424E-05	0.002220531	0.003519304	0.00%	0.00%	9.41%	0.01%	0.22%	0.35%	0.00%	0.00%	0.00%	84.2607324	0.099921471	9.99%
34	0.088629976	7.71658E-05	0.002954713	0.003985798	0.00%	0.00%	8.86%	0.01%	0.30%	0.40%	0.00%	0.00%	0.00%	87.47109714	0.095647652	9.56%
33	0.075996304	5.89708E-05	0.003662074	0.004108914	0.00%	0.00%	7.60%	0.01%	0.37%	0.41%	0.00%	0.00%	0.00%	90.85203237	0.083826263	8.38%
32	0.060688025	4.49725E-05	0.004227052	0.003944915	0.00%	0.00%	6.07%	0.00%	0.42%	0.39%	0.00%	0.00%	0.00%	94.41973721	0.068904965	6.89%
31	0.045128689	3.12102E-05	0.004543467	0.003526853	0.00%	0.00%	4.51%	0.00%	0.45%	0.35%	0.00%	0.00%	0.00%	98.19248946	0.053230219	5.32%
30	0.03053351	2.11165E-05	0.004546858	0.00280357	0.00%	0.00%	3.05%	0.00%	0.45%	0.28%	0.00%	0.00%	0.00%	102.1909976	0.037905054	3.79%
29	0.020137435	2.97748E-05	0.004045189	0.001892077	0.00%	0.00%	2.01%	0.00%	0.40%	0.19%	0.00%	0.00%	0.00%	106.4388176	0.026104475	2.61%
28	0.01667467	6.49983E-05	0.003273346	0.000966033	0.00%	0.00%	1.67%	0.01%	0.33%	0.10%	0.00%	0.00%	0.00%	110.9628615	0.020979047	2.10%
27	0.017332076	0.000122658	0.002247943	0.000289591	0.00%	0.00%	1.73%	0.01%	0.22%	0.03%	0.00%	0.00%	0.00%	115.7940198	0.019992267	2.00%
26	0.020150685	0.000206127	0.001222431	9.27309E-05	0.00%	0.00%	2.02%	0.02%	0.12%	0.01%	0.00%	0.00%	0.00%	120.9679267	0.021671974	2.17%
25	0.023892991	0.000329697	0.000458358	0.000269901	0.00%	0.00%	2.39%	0.03%	0.05%	0.03%	0.00%	0.00%	0.00%	126.5259083	0.024950948	2.50%
24	0.028885272	0.000480309	0.00024752	0.001080466	0.00%	0.00%	2.89%	0.05%	0.02%	0.11%	0.00%	0.00%	0.00%	132.5161697	0.030693568	3.07%
23	0.032462189	0.000618333	0.000494666	0.002422771	0.00%	0.00%	3.25%	0.06%	0.05%	0.24%	0.00%	0.00%	0.00%	138.9952896	0.035997959	3.60%
22	0.033130548	0.000724558	0.001524626	0.004010174	0.00%	0.00%	3.31%	0.07%	0.15%	0.40%	0.00%	0.00%	0.00%	146.0301244	0.039389906	3.94%
21	0.032141352	0.000845101	0.003090287	0.005495393	0.00%	0.00%	3.21%	0.08%	0.31%	0.55%	0.00%	0.00%	0.00%	153.7002548	0.041572132	4.16%
20	0.027650118	0.000980712	0.004950301	0.006677772	0.00%	0.00%	2.77%	0.10%	0.50%	0.67%	0.00%	0.00%	0.00%	162.1011677	0.040258903	4.03%
19	0.020602159	0.001080829	0.006559147	0.007191962	0.00%	0.00%	2.06%	0.11%	0.66%	0.72%	0.00%	0.00%	0.00%	171.3484418	0.035434097	3.54%
18	0.011573483	0.001186611	0.007523132	0.006704999	0.00%	0.00%	1.16%	0.12%	0.75%	0.67%	0.00%	0.00%	0.00%	181.5833287	0.026988225	2.70%
17	0.004678034	0.001258658	0.007638322	0.005662366	0.00%	0.00%	0.47%	0.13%	0.76%	0.57%	0.00%	0.00%	0.00%	192.9803045	0.01923738	1.92%
16	0.002840356	0.001328059	0.006859736	0.003947366	0.00%	0.00%	0.28%	0.13%	0.69%	0.39%	0.00%	0.00%	0.00%	205.7574522	0.014975516	1.50%
15	0.006208571	0.001326894	0.005199077	0.002167336	0.00%	0.00%	0.62%	0.13%	0.52%	0.22%	0.00%	0.00%	0.00%	220.1909976	0.014901878	1.49%
14	0.019881032	0.001283168	0.003172295	0.000726731	0.00%	0.00%	1.99%	0.13%	0.32%	0.07%	0.00%	0.00%	0.00%	236.6360751	0.025063225	2.51%
13	0.041603444	0.001227365	0.001324536	8.55193E-05	0.00%	0.00%	4.16%	0.12%	0.13%	0.01%	0.00%	0.00%	0.00%	255.5570766	0.044240865	4.42%
12	0.068287278	0.001107093	0.000125105	0.000238383	0.00%	0.00%	6.83%	0.11%	0.01%	0.02%	0.00%	0.00%	0.00%	277.5731765	0.069757858	6.98%
11	0.096197065	0.000986294	4.13139E-05	0.001306461	0.00%	0.00%	9.62%	0.10%	0.00%	0.13%	0.00%	0.00%	0.00%	303.5286869	0.098531134	9.85%
10	0.118694322	0.000839991	0.000703663	0.003143146	0.00%	0.00%	11.87%	0.08%	0.07%	0.31%	0.00%	0.00%	0.00%	334.6056274	0.123381121	12.34%
9	0.130801672	0.000686211	0.002185485	0.005123278	0.00%	0.00%	13.08%	0.07%	0.22%	0.51%	0.00%	0.00%	0.00%	372.5113354	0.138796647	13.88%
8	0.137291162	0.000535164	0.003986366	0.006769821	0.00%	0.00%	13.73%	0.05%	0.40%	0.68%	0.00%	0.00%	0.00%	419.8068136	0.148582514	14.86%
7	0.127239186	0.000393066	0.005340175	0.007718902	0.00%	0.00%	12.72%	0.04%	0.53%	0.77%	0.00%	0.00%	0.00%	480.5164353	0.140691329	14.07%
6	0.110486703	0.000283893	0.005973717	0.007695638	0.00%	0.00%	11.05%	0.03%	0.60%	0.77%	0.00%	0.00%	0.00%	561.3475028	0.124439951	12.44%
5	0.086525526	0.000185348	0.005755445	0.006762058	0.00%	0.00%	8.65%	0.02%	0.58%	0.68%	0.00%	0.00%	0.00%	674.3730859	0.099228377	9.92%
4	0.05690224	0.000108636	0.004656547	0.005105802	0.00%	0.00%	5.69%	0.01%	0.47%	0.51%	0.00%	0.00%	0.00%	843.7393091	0.066773225	6.68%
3	0.033624884	5.33956E-05	0.003087418	0.003232923	0.00%	0.00%	3.36%	0.01%	0.31%	0.32%	0.00%	0.00%	0.00%	1125.787065	0.039998621	4.00%
2	0.014304981	2.11998E-05	0.001508071	0.001543199	0.00%	0.00%	1.43%	0.00%	0.15%	0.15%	0.00%	0.00%	0.00%	1689.538944	0.017377451	1.74%
1	0.00334221	4.5069E-06	0.000386339	0.000386339	0.00%	0.00%	0.33%	0.00%	0.04%	0.04%	0.00%	0.00%	0.00%	3380.107736	0.004119395	0.41%

ATTACHMENT 5


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
Chapel St
College St
High St
York St
Temple St
Crown St
Wall St
Church St
Orange St
Grove St
Court St
State St
Federal Building Plaza
330
61
214
189
1021

330 COLLEGE ST

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

ATTACHMENT 6

Verizon/Yale Graduation Temp 2024

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	quadient CORRECTION IMI $003.34⁰ 04/05/2024 ZIP 06101 043M32206619 US POSTAGE OLD STATE HOUSE STATION APR 05 2024 USPS
	Postmaster, per *(name of receiving employee)* [signature]		

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.	Gina Costa 330 College Street New Haven, CT 06511				
4.					
5.					
6.					

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See Reverse for Instructions