Robinson+Cole

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Also admitted in Massachusetts
and New York

May 24, 2023

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
1111 East Putnam Avenue, Greenwich, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains an existing wireless telecommunications facility at the above-referenced property address (the "Property"). The facility consists of antennas and remote radio heads attached to pipe masts on a mechanical equipment screening enclosure on the roof of the office building. Equipment associated with the antennas is located inside the building. Cellco's existing facility was approved by the Siting Council in February of 1990 (Docket No. 120). A copy of the Council's Docket No. 120 Decision and Order approval is included in Attachment 1.

Cellco now intends to modify its facility by replacing three (3) existing antennas with three (3) new Samsung MT6407-77A antennas on the existing antenna pipe mounts. Cellco also intends to remove nine (9) remote radio heads ("RRHs") and install six (6) new RRHs adjacent to its antennas. A set of project plans showing Cellco's proposed facility modifications and new antennas and RRHs specifications are included in Attachment 2. Cellco refers to this facility as its Riverside Facility.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Greenwich's Chief Elected Official and Land Use Officer.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas will be installed on Cellco's existing antenna pipe mounts.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The installation of Cellco's new antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A Calculated Radio Frequency Emissions Report for Cellco's modified facility is included in Attachment 3. The modified facility will be capable of providing Cellco's 5G wireless service.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. According to the attached Mount Analysis and Structural Reinforcement Design Report (the "Structural Report"), the host building, mechanical equipment screening structure and existing mounts can support Cellco's proposed modifications. A copy of the Structural Report is included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Fred Camillo, Greenwich First Selectman
Patrick LaRow, Director of Planning & Zoning
Fountainhead Property LLC, Property Owner
Aleksey Tyurin, Verizon Wiresless

ATTACHMENT 1

ORIGINAL

4145E

DOCKET NO. 120 - An application of Metro Mobile CTS of Fairfield County, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of cellular telephone antennas and associated equipment located in the Town of Greenwich, Connecticut.

CONNECTICUT

SITING

COUNCIL

FEBRUARY 26, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications facility at the proposed site in Greenwich, Connecticut, including effects on the natural environment; ecological balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the proposed Greenwich (East) site in this application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the Connecticut General Statutes (CGS), be issued to Metro Mobile CTS of Fairfield County, Inc., for the construction, operation, and maintenance of a cellular telephone facility at the proposed site on 1111 East Putnam Avenue, Greenwich, Connecticut.

The Facility shall be constructed, operated, and maintained substantially as specified in the Council's record on this matter, and subject to the following conditions:

1. The facility shall be constructed in accordance with applicable sections of the State of Connecticut Basic Building Code.

2. The Certificate holder shall notify the Council if and when any equipment other than that listed in this application is added to this facility.

3. The Certificate Holder shall prepare a Development and Management Plan (D&M Plan) for this site which shall include detailed plans for the attachment of the antenna structures to the roof top facade showing mounting brackets, modifications to the facade and building structure, cable pathway from antennas to the equipment room, and the location of emergency power generation. The Certificate Holder shall consult with the building's owner in the preparation of the D&M Plan.

4. The antenna bases shall be mounted no higher than 49 feet above ground level, or 144 feet above mean sea level.

5. The Certificate Holder shall provide a final report to the Council upon completion of construction, including the final construction costs and date of commercial operation.

6. If this facility does not initially provide, or permanently ceases to provide, cellular service following the completion of construction, this Decision and Order shall be void, and the antennas and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council and a Certificate granted before any such new use is made.

7. The Certificate Holder shall comply with any future radio frequency (RF) standard promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

8. The Certificate Holder or its successor shall provide the Council with a report of recalculated power density if and when additional channels over the proposed 90 channels, higher wattage over the proposed 100 watts per channel, or if other circumstances in operation cause change in power density above the levels originally calculated in the application.

9. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken to this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below. A notice of issuance shall be published in the The Advocate and Greenwich Time. By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of State Agencies.

The parties or intervenors to this proceeding are:

(Applicant)	(Its Representatives)
Metro Mobile CTS of Fairfield County, Inc. 50 Rockland Road South Norwalk, CT 06854 Attn: Phillip Mayberry Vice President and General Manager	Robinson & Cole One Commercial Plaza Hartford, CT 0613-3597 Attn: Earl W. Phillips, Esq.

(Party)

Patrick J. Pellegrino
Mary G. Pellegrino
268 Milbank Avenue
Greenwich, CT 06830

(Intervenor)

SNET Cellular, Inc.
227 Church Street
New Haven, CT 06506

Peter H. Tyrrell, Esq.
Senior Attorney
SNET Cellular, Inc.
227 Church Street
New Haven, CT 06506

TEF/cp

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 120 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 26 day of February, 1990.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner Peter Boucher Designee: Robert A. Pulito	Yes
Commissioner Leslie Carothers Designee: Brian Emerick	Yes
Harry E. Covey	Yes
Mortimer A. Gelston	Yes
Daniel P. Lynch, Jr.	Yes
Paulann H. Sheets	Abstain
William H. Smith	Yes
Colin C. Tait	Yes

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

RIVERSIDE CT
1111 EAST PUTNAM AVE.
RIVERSIDE, CT 06878

DRAWING INDEX

SITE INFORMATION

VZ SITE NAME: RIVERSIDE CT
VZ PROJ FUZE I.D.: 16231859
VZ LOCATION CODE: 456066
VZ PROJECT CODE: 20202197021
LOCATION: 1111 EAST PUTNAM AVE.
RIVERSIDE, CT 06878

PROJECT SCOPE: REFER TO NOTES ON DRAWING C-1 FOR SCOPE OF WORK.

MAP/BLOCK/LOT: 02/1010/S

ZONING DISTRICT: LB (LOCAL BUSINESS)

LATITUDE: 41° 2' 27.91" N (41.04108611° N)

LONGITUDE: 73° 35' 03.18" W (73.58421667° W)

SITE COORDINATES AND GROUND ELEVATION OBTAINED FROM VERIZON RFDS & GOOGLE EARTH.

GROUND ELEVATION: 82.0'± AMSL

PROPERTY OWNER: FOUNTAINHEAD PROPERTIES
116 MASON ST.
GREENWICH, CT 06830

APPLICANT: CELLCO PARTNERSHIP
d/b/a VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN, ESQ.
280 TRUMBULL STREET
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385
: (860) 663-1697

SITE DIRECTIONS

START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492

END: 1111 EAST PUTNAM AVE.
RIVERSIDE, CT 06878

1.	HEAD SOUTH TOWARD ALEXANDER DRIVE	371 FT
2.	TURN RIGHT	0.1 MI
3.	TURN RIGHT TOWARD ALEXANDER DRIVE	72 FT
4.	TURN RIGHT TOWARD ALEXANDER DRIVE	167 FT
5.	TURN RIGHT ONTO ALEXANDER DRIVE	0.3 MI
6.	TURN RIGHT ONTO BARNES INDUSTRIAL PARK ROAD	0.1 MI
7.	TURN LEFT AT THE 1ST CROSS STREET ON CT-68 W.	0.4 MI
8.	TURN RIGHT	0.2 MI
9.	TURN RIGHT ONTO US-5 N/N COLONY ROAD	0.4 MI
10.	TURN LEFT TO MERGE ONTO CT-15 S TOWARD NEW HAVEN	0.3 MI
11.	MERGE ONTO CT-15 S	26.2 MI
12.	TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT	0.7 MI
13.	KEEP LEFT, FOLLOW SIGNS FOR CT-8 S/BRIDGEPORT AND MERGE ONTO CT-8 S	5.3 MI
14.	TAKE THE EXIT ONTO I-95 S TOWARD N.Y. CITY	23.4 MI
15.	TAKE EXIT 5 TOWARD RIVERSIDE	0.2 MI
16.	TURN LEFT ONTO US-1 S. DESTINATION WILL BE ON THE RIGHT	0.3 MI

LOCATION MAP
SCALE : 1" = 2000'-0"

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	02/18/22	FOR REVIEW: JRM
1	02/25/22	FOR FILING: JRM
2	03/29/23	REINF. DESIGN: JRM
3	04/07/23	UPDATED PER RFDS: JRM
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: FOUNTAINHEAD PROPERTIES
ADDRESS: 116 MASON ST. GREENWICH, CT 06830

RIVERSIDE CT

SITE ADDRESS: 1111 EAST PUTNAM AVE. RIVERSIDE, CT 06878

APT FILING NUMBER: CT141_13220

DRAWN BY: JCL

DATE: 02/18/22 CHECKED BY: JRM

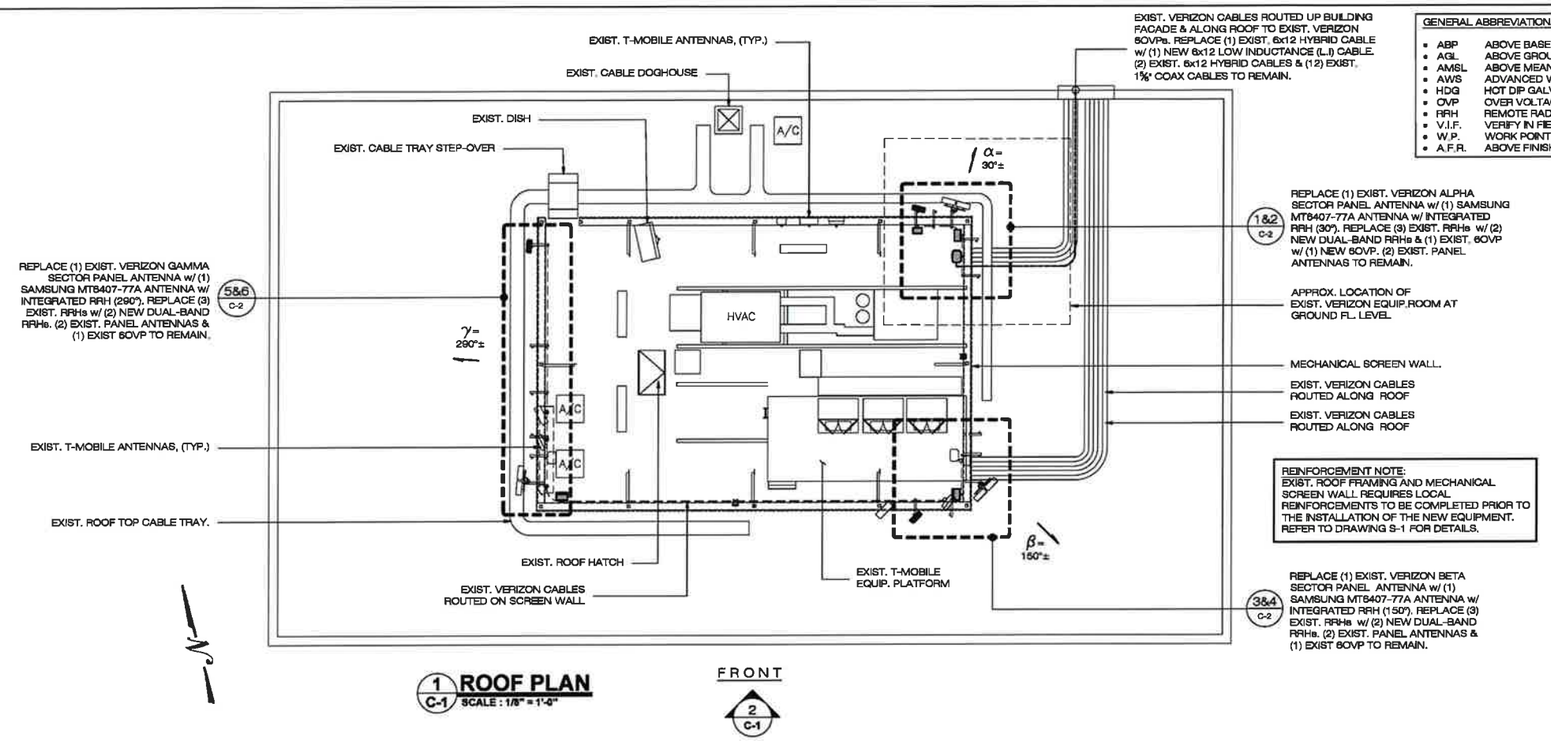
VZW PROJECT CODE: 20202197021

VZW LOCATION CODE: 456066

VZW FUZE ID: 16231859

SHEET TITLE:
TITLE SHEET

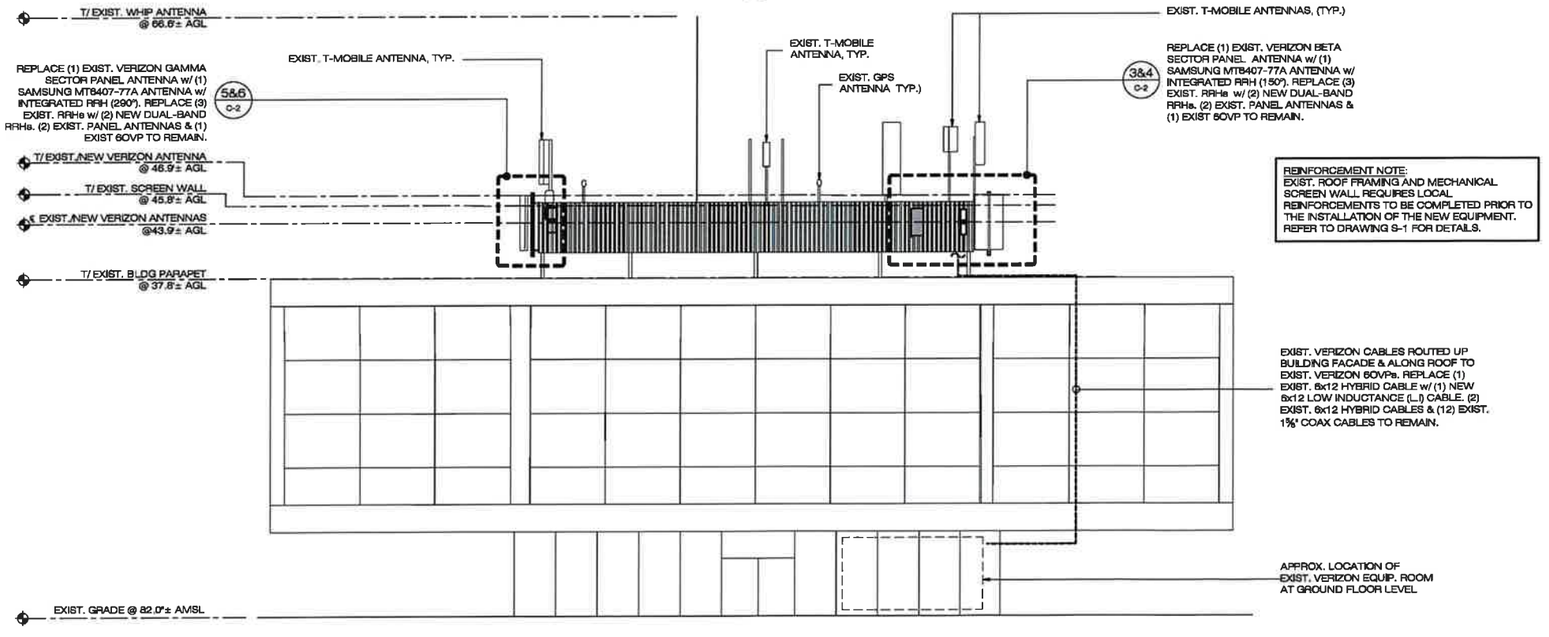
SHEET NUMBER:
T-1



1 C-1 ROOF PLAN
SCALE : 1/8" = 1'-0"

FRONT

2 C-1



2 C-1 SOUTH BUILDING ELEVATION
SCALE : 1" = 20'-0"

GENERAL ABBREVIATION LIST:

• ABP	ABOVE BASE PLATE
• AGL	ABOVE GROUND LEVEL
• AMSL	ABOVE MEAN SEA LEVEL
• AWS	ADVANCED WIRELESS SERVICE
• HDG	HOT DIP GALVANIZED
• OVP	OVER VOLTAGE PROTECTION
• RRH	REMOTE RADIO HEAD
• V.I.F.	VERIFY IN FIELD
• W.P.	WORK POINT
• A.F.R.	ABOVE FINISH ROOF

NOTES:

1. REFER TO MOUNT & STRUCTURAL ANALYSIS REPORT PREPARED BY ALL POINTS TECHNOLOGY CORPORATION, , MARKED REV 2, DATED NOVEMBER 17, 2022 AVAILABLE UNDER SEPARATE COVER.
2. REFER TO MOUNT ANALYSIS & STRUCTURAL REINFORCEMENT DESIGN REPORT PREPARED BY ALL POINTS TECHNOLOGY CORPORATION, MARKED REV 4, DATED APRIL 07, 2023 AVAILABLE UNDER SEPARATE COVER.
3. BASE MAPPING OBTAINED FROM FIELD MEASUREMENTS CONDUCTED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON 01/19/22.
4. PROJECT SCOPE INCLUDES THE FOLLOWING:
   - REPLACEMENT OF (3) EXIST. PANEL ANTENNAS w/ (3) NEW SAMSUNG MT8407-77A ANTENNAS w/ INTEGRATED RRHs.
   - REPLACEMENT OF (6) EXIST. RRHs w/ (6) NEW DUAL-BAND RRHs.
   - REPLACEMENT OF (1) EXIST. NON (L.I.) 6x12 HYBRID CABLE w/ (1) NEW 6x12 LOW INDUCTANCE (L.I.) HYBRID FEED-LINE CABLE.
   - REPLACEMENT OF (1) 6OVP W/ (1) NEW 6OVP (ALPHA ONLY).
   - REMOVAL OF (3) EXIST. RRHs.
   - (12) OUT OF (12) EXIST. 1⅝" COAX CABLES TO REMAIN.
5. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GALV. (HDG). PAINT TO MATCH EXIST. (WHERE APPLICABLE)
6. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE).
7. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH NEC (NFPA-70), NESC AND MANUFACTURERS SPECIFICATION.
8. SECURE ALL NEW ANTENNA CABLES PER MANUFACTURER RECOMMENDATIONS.
9. BOND NEW ANTENNA MOUNTING PIPES TO ANTENNA SECTOR GROUND BAR w/ # 2 AWG, BCW, (WHERE APPLICABLE).
10. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE MAST DIAMETER REQUIRED TO INSTALL NEW MOUNT BRACKETS. UNLESS NOTED OTHERWISE, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MASTS REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.
11. ANTENNA CONFIGURATION PLANS & ELEVATIONS SHOWN HEREIN ARE REAR ELEVATIONS (UNLESS NOTED OTHERWISE).
12. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.
13. REFER TO THE FINAL RFDS PROVIDED BY VERIZON FOR THE LATEST INFORMATION REGARDING EQUIPMENT MODELS, REQUIRED CABLING & DOWN-TILT INFORMATION.
14. PAINT ALL LSUB6 ANTENNAS TO MATCH EXISTING STRUCTURE (WHERE APPLICABLE). COORDINATE W/ LSUB6 MANUFACTURER INSTALLATION MANUAL REQUIREMENTS, VERIZON CONSTRUCTION MANAGER & OWNER.
15. PAINT ALL NEW NON LSUB6 ANTENNAS & APPURTENANCES TO MATCH EXIST. STRUCTURE (WHERE APPLICABLE) COORDINATE W/ VERIZON CONSTRUCTION MANAGER & BUILDING OWNER.

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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STATE OF CONNECTICUT · MICHAEL TRODDEN · 33313 · LICENSED PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: FOUNTAINHEAD PROPERTIES
ADDRESS: 118 MASON ST. GREENWICH, CT 06830

RIVERSIDE CT

SITE ADDRESS: 1111 EAST PUTNAM AVE. RIVERSIDE, CT 06878

APT FILING NUMBER: CT141_13220

DRAWN BY: JCL

DATE: 02/18/22 CHECKED BY: JRM

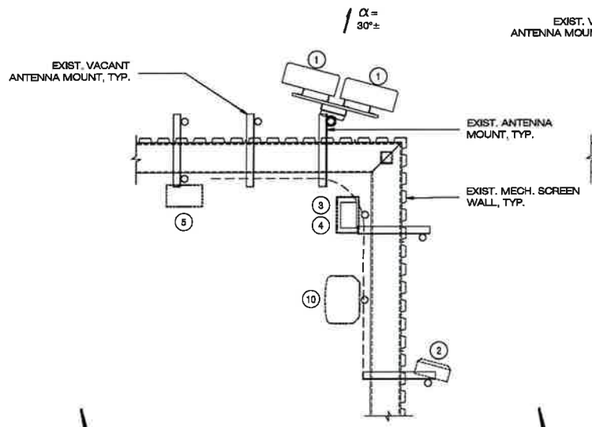
VZW PROJECT CODE: 20202197021

VZW LOCATION CODE: 468066

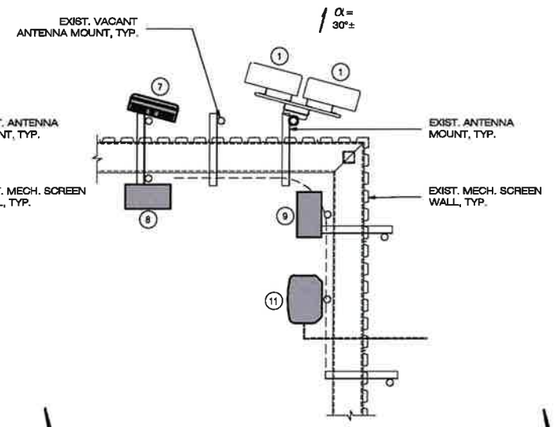
VZW FUZE ID: 16231859

SHEET TITLE:
ROOF PLAN, SOUTH BLDG. ELEVATION & NOTES

SHEET NUMBER:
C-1



EXIST. EQUIP. CONFIG. PLAN - (ALPHA)
1 C-2 SCALE : ¼" = 1'-0"



NEW EQUIP. CONFIG. PLAN - (ALPHA)
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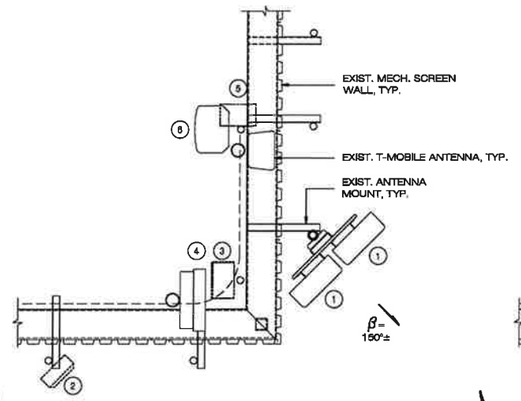
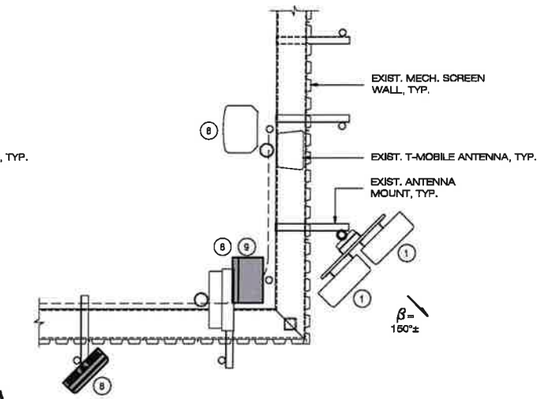
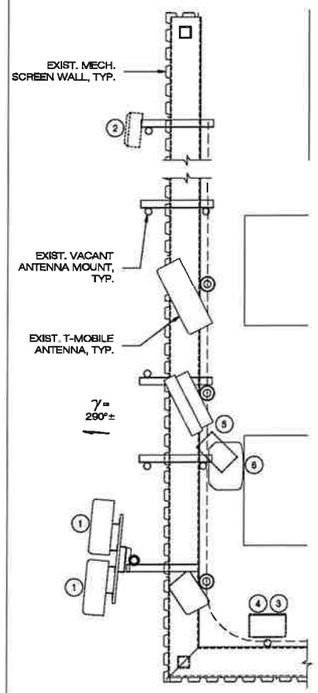


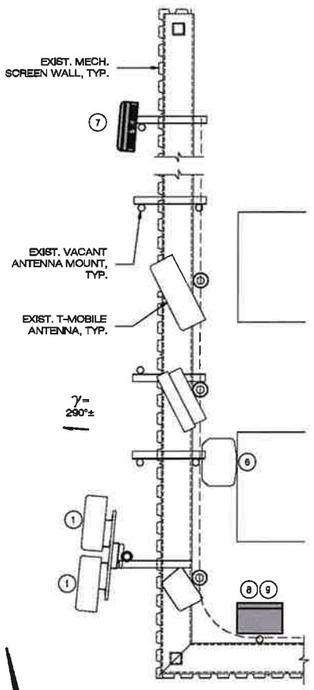
EXIST. EQUIP. CONFIG. PLAN - (BETA)
3 C-2 SCALE : ¼" = 1'-0"



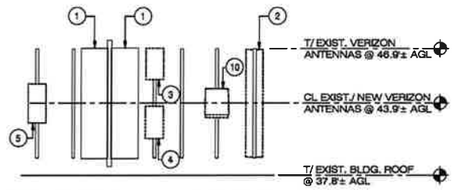
NEW EQUIP. CONFIG. PLAN - (BETA)
4 C-2 SCALE : ¼" = 1'-0"



EXIST. EQUIP. CONFIG. PLAN- (GAMMA)
5 C-2 SCALE : ¼" = 1'-0"

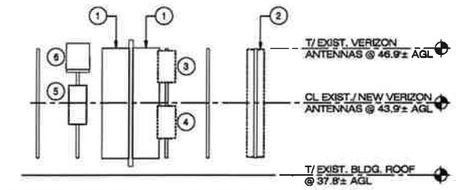


NEW EQUIP. CONFIG. PLAN - (GAMMA)
6 C-2 SCALE : ¼" = 1'-0"



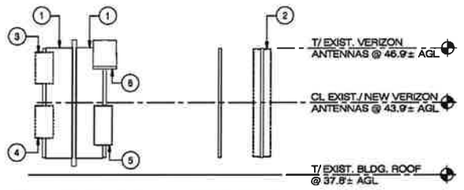
EXIST. EQUIP. MOUNTING CONFIG. (ALPHA)
7 C-2 SCALE : ¼" = 1'-0"

NEW EQUIP. MOUNTING CONFIG. (ALPHA)
8 C-2 SCALE : ¼" = 1'-0"



EXIST. EQUIP. MOUNTING CONFIG. (BETA)
9 C-2 SCALE : ¼" = 1'-0"

NEW EQUIP. MOUNTING CONFIG. (BETA)
10 C-2 SCALE : ¼" = 1'-0"



EXIST. EQUIP. MOUNTING CONFIG. (GAMMA)
11 C-2 SCALE : ¼" = 1'-0"

NEW EQUIP. MOUNTING CONFIG. (GAMMA
12 C-2 SCALE : ¼" = 1'-0"

GENERAL ABBREVIATION LIST:

ABP	ABOVE BASE PLATE
AGL	ABOVE GROUND LEVEL
AMSL	ABOVE MEAN SEA LEVEL
AWS	ADVANCED WIRELESS SERVICE
HDG	HOT DIP GALVANIZED
OVP	OVER VOLTAGE PROTECTION
RRH	REMOTE RADIO HEAD
V.I.F.	VERIFY IN FIELD
W.P.	WORK POINT
A.F.R.	ABOVE FINISH ROOF

SCOPE OF WORK (ALL) SECTORS

1. EXIST. ANTENNA (TO REMAIN) MODEL: COMMSCOPE NHH-65B-R2B
2. EXIST. ANTENNA (TO BE REPLACED) MODEL: AMPHENOL BXA-70063-6CF
3. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B13 4x30 RRH
4. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B25 4x30 RRH
5. EXIST. RRH (TO BE REPLACED) MODEL: NOKIA B66A 4x45 RRH
6. EXIST. 6OVP (TO REMAIN) MODEL: RAYCAP RxxDC-3315-PF-48 (V.I.F.)
7. NEW ANTENNA MODEL: SAMSUNG MT6407-77A w/ INTEGRATED RRH
8. NEW DUAL BAND RRH MODEL: SAMSUNG B2/B66A RRH (RF4439d-25A)
9. NEW DUAL BAND RRH MODEL: SAMSUNG B5-B13 RRH (RF4440d13A)
10. EXIST. 6OVP (TO BE REPLACED) MODEL: RAYCAP RxxDC-3315-PF-48 (V.I.F.)
11. NEW 6OVP (ALPHA) MODEL: RAYCAP RHSDC-3315-PF-48

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verizon
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STATE OF CONNECTICUT · MICHAEL TRODDEN · 33313 · LICENSED PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

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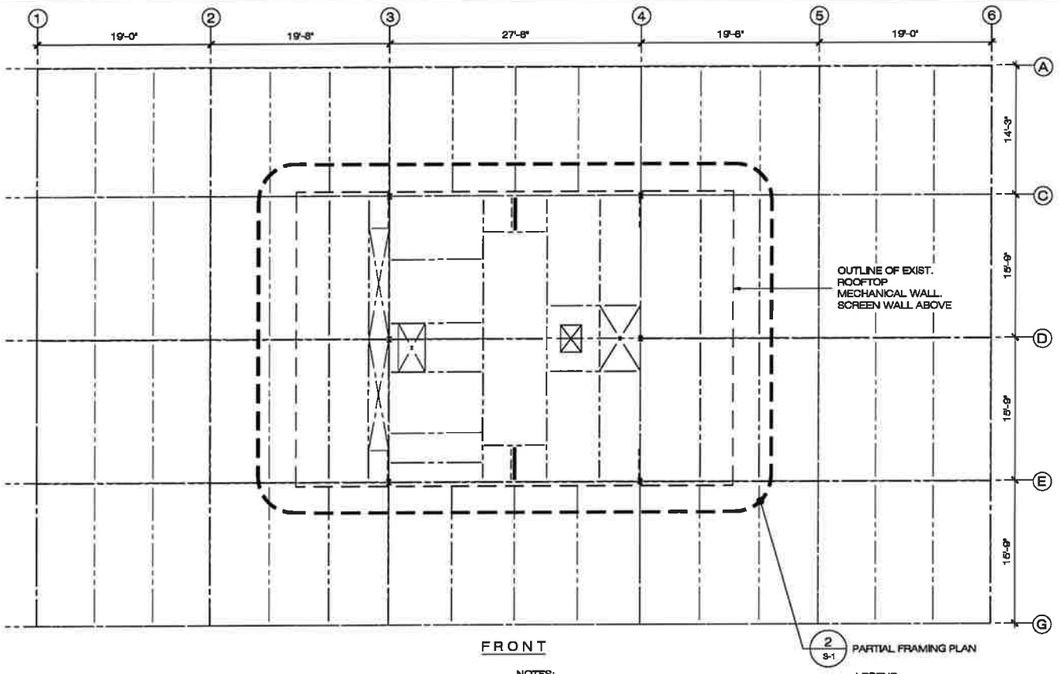
SHEET TITLE:
EXIST. & NEW EQUIPMENT MOUNTING PLANS & ELEVATIONS

SHEET NUMBER:
C-2



NOTES:

1. T/ EXIST. ROOF EL. = 0'-0" (W.P.)
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO STEEL FABRICATION.
3. REFER TO SHEET N-1 FOR STRUCTURAL SPECIFICATIONS.

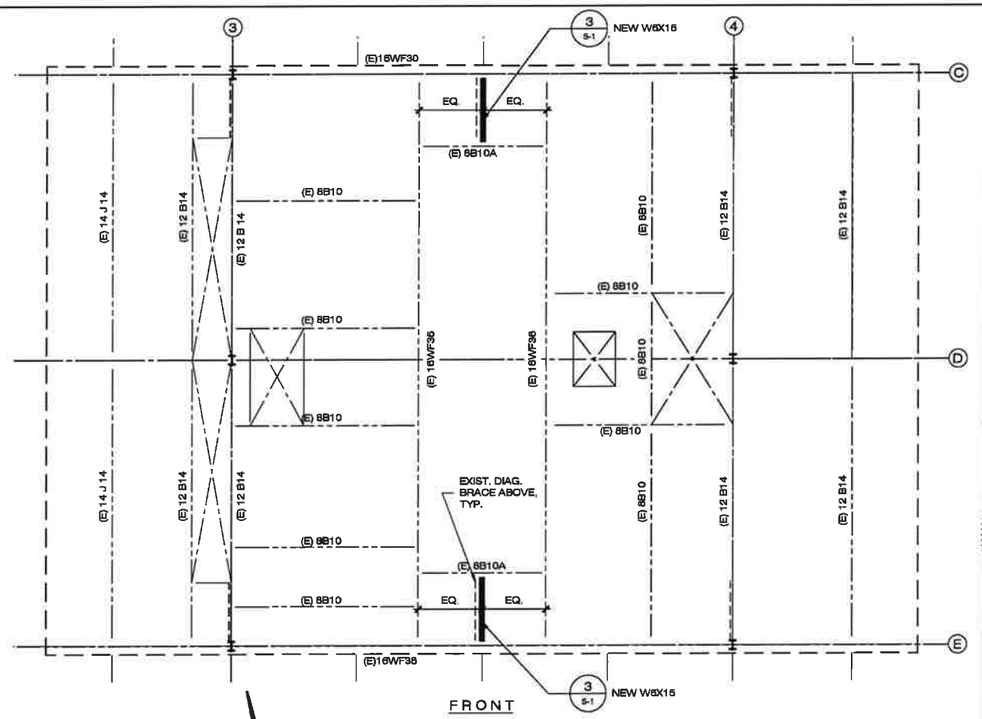
LEGEND:

W.P. = WORKING POINT

(#) = EXIST. BUILDING COLUMN DESIGNATION

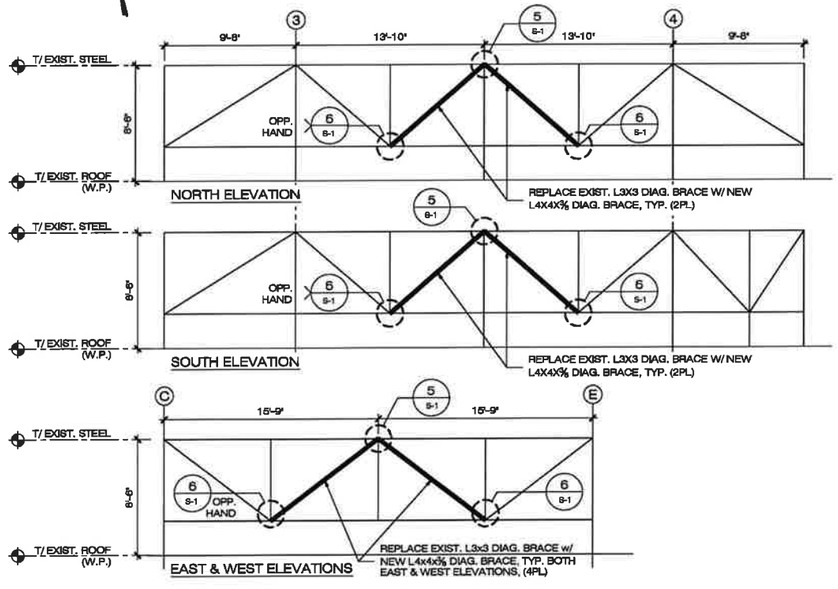
1 S-1 ROOF FRAMING PLAN

SCALE : 1/8" = 1'-0"



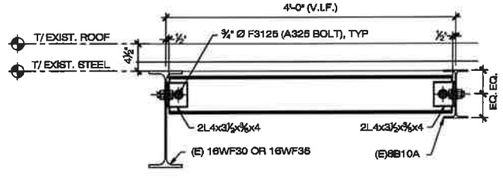
2 S-1 PARTIAL ROOF FRAMING PLAN

SCALE : 1/4" = 1'-0"



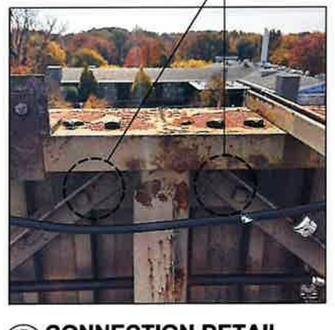
4 S-1 MECH. SCREENWALL REINFORCEMENT ELEVATIONS

SCALE : 3/16" = 1'-0"



3 S-1 CONNECTION DETAIL

SCALE : 1" = 1'-0"



5 S-1 CONNECTION DETAIL

SCALE : N.T.S.

6 S-1 CONNECTION DETAIL

SCALE : N.T.S.

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CONSTRUCTION DOCUMENTS

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6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: FOUNTAINHEAD PROPERTIES
ADDRESS: 118 MASON ST, GREENWICH, CT 06830

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SITE ADDRESS: 1111 EAST PUTNAM AVE. RIVERSIDE, CT 06878

APT FILING NUMBER: CT141_13220

DRAWN BY: JCL

DATE: 02/18/22 CHECKED BY: JRM

VZW PROJECT CODE: 20202197021

VZW LOCATION CODE: 468066

VZW FUZE ID: 18231859

SHEET TITLE:

STRUCTURAL REINFORCEMENT PLANS & DETAILS

SHEET NUMBER:

S-1

EQUIPMENT DATA

EQUIPMENT SPECIFICATIONS

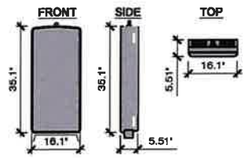
SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	30°	ETR	72.0	11.9	7.1	43.7(2)
	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	30°	ETR	72.0	11.9	7.1	43.7(2)
	SAMSUNG MT6407-77A	1	30°	NEW	35.1(3)	16.1(3)	5.5(3)	87.1(2)(5)
BETA	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	150°	ETR	72.0	11.9	7.1	43.7(2)
	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	150°	ETR	72.0	11.9	7.1	43.7(2)
	SAMSUNG MT6407-77A	1	150°	NEW	35.1(3)	16.1(3)	5.5(3)	87.1(2)(5)
GAMMA	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	290°	ETR	72.0	11.9	7.1	43.7(2)
	700/850/1900/2100: COMMSCOPE NHH-65B-R2B	1	290°	ETR	72.0	11.9	7.1	43.7(2)
	SAMSUNG MT6407-77A	1	290°	NEW	35.1(3)	16.1(3)	5.5(3)	87.1(2)(5)
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B2/B66A RRH (RF4439d-25A)	3	-	NEW	15.0	15.0	10.1	97.5
	SAMSUNG B5/B13 RRH (RF4440d-13A)	3	-	NEW	15.0	15.0	9.1	82.0
	RAYCAP RRFDC-3315-PF-48 (6OVP)	2	-	ETR	28.9	15.7	10.3	32.0
	RAYCAP RRFDC-3315-PF-48 (6OVP)	1	-	NEW	28.9	15.7	10.3	32.0

(1) 'ETR' DENOTES EXIST. TO REMAIN
(2) WEIGHT WITHOUT MOUNTING BRACKET.
(3) ANTENNA DATA BASED ON LATEST VERIZON RFDS.
(4) EQUIPMENT CONFIGURATION INDICATED ABOVE VIEWED FROM BEHIND.
(5) NOT TO EXCEED

BILL OF MATERIALS

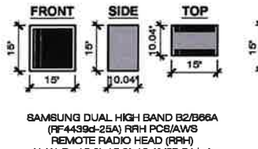
	EQUIPMENT DESCRIPTION	QUANTITY	LENGTH	COMMENTS
1	LSUB6 ANTENNA w/ INTEGRATED RRH	3		SAMSUNG MT6407-77A
2	1/2" JUMPER CABLE	36	15 FT	ROUTE FROM RRH TO ANTENNAS
3	ANTENNA LINK CABLES	6	15 M	ROUTE FROM UPPER OVP TO ANTENNAS
4	ANTENNA POWER CABLES	3	15 M	PROPIETARY POWER CABLE FROM EXIST. OVP TO ANTENNAS
5	700/850 RRH	3		SAMSUNG B5/B13 RRH (RF4440d-13A)
6	AWS/PCS RRH	3		SAMSUNG B2/B66 RRH (RF4439d-5A)
7	RRH CABLES	6	15M	PROPIETARY POWER & FIBER CABLES
8	UPPER 6OVP (ALPHA)	1		(RAYCAP RRFDC-3315-PF-48)
9	HYBRID CABLE (ALPHA)	1	110FT	6x12 LOW INDUCTANCE (L.I) HYBRID FEED-LINE CABLE

NOTES:
1. INFORMATION SHOWN HEREON IS FOR USE BY VERIZON EQUIPMENT OPERATIONS.
2. INFORMATION IS BASED ON LATEST VERIZON RFDS.
3. * DENOTES EQUIPMENT DESIGNATED "FOR LEASING ONLY" (WHERE APPLICABLE)
4. INSTALL ALARM BOARDS AT ALL OVPs WHERE REQUIRED. COORDINATE W/ VERIZON EQUIPMENT ENGINEERING.
5. INSTALL UP-CONVERTER(S) LOCATED AT BASE OVPs WHERE REQUIRED. COORDINATE W/ VERIZON EQUIPMENT ENGINEERING AS NECESSARY.
6. COORDINATE ANTENNA CABLING REQUIREMENTS WITH VERIZON ENGINEERING.
7. CONTRACTOR SHALL INSTALL NEW SIDE-BY-SIDE & DUAL-MOUNT BRACKETS PER ANTENNA MOUNT MANUFACTURER RECOMMENDATIONS, INCLUDING VERIFICATION OF MINIMUM PIPE MAST DIAMETER REQUIRED TO INSTALL NEW MOUNT BRACKETS. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD SHOULD EXIST. PIPE MAST REQUIRE REPLACEMENT TO SUPPORT THE NEW MOUNT BRACKETS.

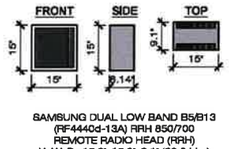


SAMSUNG MT6407-77A ANTENNA
HxWxD=35.1"x16.1"x5.51"
WT=87.1 Lbs
(NOT TO EXCEED)

2 B-1 NEW ANTENNA DETAIL
SCALE : ½" = 1'-0"



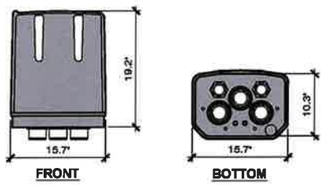
SAMSUNG DUAL HIGH BAND B2/B66A
(RF4439d-25A) RRH PCS/AWS
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x15.0"x10.1" (97.5 Lbs)



SAMSUNG DUAL LOW BAND B5/B13
(RF4440d-13A) RRH 850/700
REMOTE RADIO HEAD (RRH)
HxWxD=15.0"x15.0"x9.1" (82.0 Lbs)

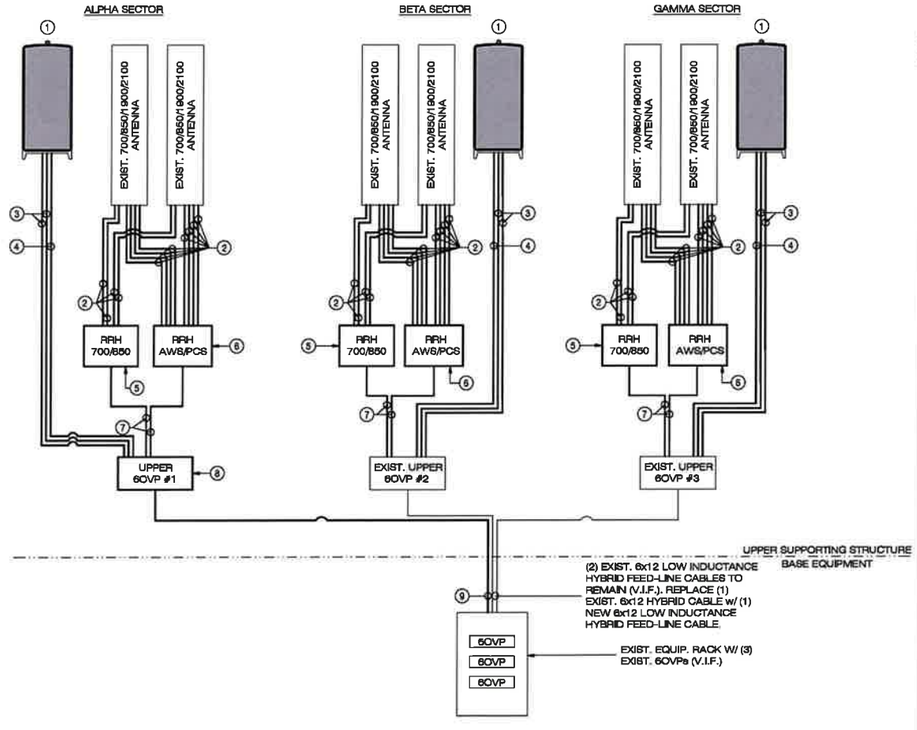
NOTE: WEIGHTS INCLUDE SOLAR SHEILD & MOUNTING BRACKET

3 B-1 NEW RRH EQUIPMENT DETAILS
SCALE : ½" = 1'-0"



RAYCAP RHSDC-3315-PF-48
OVER VOLTAGE PROTECTION BOX (OVP)
WxDxH = 15.73"x10.25"x19.18" (32.0 Lbs)
(OR EQUAL)

4 B-1 OVER VOLTAGE PROTECTION BOX (OVP)
SCALE : 1" = 1'-0"



1 B-1 PLUMBUNG DIAGRAM
SCALE : N.T.S.

NOTE: EQUIPMENT CONFIGURATION AS VIEWED FROM BEHIND.

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APT FILING NUMBER: CT141_13220

DRAWN BY: JCL
DATE: 02/18/22 CHECKED BY: JRM

VZW PROJECT CODE: 20202197021
VZW LOCATION CODE: 488086
VZW FUZE ID: 18231859

SHEET TITLE:
RF BILL OF MATERIALS, MECHANICAL SPECIFICATIONS & EQUIPMENT DETAILS

SHEET NUMBER:
B-1

DESIGN BASIS:

GOVERNING CODES/DESIGN STANDARDS:

2021 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2022 CONNECTICUT STATE BUILDING CODE
ASCE 7-16
TIA-222-H

DESIGN CRITERIA:

RISK CATEGORY (BLDG.) :	II	(IBC 2021 TABLE 1604.5)
RISK CATEGORY (MOUNTS):	II	(TIA-222-H, TABLE 2-1)

WIND LOADS:

ULTIMATE BASIC WIND SPEED, V_{ULT}: (3-SECOND GUST)	120 MPH	(2022 CSBC APPENDIX N)
EXPOSURE CATEGORY	C	(2021 IBC SEC. 1609.4.3)

ICE LOAD

BASIC WIND SPEED (V) = W/ ICE 3-SEC GUST	50 MPH	(TIA-222-H, ANNEX B)
DESIGN ICE THICKNESS (T) =	1.00"	(TIA-222-H, ANNEX B)

LIVE LOAD

ROOF LIVE LOAD, (LLR)	20 PSF	(IBC 2021 TABLE 1607.1)

SNOW LOAD

GROUND SNOW LOAD (P_G) =	30 PSF	(2022 CSBC APPENDIX P)
ROOF SNOW LOAD (P_f) =	30 PSF	(MIN. PER 2022 CSBC ADD 1608.1.1) (ASCE 7-16 EQ. 7.3-1, SEC 7.3.4)

SEISMIC LOAD:

REFER TO SECTION 1613 OF THE 2021 IBC/2022 CONNECTICUT STATE BUILDING CODE FOR SEISMIC CLASSIFICATION AND LOADING DETERMINATION.

01 GENERAL:

ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:

ACI	AMERICAN CONCRETE INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWS	AMERICAN WELDING SOCIETY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN STANDARDS AND TESTING METHODS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
ICC-ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL	UNDERWRITERS LABORATORIES
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS.

THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY IN, ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APNEWRIATE OR REQUIRED TO AVOID CONFLICTS. RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS. COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNER'S SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AHJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED PRIOR TO COMMENCING ANY WORK.

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND NEWERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTRACTOR SHALL VISIT THE SITE TO MANAGE AND GAIN APPROVAL FOR ALL TENANT DISRUPTIONS, POWER OUTAGES, WORK SCHEDULES, DEFINITION OF WORK AREA AND WORK STORAGE, NEWER BUILDING/SITE ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING/SITE MANAGEMENT PRIOR TO ALL WORK. ANY DISRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE IMPLEMENTED ONLY UPON WRITTEN APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING ANY HAZARD AFFECTING TENANT EGRESS OR COMPROMISING SITE SECURITY MEASURES.

PRIOR TO ALL BELOW-GRADE WORK AND ANY SURFACE WORK IN A NEW AREA FOR STRUCTURES OR VEHICLES, CONTRACTOR SHALL ENGAGE A MARKOUT SERVICE TO IDENTIFY ANY UNDERGROUND STRUCTURES, CONDUITS, AND PIPELINES IN THE AREA. ALL EXISTING SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UNDERGROUND UTILITIES IDENTIFIED OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN DIGGING OR EXCAVATING IN ANY MANNER AROUND OR NEAR SUCH UTILITES. CONTRACTOR IS RESPONSIBLE FOR REPAIRS, REPLACEMENT, AND ALL DAMAGES DUE TO DAMAGE OF UTILITIES BY HIS OPERATIONS.

ALL EXISTING AND NEW EQUIPMENT AND MATERIAL LOCATIONS, ROUTING, ORIENTATION, MOUNTING, SPECIFICATIONS AND GENERAL INSTALLED CHARACTERISTICS SHALL BE CONSIDERED DIAGRAMMATIC ON THE PLANS. EXACT CONDITIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO ANY INSTALLATION. ANY DIFFERENCES THAT MAY CAUSE SCHEDULE, COST, OR QUALITY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER PRIOR TO ANY WORK.

ALL REFERENCES HEREIN TO VERIFICATION OF ANY CONDITION OF SITE, FIELD, PLANS, OR SPECIFICATIONS PRIOR TO ANY WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. ANY AND ALL ADDITIONS, MODIFICATIONS, CHANGES, REPAIR, OR DEMOLITION AS A RESULT OF FAILURE TO BRING ANY EXISTING CONDITION NEWERLY TO THE ATTENTION OF THE OWNER OR ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR WITHOUT DELAY, COST, OR CHANGES IN QUALITY.

ALL NOTES THIS SHEET SHALL APPLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE INCLUDED DRAWINGS OR IN SEPARATE PROJECT SPECIFICATIONS AS APPLICABLE. ALL SPECIFICATIONS SHALL BE CONSIDERED REQUIRED UNLESS APPROVED EQUAL BY THE OWNER, CONSTRUCTION MANAGER, OR ENGINEER AS APPLICABLE.

THE WORDS "PROVIDE" OR "INSTALL" SHALL MEAN FURNISH AND INSTALL.

CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF HIS WORK. ANY PATCHING SHALL MATCH EXISTING SURROUNDING AREA IN ALL RESPECTS. ALL REMOVED MATERIAL SHALL BE REMOVED FROM THE PREMISES DAILY IN AN APPROVED SAFE MANNER.

ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE PROMPTLY WHEN DEEMED TO BE SURPLUS.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK AND NEWLY INSTALLED OR EXISTING WORK, INCLUDING PROTECTION OF THE SITE, ALL STRUCTURES, AND ALL OCCUPANTS. FURNISH, INSTALL, MAINTAIN, AND REMOVE AS APNEWRIATE, ALL APNEWRIATE BARRIERS, SAFETY GUARDS, SIGNAGE, AND SECURITY AS REQUIRED.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR RESPECTIVE FEES, PERMITS, INSPECTIONS, TESTING, CERTIFICATES, AND ALL MANAGEMENT OF SAME REQUIRED FOR COMPLETION OF AND LEGAL OCCUPANCY OF THE FINISHED PROJECT.

ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP BY THEM TO BE FREE OF DEFECTS AND MAINTAINED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION BY THE OWNER AND ENGINEER.

ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

ANY DEVIATION, MODIFICATION, ADDITION, OR CHANGE IN DESIGN SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER OR ENGINEER.

ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR DEFECT, AND SUITABLE AND LISTED FOR THE INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR SPECIFICATIONS. ALL ITEMS OF EQUIPMENT OR MATERIAL THAT ARE OF ONE GENERIC TYPE SHALL BE ONE MANUFACTURER THROUGHOUT.

ALL MATERIALS, EQUIPMENT, TOOLS, AND ITEMS UNDER THE CONTRACTORS RESPONSIBILITY ON THE JOBSITE SHALL BE ADEQUATELY SECURED, MAINTAINED, AND PROTECTED, SO AS NOT TO BECOME DAMAGED OR CREATE ANY HAZARD TO PERSONNEL OR NEWERITY.

THE CONTRACTORS HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY THE OWNER.

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL OF HIS CREW AND INSURE THAT EVERY CREW MEMBER FOLLOWS SAVE WORK PRACTICES. SAFETY TRAINING SHALL INCLUDE, BUT NOT BE LIMITED TO, FALL PROTECTION, CONFINED SPACE ENTRY, ELECTRICAL SAFETY, AND TRENCHING/EXCAVATION SAFETY WHERE SUCH WORK IS EXECUTED OR ENCOUNTERED.

ALL TEMPORARY WORK REQUIRED OR SPECIFIED AS A PART OF THIS WORK, SHALL MEET ALL OF THE SAME REQUIREMENTS AS PERMANENT INSTALLATIONS, SHALL MEET ALL APPLICABLE CODE REQUIREMENTS, AND SHALL BE COMPLETELY REMOVED AFTER ITS PURPOSES HAVE BEEN SERVED.

ANY EXISTING UTILITY, SERVICE, STRUCTURE, EQUIPMENT, OR FIXTURE OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER.

IF ASBESTOS IS ENCOUNTERED DURING WORK EXECUTION, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND CEASE ALL ACTIVITIES IN AFFECTED AREAS UNTIL NOTIFIED BY THE CONSTRUCTION TO RESUME OPERATIONS.

EXIST. ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

05 STEEL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

MATERIALS:

WIDE FLANGE	ASTM A992, GR 50
TUBING	ASTM A500, GR B
PIPE	ASTM A53, GR B
BOLTS	ASTM F3125 (A325)
GRATING	TYPE GW-2 (1-1/4X3/16" BARS)
EXISTING METALS	ASTM A36

PROVIDE CERTIFICATION THAT WELDERS TO BE USED IN WORK ARE LICENSED AND HAVE SATISFACTORILY PASSED AWS QUALIFICATION TEST UNDER THE PROVISIONS OF APPENDIX D, PARTS II AND III OF THE AWS CODE FOR WELDING IN BUILDING CONSTRUCTION.

ALL BUILDING CONNECTION POINTS TO BE CENTERED ON EXISTING STRUCTURAL BEARING POINTS AND THE LOCATIONS ARE TO BE VERIFIED IN FIELD PRIOR TO THE FABRICATION OF STEEL.

DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF AISC SPECIFICATION FOR *"THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS"*.

NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.

ALL STEEL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS WITH A COATING WEIGHT OF 2 OZ/SF.

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

DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY TOUCHING UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC, "GALVANOX", "DRY GALV", OR "ZINC IT", IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

THE STEEL STRUCTURE SHALL BE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

TOWER MANUFACTURERS DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION.

STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE MINIMUM 3/4" DIAMETER AND EACH CONNECTION SHALL HAVE MINIMUM TWO BOLTS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

ALL U-BOLTED CONNECTIONS SHALL BE COMPLETED WITH DOUBLE NUTS OR A LOCK WASHER.

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 PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE LARGER OF 1/4" FILLET OR MINIMUM SIZE PER TABLE J2.4 IN THE AISC *"MANUAL OF STEEL CONSTRUCTION"*. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE REGARDING DAMAGED GALVANIZED SURFACES.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AWS.

SEAL ALL PENETRATIONS AND SEAMS BETWEEN MASONRY AND STEEL WITH DOW CORNING 790 SILICONE BUILDING SEALANT OR EQUAL.

26 ELECTRICAL:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

ALL ELECTRICAL CONDUCTORS:

- INSULATION SHALL BE MINIMUM 600V TYPE THHN, THWN-2, OR XHHW.
- BRANCH CIRCUIT CONDUCTORS SHALL BE SOFT DRAWN 98% MINIMUM CONDUCTIVITY NEWERLY REFINED COPPER.
- FEEDER CIRCUIT CONDUCTORS SHALL BE EITHER COPPER OR ALUMINUM OF THE APNEWRIATE SIZE FOR THE APPLICATION, OR AS SPECIFICALLY NOTED.
- PERMANENTLY LABEL OR TAG ALL CONDUCTORS WITH THEIR CIRCUIT DESIGNATION AT ALL TERMINATION ENDS, SPLICES, AND VISIBLE AS PASS-THROUGH IN ALL ENCLOSURES.

ALL CONDUIT, RACEWAY, WIREWAYS, DUCTS, ETC. SHALL BE LISTED AND SUITABLE FOR THE APPLICATION. ONLY THE FOLLOWING CONDUITS AS APPROVED AND LISTED FOR THE APPLICATION SHALL BE ACCEPTABLE:

- ELECTRICAL METALLIC TUBING (EMT)
- COMPRESSION COUPLINGS AND CONNECTORS ONLY MADE UP WRENCH TIGHT.
- FLEXIBLE METAL CONDUIT (FMC) AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)
- FINAL CONNECTIONS TO VIBRATING OR ADJUSTABLE EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, HVAC UNITS, TRANSFORMERS, MOTORS, ETC. OR WHERE EQUIPMENT IS PLACED UPON SLAB ON-GRADE.
- RIGID GALVANIZED STEEL (RGS).
- ALL FITTINGS, CONNECTORS, AND COUPLINGS SHALL BE THREADED MADE UP WRENCH TIGHT.
- RIGID POLYVINYL CHLORIDE (PVC) SCHEDULE 40 OR SCHEDULE 80.
- MAY BE USED FOR SERVICES, EXTERIOR, BELOW GRADE, AND WET LOCATIONS.
- SHALL NOT BE USED IN CONCRETE SLABS NOR EXPOSED WITHIN A BUILDING OR STRUCTURE.
- METAL-CLAD CABLE (MC)
- CONCEALED INSTALLATIONS ONLY.
- WITHIN A DUCT WITH SMOOTH OR CORRUGATED METAL JACKET AND NO OUTER COVERING OVER THE METAL JACKET.

IN FINISHED SPACES, ALL CONDUITS SHALL BE CONCEALED EXCEPT TO MAKE A FINAL CONNECTION TO EQUIPMENT NOT MOUNTED IN OR AGAINST FINISH MATERIAL.

ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A SEPARATE NEWERLY SIZED AND MARKED GROUNDING CONDUCTOR, PER APPLICABLE CODES, THAT BONDS ALL ENCLOSURES, BOXES, ETC. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING CONDUCTOR.

IF EXISTING ELECTRIC SERVICE IS TO REMAIN, CONTRACTOR SHALL BE VERIFY THAT IT MEETS PROJECT REQUIREMENTS WITHOUT MODIFICATION. IF IT IS TO BE ADDED OR REPLACED AS A PART OF THIS WORK, CONTRACTOR SHALL ORDER FROM, COORDINATE WITH, AND GAIN APPROVAL FROM THE ELECTRICAL UTILITY. ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED AND AS APPROVED BY THE LOCAL UTILITY WHERE APPLICABLE.

ALL EQUIPMENT, ENCLOSURES, ETC. SHALL BE SUITABLE FOR THE INSTALLED ENVIRONMENT, MINIMUM NEMA 3R FOR ALL EXTERIOR INSTALLATIONS.

WIRING DEVICES SHALL BE SPECIFICATION GRADE AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED. COLOR SHALL BE IVORY. ALL DEVICES AND COVER PLATES SHALL BE OF THE SAME MANUFACTURER.

ALL FIRE-RATED PENETRATIONS SHALL BE SEALED USING A SUITABLE AND LISTED FIRE SEALING DEVICE OR GROUT THAT WILL MAINTAIN THE FIRE RATING OF THE STRUCTURE PENETRATED.

PROVIDE PERMANENTLY AFFIXED ENGRAVED NAMEPLATES FOR ALL CODE REQUIRED LABELING AND ON ALL PANELS, METERING, DISCONNECTS, AND ELECTRICAL EQUIPMENT THAT IDENTIFIES EQUIPMENT SERVED, ELECTRICAL SOURCE WITH CIRCUIT IDENTIFICATION, AND VOLTAGES WITHIN.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL FINAL TERMINATIONS TO ALL EQUIPMENT.

ALL ELECTRICAL APPURTENANCES THAT ARE DISCONNECTED SHALL BE COMPLETELY REMOVED WITH EXISTING STRUCTURES TO REMAIN, REPAIRED, FINISHED, FILLED, PAINTED, ETC. ALL PANEL SCHEDULES, EQUIPMENT LABELING, AND CODE-REQUIRED LABELING, SHALL BE VERIFIED AND NEWERLY COMPLETED TO MATCH THE INSTALLATION.

26 GROUNDING:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

GROUND ALL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH BEST INDUSTRY PRACTICE, THE REQUIREMENTS OF THE NFPA 70 NATIONAL ELECTRICAL CODE (NEC), AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

ALL GROUNDING ELECTRODES PRESENT AT EACH SERVICE LOCATION SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.

ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED BY THE INSTALLATION OF A SEPARATE GROUNDING CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS THAT IS SIZED PER CODE OR IS OF THE SIZE INDICATED ON THE DRAWINGS, SHALL BE CONTINUOUS IN LENGTH, AND SHALL BE BONDED TO EACH ENCLOSURE PASSED THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING WIRE OR CIRCUIT.

BOND ALL METALLIC CONDUITS TOGETHER THAT ARE CONNECTED TO NON-METALLIC ENCLOSURES, IN-GROUND BOXES, AND TO AN ENCLOSURE WHERE A GROUND BUS IS SPECIFIED OR SUPPLIED. ACCOMPLISH THIS BOND WITH GROUNDING CONDUCTORS MINIMUM SIZED TO THE LARGEST GROUNDING CONDUCTOR PRESENT IN THE ENCLOSURE CONNECTED TO A GROUNDING TYPE BUSHING EQUALLY SIZED OR MAXIMUM GROUND WIRE ACCOMMODATION AVAILABLE IN STANDARD MANUFACTURE FOR THE CONDUIT SIZE, WHICHEVER IS LESS.

EQUIPMENT GROUNDING AND LOAD SIDE BONDING CONDUCTORS SHALL BE SIZED PER THE CIRCUIT'S OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. WHERE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUIT'S OCPD, INCREASE THE GROUNDING CONDUCTOR NEWORTIONATELY TO THE CROSS-SECTIONAL AREA OF THE UNGROUNDED CONDUCTORS.

SERVICE MAIN BONDING JUMPERS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED AND INSTALLED PER THE MINIMUM OF ALL APPLICABLE CODES AND REGULATIONS.

26 LIGHTNING PROTECTION:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS AND THE GROUNDING SPECIFICATIONS HEREIN.

THE LIGHTNING PROTECTION GROUNDING SYSTEM (LPGS) SHALL CONSIST OF BONDING ALL EQUIPMENT AND CONDUCTIVE STRUCTURES TO LOCALIZED SINGLE-POINT GROUNDING CONNECTIONS (TYPICALLY GROUND BARS) WHICH ARE BONDED TOGETHER AND TO AN IN-GROUND SYSTEM. IF THE LPGS IS ON A BUILDING, IT SHALL BE EFFECTIVELY BONDED TO THE ELECTRICAL SERVICE MAIN BONDING JUMPER AND TO ADDITIONAL IN-GROUND ELECTRODES AS MAY BE REQUIRED OR INDICATED. IF THE LPGS IS ON A DEDICATED COMMUNICATION SITE, ALL EQUIPMENT AREAS AND TOWERS SHALL EACH HAVE THEIR OWN IN-GROUND RING WITH EVERY RING BONDED TOGETHER, AND ALL CONDUCTIVE STRUCTURES IN CLOSE PROXIMITY (FENCES, ICE BRIDGES, ISOLATED EQUIPMENT, ETC.) ALSO BONDED TO PROVIDE A COMMON ELECTRICAL EQUIPOTENTIAL SYSTEM FOR ALL CONDUCTIVE ELEMENTS AND STRUCTURES.

CONDUCTORS:

- MIN #2 AWG SOLID BARE TINNED COPPER (SBTC) FOR ALL IN-GROUND CONDUCTORS.
- MIN #2 AWG COPPER GREEN STRANDED FOR BONDING STRUCTURES, AND FOR INTER-SYSTEM BONDING OF INDIVIDUAL ELEMENTS SUCH AS GROUND BAR TO GROUND BAR.
- MIN #6 AWG COPPER GREEN STRANDED OR ALL EQUIPMENT BONDING.
- INSTALL ALL IN-GROUND CONDUCTORS IN THE SAME HORIZONTAL PLANE OR IN A DOWNWARD DIRECTION AWAY FROM THE TOWER AND EQUIPMENT AREAS.
- AVOID LONG RUNS. MAKE DIRECT RUNS AS MUCH AS POSSIBLE.
- PLACE THROUGH NON-METALLIC SLEEVES WHEN PASSING THROUGH FLOORS, WALLS, CEILINGS, AND SIMILAR STRUCTURES.
- MAKE ALL CONNECTIONS IN CONTACT WITH EARTH WITH EXOTHERMIC WELDING. MAKE ALL OTHER CONNECTIONS WITH EXOTHERMIC WELDING, IRREVERSIBLE COMPRESSION CONNECTORS, OR LISTED COMPRESSION TWO-HOLE LUGS.
- INSTALL ALL CONDUCTORS WITH A MINIMUM 18 INCH BEND RADIUS AND NO BEND LONGER THAN A 90 DEGREE ARC. ALL BENDS SHALL BE HORIZONTAL, OR DOWNWARD TOWARDS EARTH.
- ALL CONDUCTORS PASSING FROM ABOVE-GROUND TO IN-GROUND CONNECTIONS, WHERE EXPOSED, SHALL BE COVERED AND PROTECTED WITH A NON-METALLIC CONDUIT SEALED AT BOTH ENDS.
- IF 2 OR MORE IN-GROUND CONDUCTOS ARE IN THE SAME PATH (2 RINGS OVERLAPPING, BONDING FOLLOWING ANOTHER RING OR RADIAL, OR SIMILAR), COMBINE WITH A SHARED SINGLE CONDUCTOR.

EQUIPMENT AND TOWER GROUND RINGS SHALL BE:

- BONDED TO ANY CONDUCTIVE OBJECT OR STRUCTURE WITHIN 5 FEET OF EQUIPMENT GROUND RINGS AND WITHIN 20 FEET OF TOWER GROUND RINGS.
- INSTALLED MINIMUM 18 INCHES FROM FOUNDATIONS, FOOTINGS, AND SIMILAR.

INSTALL ALL IN-GROUND RINGS, RADIALS, BONDS CONNECTING THEM, AND ALL SIMILAR GROUNDING:

- MIN 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE, WHICHEVER IS GREATER DEPTH.
- MIN 2 FEET FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND SIMILAR STRUCTURES, EXCEPT WHEN MAKING A BOND TO ANY OF THESE STRUCTURES. DO NOT BOND TO FOUNDATION INTERNAL REINFORCEMENT.

ALL EQUIPMENT GROUPED IN A COMMON AREA, COMPOUND, STRUCTURE, OR SIMILAR SHALL BE BONDED TO A SINGLE-POINT GROUND, PREFERABLY AN ISOLATED GROUND BAR. BOND THE GROUND BAR TO THE SYSTEM WITH MINIMUM SINGLE BONDING CONDUCTOR. IF BONDING TO AN IN-GROUND RING, INSTALL 2 BONDING CONDUCTORS MINIMUM WITH EACH CONDUCTOR INSTALLED DIRECTIONALLY AWAY FROM EACH OTHER AND PARALLEL TO THE IN-GROUND CONDUCTOR, WITH NO TEE CONNECTIONS.

TOWER GROUNDING:

- EACH TOWER LEG SHALL BE BONDED TO ITS RING. SINGLE-LEGGED TOWERS, OR MONOPOLES, SHALL HAVE 2 BONDS ON OPPOSITE SIDES.
- BOND TO TOWER BASE, NOT TO VERTICAL TOWER STRUCTURE, AWAY FROM TOWER MOUNTING HARDWARE.
- EACH BOND SHALL HAVE A CORRESPONDING GROUND ROD ON THE RING.
- EACH BOND SHALL CONSIST OF 2 CONDUCTORS FROM THE TOWER TO ITS RING WITH EACH CONDUCTOR DIRECTED IN OPPOSITE DIRECTIONS WITH A PARALLEL CONNECTION ON THE RING ON OPPOSITE SIDES OF THE GROUND ROD.

EQUIPMENT AREA GROUNDING:

- COMMUNICATION AREAS ON EARTH SHALL HAVE A GROUND RING.
- BOND ALL EQUIPMENT TO A SINGLE-POINT GROUND (GROUND BAR).
- BOND THE EQIPMENT SINGLE-POINT GROUND TO THE EQUIPMENT GROUND RING WITH MINIMUM 2 CONDUCTORS DIRECTED IN OPPOSITE DIRECTIONS WITH PARALLEL CONNECTIONS ON THE RING.
- IF EQUIPMENT IS ENCLOSED IN A SHELTER:
- IF THE SHELTER IS CONSIDERED TO BE EXPOSED TO A DIRECT LIGHTNING STRIKE, INSTALL A BUILDING LIGHTNING PROTECTION SYSTEM PER APPLICABLE VERSION OF NFPA 780.
- BOND ALL FIXED CONDUCTIVE BUILDING COMPONENTS TOGETHER AND TO THE BUILDING RING GROUND AT THE CORNERS. THIS IS TYPICALLY CALLED THE HALO GROUND. DO NOT BOND EQUIPMENT TO THE HALO GROUND.
- BOND ALL EQUIPMENT TOGETHER TO A SINGLE-POINT OR INTERIOR EQUIPMENT RING GROUND (IEGR). BOND THE SINGLE-POINT OR IEGR TO THE EXTERNAL EQUIPMENT RING GROUND.
- PLACE GROUND RODS AT THE EQUIPMENT GROUND RING CORNERS.

GROUND RODS:

- SEPARATION SPACE BETWEEN ANY 2 GROUND RODS SHALL BE NO CLOSER THAN THEIR DEPTH. THIS APPLIES TO ALL RODS IN THE COMPLETE SYSTEM.
- DRIVE VERTICALLY IN UNDISTURBED SOIL WITH THE TOP AT SAME DEPTH AS THE IN-GROUND CONDUCTOR. IF NOT POSSIBLE TO INSTALL VERTICALLY, PLACE AS CLOSE TO VERTICAL AS POSSIBLE AND IN A DIRECTION AWAY FROM THE NEAREST ABOVE-GROUND CONDUCTIVE ELEMENT (TOWER, EQUIPMENT, ETC.)

RADIALS (TYP. NEW DEDICATED COMMUNICATION SITES):

- WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL A MINIMUM OF 4, MAXIMUM 10 RING RADIALS.
- EACH RADIAL'S LENGTH SHALL BE MIN 20 FT, MAX 80 FT.
- EXTEND RADIALS PERPENDICULAR FROM RINGS IN AS STRAIGHT LINE AS POSSIBLE, AWAY FROM OTHER RING GROUNDS, RADIALS, BONDS, AND SIMILAR.
- A COMMON PRACTICE IS TO PLACE 4 RADIALS FROM THE TOWER RING TO THE 4 CORNERS OF THE AVAILABLE AREA.

AT A MINIMUM, BOND ALL COMPOUND CONDUCTIVE FENCE CORNER POSTS AND GATE POSTS TO THE LPGS. PREFERABLY, INSTALL A GROUND RING THAT FOLLOWS THE FENCE LINE, BONDING ALL POSTS TO THE RING.

27 ANTENNAS & CABLES:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNT AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER. COORDINATE LENGTH OF JUMPER CABLES WITH OWNER. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH OWNER PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.

AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM / SWEEP TESTED FOR NEWER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR SHALL OBTAIN AND USE LATEST TESTING PROCEDURES FROM OWNER OR MANUFACTURER PRIOR TO BIDDING.

ANTENNA CABLES SHALL BE UNIQUELY COLOR-CODED AT THE ANTENNAS, BOTH SIDES OF EQUIPMENT SHELTER WALL, AND JUMPER CABLES AT THE EQUIPMENT.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS, ASSOCIATED CABLE MOUNTING AND GROUNDING HARDWARE, WALL MOUNTS, STANDOFFS, AND ALL ASSOCIATED HARDWARE TO INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURERS AND OWNER'S SPECIFICATIONS.

ANTENNA CABLES SHALL BE FOAM DIELECTRIC COAXIAL CABLES AS FOLLOWS:

- BASE STATION ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 100 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 100 FT.
  - GPS ANTENNAS:
  - 7/8" DIAMETER FOR CABLE LENGTHS UP TO 200 FT.
  - 1-5/8" DIAMETER FOR CABLE LENGTHS GREATER THAN 200 FT.

MINIMUM BENDING RADIUS FOR COAXIAL CABLES SHALL BE:

- 15 FT FOR 7/8" COAXIAL CABLES.
- 25 FT FOR 1-5/8" COAXIAL CABLES.

CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.

ALL EXTERIOR CABLE CONNECTIONS SHALL BE COVERED WITH A WATERPROOF SPLICING KIT.

CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.

CABLE SHALL BE FURNISHED AND INSTALLED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

27 CABLE TRAY:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.

CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.

CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORDANCE WITH NEC AND NEMA 11-15-84.

CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC. OR EQUAL.

CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

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CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	02/18/22	FOR REVIEW: JRM
1	02/25/22	FOR FILING: JRM
2	03/29/23	REINF. DESIGN: JRM
3	04/07/23	UPDATED PER RFDS: JRM
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

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APT FILING NUMBER: CT141_13220

	DRAWN BY: JCL
DATE: 02/18/22	CHECKED BY: JRM

VZW PROJECT CODE: 20202197021
VZW LOCATION CODE: 469066
VZW FUZE ID: 16231659

SHEET TITLE:
NOTES & SPECIFICATIONS

SHEET NUMBER:
N-1

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..

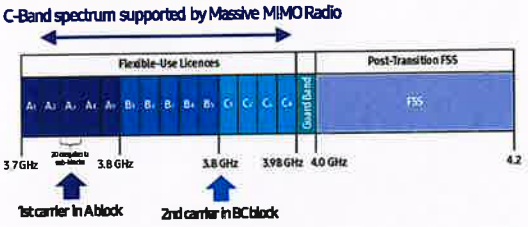
Model Code : MT6407-77A

Points of Differentiation

Wide Bandwidth

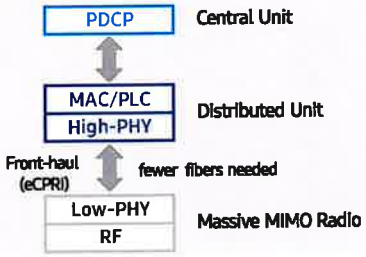
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

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

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

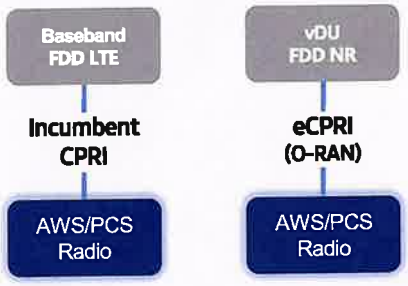
Homepage
samsungnetworks.com

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

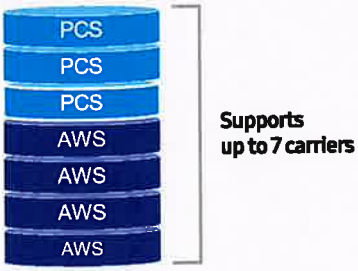
A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

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.

- **2 FH connectivity**
- **O-RAN capability**
- **More carriers and spectrum**

Same as an Incumbent radio volume

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

SAMSUNG

700/850MHZ 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 700/850MHz 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	RF4440d-13A

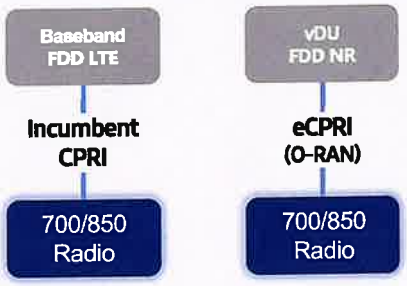
Homepage
samsungnetworks.com

Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

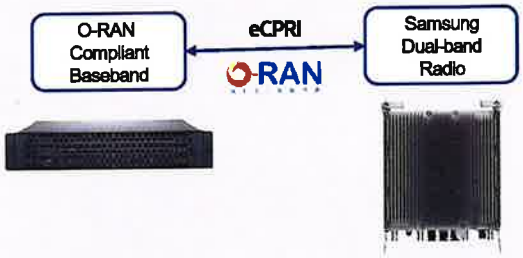
Samsung's 700/850MHz macro radio can support each incumbent CPRI interface as well as an advanced eCPRI interface. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help when implementing cost-effective networks because it is 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

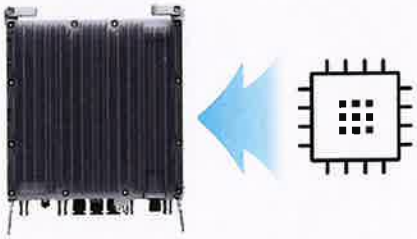
The number of required carriers varies according to site (region). The ability to support many carriers is essential for using all frequencies that the operator has available.

The new 700/850MHz dual-band radio can support up to 2 carriers in the B13 (700MHz) band and 3 carriers in the B5 (850MHz) band, respectively.

Secured Integrity

Access to sensitive data is allowed only to authorized software.

The Samsung radio's CPU can protect root of trust, which is credential information to verify SW integrity, and secure storage provides access control to sensitive data by using dedicated hardware (TPM).



Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B13(700MHz), B5(850MHz)
Frequency Band	DL: 746 – 756MHz, UL: 777 – 787MHz DL: 869 – 894MHz, UL: 824 – 849MHz
RF Power	(B13) 4 × 40W or 2 × 60W (B5) 4 × 40W or 2 × 60W
IBW/OBW	(B13) 10MHz / 10MHz (B5) 25MHz / 25MHz
Installation	Pole, Wall
Size/ Weight	14.96 x 14.96 x 9.05inch (33.2L) / 70.33 lb

ATTACHMENT 3

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

verizon

Riverside CT

1111 East Putnam Ave, Riverside, CT 06878

May 23, 2023

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays to be mounted at 43.9' AGL on an existing rooftop located at 1111 East Putnam Ave in Riverside, CT. The coordinates of the monopole tower are 41° 02' 27.91" N, 73° 35' 3.18" W.

Verizon is proposing the following:

1) Install three (3) antennas, one (1) per sector to support its commercial LTE network.
2) Maintain six (6) multi-band antennas, two (2) per sector to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon[1] and the existing antennas for T-Mobile[2] to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to Verizon's Radio Frequency Design Sheet updated 4/6/2023.

[2] As referenced to Radio Frequency Emissions Analysis Report prepared by EBI Consulting on behalf of T-Mobile.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 30°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	43.9
		850	160	15	5060		60			
		1900	160	17.9	9866	NHH-65B-R2B	69			
		2100	240	18.4	16604		64			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	43.9
	Beta / 150°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	43.9
		850	160	15	5060		60			
		1900	160	17.9	9866	NHH-65B-R2B	69			
		2100	240	18.4	16604		64			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	43.9
	Gamma / 290°	700	160	14.9	4944	NHH-65B-R2B	65	0	5.99	43.9
		850	160	15	5060		60			
		1900	160	17.9	9866	NHH-65B-R2B	69			
		2100	240	18.4	16604		64			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	43.9

Table 1: Proposed Antenna Inventory[3] [4]

[3] Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 4/6/2023.

[4] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

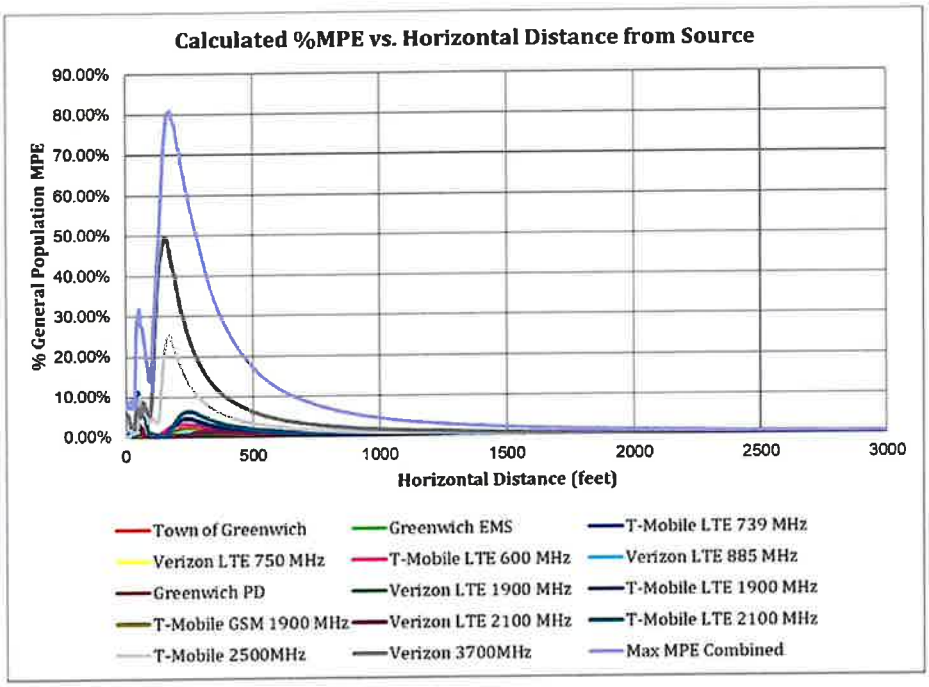


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (82.49% of the General Population limit) is calculated to occur at a horizontal distance of 174 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 174 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
Greenwich EMS	1	4.0	55.7	174	0.000019	0.300	0.02%
Greenwich PD	1	70.0	55.7	174	0.001662	0.567	2.00%
T-Mobile 2500MHz	1	120.0	43.0	174	0.255533	1.000	25.55%
T-Mobile GSM 1900 MHz	1	120.0	43.0	174	0.010424	1.000	1.04%
T-Mobile LTE 1900 MHz	1	240.0	43.0	174	0.020847	1.000	2.08%
T-Mobile LTE 2100 MHz	3	120.0	43.0	174	0.017542	1.000	1.75%
T-Mobile LTE 600 MHz	1	160.0	43.0	174	0.009839	0.400	2.46%
T-Mobile LTE 739 MHz	1	60.0	43.0	174	0.002486	0.493	0.50%
Town of Greenwich	1	1.0	66.7	174	0.000029	1.000	0.00%
Verizon 3700MHz	1	200.0	43.9	174	0.451898	1.000	45.19%
Verizon LTE 1900 MHz	1	160.0	43.9	174	0.001175	1.000	0.12%
Verizon LTE 2100 MHz	1	240.0	43.9	174	0.001671	1.000	0.17%
Verizon LTE 750 MHz	1	120.0	43.9	174	0.005004	0.500	1.00%
Verizon LTE 885 MHz	1	120.0	43.9	174	0.003354	0.567	0.59%
						Total	**82.49%**

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **82.49% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 174 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Report Prepared By: Ram Acharya
RF Engineer 1
C Squared Systems, LLC

May 22, 2023
Date

Reviewed/Approved By: Sohail Usmani
Senior RF Engineer
C Squared Systems, LLC

May 23, 2023
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Verizon's Radio Frequency Design Sheet updated 10/21/2022

AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Antenna Add - 1111 East Putnam Ave (aka 1 Service Road) Riverside, CT, dated 9/23/2022

As referenced to Dish Wireless LLC's filing, Connecticut Siting Council Tower Share Application – 1111 East Putnam Ave , Riverside, CT, dated 11/19/2021

T-Mobile's filing, Connecticut Siting Council Notice of Exempt Modification – 1111 East Putnam Ave , Riverside, CT, dated 10/1/2020

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[6]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[5] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[6] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

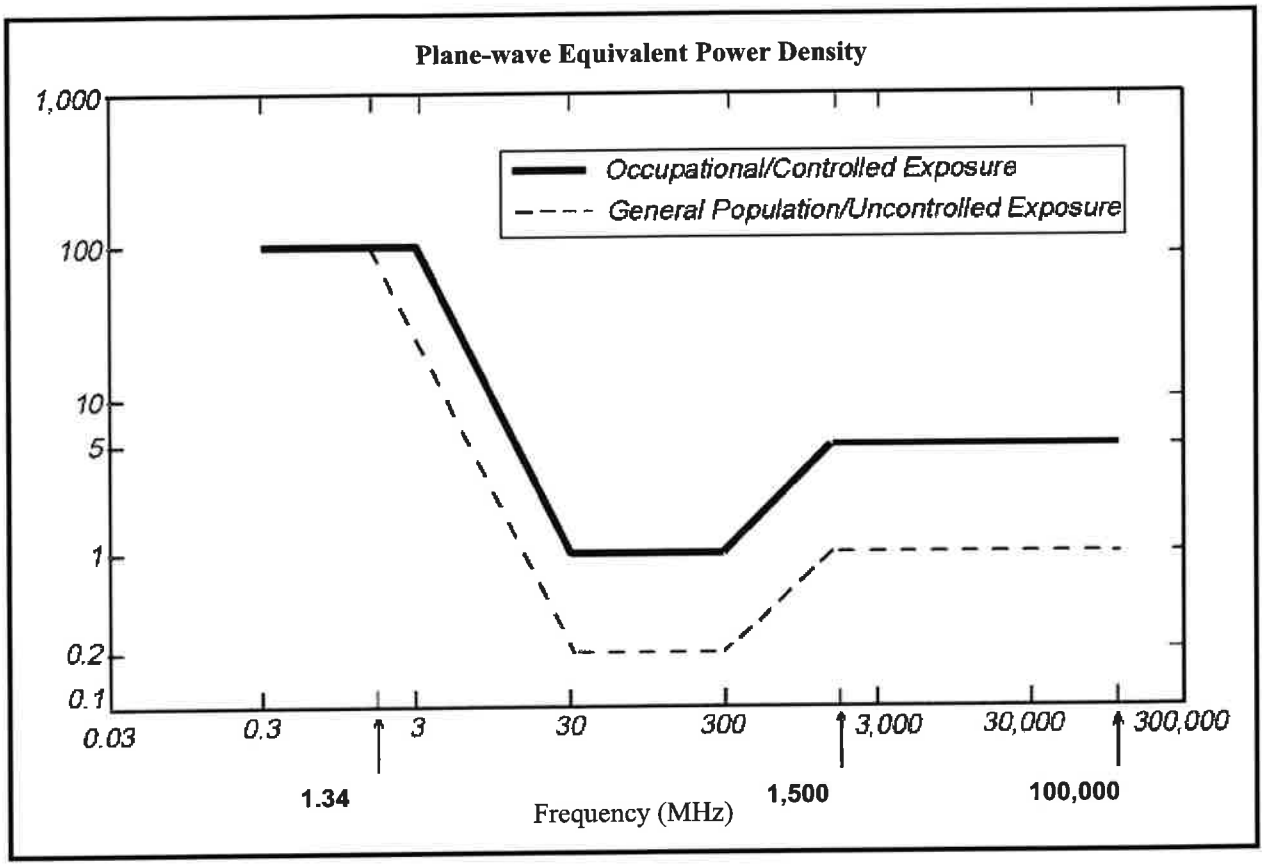
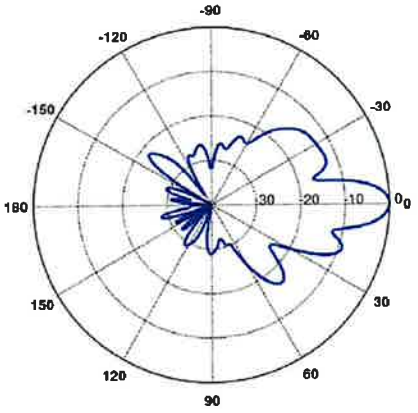


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

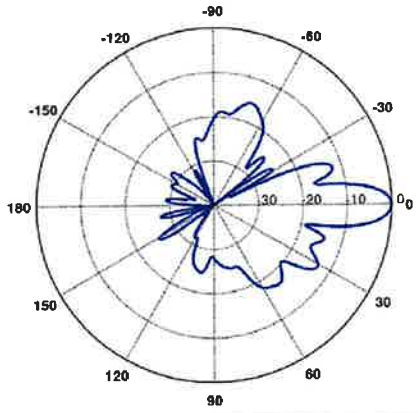
750 MHz

Manufacturer:	COMMSCOPE
Model #:	NHH-65B-R2B
Frequency Band:	698-806 MHz
Gain:	14.9 dBi
Vertical Beamwidth:	12.4°
Horizontal Beamwidth:	65°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 7.1" x 11.85"



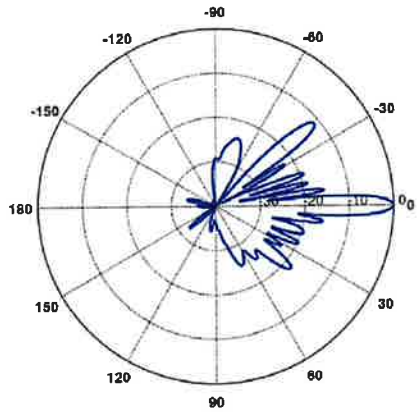
885 MHz

Manufacturer:	COMMSCOPE
Model #:	NHH-65B-R2B
Frequency Band:	806-896 MHz
Gain:	15 dBi
Vertical Beamwidth:	11.2°
Horizontal Beamwidth:	65°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 7.1" x 11.85"



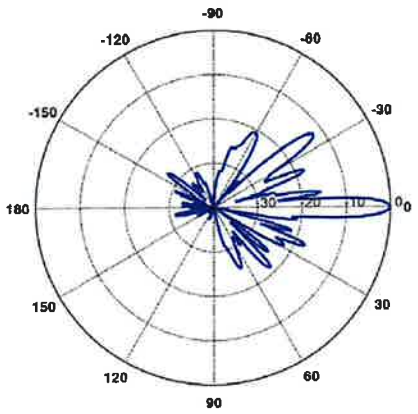
1900 MHz

Manufacturer:	COMMSCOPE
Model #:	NHH-65B-R2B
Frequency Band:	1850-1990 MHz
Gain:	17.9 dBi
Vertical Beamwidth:	5.2°
Horizontal Beamwidth:	69°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 7.1" x 11.85"



2100 MHz

Manufacturer:	COMMSCOPE
Model #:	NHH-65B-R2B
Frequency Band:	1920-2200 MHz
Gain:	18.4 dBi
Vertical Beamwidth:	4.9°
Horizontal Beamwidth:	64°
Polarization:	±45°
Dimensions (L x W x D):	71.9" x 7.1" x 11.85"



ATTACHMENT 4

ALL-POINTS
TECHNOLOGY CORPORATION

MOUNT ANALYSIS AND STRUCTURAL REINFORCEMENT DESIGN REPORT RIVERSIDE, CONNECTICUT

Prepared for
Verizon Wireless

verizon

Verizon Site Ref:

468066; Riverside CT

Site Address: 1111 East Putnam Avenue, Riverside, CT 06878
FUZE ID: 16231859
Location Code: 468066
Project Code: 20202197021

APT Filing No. CT141_13220

~~Rev 0: February 18, 2022~~
~~Rev 1: February 25, 2022~~
~~Rev 2: November 17, 2022~~
~~Rev 3: March 29, 2023~~
Rev 4: April 7, 2023

ALL-POINTS TECHNOLOGY CORPORATION, P.C.
567 VAUXHALL STREET EXTENSION · SUITE 311 · WATERFORD, CT 06385 · PHONE 860-663-1697

Mount Analysis and
Structural Reinforcement Design Report
Riverside, Connecticut
prepared for
Verizon Wireless

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of the existing antenna mount assemblies and an evaluation of the existing host structure to support a proposed Verizon Wireless equipment modification.

Details of the existing and proposed equipment configuration are included within the table on the following page. Reference can be made to the Construction Drawings, prepared by APT, marked Rev 3, dated 04/07/2023.

We find that the existing Verizon mount assemblies meet the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard under the proposed equipment loading. Furthermore, successful completion of the reinforcements detailed within the referenced Construction Drawings dated 04/07/2023 will result in a host structure that meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with proposed and existing equipment loading.

The mount assembly component usage is summarized in the table below:

Mount Assembly Component	Usage (%)
Members (Pipe Mast)	44%
Connection (Bolts)	12%

The existing rooftop screenwall and supporting roof structure component usage is summarized in the table below:

Mount Assembly Component	Usage (%)
Mechanical Screenwall (Braces)	96%
Roof Support Structure (Beam)	94%

INTRODUCTION:

A structural analysis of the existing mount assemblies was performed by APT for the purpose of supporting the proposed Verizon Wireless equipment installation. Further, APT conducted a local evaluation of the existing host structure with the imposed carrier loading. The subject host structure is a 37.8'± office building located at 1111 East Putnam Avenue in Riverside, Connecticut.

The following information was utilized in the preparation of this analysis:

- RFDS detailing Verizon's proposed equipment changes, latest version.
- Rooftop mapping obtained from field measurements and site observations conducted by APT during January and October 2022.

- Mount Analysis Report as prepared by PBA Engineering, P.C. (PBA) (PBA Project No. N-552), dated April 6, 2021.
- Structural Analysis Report as prepared by PBA Engineering, P.C. (PBA) (PBA Project No. N-552), dated April 6, 2021.
- Construction Drawings as prepared by On Air Engineering, LLC (On-Air), marked Rev 2 and dated April 4, 2021.
- Partial set of Building Drawings as prepared by James A. Evans, Architect, and Werner, Jensen, & Korst, Engineers

The analysis was conducted using the following antenna inventory (proposed equipment shown in **bold** text):

Carrier	Antenna and Appurtenance Make/Model	Elevation	Status	Mount Type
Verizon	**(3) Samsung MT6407-77A Panel Antennas w/ Integrated RRHs (3) Samsung B2/B66a (RF4439d-25A) RRHs, (3) Samsung B5/B13 (RF4440d-13A) RRHs, (1) Raycap RxxDC-3315-PF-48 (6OVP) [3]**	**90'±**	**P**	Existing individual steel pipes flush mounted to existing building rooftop mechanical screenwall.
	(6) Commscope NHH-65B-R2B panel antennas [5] (2) Raycap RxxDC-3315-PF-48 (6OVP)		ETR	

Notes:

1. ETR = Existing to Remain; ERL= Existing to be Relocated; **P** = Proposed; F = Future; *R*= Reserved.
2. Antennas utilizing dual mount antenna brackets.
3. Alpha Sector only.

STRUCTURAL ANALYSIS:

The structural analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled "Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures"; American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code utilizing the following criteria:

- 120 mph (3-second gust) Basic Design Wind Speed
- Risk Category: II
- Exposure Category: C
- Ground Snow Load, Pg = 30 psf
- Roof Live Load, LLr = 20 psf

ANALYSIS RESULTS:

Antenna Mount Assemblies:

The analysis of the antenna mount assemblies was conducted in accordance with the criteria outlined herein with the aforementioned proposed equipment loading. The following table summarizes the results of the analysis:

Mount Assembly Component	Usage (%)
Members (Pipe Mast)	44%
Connection (Bolts)	12%

Existing Screenwall & Roof Members:

The analysis of the existing rooftop mechanical screenwall and supporting roof structure were conducted in accordance with the criteria outlined herein with the aforementioned proposed equipment loading. The following table summarizes the results of the analysis **after reinforcement**:

Mount Assembly Component	Usage (%)
Mechanical Screenwall (Braces)	96%
Roof Support Structure (Beam)	94%

CONCLUSIONS AND RECOMMENDATIONS:

In conclusion, we find that the existing mount assemblies located at 1111 East Putnam Avenue Road in Riverside, Connecticut meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard under the proposed equipment loading. Furthermore, successful completion of the reinforcements detailed within the referenced Construction Drawings dated 04/07/2023 will result in a host structure that meets the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with proposed and existing equipment loading.

Sincerely,
All-Points Technology Corp., P.C.

Michael S. Trodden, P.E.
Sr. Structural Engineer

Prepared by,
All-Points Technology Corp., P.C.

Jeremy P. Vassell
Project Structural Engineer

LIMITATIONS:

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. With the exception of the anchor bolts, all members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts.
4. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication, and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Design Criteria

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
~~Granby~~	~~110~~	~~120~~	~~125~~	~~130~~	~~85~~	~~93~~	~~97~~	~~101~~	~~35~~	~~0.171~~	~~0.054~~			~~Yes~~
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
~~Griswold~~	~~120~~	~~125~~	~~135~~	~~140~~	~~93~~	~~97~~	~~105~~	~~108~~	~~30~~	~~0.189~~	~~0.054~~			~~Yes~~
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

Appendix B

Mount Analysis

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_13220
Site Name:	Riverside CT
Date:	2/8/2022
Prepared By:	J. Vassell
Checked By:	M. Trodden

(Based on ANSI/TIA-222-H-2018)

Site Name:	Riverside CT
Site Address:	1111 East Putnam Ave Riverside, CT 06878
Site County:	Fairfield

Design Criteria

Risk Category =	II		*Sect. 2.2 & Table 2-1*
Exposure Category =	C		*Section 2.6.5*
Ultimate Design Wind Speed, V =	120	mph	*Appendix N 2018 CT Builidng Code*
Design Wind Speed with Ice, V_i =	50	mph	*Fig. B-9*
Design Ice Thickness, t_i =	1.00	in	*Fig. B-9*
Importance Factor, I =	1.00		*Table 2-3*

Building Information:

Antenna Centerline, z =	43.9	ft., +/-	
Building Height, H =	37.8	ft., +/-	
Bulkhead/Parapet Height, H_{ppt} =	0.00	ft., +/-	*(max.)*
Largest Windward Face of Structure, W_s =	48.0	ft., +/-	

Wind Pressure Analysis:

$q_z = 0.00256K_zK_{zt}K_sK_eK_dV^2$ *Section 2.6.11.6*

K_z : **See Next Sheet**

	z_g =	900	*Table 2-4*
	α =	9.5	*Table 2-4*
	K_{zmin} =	0.85	*Table 2-4*
K_{zt} :	K_{zt} =	**1.00**	*Section 2.6.6*
K_s :	K_s =	**1.10**	*Section 2.6.7*
K_e :	K_e =	**1.00**	*Section 2.6.8*
K_d :	K_d =	**0.95**	*Section 16.6*
	q_z' =	**38.52** psf	
	q_{zi}' =	**6.69** psf	

$F = q_zG_h(EPA)_A = q_zG_hK_a[(EPA)_N\cos^2(\Theta)+(EPA)_T\sin^2(\Theta)]$ *Section 2.6.11.2*

G_h =	1.00	*Section 16.6*
K_a =	0.90	*Section 16.6*

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_13220
Site Name:	Riverside CT
Date:	2/8/2022
Prepared By:	J. Vassell
Checked By:	M. Trodden

(Based on ANSI/TIA-222-H-2018)

Design Criteria: *(From Previous Sheet)*

$q_z' =$ **38.52** psf
$q_{zi}' =$ **6.69** psf
$t_i =$ **1.00** in

$G_h =$ 1.00 *Section 16.6*
$K_d =$ 0.90 *Section 16.6*

$z_g =$ 900 *Table 2-4*
$\alpha =$ 9.5 *Table 2-4*
$K_{zmin} =$ 0.85 *Table 2-4*

Description	#/Sector	Elev. z, ft	K_z	q_z, psf	Dimensions Height, in	Width, in	Depth, in	Wght., lbs	Flat Panel Front Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Flat Panel Side Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Front Wind Force, lbs	Side Wind Force, lbs	Weight, lbs
NHH-65B-R2B	2.0	43.9	1.064	41.00	72.0	11.9	8.2	73.7	5.95	6.050	1.36	8.08	4.100	8.780	1.46	5.983	299.0	221.0	73.7
MT6407-77A	**1.0**	**43.9**	1.064	41.00	35.1	16.1	5.5	87.1	3.92	2.180	1.20	4.71	1.343	6.370	1.37	1.843	174.0	68.0	87.1
B2/66a Samsung RRH	1.0	43.9	1.064	41.00	15.0	15.0	10.0	97.5	1.56	1.000	1.20	1.88	1.046	1.494	1.20	1.255	70.0	47.0	97.5
B5/B13 Samsung RRH	1.0	43.9	1.064	41.00	15.0	15.0	8.1	82.0	1.56	1.000	1.20	1.88	0.844	1.852	1.20	1.013	70.0	38.0	82.0
OVP	1.0	43.9	1.064	41.00	19.8	15.7	10.3	32.0	2.16	1.259	1.20	2.60	1.409	1.932	1.20	1.691	96.0	63.0	32.0

Description	#/Sector	z, ft	K_z	q_{zi}, psf	Dimensions with Ice Ice Thick., t_{iz}, in	Height, in	Dc, in	Ice Wght., lbs	Flat Panel Front Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Flat Panel Side Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Front Wind Force, lbs	Side Wind Force, lbs	Weight, lbs
NHH-65B-R2B	2.0	43.9	1.064	7.118	1.03	74.06	14.45	120.1	7.18	5.12	0.76	5.444	5.276	5.12	0.76	4.001	35.0	26.0	193.8
MT6407-77A	**1.0**	43.9	1.064	7.118	1.03	37.16	17.02	70.2	4.69	2.18	0.70	3.280	1.953	2.18	0.70	1.367	22.0	9.0	157.3
B2/66a Samsung RRH	1.0	43.9	1.064	7.118	1.03	17.06	18.05	34.1	2.02	0.95	0.70	1.414	1.433	0.95	0.70	1.003	10.0	7.0	131.6
B5/B13 Samsung RRH	1.0	43.9	1.064	7.118	1.03	17.06	17.05	32.3	2.02	1.00	0.70	1.414	1.203	1.00	0.70	0.842	10.0	6.0	114.3
OVP	1.0	43.9	1.064	7.118	1.03	21.86	18.77	45.3	2.70	1.16	0.70	1.890	1.868	1.16	0.70	1.308	13.0	9.0	77.3

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_13220
Site Name:	Riverside CT
Date:	2/8/2022
Prepared By:	J. Vassell
Checked By:	M. Trodden

(Based on ANSI/TIA-222-H-2018)

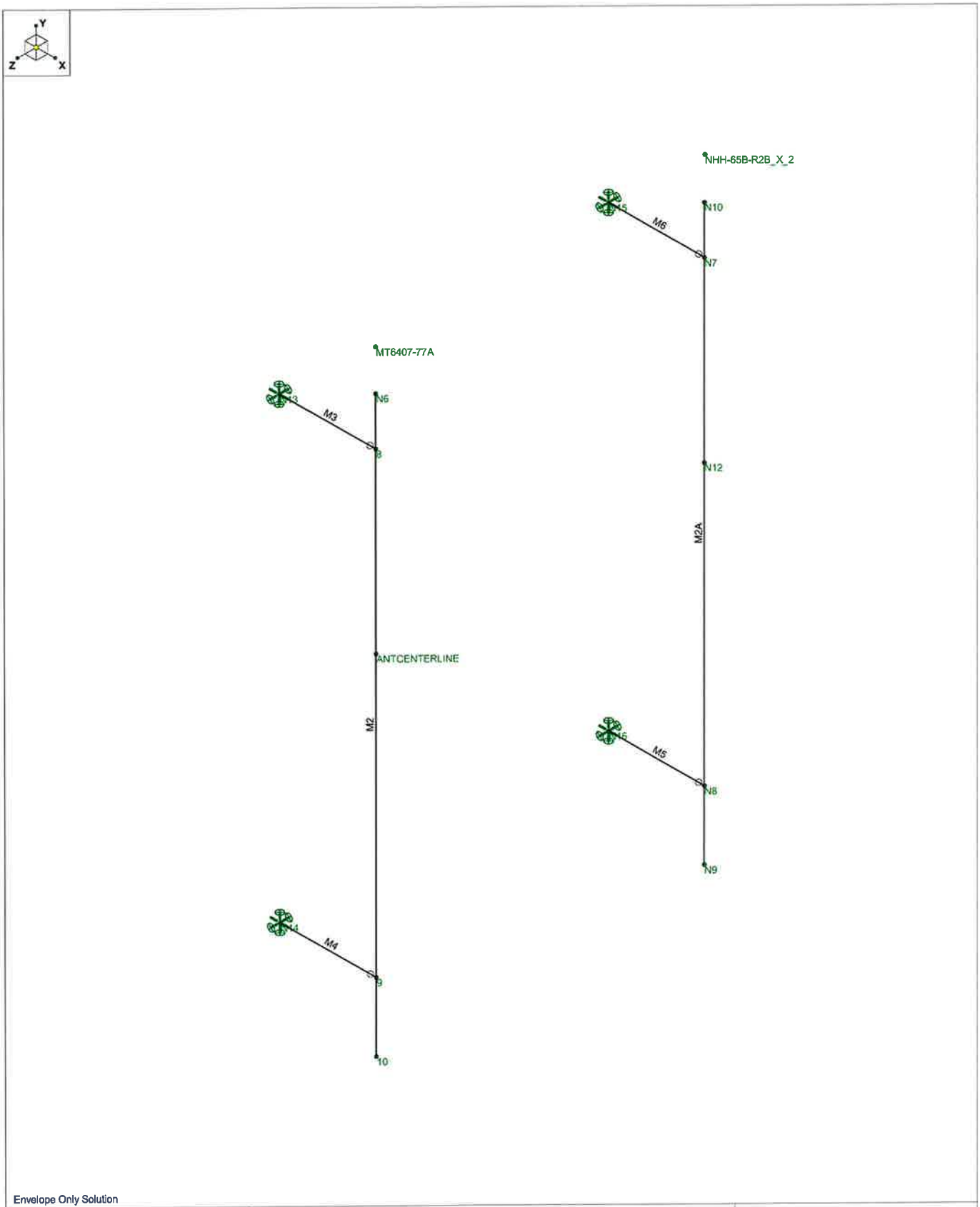
Design Criteria: *(From Previous Sheet)*

$q_z' =$ **38.52** psf
$q_z' =$ **6.69** psf
$t_i =$ **1.00** in

$G_h =$ 1.00 *Section 16.6*
$K_a =$ 0.90 *Section 16.6*

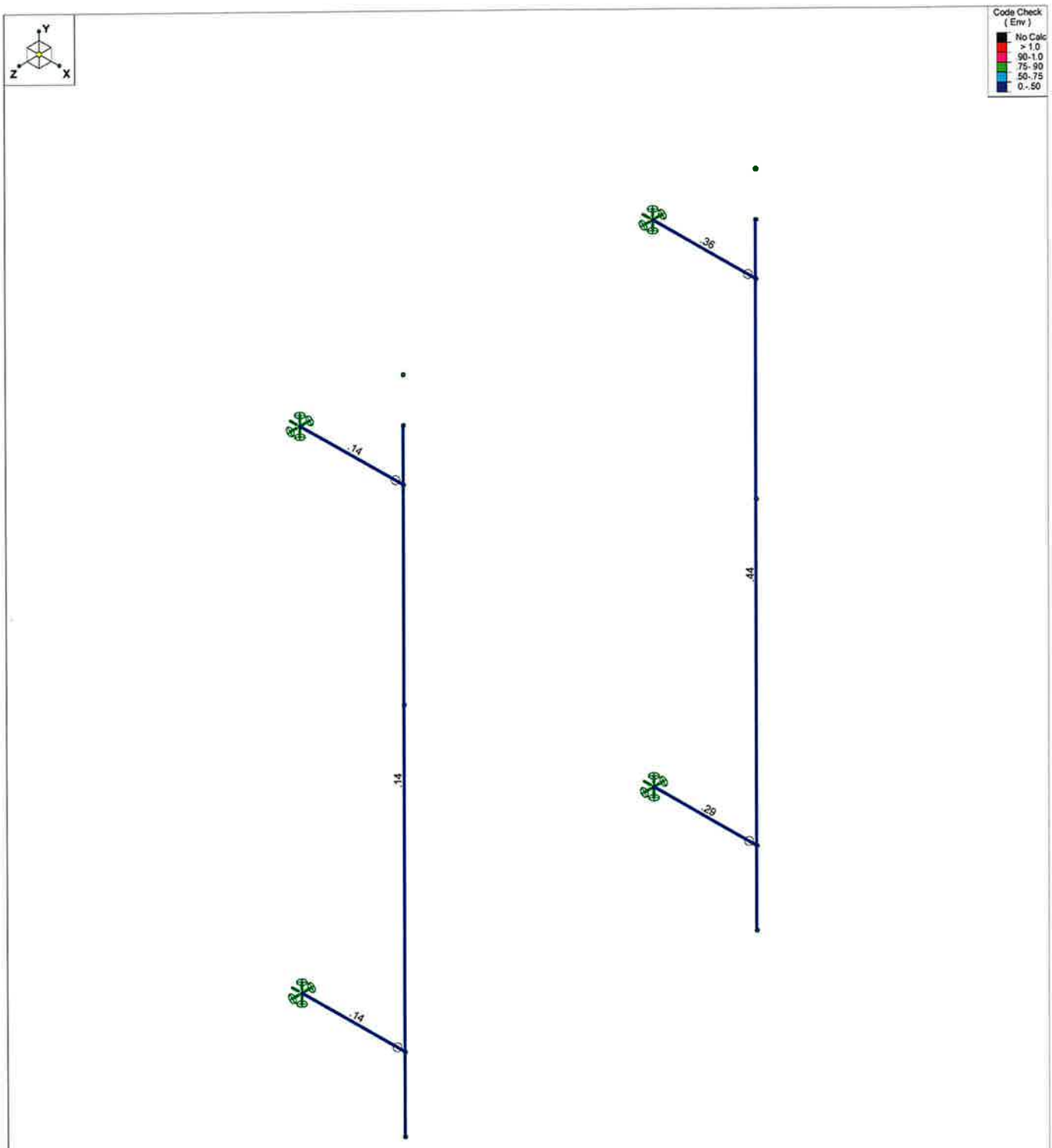
$z_g =$ 900 *Table 2-4*
$\alpha =$ 9.5 *Table 2-4*
$K_{zmin} =$ 0.85 *Table 2-4*

Description	Elev., z, ft	K_z	q_z, psf	Ice Thick., t_i, in	q_{zi}, psf	Dimensions: Width or Dia, in	Dimensions: Depth, in	Dimensions: Thickness, in	Dimensions: r_s	Dimensions: Weight, lbs/ft	Loading, No Ice: Flat or Round	Loading, No Ice: Ca	Loading, No Ice: Wind, lbs/ft	With Ice: Width or Dia, in	With Ice: Dc, in	With Ice: Weight, lbs/ft	With Ice: Ca	With Ice: Wind, lbs/ft
L2.5x2.5x1/4	43.9	1.064	41.00	1.03	7.12	2.500	2.500	0.250	-	4.10	FLAT	2.00	15.37	4.56	3.536	5.74	2.00	4.87
2.0" STD	43.9	1.064	41.00	1.03	7.12	2.375	2.375	0.154	-	3.65	ROUND	1.20	8.76	4.43	2.375	4.28	1.20	2.84



Envelope Only Solution

APT		
JV	Existing Mounts	Jan 31, 2022 at 11:36 AM
CT141_13220	Nodes & Labels	Riverside CT - TYP MOUNT.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

APT	Existing Mounts	
JV		Feb 8, 2022 at 9:57 AM
CT141_13220	Bending Stresses	Riverside CT - TYP MOUNT.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE 2.0	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	L2.5x2.5x1/4	L2.5x2.5...	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M2	PIPE 2.0	84									Lateral
2	M2A	PIPE_2.0	84									Lateral
3	M3	L2.5x2.5x1/4	14			Lbyy						Lateral
4	M4	L2.5x2.5x1/4	14			Lbyy						Lateral
5	M5	L2.5x2.5x1/4	14			Lbyy						Lateral
6	M6	L2.5x2.5x1/4	14			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	DL	DL		-1.05		2				
2	WLX	WLX				2		2		
3	WLZ	WLZ				2		6		
4	DLi	OL1				2		6		
5	WLXi	WL+X				2		2		
6	WLZi	WL+Z				2		6		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2																								
3	1.2DL + WLX	Yes	Y		DL	1.2	WLX	1																
4	1.2DL + 0.75WLX + 0.25...	Yes	Y		DL	1.2	WLX	.75	W...	.25														
5	1.2DL + 0.25WLX + 0.75...	Yes	Y		DL	1.2	WLX	.25	W...	.75														
6	1.2DL + WLZ	Yes	Y		DL	1.2	WLZ	1																
7	1.2DL + 0.25WL-X + 0.75...	Yes	Y		DL	1.2	WLX	-.25	W...	.75														
8	1.2DL + 0.75WL-X + 0.25...	Yes	Y		DL	1.2	WLX	-.75	W...	.25														
9	1.2DL + WL-X	Yes	Y		DL	1.2	WLX	-1																
10	1.2DL + 0.75WL-X + 0.25...	Yes	Y		DL	1.2	WLX	-.75	W...	-.25														
11	1.2DL + 0.25WL-X + 0.75...	Yes	Y		DL	1.2	WLX	-.25	W...	-.75														
12	1.2DL + WL-Z	Yes	Y		DL	1.2	WLZ	-1																
13	1.2DL + 0.25WLX + 0.75...	Yes	Y		DL	1.2	WLX	.25	W...	-.75														
14	1.2DL + 0.75WLX + 0.25...	Yes	Y		DL	1.2	WLX	.75	W...	-.25														
15																								
16	1.2DL + DLi + WLXi	Yes	Y		DL	1.2	OL1	1	W...	1														
17	1.2DL + DLi + 0.75WLXi +...	Yes	Y		DL	1.2	OL1	1	W...	.75	W...	.25												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
18	1.2DL + DLi + 0.25WLXi +...	Yes	Y		DL	1.2	OL1	1	W...	.25	W...	.75												
19	1.2DL + DLi + WLZi	Yes	Y		DL	1.2	OL1	1	W...	1														
20	1.2DL + DLi + 0.25WL-Xi ...	Yes	Y		DL	1.2	OL1	1	W...	-.25	W...	.75												
21	1.2DL + DLi + 0.75WL-Xi ...	Yes	Y		DL	1.2	OL1	1	W...	-.75	W...	.25												
22	1.2DL + DLi + WL-Xi	Yes	Y		DL	1.2	OL1	1	W...	-1														
23	1.2DL + DLi + 0.75WL-Xi ...	Yes	Y		DL	1.2	OL1	1	W...	-.75	W...	-.25												
24	1.2DL + DLi + 0.25WL-Xi ...	Yes	Y		DL	1.2	OL1	1	W...	-.25	W...	-.75												
25	1.2DL + DLi + WL-Zi	Yes	Y		DL	1.2	OL1	1	W...	-1														
26	1.2DL + DLi + 0.25WLXi +...	Yes	Y		DL	1.2	OL1	1	W...	.25	W...	-.75												
27	1.2DL + DLi + 0.75WLXi +...	Yes	Y		DL	1.2	OL1	1	W...	.75	W...	-.25												
28																								
29	DL	Yes	Y		DL	1																		
30																								
31	DL + 0.6WLX	Yes	Y		DL	1	WLX	.6																
32	DL + 0.6(.75WLX + 0.25W...	Yes	Y		DL	1	WLX	.45	W...	.15														
33	DL + 0.6(0.25WLX + 0.75...	Yes	Y		DL	1	WLX	.15	W...	.45														
34	DL + 0.6WLZ	Yes	Y		DL	1	WLZ	.6																
35	DL + 0.6(0.25WL-X + 0.75...	Yes	Y		DL	1	WLX	-.15	W...	.45														
36	DL + 0.6(0.75WL-X + 0.25...	Yes	Y		DL	1	WLX	-.45	W...	.15														
37	DL + 0.6WL-X	Yes	Y		DL	1	WLX	-.6																
38	DL + 0.6(0.75WL-X + 0.25...	Yes	Y		DL	1	WLX	-.45	W...	-.15														
39	DL + 0.6(0.25WL-X + 0.75...	Yes	Y		DL	1	WLX	-.15	W...	-.45														
40	DL + 0.6WL-Z	Yes	Y		DL	1	WLZ	.6																
41	DL + 0.6(0.25WLX + 0.75...	Yes	Y		DL	1	WLX	.15	W...	-.45														
42	DL + 0.6(0.75WLX + 0.25...	Yes	Y		DL	1	WLX	.45	W...	-.15														
43																								
44	DL + 0.7DLi + 0.7WLXi	Yes	Y		DL	1	OL1	.7	W...	.7														
45	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	.525	W...	.175												
46	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	.175	W...	.525												
47	DL + 0.7DLi + 0.7WLZi	Yes	Y		DL	1	OL1	.7	W...	.7														
48	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	-.175	W...	.525												
49	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	-.525	W...	.175												
50	DL + 0.7DLi + 0.7WL-Xi	Yes	Y		DL	1	OL1	.7	W...	-.7														
51	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	-.525	W...	-.175												
52	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	-.175	W...	-.525												
53	DL + 0.7DLi + 0.7WL-Zi	Yes	Y		DL	1	OL1	.7	W...	-.7														
54	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	.175	W...	-.525												
55	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	.525	W...	-.175												

Joint Reactions

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
1	1	N13	0	85.97	0	0	0	96.248
2	1	N14	0	85.574	0	0	0	95.785
3	1	N15	0	128.324	0	0	0	145.661
4	1	N16	0	127.64	0	0	0	144.862
5	1	Totals:	0	427.508	0			
6	1	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
7	3	N13	-135.902	73.7	0	0	-.042	82.438
8	3	N14	-99.418	73.338	0	0	-.031	82.036
9	3	N15	-395.916	110.053	0	0	-.187	124.603
10	3	N16	-263.404	109.345	0	0	-.124	123.884
11	3	Totals:	-894.64	366.435	0			
12	3	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
13	4	N13	-102.005	72.523	-22.224	0	23.267	81.076
14	4	N14	-74.485	74.515	-19.072	0	19.603	82.98

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
15	4	N15	-297.015	102.802	-79.554	0	89.894	116.139
16	4	N16	-197.475	116.595	-55.242	0	61.656	131.905
17	4	Totals:	-670.98	366.435	-176.092			
18	4	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
19	5	N13	-34.21	70.165	-66.672	0	69.914	78.361
20	5	N14	-24.62	76.872	-57.215	0	58.889	84.886
21	5	N15	-99.214	88.236	-238.663	0	270.384	99.304
22	5	N16	-65.616	131.162	-165.725	0	185.384	148.133
23	5	Totals:	-223.66	366.435	-528.275			
24	5	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
25	6	N13	-.313	68.984	-88.897	0	93.252	77.009
26	6	N14	.313	78.053	-76.287	0	78.541	85.847
27	6	N15	-.313	80.921	-318.218	0	360.793	90.935
28	6	N16	.313	138.476	-220.966	0	247.334	156.341
29	6	Totals:	0	366.435	-704.367			
30	6	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
31	7	N13	33.741	70.156	-66.672	0	69.964	78.402
32	7	N14	25.089	76.882	-57.215	0	58.923	84.935
33	7	N15	98.744	88.142	-238.663	0	270.806	99.525
34	7	N16	66.086	131.256	-165.725	0	185.617	148.462
35	7	Totals:	223.66	366.435	-528.275			
36	7	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
37	8	N13	101.848	72.502	-22.224	0	23.359	81.176
38	8	N14	74.642	74.536	-19.072	0	19.668	83.096
39	8	N15	296.858	102.647	-79.554	0	90.504	116.609
40	8	N16	197.632	116.751	-55.242	0	62.012	132.518
41	8	Totals:	670.98	366.435	-176.092			
42	8	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
43	9	N13	135.902	73.678	0	0	.042	82.557
44	9	N14	99.418	73.36	0	0	.031	82.167
45	9	N15	395.916	109.931	0	0	.187	125.101
46	9	N16	263.404	109.466	0	0	.124	124.451
47	9	Totals:	894.64	366.435	0			
48	9	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
49	10	N13	102.005	74.859	22.224	0	-23.296	83.909
50	10	N14	74.485	72.179	19.072	0	-19.622	81.206
51	10	N15	297.015	117.245	79.554	0	-90.221	133.469
52	10	N16	197.475	102.153	55.242	0	-61.826	116.245
53	10	Totals:	670.98	366.435	176.092			
54	10	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
55	11	N13	34.21	77.217	66.672	0	-69.943	86.624
56	11	N14	24.62	69.821	57.215	0	-58.908	79.301
57	11	N15	99.214	131.81	238.66	0	-270.709	150.301
58	11	N16	65.616	87.588	165.728	0	-185.558	100.017
59	11	Totals:	223.66	366.435	528.275			
60	11	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
61	12	N13	.313	78.393	88.896	0	-93.252	87.987
62	12	N14	-.313	68.644	76.287	0	-78.541	78.356
63	12	N15	.313	139.061	318.213	0	-360.788	158.766
64	12	N16	-.313	80.337	220.971	0	-247.339	91.997
65	12	Totals:	0	366.435	704.367			
66	12	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
67	13	N13	-33.741	77.218	66.672	0	-69.935	86.605
68	13	N14	-25.089	69.82	57.215	0	-58.904	79.284
69	13	N15	-98.744	131.777	238.66	0	-270.474	150.273
70	13	N16	-66.086	87.62	165.728	0	-185.45	100.062
71	13	Totals:	-223.66	366.435	528.275			

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
72	13	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
73	14	N13	-101.848	74.871	22.224	0	-23.33	83.831
74	14	N14	-74.642	72.167	19.072	0	-19.649	81.124
75	14	N15	-296.858	117.274	79.554	0	-90.174	133.192
76	14	N16	-197.632	102.124	55.242	0	-61.842	116.005
77	14	Totals:	-670.98	366.435	176.092			
78	14	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
79	16	N13	-22.994	130.579	0	0	-.013	144.942
80	16	N14	-18.886	130.012	0	0	-.01	144.284
81	16	N15	-52.546	264.629	0	0	-.06	301.253
82	16	N16	-37.334	263.122	0	0	-.043	299.524
83	16	Totals:	-131.76	788.342	0			
84	16	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
85	17	N13	-17.27	130.41	-5.176	0	5.2	144.749
86	17	N14	-14.14	130.181	-4.885	0	4.862	144.348
87	17	N15	-39.434	263.743	-11.791	0	12.88	300.243
88	17	N16	-27.976	264.008	-9.02	0	9.66	300.437
89	17	Totals:	-98.82	788.342	-30.872			
90	17	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
91	18	N13	-5.823	130.07	-15.529	0	15.628	144.364
92	18	N14	-4.647	130.521	-14.654	0	14.607	144.477
93	18	N15	-13.211	261.969	-35.373	0	38.765	298.224
94	18	N16	-9.259	265.783	-27.059	0	29.071	302.267
95	18	Totals:	-32.94	788.342	-92.615			
96	18	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
97	19	N13	-.099	129.901	-20.705	0	20.842	144.172
98	19	N14	.099	130.69	-19.538	0	19.48	144.541
99	19	N15	-.1	261.081	-47.165	0	51.711	297.216
100	19	N16	.1	266.67	-36.079	0	38.778	303.184
101	19	Totals:	0	788.342	-123.487			
102	19	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
103	20	N13	5.674	130.069	-15.529	0	15.635	144.374
104	20	N14	4.796	130.522	-14.654	0	14.613	144.487
105	20	N15	13.062	261.959	-35.373	0	38.801	298.267
106	20	N16	9.408	265.792	-27.059	0	29.096	302.317
107	20	Totals:	32.94	788.342	-92.615			
108	20	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
109	21	N13	17.22	130.406	-5.176	0	5.22	144.778
110	21	N14	14.19	130.185	-4.885	0	4.878	144.379
111	21	N15	39.385	263.717	-11.791	0	12.976	300.369
112	21	N16	28.025	264.034	-9.02	0	9.728	300.579
113	21	Totals:	98.82	788.342	-30.872			
114	21	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
115	22	N13	22.994	130.575	0	0	.013	144.98
116	22	N14	18.886	130.016	0	0	.01	144.325
117	22	N15	52.546	264.596	0	0	.06	301.419
118	22	N16	37.334	263.155	0	0	.043	299.709
119	22	Totals:	131.76	788.342	0			
120	22	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
121	23	N13	17.27	130.745	5.176	0	-5.202	145.172
122	23	N14	14.14	129.847	4.885	0	-4.863	144.26
123	23	N15	39.434	265.483	11.791	0	-12.886	302.427
124	23	N16	27.976	262.268	9.02	0	-9.664	298.792
125	23	Totals:	98.82	788.342	30.872			
126	23	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
127	24	N13	5.823	131.084	15.529	0	-15.629	145.558
128	24	N14	4.647	129.507	14.654	0	-14.608	144.131

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
129	24	N15	13.211	267.258	35.373	0	-38.771	304.446
130	24	N16	9.259	260.493	27.059	0	-29.075	296.962
131	24	Totals:	32.94	788.342	92.615			
132	24	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
133	25	N13	.099	131.253	20.705	0	-20.842	145.75
134	25	N14	-.099	129.338	19.538	0	-19.48	144.068
135	25	N15	.1	268.144	47.164	0	-51.711	305.456
136	25	N16	-.1	259.607	36.079	0	-38.778	296.048
137	25	Totals:	0	788.342	123.487			
138	25	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
139	26	N13	-5.674	131.085	15.529	0	-15.634	145.549
140	26	N14	-4.796	129.506	14.654	0	-14.612	144.122
141	26	N15	-13.062	267.265	35.373	0	-38.795	304.407
142	26	N16	-9.408	260.486	27.059	0	-29.092	296.919
143	26	Totals:	-32.94	788.342	92.615			
144	26	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
145	27	N13	-17.22	130.748	5.176	0	-5.219	145.145
146	27	N14	-14.19	129.843	4.885	0	-4.877	144.23
147	27	N15	-39.385	265.507	11.791	0	-12.969	302.305
148	27	N16	-28.025	262.244	9.02	0	-9.725	298.657
149	27	Totals:	-98.82	788.342	30.872			
150	27	COG (in):	X: -.449	Y: -68.864	Z: 15.867			
151	29	N13	0	61.407	0	0	0	68.748
152	29	N14	0	61.124	0	0	0	68.418
153	29	N15	0	91.66	0	0	0	104.043
154	29	N16	0	91.171	0	0	0	103.473
155	29	Totals:	0	305.363	0			
156	29	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
157	31	N13	-81.527	61.413	0	0	-.021	68.719
158	31	N14	-59.665	61.119	0	0	-.015	68.385
159	31	N15	-237.481	91.691	0	0	-.094	103.919
160	31	N16	-158.111	91.141	0	0	-.062	103.331
161	31	Totals:	-536.784	305.363	0			
162	31	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
163	32	N13	-61.192	60.708	-13.333	0	13.965	67.902
164	32	N14	-44.702	61.824	-11.445	0	11.768	68.951
165	32	N15	-178.157	87.341	-47.719	0	53.974	98.854
166	32	N16	-118.537	95.49	-33.158	0	37.038	108.15
167	32	Totals:	-402.588	305.363	-105.655			
168	32	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
169	33	N13	-20.523	59.295	-39.999	0	41.947	66.272
170	33	N14	-14.775	63.236	-34.334	0	35.342	70.089
171	33	N15	-59.511	78.62	-143.158	0	162.228	88.759
172	33	N16	-39.387	104.211	-99.474	0	111.3	117.855
173	33	Totals:	-134.196	305.363	-316.965			
174	33	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
175	34	N13	-.188	58.588	-53.331	0	55.944	65.459
176	34	N14	.188	63.943	-45.779	0	47.132	70.661
177	34	N15	-.188	74.248	-190.878	0	216.415	83.729
178	34	N16	.188	108.584	-132.632	0	148.461	122.742
179	34	Totals:	0	305.363	-422.62			
180	34	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
181	35	N13	20.241	59.291	-39.999	0	41.968	66.291
182	35	N14	15.057	63.24	-34.334	0	35.357	70.111
183	35	N15	59.229	78.582	-143.158	0	162.393	88.856
184	35	N16	39.669	104.25	-99.474	0	111.392	117.993
185	35	Totals:	134.196	305.363	-316.965			

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
186	35	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
187	36	N13	61.099	60.698	-13.333	0	14.007	67.95
188	36	N14	44.795	61.834	-11.445	0	11.798	69.006
189	36	N15	178.063	87.273	-47.719	0	54.233	99.076
190	36	N16	118.631	95.559	-33.158	0	37.193	108.43
191	36	Totals:	402.588	305.363	-105.655			
192	36	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
193	37	N13	81.527	61.402	0	0	.021	68.778
194	37	N14	59.665	61.13	0	0	.015	68.451
195	37	N15	237.481	91.63	0	0	.094	104.168
196	37	N16	158.111	91.202	0	0	.062	103.615
197	37	Totals:	536.784	305.363	0			
198	37	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
199	38	N13	61.192	62.109	13.333	0	-13.975	69.591
200	38	N14	44.702	60.423	11.445	0	-11.775	67.879
201	38	N15	178.157	96.001	47.719	0	-54.092	109.198
202	38	N16	118.537	86.83	33.158	0	-37.1	98.729
203	38	Totals:	402.588	305.363	105.655			
204	38	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
205	39	N13	20.523	63.521	39.998	0	-41.958	71.22
206	39	N14	14.775	59.011	34.334	0	-35.349	66.741
207	39	N15	59.511	104.723	143.157	0	-162.346	119.292
208	39	N16	39.387	78.109	99.475	0	-111.362	89.024
209	39	Totals:	134.196	305.363	316.965			
210	39	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
211	40	N13	-.188	58.588	-53.331	0	55.944	65.459
212	40	N14	.188	63.943	-45.779	0	47.132	70.661
213	40	N15	-.188	74.248	-190.878	0	216.415	83.729
214	40	N16	.188	108.584	-132.632	0	148.461	122.742
215	40	Totals:	0	305.363	-422.62			
216	40	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
217	41	N13	-20.241	63.522	39.998	0	-41.958	71.209
218	41	N14	-15.057	59.009	34.334	0	-35.35	66.731
219	41	N15	-59.229	104.715	143.157	0	-162.274	119.265
220	41	N16	-39.669	78.116	99.475	0	-111.332	89.02
221	41	Totals:	-134.196	305.363	316.965			
222	41	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
223	42	N13	-61.099	62.115	13.333	0	-13.997	69.55
224	42	N14	-44.795	60.416	11.445	0	-11.791	67.836
225	42	N15	-178.063	96.025	47.719	0	-54.115	109.046
226	42	N16	-118.631	86.807	33.158	0	-37.132	98.583
227	42	Totals:	-402.588	305.363	105.655			
228	42	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
229	44	N13	-16.09	101.23	0	0	-.007	112.462
230	44	N14	-13.226	100.789	0	0	-.006	111.949
231	44	N15	-36.745	199.903	0	0	-.032	227.538
232	44	N16	-26.171	198.776	0	0	-.023	226.238
233	44	Totals:	-92.232	600.698	0			
234	44	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
235	45	N13	-12.085	101.112	-3.623	0	3.641	112.327
236	45	N14	-9.902	100.907	-3.42	0	3.406	111.992
237	45	N15	-27.576	199.287	-8.247	0	9.016	226.832
238	45	N16	-19.611	199.391	-6.321	0	6.777	226.869
239	45	Totals:	-69.174	600.698	-21.61			
240	45	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
241	46	N13	-4.075	100.876	-10.868	0	10.937	112.057
242	46	N14	-3.254	101.143	-10.26	0	10.228	112.08

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
243	46	N15	-9.239	198.055	-24.74	0	27.114	225.422
244	46	N16	-6.49	200.624	-18.963	0	20.377	228.133
245	46	Totals:	-23.058	600.698	-64.831			
246	46	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
247	47	N13	-.069	100.757	-14.49	0	14.585	111.922
248	47	N14	.069	101.261	-13.68	0	13.64	112.124
249	47	N15	-.07	197.439	-32.986	0	36.164	224.717
250	47	N16	.07	201.24	-25.284	0	27.178	228.765
251	47	Totals:	0	600.698	-86.441			
252	47	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
253	48	N13	3.97	100.875	-10.868	0	10.941	112.063
254	48	N14	3.359	101.144	-10.26	0	10.232	112.086
255	48	N15	9.134	198.05	-24.74	0	27.132	225.445
256	48	N16	6.595	200.628	-18.963	0	20.39	228.159
257	48	Totals:	23.058	600.698	-64.831			
258	48	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
259	49	N13	12.05	101.11	-3.623	0	3.652	112.343
260	49	N14	9.937	100.909	-3.42	0	3.414	112.009
261	49	N15	27.541	199.274	-8.247	0	9.066	226.899
262	49	N16	19.646	199.405	-6.321	0	6.812	226.944
263	49	Totals:	69.174	600.698	-21.61			
264	49	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
265	50	N13	16.09	101.228	0	0	.007	112.483
266	50	N14	13.226	100.791	0	0	.006	111.971
267	50	N15	36.745	199.886	0	0	.032	227.626
268	50	N16	26.171	198.793	0	0	.023	226.336
269	50	Totals:	92.232	600.698	0			
270	50	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
271	51	N13	12.085	101.346	3.623	0	-3.642	112.618
272	51	N14	9.902	100.673	3.42	0	-3.406	111.927
273	51	N15	27.576	200.502	8.247	0	-9.019	228.331
274	51	N16	19.611	198.177	6.321	0	-6.778	225.703
275	51	Totals:	69.174	600.698	21.61			
276	51	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
277	52	N13	4.075	101.582	10.868	0	-10.938	112.888
278	52	N14	3.254	100.436	10.26	0	-10.229	111.84
279	52	N15	9.239	201.734	24.74	0	-27.117	229.741
280	52	N16	6.49	196.945	18.963	0	-20.379	224.44
281	52	Totals:	23.058	600.698	64.83			
282	52	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
283	53	N13	.069	101.701	14.49	0	-14.585	113.023
284	53	N14	-.069	100.318	13.68	0	-13.64	111.796
285	53	N15	.07	202.35	32.986	0	-36.164	230.447
286	53	N16	-.07	196.329	25.284	0	-27.178	223.809
287	53	Totals:	0	600.698	86.441			
288	53	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
289	54	N13	-3.97	101.583	10.868	0	-10.941	112.883
290	54	N14	-3.359	100.436	10.26	0	-10.231	111.835
291	54	N15	-9.134	201.738	24.74	0	-27.129	229.72
292	54	N16	-6.595	196.941	18.963	0	-20.388	224.417
293	54	Totals:	-23.058	600.698	64.83			
294	54	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
295	55	N13	-12.05	101.348	3.623	0	-3.651	112.603
296	55	N14	-9.937	100.671	3.42	0	-3.414	111.911
297	55	N15	-27.541	200.515	8.247	0	-9.063	228.266
298	55	N16	-19.646	198.164	6.321	0	-6.811	225.632
299	55	Totals:	-69.174	600.698	21.61			

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
300	55	COG (in):	X: -.45	Y: -68.875	Z: 16.143			

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N13	max	135.902	9	131.253	25	88.896	12	0	55	93.252	6	145.75	25
2		min	-135.902	3	58.588	34	-88.897	6	0	1	-93.252	12	65.459	34
3	N14	max	99.418	9	130.69	19	76.287	12	0	55	78.541	6	144.541	19
4		min	-99.418	3	59.009	41	-76.287	6	0	1	-78.541	12	66.731	41
5	N15	max	395.916	9	268.144	25	318.213	12	0	55	360.793	6	305.456	25
6		min	-395.916	3	74.248	34	-318.218	6	0	1	-360.788	12	83.729	34
7	N16	max	263.404	9	266.67	19	220.971	12	0	55	247.334	6	303.184	19
8		min	-263.404	3	78.109	39	-220.966	6	0	1	-247.339	12	89.02	41
9	Totals:	max	894.64	9	788.342	27	704.367	12						
10		min	-894.64	3	305.363	29	-704.367	6						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M2	PIPE_2.0	.140	33.25	9	.014	7		9	17855.0...	32130	1871.625	1871.625	1.5	H1-1b
2	M2A	PIPE_2.0	.439	33.25	9	.040	7		9	17855.0...	32130	1871.625	1871.625	1....	H1-1b
3	M3	L2.5x2.5x4	.139	14	19	.011	14	y	25	36881.0...	38556	1113.554	2537.388	1....	H2-1
4	M4	L2.5x2.5x4	.139	14	19	.011	14	y	19	36881.0...	38556	1113.554	2537.388	1....	H2-1
5	M5	L2.5x2.5x4	.290	14	19	.022	14	y	19	36881.0...	38556	1113.554	2537.388	1....	H2-1
6	M6	L2.5x2.5x4	.362	14	6	.026	14	z	6	36881.0...	38556	1113.554	2537.388	1....	H2-1

Load Combinations

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL		Y		DL	1.4																		
2																								
3	1.2DL + WLX		Y		DL	1.2	WLX	1																
4	1.2DL + 0.75WLX + 0.25...		Y		DL	1.2	WLX	.75	W...	.25														
5	1.2DL + 0.25WLX + 0.75...		Y		DL	1.2	WLX	.25	W...	.75														
6	1.2DL + WLZ		Y		DL	1.2	WLZ	1																
7	1.2DL + 0.25WL-X + 0.75...		Y		DL	1.2	WLX	-.25	W...	.75														
8	1.2DL + 0.75WL-X + 0.25...		Y		DL	1.2	WLX	-.75	W...	.25														
9	1.2DL + WL-X		Y		DL	1.2	WLX	-1																
10	1.2DL + 0.75WL-X + 0.25...		Y		DL	1.2	WLX	-.75	W...	-.25														
11	1.2DL + 0.25WL-X + 0.75...		Y		DL	1.2	WLX	-.25	W...	-.75														
12	1.2DL + WL-Z		Y		DL	1.2	WLZ	-1																
13	1.2DL + 0.25WLX + 0.75...		Y		DL	1.2	WLX	.25	W...	-.75														
14	1.2DL + 0.75WLX + 0.25...		Y		DL	1.2	WLX	.75	W...	-.25														
15																								
16	1.2DL + DLi + WLXi		Y		DL	1.2	OL1	1	W...	1														
17	1.2DL + DLi + 0.75WLXi +...		Y		DL	1.2	OL1	1	W...	.75	W...	.25												
18	1.2DL + DLi + 0.25WLXi +...		Y		DL	1.2	OL1	1	W...	.25	W...	.75												
19	1.2DL + DLi + WLZi		Y		DL	1.2	OL1	1	W...	1														
20	1.2DL + DLi + 0.25WL-Xi ...		Y		DL	1.2	OL1	1	W...	-.25	W...	.75												
21	1.2DL + DLi + 0.75WL-Xi ...		Y		DL	1.2	OL1	1	W...	-.75	W...	.25												
22	1.2DL + DLi + WL-Xi		Y		DL	1.2	OL1	1	W...	-1														
23	1.2DL + DLi + 0.75WL-Xi ...		Y		DL	1.2	OL1	1	W...	-.75	W...	-.25												
24	1.2DL + DLi + 0.25WL-Xi ...		Y		DL	1.2	OL1	1	W...	-.25	W...	-.75												
25	1.2DL + DLi + WL-Zi		Y		DL	1.2	OL1	1	W...	-1														
26	1.2DL + DLi + 0.25WLXi +...		Y		DL	1.2	OL1	1	W...	.25	W...	-.75												
27	1.2DL + DLi + 0.75WLXi +...		Y		DL	1.2	OL1	1	W...	.75	W...	-.25												
28																								
29	DL	Yes	Y		DL	1																		
30																								
31	DL + 0.6WLX	Yes	Y		DL	1	WLX	.6																
32	DL + 0.6(.75WLX + 0.25W...	Yes	Y		DL	1	WLX	.45	W...	.15														
33	DL + 0.6(0.25WLX + 0.75...	Yes	Y		DL	1	WLX	.15	W...	.45														
34	DL + 0.6WLZ	Yes	Y		DL	1	WLZ	.6																
35	DL + 0.6(0.25WL-X + 0.75...	Yes	Y		DL	1	WLX	-.15	W...	.45														
36	DL + 0.6(0.75WL-X + 0.25...	Yes	Y		DL	1	WLX	-.45	W...	.15														
37	DL + 0.6WL-X	Yes	Y		DL	1	WLX	-.6																
38	DL + 0.6(0.75WL-X + 0.25...	Yes	Y		DL	1	WLX	-.45	W...	-.15														
39	DL + 0.6(0.25WL-X + 0.75...	Yes	Y		DL	1	WLX	-.15	W...	-.45														
40	DL + 0.6WL-Z	Yes	Y		DL	1	WLZ	.6																
41	DL + 0.6(0.25WLX + 0.75...	Yes	Y		DL	1	WLX	.15	W...	-.45														
42	DL + 0.6(0.75WLX + 0.25...	Yes	Y		DL	1	WLX	.45	W...	-.15														
43																								
44	DL + 0.7DLi + 0.7WLXi	Yes	Y		DL	1	OL1	.7	W...	.7														
45	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	.525	W...	.175												
46	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	.175	W...	.525												
47	DL + 0.7DLi + 0.7WLZi	Yes	Y		DL	1	OL1	.7	W...	.7														
48	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	-.175	W...	.525												
49	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	-.525	W...	.175												
50	DL + 0.7DLi + 0.7WL-Xi	Yes	Y		DL	1	OL1	.7	W...	-.7														
51	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	-.525	W...	-.175												
52	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	-.175	W...	-.525												
53	DL + 0.7DLi + 0.7WL-Zi	Yes	Y		DL	1	OL1	.7	W...	-.7														
54	DL + 0.7DLi + 0.7(0.25WL...	Yes	Y		DL	1	OL1	.7	W...	.175	W...	-.525												
55	DL + 0.7DLi + 0.7(0.75WL...	Yes	Y		DL	1	OL1	.7	W...	.525	W...	-.175												

Joint Reactions (By Combination)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
1	29	N13	0	61.407	0	0	0	68.748
2	29	N14	0	61.124	0	0	0	68.418
3	29	N15	0	91.66	0	0	0	104.043
4	29	N16	0	91.171	0	0	0	103.473
5	29	Totals:	0	305.363	0			
6	29	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
7	31	N13	-81.527	61.413	0	0	-.021	68.719
8	31	N14	-59.665	61.119	0	0	-.015	68.385
9	31	N15	-237.481	91.691	0	0	-.094	103.919
10	31	N16	-158.111	91.141	0	0	-.062	103.331
11	31	Totals:	-536.784	305.363	0			
12	31	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
13	32	N13	-61.192	60.708	-13.333	0	13.965	67.902
14	32	N14	-44.702	61.824	-11.445	0	11.768	68.951
15	32	N15	-178.157	87.341	-47.719	0	53.974	98.854
16	32	N16	-118.537	95.49	-33.158	0	37.038	108.15
17	32	Totals:	-402.588	305.363	-105.655			
18	32	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
19	33	N13	-20.523	59.295	-39.999	0	41.947	66.272
20	33	N14	-14.775	63.236	-34.334	0	35.342	70.089
21	33	N15	-59.511	78.62	-143.158	0	162.228	88.759
22	33	N16	-39.387	104.211	-99.474	0	111.3	117.855
23	33	Totals:	-134.196	305.363	-316.965			
24	33	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
25	34	N13	-.188	58.588	-53.331	0	55.944	65.459
26	34	N14	.188	63.943	-45.779	0	47.132	70.661
27	34	N15	-.188	74.248	-190.878	0	216.415	83.729
28	34	N16	.188	108.584	-132.632	0	148.461	122.742
29	34	Totals:	0	305.363	-422.62			
30	34	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
31	35	N13	20.241	59.291	-39.999	0	41.968	66.291
32	35	N14	15.057	63.24	-34.334	0	35.357	70.111
33	35	N15	59.229	78.582	-143.158	0	162.393	88.856
34	35	N16	39.669	104.25	-99.474	0	111.392	117.993
35	35	Totals:	134.196	305.363	-316.965			
36	35	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
37	36	N13	61.099	60.698	-13.333	0	14.007	67.95
38	36	N14	44.795	61.834	-11.445	0	11.798	69.006
39	36	N15	178.063	87.273	-47.719	0	54.233	99.076
40	36	N16	118.631	95.559	-33.158	0	37.193	108.43
41	36	Totals:	402.588	305.363	-105.655			
42	36	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
43	37	N13	81.527	61.402	0	0	.021	68.778
44	37	N14	59.665	61.13	0	0	.015	68.451
45	37	N15	237.481	91.63	0	0	.094	104.168
46	37	N16	158.111	91.202	0	0	.062	103.615
47	37	Totals:	536.784	305.363	0			
48	37	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
49	38	N13	61.192	62.109	13.333	0	-13.975	69.591
50	38	N14	44.702	60.423	11.445	0	-11.775	67.879
51	38	N15	178.157	96.001	47.719	0	-54.092	109.198
52	38	N16	118.537	86.83	33.158	0	-37.1	98.729
53	38	Totals:	402.588	305.363	105.655			
54	38	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
55	39	N13	20.523	63.521	39.998	0	-41.958	71.22
56	39	N14	14.775	59.011	34.334	0	-35.349	66.741

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
57	39	N15	59.511	104.723	143.157	0	-162.346	119.292
58	39	N16	39.387	78.109	99.475	0	-111.362	89.024
59	39	Totals:	134.196	305.363	316.965			
60	39	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
61	40	N13	-.188	58.588	-53.331	0	55.944	65.459
62	40	N14	.188	63.943	-45.779	0	47.132	70.661
63	40	N15	-.188	74.248	-190.878	0	216.415	83.729
64	40	N16	.188	108.584	-132.632	0	148.461	122.742
65	40	Totals:	0	305.363	-422.62			
66	40	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
67	41	N13	-20.241	63.522	39.998	0	-41.958	71.209
68	41	N14	-15.057	59.009	34.334	0	-35.35	66.731
69	41	N15	-59.229	104.715	143.157	0	-162.274	119.265
70	41	N16	-39.669	78.116	99.475	0	-111.332	89.02
71	41	Totals:	-134.196	305.363	316.965			
72	41	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
73	42	N13	-61.099	62.115	13.333	0	-13.997	69.55
74	42	N14	-44.795	60.416	11.445	0	-11.791	67.836
75	42	N15	-178.063	96.025	47.719	0	-54.115	109.046
76	42	N16	-118.631	86.807	33.158	0	-37.132	98.583
77	42	Totals:	-402.588	305.363	105.655			
78	42	COG (in):	X: -.455	Y: -68.991	Z: 19.261			
79	44	N13	-16.09	101.23	0	0	-.007	112.462
80	44	N14	-13.226	100.789	0	0	-.006	111.949
81	44	N15	-36.745	199.903	0	0	-.032	227.538
82	44	N16	-26.171	198.776	0	0	-.023	226.238
83	44	Totals:	-92.232	600.698	0			
84	44	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
85	45	N13	-12.085	101.112	-3.623	0	3.641	112.327
86	45	N14	-9.902	100.907	-3.42	0	3.406	111.992
87	45	N15	-27.576	199.287	-8.247	0	9.016	226.832
88	45	N16	-19.611	199.391	-6.321	0	6.777	226.869
89	45	Totals:	-69.174	600.698	-21.61			
90	45	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
91	46	N13	-4.075	100.876	-10.868	0	10.937	112.057
92	46	N14	-3.254	101.143	-10.26	0	10.228	112.08
93	46	N15	-9.239	198.055	-24.74	0	27.114	225.422
94	46	N16	-6.49	200.624	-18.963	0	20.377	228.133
95	46	Totals:	-23.058	600.698	-64.831			
96	46	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
97	47	N13	-.069	100.757	-14.49	0	14.585	111.922
98	47	N14	.069	101.261	-13.68	0	13.64	112.124
99	47	N15	-.07	197.439	-32.986	0	36.164	224.717
100	47	N16	.07	201.24	-25.284	0	27.178	228.765
101	47	Totals:	0	600.698	-86.441			
102	47	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
103	48	N13	3.97	100.875	-10.868	0	10.941	112.063
104	48	N14	3.359	101.144	-10.26	0	10.232	112.086
105	48	N15	9.134	198.05	-24.74	0	27.132	225.445
106	48	N16	6.595	200.628	-18.963	0	20.39	228.159
107	48	Totals:	23.058	600.698	-64.831			
108	48	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
109	49	N13	12.05	101.11	-3.623	0	3.652	112.343
110	49	N14	9.937	100.909	-3.42	0	3.414	112.009
111	49	N15	27.541	199.274	-8.247	0	9.066	226.899
112	49	N16	19.646	199.405	-6.321	0	6.812	226.944
113	49	Totals:	69.174	600.698	-21.61			

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
114	49	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
115	50	N13	16.09	101.228	0	0	.007	112.483
116	50	N14	13.226	100.791	0	0	.006	111.971
117	50	N15	36.745	199.886	0	0	.032	227.626
118	50	N16	26.171	198.793	0	0	.023	226.336
119	50	Totals:	92.232	600.698	0			
120	50	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
121	51	N13	12.085	101.346	3.623	0	-3.642	112.618
122	51	N14	9.902	100.673	3.42	0	-3.406	111.927
123	51	N15	27.576	200.502	8.247	0	-9.019	228.331
124	51	N16	19.611	198.177	6.321	0	-6.778	225.703
125	51	Totals:	69.174	600.698	21.61			
126	51	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
127	52	N13	4.075	101.582	10.868	0	-10.938	112.888
128	52	N14	3.254	100.436	10.26	0	-10.229	111.84
129	52	N15	9.239	201.734	24.74	0	-27.117	229.741
130	52	N16	6.49	196.945	18.963	0	-20.379	224.44
131	52	Totals:	23.058	600.698	64.83			
132	52	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
133	53	N13	.069	101.701	14.49	0	-14.585	113.023
134	53	N14	-.069	100.318	13.68	0	-13.64	111.796
135	53	N15	.07	202.35	32.986	0	-36.164	230.447
136	53	N16	-.07	196.329	25.284	0	-27.178	223.809
137	53	Totals:	0	600.698	86.441			
138	53	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
139	54	N13	-3.97	101.583	10.868	0	-10.941	112.883
140	54	N14	-3.359	100.436	10.26	0	-10.231	111.835
141	54	N15	-9.134	201.738	24.74	0	-27.129	229.72
142	54	N16	-6.595	196.941	18.963	0	-20.388	224.417
143	54	Totals:	-23.058	600.698	64.83			
144	54	COG (in):	X: -.45	Y: -68.875	Z: 16.143			
145	55	N13	-12.05	101.348	3.623	0	-3.651	112.603
146	55	N14	-9.937	100.671	3.42	0	-3.414	111.911
147	55	N15	-27.541	200.515	8.247	0	-9.063	228.266
148	55	N16	-19.646	198.164	6.321	0	-6.811	225.632
149	55	Totals:	-69.174	600.698	21.61			
150	55	COG (in):	X: -.45	Y: -68.875	Z: 16.143			

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N13	max	81.527	37	101.701	53	39.998	41	0	55	55.944	40	113.023	53
2		min	-81.527	31	58.588	34	-53.331	34	0	29	-41.958	41	65.459	34
3	N14	max	59.665	37	101.261	47	34.334	41	0	55	47.132	40	112.124	47
4		min	-59.665	31	59.009	41	-45.779	34	0	29	-35.35	41	66.731	41
5	N15	max	237.481	37	202.35	53	143.157	41	0	55	216.415	40	230.447	53
6		min	-237.481	31	74.248	34	-190.878	34	0	29	-162.346	39	83.729	34
7	N16	max	158.111	37	201.24	47	99.475	41	0	55	148.461	40	228.765	47
8		min	-158.111	31	78.109	39	-132.632	34	0	29	-111.362	39	89.02	41
9	Totals:	max	536.784	37	600.698	55	316.965	41						
10		min	-536.784	31	305.363	29	-422.62	34						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
1	8	max	0	31	-.004	41	.007	40	8.553e-4	41	1.219e-3	31	2.399e-3	31
2		min	0	37	-.009	47	0	41	-1.14e-3	34	-2.992e-3	37	-2.399e-3	37
3	9	max	0	31	-.004	41	.007	40	1.034e-3	40	1.219e-3	31	2.105e-3	37
4		min	0	37	-.009	47	0	41	-7.75e-4	39	-2.992e-3	37	-2.105e-3	31
5	10	max	.021	37	-.004	41	.008	39	1.029e-3	40	1.219e-3	31	2.1e-3	37
6		min	-.021	31	-.009	47	-.004	34	-7.712e-4	39	-2.992e-3	37	-2.1e-3	31
7	N6	max	.017	37	-.004	41	.006	39	8.54e-4	41	1.219e-3	31	2.397e-3	31
8		min	-.017	31	-.009	47	0	34	-1.138e-3	34	-2.992e-3	37	-2.397e-3	37
9	MT6407-77A	max	0	55	0	55	0	55	0	55	0	55	0	55
10		min	0	29	0	29	0	29	0	29	0	29	0	29
11	ANTCENTERLI...	max	.048	31	-.004	41	.03	40	2.482e-4	41	1.219e-3	31	6.85e-4	31
12		min	-.048	37	-.009	47	-.017	41	-3.304e-4	34	-2.992e-3	37	-6.85e-4	37
13	N7	max	0	31	-.002	39	.021	40	4.132e-3	41	5.073e-3	31	7.404e-3	31
14		min	0	37	-.019	47	-.007	39	-5.512e-3	34	-7.764e-3	37	-7.404e-3	37
15	N8	max	0	31	-.002	39	.017	40	4.884e-3	40	5.073e-3	31	6.416e-3	37
16		min	0	37	-.019	47	-.005	39	-3.66e-3	39	-7.764e-3	37	-6.416e-3	31
17	N9	max	.064	37	-.002	39	.032	41	4.879e-3	40	5.073e-3	31	6.411e-3	37
18		min	-.064	31	-.019	47	-.032	34	-3.656e-3	39	-7.764e-3	37	-6.411e-3	31
19	N10	max	.052	37	-.002	39	.022	41	4.13e-3	41	5.073e-3	31	7.402e-3	31
20		min	-.052	31	-.019	47	-.018	34	-5.51e-3	34	-7.764e-3	37	-7.402e-3	37
21	NHH-65B-R2B_...	max	0	55	0	55	0	55	0	55	0	55	0	55
22		min	0	29	0	29	0	29	0	29	0	29	0	29
23	N12	max	.147	31	-.002	39	.13	40	1.133e-3	41	5.073e-3	31	2.075e-3	31
24		min	-.147	37	-.019	47	-.089	39	-1.512e-3	34	-7.764e-3	37	-2.075e-3	37
25	N13	max	0	55	0	55	0	55	8.553e-4	41	0	55	0	55
26		min	0	29	0	29	0	29	-1.14e-3	34	0	29	0	29
27	N14	max	0	55	0	55	0	55	1.034e-3	40	0	55	0	55
28		min	0	29	0	29	0	29	-7.75e-4	39	0	29	0	29
29	N15	max	0	55	0	55	0	55	4.132e-3	41	0	55	0	55
30		min	0	29	0	29	0	29	-5.512e-3	34	0	29	0	29
31	N16	max	0	55	0	55	0	55	4.884e-3	40	0	55	0	55
32		min	0	29	0	29	0	29	-3.66e-3	39	0	29	0	29

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_13220
Site Name:	Riverside CT
Date:	2/8/2022
Prepared By:	J.Vassell
Checked By:	M. Trodden

EXISTING CONNECTION CHECK

>> Max Reactions per RISA Output: N15, Envelope **[Max Shear]**

	Fx =	395.9 lbs	Mx =	0.0 lbs-ft
(Uplift)	Fy =	0.0 lbs	My =	360.8 lbs-ft
	Fz =	318.2 lbs	Mz =	0.0 lbs-ft

>> Existing Connection:

	L, in		W, in			
Member Size =	4.5	x	4.5	Existing STD 4.0" Pipe		
	L, in		W, in		t, in	
Plate =	10	x	6.5	x	0.5	
Bolt Spac. =	3 in			Fy =	36	ksi
Bolt Dia =	0.625 in			Grade =	A325	
# of Bolts =	2					

>> Check Existing Bolts: Per Field Notes, 5/8" DIA A325 Bolts

Tall =	20700 lbs	Vall =	12400 lbs
T_{My} =	1443.2 lbs		
T_{Mz} =	0 lbs	$V_{Fx/Fz}$ =	507.9459 lbs
T_{Fa} =	0.00 lbs	V_{Mx} =	0 lbs
Ft =	1443.2 lbs	Fv =	507.9459 lbs

>> Bolt Interaction:

0.069718 + 0.041 = 0.111 **< 1.0, OK**

Appendix C

Existing Screenwall and
Roof Structure Evaluation

ALL-POINTS TECHNOLOGY CORPORATION

Project ID: CT141_13220
Site Name: Riverside CT
Date: 11/17/2022

(Based on IBC 2021/2022 CSBC & ASCE 7-16)

DEAD LOADING

For Screenwall Siding =	2.5	psf	
Roofing Membrane =	0.5	psf	
3" Rigid Insulation =	4.50	psf	*Per drawings prepared by Werner Jensen & Korst*
Roof Deck 22 Gauge Type B =	2.20	psf	*Per drawings prepared by Werner Jensen & Korst*
Hung Ceiling =	3.00	psf	*Assumed*
Mechanical Duct Allowance =	4.00	psf	*Assumed*
Misc. =	2.00	psf	
Total =	16.20	psf	
Use =	**17.00**	**psf**	

LIVE LOADING

Per Existing Building Drawings by Werner Jensen & Korst, design live load for roof areas is **30 psf.**
Per IBC 2021 / 2022 CSBC, live load for ordinary roofs is **20 psf.**

SNOW LOADING *(Per ASCE 7-16 & CT Building Code 2022)*

$p_f = 0.7C_eC_tIp_g$ *(ASCE 7-16, Section 7.3)*

p_g =	30 psf	*(CTBC Appendix P)*
C_e =	1.0	*(ASCE 7-16, Table 7.3-1)*
C_t =	1.1	*(ASCE 7-16, Table 7.3-2)*
I =	1.0	*(ASCE 7-16, Table 1.5-2)*

p_{fmin} =	30 psf	***<< Per 1608.1.1 of 2022 CTBC, P_f shall not be less than 30 psf***
Calculated p_f =	23.1 psf	
Use p_f =	**30 psf**	

WIND LOADING

> Wind Loads: General Requirements - Chapter 26

Location =	Greenwich, CT		
Risk Category =	II		*Table 1.5-1*
V_{ult} =	120	mph	*Figures 26.5-1A - 26.5-1C*
z =	37.8	ft, +/-	
Exposure =	C		*Section 26.7.3*
α =	9.5		*Table 26.9-1*
z_g =	900		*Table 26.9-1*
k_z =	1.03		*Table 27.3-1*
k_{zt} =	1.00		*Section 26.8*
k_d =	0.85		*Table 26.6-1*
q_z =	**32.31**	**psf**	

> Wind Loads on Other Structures and Building Appurtenances - Chapter 29

$q_z \times GC_r$ =	**61.39**	**psf**

ALL-POINTS TECHNOLOGY CORPORATION

Project ID: CT141_13220
Site Name: Riverside CT
Date: 11/17/2022

(Based on IBC 2015/2018 CSBC & ASCE 7-10)

DEAD LOADING

Equipment	Quant.	Dimensions, in			Weight, lbs	
		Height	Width	Depth	Per.	Total
NHH-65B-R2B	2	72.0	13.8	8.2	73.7	147.4
MT6407-77A	1	35.1	16.1	5.5	87.1	87.1
B5/B13 RRH	1	15.0	15.0	8.1	82.0	82.0
B2/B66 RRH	1	15.0	15.0	10.0	97.5	97.5
6OVP	1	19.8	15.7	10.3	32.0	32.0
APXVAALL24_43-U-NA20	*1*	*95.9*	*24.0*	*8.5*	*149.9*	*149.9*
AIR32	*1*	*56.6*	*12.9*	*8.7*	*132.2*	*132.2*
AIR6449	*1*	*33.1*	*20.6*	*8.6*	*104.0*	*104.0*
Ericsson RRU	*1*	*14.9*	*13.2*	*9.3*	*74.0*	*74.0*
Ericsson RRU	*1*	*16.5*	*13.5*	*9.6*	*88.0*	*88.0*

**T-mobile Equipment in italics*

Total (per sector) =	994.1	lbs/sector
Add 25% for misc. =	1242.63	lbs
Total Carrier Equip Weight =	3727.88	lbs
Distributed Load (Based upon 156' +/- screenwall perimeter) =	23.9	lbs/ft
Use =	**30.0**	**lbs/ft**

WIND LOADING

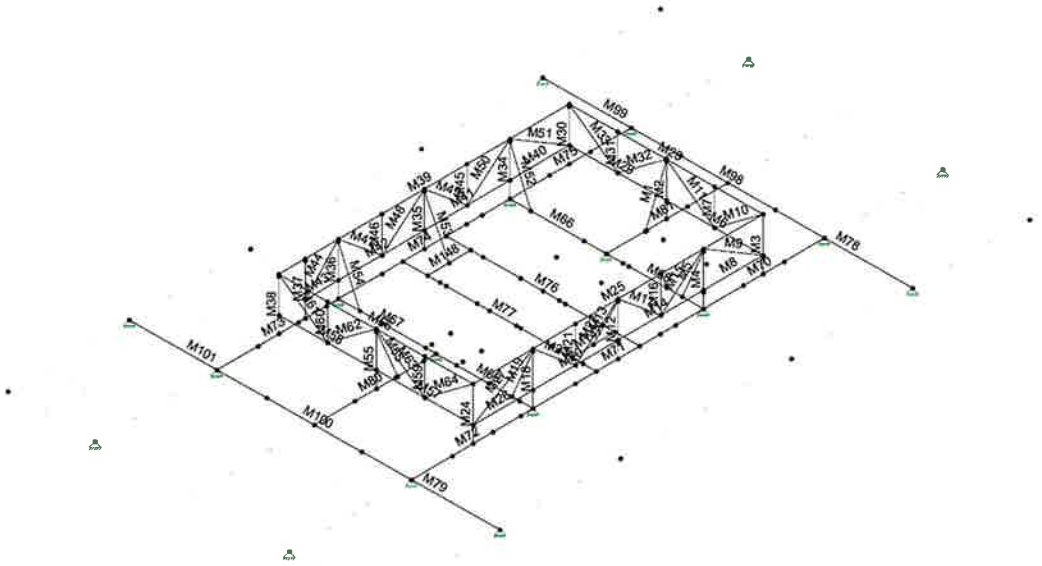
**** See Previous Sheet for Calculation****

q_z = **61.39** **psf**

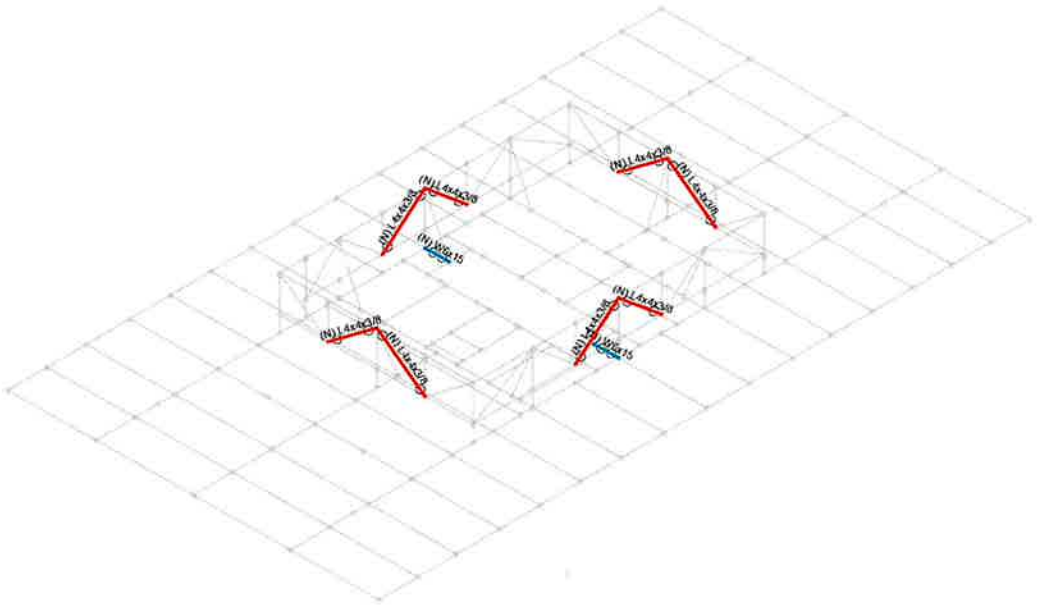
Equipment	Wind Area, ft^2		Wind Load, lbs		
	Norm.	Trans.	Norm.	Trans.	Avg.
NHH-65B-R2B	6.90	4.10	423.6	251.7	366.3
MT6407-77A	3.92	1.34	240.9	82.3	188.1
B5/B13 RRH	1.56	0.85	95.9	52.1	81.3
B2/B66 RRH	1.56	1.05	95.9	64.2	85.4
6OVP	2.16	1.42	132.8	87.0	117.5
APXVAALL24_43-U-NA20	*15.98*	*5.66*	981.3	347.5	770.0
AIR32	*5.07*	*3.42*	311.3	209.9	277.5
AIR6449	*4.74*	*1.98*	290.7	121.4	234.3
Ericsson RRU	*1.37*	*0.96*	83.9	58.8	75.5
Ericsson RRU	*1.55*	*1.10*	95.0	67.5	85.8

**T-mobile Equipment in italics*

Total (per sector) =	2281.7	lbs/sector
Add 25% for misc. =	2852.13	lbs
Total Carrier Equip Wind Load =	8556.38	lbs
Distributed Load (Based upon 156' +/- screenwall perimeter) =	54.85	lbs/ft
Use =	**55.0**	**lbs/ft**

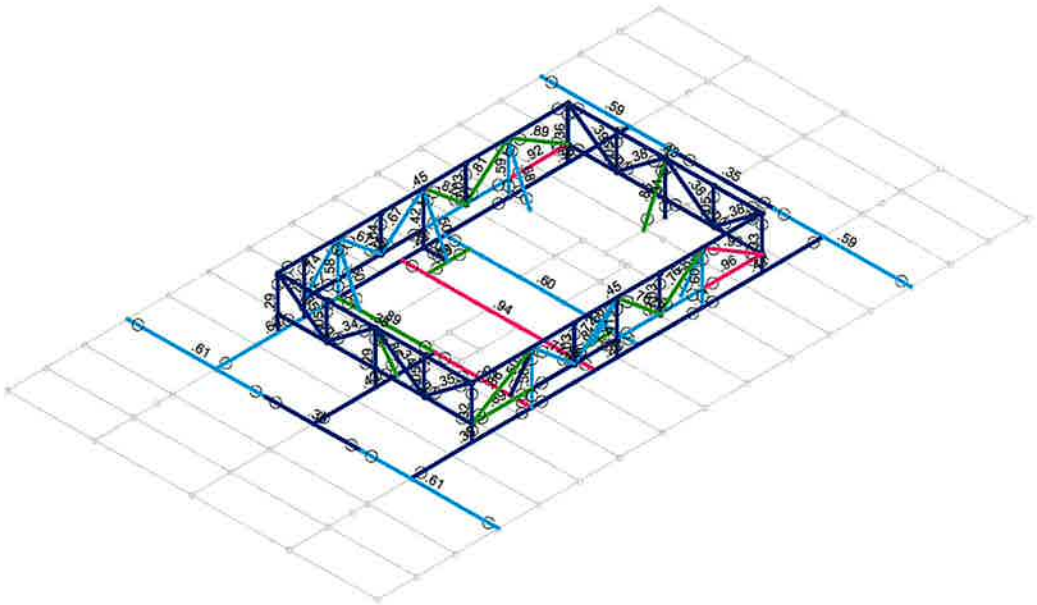


APT	EXISTING SCREEN WALL MEMBER LABELS	
JV		
Riverside CT		Exist. Roof Framing w Screenwall_...



Envelope Only Solution

APT	EXISTING SCREEN WALL	
JV	Proposed Section Set	
Riverside CT		Exist. Roof Framing w Screenwall_...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

APT	EXISTING SCREEN WALL	
JV	Max Bending Stresses	
Riverside CT		Exist. Roof Framing w Screenwall_...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	C10	C10X15.3	Beam	Channel	A36 Gr.36	Typical	4.48	2.27	67.3	.209
2	(N) L4x4x3/8	L4X4X6	HBrace	Single Angle	A36 Gr.36	Typical	2.86	4.32	4.32	.141
3	L3x3x1/4 Dia.	L3X3X4	HBrace	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
4	L3x3x1/4 Vertical	L3X3X4	VBrace	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
5	L3x3x1/4 Kicker	L3X3X4	VBrace	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
6	L2.5x2.5x1/4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	HSS6x6x1/4	HSS6X6X4	Column	SquareTube	A36 Gr.36	Typical	5.24	28.6	28.6	45.6
8	4.0" STD	PIPE_4.0	Beam	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
9	2.0" STD	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
10	HSS4x4	HSS4X4X4	Column	SquareTube	A500 Gr.B R...	Typical	3.37	7.8	7.8	12.8
11	16WF36	16WFx38.7_15_H...	Beam	Wide Flange	A36 Gr.36	Typical	11.39	22.9	490.8	.93
12	14WF30	14WFx32.4_1_His...	Beam	Wide Flange	A36 Gr.36	Typical	9.53	18.1	320.2	.63
13	10B19	10B19	Beam	Wide Flange	A36 Gr.36	Typical	5.533	4.278	94.619	.21
14	12B14	12B14	Beam	Wide Flange	A36 Gr.36	Typical	4.071	2.344	85.826	.061
15	8B10	8B10	Beam	Wide Flange	A36 Gr.36	Typical	2.881	2.083	29.766	.035
16	(N) W6x15	W6X15	Beam	Wide Flange	A992	Typical	4.43	9.32	29.1	.101

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
2	M2	HSS4x4	100.75									Lateral
3	M3	HSS4x4	100.75									Lateral
4	M4	HSS4x4	100.75									Lateral
5	M5	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
6	M6	C10	188	Segment	Segment	Segment	Segment	Segm...				Lateral
7	M7	L3x3x1/4 V...	69.5									Lateral
8	M8	C10	116	Segment	Segment	Segment	Segment	Segm...				Lateral
9	M9	L3x3x1/4 Dia.	135.227	Segment	Segment	Segment	Segment	Segm...	.865	.865		Lateral
10	M10	L3x3x1/4 Dia.	116.903						.865	.865		Lateral
11	M11	(N) L4x4x3/8	116.903						.865	.865		Lateral
12	M12	HSS4x4	100.75									Lateral
13	M13	L3x3x1/4 Ki...	108.003						.8	.8		Lateral
14	M14	C10	166	Segment	Segment	Segment	Segment	Segm...				Lateral
15	M15	L3x3x1/4 Dia.	108.255						.865	.865		Lateral
16	M16	L3x3x1/4 V...	69.5									Lateral
17	M17	(N) L4x4x3/8	108.255						.865	.865		Lateral
18	M18	HSS4x4	100.75									Lateral
19	M19	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
20	M20	C10	166	Segment	Segment	Segment	Segment	Segm...				Lateral
21	M21	L3x3x1/4 V...	69.5									Lateral
22	M22	(N) L4x4x3/8	108.255						.865	.865		Lateral
23	M23	L3x3x1/4 Dia.	108.255						.865	.865		Lateral
24	M24	HSS4x4	100.75									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
25	M25	C10	564	Segment	Segment	Segment	Segment	Segm...				Lateral
26	M26	C10	116			Lbyy						Lateral
27	M27	L3x3x1/4 Dia.	135.227						.865	.865		Lateral
28	M28	C10	376	Segment	Segment	Segment	Segment	Segm...				Lateral
29	M29	C10	188	Segment	Segment	Segment	Segment	Segm...				Lateral
30	M30	HSS4x4	100.75									Lateral
31	M31	L3x3x1/4 V...	69.5									Lateral
32	M32	(N) L4x4x3/8	116.903						.865	.865		Lateral
33	M33	L3x3x1/4 Dia.	116.903						.865	.865		Lateral
34	M34	HSS4x4	100.75									Lateral
35	M35	HSS4x4	100.75									Lateral
36	M36	HSS4x4	100.75									Lateral
37	M37	C10	100.75									Lateral
38	M38	HSS4x4	100.75									Lateral
39	M39	C10	564	Segment	Segment	Segment	Segment	Segm...				Lateral
40	M40	C10	116			Lbyy						Lateral
41	M41	C10	166	Segment	Segment	Segment	Segment	Segm...				Lateral
42	M42	C10	166	Segment	Segment	Segment	Segment	Segm...				Lateral
43	M43	C10	65			Lbyy						Lateral
44	M44	L3x3x1/4 Dia.	95.159						.865	.865		Lateral
45	M45	L3x3x1/4 V...	69.5									Lateral
46	M46	L3x3x1/4 V...	69.5									Lateral
47	M47	L3x3x1/4 Dia.	108.255	Segment	Segment	Segment	Segment	Segm...	.865	.865		Lateral
48	M48	(N) L4x4x3/8	108.255						.865	.865		Lateral
49	M49	(N) L4x4x3/8	108.255						.865	.865		Lateral
50	M50	L3x3x1/4 Dia.	108.255						.865	.865		Lateral
51	M51	L3x3x1/4 Dia.	135.227						.865	.865		Lateral
52	M52	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
53	M53	L3x3x1/4 Ki...	108.003						.8	.8		Lateral
54	M54	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
55	M55	HSS4x4	100.75									Lateral
56	M56	C10	376	Segment	Segment	Segment	Segment	Segm...				Lateral
57	M57	C10	188	Segment	Segment	Segment	Segment	Segm...				Lateral
58	M58	C10	188	Segment	Segment	Segment	Segment	Segm...				Lateral
59	M59	L3x3x1/4 V...	69.5									Lateral
60	M60	L3x3x1/4 V...	69.5									Lateral
61	M61	L3x3x1/4 Dia.	116.903						.865	.865		Lateral
62	M62	(N) L4x4x3/8	116.903						.865	.865		Lateral
63	M63	(N) L4x4x3/8	116.903						.865	.865		Lateral
64	M64	L3x3x1/4 Dia.	116.903						.865	.865		Lateral
65	M65	L3x3x1/4 Ki...	105.079						.8	.8		Lateral
66	M66	12B14	188	48	Segment	48	Segment	48				Lateral
67	M67	12B14	188	48		48		48				Lateral
68	M68	12B14	188	48	Segment	48	Segment	48				Lateral
69	M69	12B14	188	48		48		48				Lateral
70	M70	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
71	M71	16WF36	332	Segment	Segment	Segment	Segment					Lateral
72	M72	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
73	M73	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
74	M74	16WF36	332	Segment	Segment	Segment	Segment	Segm...				Lateral
75	M75	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
76	M76	16WF36	376	48		48		48				Lateral
77	M77	16WF36	376	48		48		48				Lateral
78	M78	14WF30	267	Segment	Segment	Segment	Segment	Segm...				Lateral
79	M79	14WF30	267	24	Segment	24	Segment					Lateral
80	M80	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
81	M81	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
82	M82	8B10	124.04			Lbyy						Lateral
83	M83	8B10	124.04	Segment	Segment	Segment	Segment	Segm...				Lateral
84	M84	8B10	124.04			Lbyy						Lateral
85	M85	8B10	124.04			Lbyy						Lateral
86	M86	12B14	188									Lateral
87	M87	12B14	188									Lateral
88	M88	MC6X6.5	188									Lateral
89	M89	MC6X6.5	188									Lateral
90	M90	MC6X6.5	188									Lateral
91	M91	MC6X6.5	188									Lateral
92	M92	MC6X6.5	188									Lateral
93	M93	MC6X6.5	188									Lateral
94	M98	14WF30	184	Segment	Segment	Segment	Segment	Segm...				Lateral
95	M99	14WF30	267	Segment	Segment	Segment	Segment	Segm...				Lateral
96	M100	14WF30	184	24	Segment	24	Segment					Lateral
97	M101	14WF30	267	24	Segment	24	Segment					Lateral
98	M102	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
99	M103	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
100	M104	10B19	236	Segment	Segment	Segment	Segment	Segm...				Lateral
101	M105	10B19	228	Segment	Segment	Segment	Segment	Segm...				Lateral
102	M106	10B19	228	Segment	Segment	Segment	Segment	Segm...				Lateral
103	M107	10B19	228	Segment	Segment	Segment	Segment	Segm...				Lateral
104	M108	MC6X6.5	171									Lateral
105	M109	MC6X6.5	188									Lateral
106	M110	MC6X6.5	188									Lateral
107	M111	MC6X6.5	171									Lateral
108	M112	MC6X6.5	171									Lateral
109	M113	MC6X6.5	188									Lateral
110	M114	MC6X6.5	188									Lateral
111	M115	MC6X6.5	171									Lateral
112	M116	MC6X6.5	171									Lateral
113	M117	MC6X6.5	188									Lateral
114	M118	MC6X6.5	188									Lateral
115	M119	MC6X6.5	171									Lateral
116	M120	MC6X6.5	171									Lateral
117	M121	MC6X6.5	188									Lateral
118	M122	MC6X6.5	188									Lateral
119	M123	MC6X6.5	171									Lateral
120	M124	MC6X6.5	171									Lateral
121	M125	MC6X6.5	171									Lateral
122	M126	MC6X6.5	171									Lateral
123	M127	MC6X6.5	171									Lateral
124	M128	12B14	171									Lateral
125	M129	12B14	171									Lateral
126	M130	8B10	123.96	Segment	Segment	Segment	Segment	Segm...				Lateral
127	M131	8B10	123.96	Segment	Segment	Segment	Segment	Segm...				Lateral
128	M132	8B10	144.5									Lateral
129	M133	8B10	87									Lateral
130	M134	8B10	144.5									Lateral
131	M135	MC6X6.5	171									Lateral
132	M136	MC6X6.5	171									Lateral
133	M137	MC6X6.5	171									Lateral
134	M138	MC6X6.5	171									Lateral
135	M139	12B14	171									Lateral
136	M140	12B14	171									Lateral
137	M141	MC6X6.5	171									Lateral
138	M142	MC6X6.5	171									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
139	M143	MC6X6.5	171									Lateral
140	M144	MC6X6.5	171									Lateral
141	M145	MC6X6.5	171									Lateral
142	M146	MC6X6.5	171									Lateral
143	M147	8B10	84	Segment	Segment	Segment	Segment	Segm...				Lateral
144	M148	8B10	84	Segment	Segment	Segment	Segment	Segm...				Lateral
145	M149	8B10	124.04	Segment	Segment	Segment	Segment	Segm...				Lateral
146	M150	8B10	60									Lateral
147	M151	8B10	60									Lateral
148	M152	12B14	188									Lateral
149	M153	12B14	188									Lateral
150	M154	(N) W6x15	48			Lbyy						Lateral
151	M155	(N) W6x15	48			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(M...	Surfac...
1	DL	DL		-1.05		4			10	
2	SL	SL							6	
3	Roof LL	RLL							6	
4	DL new	OL1				8		4		
5	WLX	WLX							2	
6	WLZ	WLZ							2	
7	WLX new	OL2						4		
8	WLZ new	OL3						4		
9	Exist Design Roof Live Load	LL								
10	BLC 1 Transient Area Loads	None						264		
11	BLC 3 Transient Area Loads	None						225		
12	BLC 2 Transient Area Loads	None						225		
13	BLC 5 Transient Area Loads	None						33		
14	BLC 6 Transient Area Loads	None						6		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL	Y...	Y		DL	1																		
2	DL + ORIG. DESIGN LL	Y...	Y		DL	1	LL	1																
3																								
4	DL New	Y...	Y		O...	1																		
5	DL + DL New	Y...	Y		DL	1	OL1	1																
6	DL + DL New + Roof LL	Y...	Y		DL	1	OL1	1	RLL	1														
7	DL + DL New + SL	Y...	Y		DL	1	OL1	1	SL	1														
8	DL + DL New + 0.6WLX	Y...	Y		DL	1	OL1	1	WLX	.6	O...	.6												
9	DL + DL New + 0.6WLZ	Y...	Y		DL	1	OL1	1	WLZ	.6	O...	.6												
10	DL + DL New + 0.6WL-X	Y...	Y		DL	1	OL1	1	WLX	-.6	O...	-.6												
11	DL + DL New + 0.6WL-Z	Y...	Y		DL	1	OL1	1	WLZ	-.6	O...	-.6												
12	DL + DLnew + 0.75Roof LL + 0.45WLX	Y...	Y		DL	1	OL1	1	RLL	.75	...	.45	O...	.45										
13	DL + DLnew + 0.75Roof LL + 0.45WLZ	Y...	Y		DL	1	OL1	1	RLL	.75	...	.45	O...	.45										
14	DL + DLnew + 0.75Roof LL + 0.45WL-X	Y...	Y		DL	1	OL1	1	RLL	.75	...	-.45	O...	-.45										
15	DL + DLnew + 0.75Roof LL + 0.45WL-Z	Y...	Y		DL	1	OL1	1	RLL	.75	...	-.45	O...	-.45										
16	DL + DLnew + 0.75SL + 0.45WLX	Y...	Y		DL	1	OL1	1	SL	.75	...	.45	O...	.45										
17	DL + DLnew + 0.75SL + 0.45WLZ	Y...	Y		DL	1	OL1	1	SL	.75	...	.45	O...	.45										
18	DL + DLnew + 0.75SL + 0.45WL-X	Y...	Y		DL	1	OL1	1	SL	.75	...	-.45	O...	-.45										
19	DL + DLnew + 0.75SL + 0.45WL-Z	Y...	Y		DL	1	OL1	1	SL	.75	...	-.45	O...	-.45										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	12	max	2247.645	10	40757.97	7	1865.33	11	0	19	0	19	0	19
2		min	-1819.741	8	6358.58	4	-2050.905	9	0	1	0	1	0	1
3	27	max	2012.93	10	41666.09	7	2048.882	11	0	19	0	19	0	19
4		min	-2094.928	8	3082.331	4	-1890.331	9	0	1	0	1	0	1
5	45	max	1507.218	10	39814.445	7	1989.624	11	0	19	0	19	0	19
6		min	-2576.529	8	3214.939	4	-2027.386	9	0	1	0	1	0	1
7	53	max	1913.489	10	39080.16	7	2060.076	11	0	19	0	19	0	19
8		min	-1843.055	8	2160.169	4	-2007.396	9	0	1	0	1	0	1
9	79	max	710.752	10	13272.209	19	3663.578	11	0	19	0	19	0	19
10		min	-726.579	8	307.777	4	-3386.628	9	0	1	0	1	0	1
11	78	max	619.216	10	10595.399	17	3418.966	11	0	19	0	19	0	19
12		min	-796.393	8	2110.091	4	-3612.457	9	0	1	0	1	0	1
13	80	max	113.513	8	21242.729	7	478.185	11	0	19	0	19	0	19
14		min	-136.83	10	193.169	4	-549.589	9	0	1	0	1	0	1
15	81	max	111.468	8	23384.28	7	383.972	11	0	19	0	19	0	19
16		min	-120.108	10	224.62	4	-376.816	9	0	1	0	1	0	1
17	82	max	117.692	8	21648.811	7	552.864	11	0	19	0	19	0	19
18		min	-112.769	10	115.682	4	-452.984	9	0	1	0	1	0	1
19	83	max	122.657	8	21224.931	7	444.931	11	0	19	0	19	0	19
20		min	-128.616	10	171.211	4	-566.624	9	0	1	0	1	0	1
21	114	max	6928.979	10	15851.928	7	170.556	9	0	19	0	19	0	19
22		min	-5719.779	8	-27.981	4	-161.652	11	0	1	0	1	0	1
23	115	max	6814.375	10	15843.008	7	157.035	9	0	19	0	19	0	19
24		min	-5891.721	8	-24.706	4	-169.05	11	0	1	0	1	0	1
25	116	max	2015.002	8	9617.025	7	568.77	11	0	19	0	19	0	19
26		min	-2394.651	10	.018	4	-528.347	9	0	1	0	1	0	1
27	118	max	2045.458	8	9071.234	7	543.913	11	0	19	0	19	0	19
28		min	-2495.53	10	.027	4	-573.872	9	0	1	0	1	0	1
29	120	max	2327.011	8	9070.604	7	543.913	11	0	19	0	19	0	19
30		min	-2170.547	10	-.018	4	-573.872	9	0	1	0	1	0	1
31	121	max	2236.954	8	9621.086	7	568.77	11	0	19	0	19	0	19
32		min	-2040.52	10	-.007	4	-528.347	9	0	1	0	1	0	1
33	124	max	5853.255	10	15846.443	7	157.035	9	0	19	0	19	0	19
34		min	-6358.703	8	-24.679	4	-169.05	11	0	1	0	1	0	1
35	125	max	6147.522	10	15853.122	7	170.555	9	0	19	0	19	0	19
36		min	-6418.138	8	-27.89	4	-161.651	11	0	1	0	1	0	1
37	Totals:	max	25155.81	10	372776.117	7	18470.373	11						
38		min	-25155.81	8	17833.333	4	-18470.373	9						

Joint Reactions

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
1	1	12	384.285	17249.236	-57.163	0	0	0
2	1	27	-172.172	21495.381	52.201	0	0	0
3	1	45	-407.963	18830.535	14.511	0	0	0
4	1	53	156.138	21314.883	-.16	0	0	0
5	1	79	-12.629	8113.438	128.328	0	0	0
6	1	78	-10.004	3716.102	-116.389	0	0	0
7	1	80	-3.712	8766.936	-23.725	0	0	0
8	1	81	-4.887	9705.902	2.386	0	0	0
9	1	82	1.411	8971.941	43.073	0	0	0
10	1	83	2.717	8776.04	-44.84	0	0	0
11	1	114	316.701	5964.662	4.568	0	0	0
12	1	115	311.039	5952.812	-4.944	0	0	0
13	1	116	-122.678	3727.91	16.635	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
14	1	118	-128.852	3518.61	-15.37	0	0	0
15	1	120	110.093	3518.522	-15.37	0	0	0
16	1	121	106.804	3729.447	16.635	0	0	0
17	1	124	-262.15	5953.968	-4.944	0	0	0
18	1	125	-264.141	5964.792	4.568	0	0	0
19	1	Totals:	0	165271.117	0			
20	1	COG (in):	X: -2.414	Y: 4.264	Z: 297.845			
21	2	12	384.285	17249.236	-57.163	0	0	0
22	2	27	-172.172	21495.381	52.201	0	0	0
23	2	45	-407.963	18830.535	14.511	0	0	0
24	2	53	156.138	21314.883	-.16	0	0	0
25	2	79	-12.629	8113.438	128.328	0	0	0
26	2	78	-10.004	3716.102	-116.389	0	0	0
27	2	80	-3.712	8766.936	-23.725	0	0	0
28	2	81	-4.887	9705.902	2.386	0	0	0
29	2	82	1.411	8971.941	43.073	0	0	0
30	2	83	2.717	8776.04	-44.84	0	0	0
31	2	114	316.701	5964.662	4.568	0	0	0
32	2	115	311.039	5952.812	-4.944	0	0	0
33	2	116	-122.678	3727.91	16.635	0	0	0
34	2	118	-128.852	3518.61	-15.37	0	0	0
35	2	120	110.093	3518.522	-15.37	0	0	0
36	2	121	106.804	3729.447	16.635	0	0	0
37	2	124	-262.15	5953.968	-4.944	0	0	0
38	2	125	-264.141	5964.792	4.568	0	0	0
39	2	Totals:	0	165271.117	0			
40	2	COG (in):	X: -2.414	Y: 4.264	Z: 297.845			
41	4	12	-136.002	6358.58	-16.673	0	0	0
42	4	27	147.357	3082.331	8.385	0	0	0
43	4	45	-135.446	3214.939	-15.092	0	0	0
44	4	53	-131.842	2160.169	8.102	0	0	0
45	4	79	5.219	307.777	17.943	0	0	0
46	4	78	-78.861	2110.091	11.32	0	0	0
47	4	80	-7.632	193.169	-11.125	0	0	0
48	4	81	.543	224.62	.775	0	0	0
49	4	82	1.465	115.682	5.672	0	0	0
50	4	83	-5.199	171.211	-14.739	0	0	0
51	4	114	291.188	-27.981	-.45	0	0	0
52	4	115	162.367	-24.706	-.699	0	0	0
53	4	116	-71.615	.018	2.351	0	0	0
54	4	118	-98.981	.027	1.514	0	0	0
55	4	120	-18.471	-.018	1.514	0	0	0
56	4	121	3.507	-.007	2.351	0	0	0
57	4	124	-21.407	-24.679	-.699	0	0	0
58	4	125	93.809	-27.89	-.45	0	0	0
59	4	Totals:	0	17833.333	0			
60	4	COG (in):	X: 41.495	Y: 44.255	Z: 224.512			
61	5	12	199.698	23606.436	-73.812	0	0	0
62	5	27	-55.984	24576.767	60.339	0	0	0
63	5	45	-519.923	22045.903	-1.222	0	0	0
64	5	53	49.404	23474.234	8.041	0	0	0
65	5	79	-8.14	8422.23	144.493	0	0	0
66	5	78	-88.687	5825.992	-102.802	0	0	0
67	5	80	-11.738	8960.961	-34.973	0	0	0
68	5	81	-4.684	9931.278	3.502	0	0	0
69	5	82	2.578	9088.275	48.927	0	0	0
70	5	83	-2.887	8948.073	-59.851	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
71	5	114	600.784	5936.109	4.046	0	0	0
72	5	115	459.06	5927.662	-5.602	0	0	0
73	5	116	-188.365	3728.066	18.848	0	0	0
74	5	118	-223.298	3518.806	-13.613	0	0	0
75	5	120	76.427	3518.434	-13.613	0	0	0
76	5	121	96.64	3729.414	18.848	0	0	0
77	5	124	-249.466	5929.046	-5.602	0	0	0
78	5	125	-131.421	5936.764	4.046	0	0	0
79	5	Totals:	0	183104.45	0			
80	5	COG (in):	X: 1.863	Y: 8.159	Z: 290.703			
81	6	12	128.721	35039.983	-177.44	0	0	0
82	6	27	-96.994	35969.252	160.206	0	0	0
83	6	45	-455.684	33891.003	-52.658	0	0	0
84	6	53	107.325	33877.595	85.564	0	0	0
85	6	79	-9.941	11436.449	237.993	0	0	0
86	6	78	-88.53	8771.594	-187.566	0	0	0
87	6	80	-14.525	17148.341	-76.244	0	0	0
88	6	81	-8.899	18899.469	13.503	0	0	0
89	6	82	3.115	17461.506	105.122	0	0	0
90	6	83	-.737	17132.18	-117.196	0	0	0
91	6	114	664.762	12546.777	7.276	0	0	0
92	6	115	507.88	12538.022	-9.119	0	0	0
93	6	116	-205.527	7654.029	30.683	0	0	0
94	6	118	-245.413	7220.416	-24.481	0	0	0
95	6	120	101.511	7219.87	-24.481	0	0	0
96	6	121	121.291	7657.184	30.683	0	0	0
97	6	124	-312.122	12540.768	-9.119	0	0	0
98	6	125	-196.233	12547.79	7.276	0	0	0
99	6	Totals:	0	309552.228	0			
100	6	COG (in):	X: 1.092	Y: 4.826	Z: 288.77			
101	7	12	78.605	40757.97	-228.484	0	0	0
102	7	27	-132.027	41666.09	209.389	0	0	0
103	7	45	-408.15	39814.445	-78.718	0	0	0
104	7	53	151.404	39080.16	124.17	0	0	0
105	7	79	-11.403	12941.032	281.369	0	0	0
106	7	78	-88.449	10241.22	-226.564	0	0	0
107	7	80	-15.93	21242.729	-97.297	0	0	0
108	7	81	-11.273	23384.28	19.399	0	0	0
109	7	82	3.115	21648.811	133.793	0	0	0
110	7	83	.337	21224.931	-146.478	0	0	0
111	7	114	688.334	15851.928	8.719	0	0	0
112	7	115	522.641	15843.008	-10.713	0	0	0
113	7	116	-210.142	9617.025	36.043	0	0	0
114	7	118	-252.796	9071.234	-29.339	0	0	0
115	7	120	110.886	9070.604	-29.339	0	0	0
116	7	121	130.312	9621.086	36.043	0	0	0
117	7	124	-334.229	15846.443	-10.713	0	0	0
118	7	125	-221.233	15853.122	8.719	0	0	0
119	7	Totals:	0	372776.117	0			
120	7	COG (in):	X: .903	Y: 4.008	Z: 288.295			
121	8	12	-1819.741	25998.49	-75.9	0	0	0
122	8	27	-2094.928	26987.855	63.017	0	0	0
123	8	45	-2576.529	19584.424	-2.536	0	0	0
124	8	53	-1843.055	21245.285	9.811	0	0	0
125	8	79	-726.579	8407.797	142.216	0	0	0
126	8	78	-796.393	5828.675	-103.087	0	0	0
127	8	80	113.513	8891.626	-32.882	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
128	8	81	111.468	9764.638	3.025	0	0	0
129	8	82	117.692	9152.101	52.796	0	0	0
130	8	83	122.657	9016.336	-63.398	0	0	0
131	8	114	-5719.779	5943.838	4.056	0	0	0
132	8	115	-5891.721	5937.646	-5.524	0	0	0
133	8	116	2015.002	3723.05	18.585	0	0	0
134	8	118	2045.458	3513.615	-13.648	0	0	0
135	8	120	2327.011	3524.071	-13.648	0	0	0
136	8	121	2236.954	3734.793	18.585	0	0	0
137	8	124	-6358.703	5922.64	-5.524	0	0	0
138	8	125	-6418.138	5927.569	4.057	0	0	0
139	8	Totals:	-25155.81	183104.45	0			
140	8	COG (in):	X: 1.863	Y: 8.159	Z: 290.703			
141	9	12	206.643	21666.293	-2050.905	0	0	0
142	9	27	-66.413	26519.054	-1890.331	0	0	0
143	9	45	-524.122	20140.574	-2027.386	0	0	0
144	9	53	60.272	25336.309	-2007.396	0	0	0
145	9	79	-8.545	6469.161	-3386.628	0	0	0
146	9	78	-88.655	7778.222	-3612.457	0	0	0
147	9	80	-10.897	8284.477	-549.589	0	0	0
148	9	81	-5.493	10651.129	-376.816	0	0	0
149	9	82	3.392	9761.686	-452.984	0	0	0
150	9	83	-3.755	8272.547	-566.624	0	0	0
151	9	114	593.644	6138.289	170.556	0	0	0
152	9	115	465.025	5726.144	157.035	0	0	0
153	9	116	-189.278	3726.796	-528.347	0	0	0
154	9	118	-221.754	3519.781	-573.872	0	0	0
155	9	120	75.818	3519.435	-573.872	0	0	0
156	9	121	98.285	3728.156	-528.347	0	0	0
157	9	124	-257.425	5727.514	157.035	0	0	0
158	9	125	-126.74	6138.883	170.555	0	0	0
159	9	Totals:	0	183104.45	-18470.373			
160	9	COG (in):	X: 1.863	Y: 8.159	Z: 290.703			
161	10	12	2247.645	21218.563	-71.832	0	0	0
162	10	27	2012.93	22169.322	57.741	0	0	0
163	10	45	1507.218	24511.549	-.255	0	0	0
164	10	53	1913.489	25706.17	6.444	0	0	0
165	10	79	710.752	8432.144	146.872	0	0	0
166	10	78	619.216	5816.999	-102.474	0	0	0
167	10	80	-136.83	9030.423	-37.042	0	0	0
168	10	81	-120.108	10098.14	3.995	0	0	0
169	10	82	-112.769	9024.515	45.064	0	0	0
170	10	83	-128.616	8879.916	-56.301	0	0	0
171	10	114	6928.979	5926.729	4.035	0	0	0
172	10	115	6814.375	5915.865	-5.682	0	0	0
173	10	116	-2394.651	3733.617	19.116	0	0	0
174	10	118	-2495.53	3524.509	-13.575	0	0	0
175	10	120	-2170.547	3513.257	-13.575	0	0	0
176	10	121	-2040.52	3724.475	19.116	0	0	0
177	10	124	5853.255	5933.882	-5.681	0	0	0
178	10	125	6147.522	5944.375	4.034	0	0	0
179	10	Totals:	25155.81	183104.45	0			
180	10	COG (in):	X: 1.863	Y: 8.159	Z: 290.703			
181	11	12	192.952	25546.806	1865.33	0	0	0
182	11	27	-45.321	22635.083	2048.882	0	0	0
183	11	45	-515.894	23951.637	1989.624	0	0	0
184	11	53	38.335	21612.453	2060.076	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
185	11	79	-7.735	10379.364	3663.578	0	0	0
186	11	78	-88.699	3878.182	3418.966	0	0	0
187	11	80	-12.575	9634.437	478.185	0	0	0
188	11	81	-3.869	9208.409	383.972	0	0	0
189	11	82	1.765	8411.749	552.864	0	0	0
190	11	83	-2.017	9620.544	444.931	0	0	0
191	11	114	607.942	5734.776	-161.652	0	0	0
192	11	115	453.113	6130.051	-169.05	0	0	0
193	11	116	-187.469	3729.032	568.77	0	0	0
194	11	118	-224.861	3517.507	543.913	0	0	0
195	11	120	77.067	3517.11	543.913	0	0	0
196	11	121	95.025	3730.369	568.77	0	0	0
197	11	124	-241.581	6131.45	-169.05	0	0	0
198	11	125	-136.178	5735.493	-161.651	0	0	0
199	11	Totals:	0	183104.45	18470.373			
200	11	COG (in):	X: 1.863	Y: 8.159	Z: 290.703			
201	12	12	-1343.39	33977.759	-152.522	0	0	0
202	12	27	-1594.01	34932.415	136.691	0	0	0
203	12	45	-1989.741	29080.146	-40.701	0	0	0
204	12	53	-1302.932	29603.206	68.196	0	0	0
205	12	79	-548.759	10670.802	213.44	0	0	0
206	12	78	-617.853	8038.686	-167.479	0	0	0
207	12	80	81.067	15049.104	-64.28	0	0	0
208	12	81	78.988	16531.987	10.172	0	0	0
209	12	82	90.477	15416.142	93.862	0	0	0
210	12	83	93.882	15137.356	-105.411	0	0	0
211	12	114	-4128.389	10902.494	6.52	0	0	0
212	12	115	-4297.912	10895.59	-8.219	0	0	0
213	12	116	1462.381	6667.341	27.654	0	0	0
214	12	118	1474.044	6289.658	-21.938	0	0	0
215	12	120	1797.301	6300.082	-21.938	0	0	0
216	12	121	1734.36	6680.584	27.654	0	0	0
217	12	124	-4920.437	10880.928	-8.22	0	0	0
218	12	125	-4935.934	10886.003	6.521	0	0	0
219	12	Totals:	-18866.858	277940.284	0			
220	12	COG (in):	X: 1.219	Y: 5.375	Z: 289.088			
221	13	12	158.583	30729.23	-1618.592	0	0	0
222	13	27	-94.015	34574.398	-1319.856	0	0	0
223	13	45	-481.958	29503.186	-1540.083	0	0	0
224	13	53	100.484	32670.737	-1443.22	0	0	0
225	13	79	-9.758	9223.785	-2437.36	0	0	0
226	13	78	-88.559	9494.692	-2806.608	0	0	0
227	13	80	-13.198	14594.195	-459.574	0	0	0
228	13	81	-8.359	17196.824	-280.637	0	0	0
229	13	82	3.676	15873.465	-293.816	0	0	0
230	13	83	-1.926	14579.522	-490.733	0	0	0
231	13	114	645.555	11045.849	131.671	0	0	0
232	13	115	502.33	10734.129	114.098	0	0	0
233	13	116	-202.877	6671.03	-383.882	0	0	0
234	13	118	-239.649	6296.37	-443.036	0	0	0
235	13	120	95.561	6295.888	-443.036	0	0	0
236	13	121	117.164	6673.743	-383.882	0	0	0
237	13	124	-304.715	10736.52	114.097	0	0	0
238	13	125	-178.34	11046.723	131.67	0	0	0
239	13	Totals:	0	277940.284	-13852.78			
240	13	COG (in):	X: 1.219	Y: 5.375	Z: 289.088			
241	14	12	1659.088	30387.32	-150.992	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
242	14	27	1444.097	31311.714	134.21	0	0	0
243	14	45	1022.504	32781.377	-38.939	0	0	0
244	14	53	1465.707	32951.645	64.351	0	0	0
245	14	79	530.237	10693.47	217.527	0	0	0
246	14	78	440.831	8029.44	-166.92	0	0	0
247	14	80	-108.629	15153.62	-67.345	0	0	0
248	14	81	-94.151	16782.63	11.395	0	0	0
249	14	82	-84.528	15319.955	88.001	0	0	0
250	14	83	-96.535	15034.669	-100.002	0	0	0
251	14	114	5434.19	10884.88	6.501	0	0	0
252	14	115	5296.29	10874.343	-8.344	0	0	0
253	14	116	-1868.338	6678.032	28.074	0	0	0
254	14	118	-1957.493	6300.651	-21.874	0	0	0
255	14	120	-1603.33	6289.193	-21.874	0	0	0
256	14	121	-1500.808	6670.141	28.074	0	0	0
257	14	124	4319.635	10893.947	-8.344	0	0	0
258	14	125	4568.091	10903.256	6.5	0	0	0
259	14	Totals:	18866.858	277940.284	0			
260	14	COG (in):	X: 1.219	Y: 5.375	Z: 289.088			
261	15	12	141.784	33633.457	1293.747	0	0	0
262	15	27	-72.084	31667.88	1612.06	0	0	0
263	15	45	-469.339	32356.028	1440.748	0	0	0
264	15	53	77.537	29882.473	1596.289	0	0	0
265	15	79	-8.942	12145.637	2861.737	0	0	0
266	15	78	-88.569	6579.855	2478.756	0	0	0
267	15	80	-14.449	15606.728	327.124	0	0	0
268	15	81	-7.195	16115.934	302.267	0	0	0
269	15	82	2.42	14860.806	476.815	0	0	0
270	15	83	-.621	15590.688	284.202	0	0	0
271	15	114	656.202	10742.95	-118.183	0	0	0
272	15	115	493.85	11037.332	-131.126	0	0	0
273	15	116	-201.588	6673.869	441.173	0	0	0
274	15	118	-241.969	6293.469	397.653	0	0	0
275	15	120	96.522	6292.946	397.653	0	0	0
276	15	121	114.761	6676.562	441.173	0	0	0
277	15	124	-292.849	11039.748	-131.125	0	0	0
278	15	125	-185.472	10743.922	-118.183	0	0	0
279	15	Totals:	0	277940.284	13852.78			
280	15	COG (in):	X: 1.219	Y: 5.375	Z: 289.088			
281	16	12	-1364.775	38267.306	-190.663	0	0	0
282	16	27	-1605.382	39206.603	173.443	0	0	0
283	16	45	-1946.343	33520.989	-60.159	0	0	0
284	16	53	-1262.571	33504.168	97.53	0	0	0
285	16	79	-549.964	11798.885	246.888	0	0	0
286	16	78	-617.078	9141.954	-197.82	0	0	0
287	16	80	80.489	18119.567	-79.951	0	0	0
288	16	81	77.148	19895.238	14.191	0	0	0
289	16	82	91.09	18556.528	115.203	0	0	0
290	16	83	95.167	18206.795	-127.204	0	0	0
291	16	114	-4126.742	13382.621	7.657	0	0	0
292	16	115	-4299.632	13375.627	-9.464	0	0	0
293	16	116	1463.441	8138.886	31.844	0	0	0
294	16	118	1473.7	7677.056	-25.765	0	0	0
295	16	120	1812.031	7688.832	-25.765	0	0	0
296	16	121	1748.772	8154.19	31.844	0	0	0
297	16	124	-4959.724	13359.078	-9.465	0	0	0
298	16	125	-4976.487	13363.879	7.658	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
299	16	Totals:	-18866.858	325358.2	0			
300	16	COG (in):	X: 1.038	Y: 4.592	Z: 288.634			
301	17	12	127.183	35018.864	-1650.869	0	0	0
302	17	27	-117.253	38845.232	-1277.061	0	0	0
303	17	45	-452.724	33946.838	-1551.498	0	0	0
304	17	53	130.434	36571.226	-1411.41	0	0	0
305	17	79	-10.736	10355.721	-2406.605	0	0	0
306	17	78	-88.507	10595.399	-2839.963	0	0	0
307	17	80	-14.25	17664.738	-479.214	0	0	0
308	17	81	-10.041	20559.915	-279.592	0	0	0
309	17	82	3.771	19013.772	-276.576	0	0	0
310	17	83	-1.121	17648.812	-516.594	0	0	0
311	17	114	665.886	13524.84	132.986	0	0	0
312	17	115	516.302	13212.861	113.015	0	0	0
313	17	116	-207.562	8142.981	-380.238	0	0	0
314	17	118	-246.338	7684.78	-447.46	0	0	0
315	17	120	103.575	7684.235	-447.46	0	0	0
316	17	121	124.953	8146.374	-380.238	0	0	0
317	17	124	-324.185	13215.765	113.014	0	0	0
318	17	125	-199.388	13525.847	132.985	0	0	0
319	17	Totals:	0	325358.2	-13852.78			
320	17	COG (in):	X: 1.038	Y: 4.592	Z: 288.634			
321	18	12	1614.111	34674.073	-189.899	0	0	0
322	18	27	1411.713	35582.473	171.702	0	0	0
323	18	45	1041.096	37225.225	-58.369	0	0	0
324	18	53	1482.362	36854.038	93.026	0	0	0
325	18	79	529.56	11823.727	251.274	0	0	0
326	18	78	440.18	9132.452	-197.212	0	0	0
327	18	80	-110.153	18224.299	-82.988	0	0	0
328	18	81	-95.713	20146.143	15.662	0	0	0
329	18	82	-84.981	18460.091	109.309	0	0	0
330	18	83	-96.208	18103.917	-121.751	0	0	0
331	18	114	5473.01	13362.588	7.637	0	0	0
332	18	115	5325.981	13351.904	-9.593	0	0	0
333	18	116	-1878.72	8150.974	32.276	0	0	0
334	18	118	-1970.453	7689.476	-25.697	0	0	0
335	18	120	-1602.079	7676.537	-25.697	0	0	0
336	18	121	-1499.687	8142.379	32.276	0	0	0
337	18	124	4320.181	13374.421	-9.592	0	0	0
338	18	125	4566.659	13383.486	7.636	0	0	0
339	18	Totals:	18866.858	325358.2	0			
340	18	COG (in):	X: 1.038	Y: 4.592	Z: 288.634			
341	19	12	107.145	37920.035	1248.952	0	0	0
342	19	27	-92.296	35941.917	1643.532	0	0	0
343	19	45	-436.904	36796.965	1413.264	0	0	0
344	19	53	104.25	33785.271	1622.505	0	0	0
345	19	79	-9.805	13272.209	2898.292	0	0	0
346	19	78	-88.503	7685.629	2451.36	0	0	0
347	19	80	-15.498	18677.308	315.455	0	0	0
348	19	81	-8.908	19479.591	309.5	0	0	0
349	19	82	2.494	18001.004	502.223	0	0	0
350	19	83	.185	18660.067	266.522	0	0	0
351	19	114	676.492	13221.803	-117.22	0	0	0
352	19	115	508.057	13516.205	-132.541	0	0	0
353	19	116	-206.306	8146.405	445.936	0	0	0
354	19	118	-248.652	7681.279	394.413	0	0	0
355	19	120	104.551	7680.691	394.413	0	0	0

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [lb-ft]	MY [lb-ft]	MZ [lb-ft]
356	19	121	122.573	8149.775	445.936	0	0	0
357	19	124	-312.321	13519.136	-132.541	0	0	0
358	19	125	-206.555	13222.913	-117.22	0	0	0
359	19	Totals:	0	325358.2	13852.78			
360	19	COG (in):	X: 1.038	Y: 4.592	Z: 288.634			

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	Pnc/om ...	Pnt/om [...	Mnyy/o...	Mnzz/o...	Cb	Eqn
1	M1	L3X3X4	.846	54.729	9	.002	0	y	10	10482.01	31041.9...	1123.179	1948.352	1...	H2-1
2	M2	HSS4X4X4	.311	69.266	10	.108	0	z	9	69111.6...	92826.3...	10765.4...	10765.4...	1...	H1-1b
3	M3	HSS4X4X4	.335	69.266	8	.045	70.3...	y	10	69111.6...	92826.3...	10765.4...	10765.4...	1.4	H1-1b
4	M4	HSS4X4X4	.604	69.266	16	.071	0	y	10	69111.6...	92826.3...	10765.4...	10765.4...	1...	H1-1a
5	M5	L3X3X4	.585	54.729	10	.008	0	y	17	10482.01	31041.9...	1123.179	1948.352	1...	H2-1
6	M6	C10X15.3	.212	94	11	.030	188	y	11	38562.5...	96574.85	3318.693	27738.7...	1...	H1-1b
7	M7	L3X3X4	.048	69.5	7	.002	0	y	19	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
8	M8	C10X15.3	.957	58	7	.032	0	y	18	25356.5...	96574.85	3318.693	18855.8...	1	H1-1a
9	M9	L3X3X4	.927	67.613	7	.006	135....	y	7	5413.75	31041.9...	1123.179	1780.307	1...	H2-1
10	M10	L3X3X4	.384	58.451	7	.003	116....	y	7	7243.918	31041.9...	1123.179	1879.89	1...	H2-1
11	M11	L4X4X6	.378	57.234	7	.002	0	y	7	25392.26	61652.6...	2926.466	5603.756	1...	H2-1
12	M12	HSS4X4X4	.408	69.266	19	.127	0	y	8	69111.6...	92826.3...	10765.4...	10765.4...	2...	H1-1a
13	M13	L3X3X4	.558	56.251	10	.006	0	y	9	9922.17	31041.9...	1123.179	1931.079	1...	H2-1
14	M14	C10X15.3	.529	83	16	.037	166	y	8	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1a
15	M15	L3X3X4	.755	54.128	7	.003	0	y	18	8447.4	31041.9...	1123.179	1929.596	1...	H2-1
16	M16	L3X3X4	.029	69.5	9	.007	0	y	16	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
17	M17	L4X4X6	.761	53	7	.004	0	y	18	28812.9...	61652.6...	2926.466	5709.898	1...	H2-1
18	M18	HSS4X4X4	.577	69.266	16	.057	0	y	10	69111.6...	92826.3...	10765.4...	10765.4...	1.5	H1-1a
19	M19	L3X3X4	.497	54.729	10	.008	105....	y	19	10482.01	31041.9...	1123.179	1948.352	1...	H2-1
20	M20	C10X15.3	.490	83	16	.034	0	y	8	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1a
21	M21	L3X3X4	.029	69.5	11	.006	0	y	7	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
22	M22	L4X4X6	.721	55.255	7	.004	108....	y	18	28812.9...	61652.6...	2926.466	5709.898	1...	H2-1
23	M23	L3X3X4	.718	54.128	7	.003	108....	y	18	8447.4	31041.9...	1123.179	1929.596	1...	H2-1
24	M24	HSS4X4X4	.318	69.266	8	.043	70.3...	z	11	69111.6...	92826.3...	10765.4...	10765.4...	1.4	H1-1b
25	M25	C10X15.3	.446	282	16	.053	282	y	8	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1b
26	M26	C10X15.3	.887	58	7	.036	0	y	10	25356.5...	96574.85	3318.693	18855.8...	1	H1-1a
27	M27	L3X3X4	.859	67.613	7	.006	135....	y	18	5413.75	31041.9...	1123.179	1780.307	1...	H2-1
28	M28	C10X15.3	.428	94	19	.044	188	y	9	38562.5...	96574.85	3318.693	27648.3...	1...	H1-1a
29	M29	C10X15.3	.213	94	11	.029	188	y	11	38562.5...	96574.85	3318.693	27734.4...	1...	H1-1b
30	M30	HSS4X4X4	.355	69.266	10	.049	70.3...	y	10	69111.6...	92826.3...	10765.4...	10765.4...	1...	H1-1b
31	M31	L3X3X4	.048	69.5	7	.002	0	y	19	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
32	M32	L4X4X6	.384	59.669	7	.002	116....	y	17	25392.26	61652.6...	2926.466	5603.756	1...	H2-1
33	M33	L3X3X4	.389	58.451	7	.003	0	y	7	7243.918	31041.9...	1123.179	1879.89	1...	H2-1
34	M34	HSS4X4X4	.590	69.266	18	.086	0	y	8	69111.6...	92826.3...	10765.4...	10765.4...	1...	H1-1a
35	M35	HSS4X4X4	.419	69.266	19	.141	0	y	10	69111.6...	92826.3...	10765.4...	10765.4...	2...	H1-1a
36	M36	HSS4X4X4	.581	69.266	18	.061	0	y	8	69111.6...	92826.3...	10765.4...	10765.4...	1...	H1-1a
37	M37	C10X15.3	.276	70.315	11	.033	70.3...	y	16	33613.7...	96574.85	3318.693	28562.8...	1...	H1-1b
38	M38	HSS4X4X4	.292	69.266	10	.043	70.3...	y	10	69111.6...	92826.3...	10765.4...	10765.4...	1.4	H1-1b
39	M39	C10X15.3	.454	282	18	.059	282	y	10	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1b
40	M40	C10X15.3	.924	58	7	.030	116	y	16	25356.5...	96574.85	3318.693	18855.8...	1	H1-1a
41	M41	C10X15.3	.513	83	18	.039	166	y	10	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1a
42	M42	C10X15.3	.377	84.729	18	.033	0	y	10	47208.2...	96574.85	3318.693	28562.8...	1...	H1-1a
43	M43	C10X15.3	.266	32.5	7	.034	65	y	16	62262.0...	96574.85	3318.693	25010.0...	1	H1-1a
44	M44	L3X3X4	.743	47.58	7	.002	95.1...	y	10	10932.5...	31041.9...	1123.179	2008.824	1...	H2-1
45	M45	L3X3X4	.029	0	9	.008	0	y	18	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
46	M46	L3X3X4	.036	0	11	.006	0	y	18	14765.6...	31041.9...	1123.179	2114.686	1	H2-1
47	M47	L3X3X4	.672	54.128	7	.004	0	y	16	8447.4	31041.9...	1123.179	1929.596	1...	H2-1

Envelope AISC 14th(360-10): ASD Steel Code Checks (Continued)

	Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	Pnc/om ..	Pnt/om [..	Mnyy/o...	Mnzz/o...	Cb	Eqn
48	M48	L4X4X6	.667	53	7	.003	0	y	7	28812.9..	61652.6..	2926.466	5709.898	1...	H2-1
49	M49	L4X4X6	.817	55.255	7	.004	108....	y	16	28812.9..	61652.6..	2926.466	5709.898	1...	H2-1
50	M50	L3X3X4	.807	54.128	7	.004	108....	y	16	8447.4	31041.9..	1123.179	1929.596	1...	H2-1
51	M51	L3X3X4	.889	67.613	7	.007	135....	y	7	5413.75	31041.9..	1123.179	1780.307	1...	H2-1
52	M52	L3X3X4	.682	54.729	8	.008	105....	y	17	10482.01	31041.9..	1123.179	1948.352	1...	H2-1
53	M53	L3X3X4	.503	56.251	8	.006	0	y	9	9922.17	31041.9..	1123.179	1931.079	1...	H2-1
54	M54	L3X3X4	.500	54.729	8	.009	105....	y	19	10482.01	31041.9..	1123.179	1948.352	1...	H2-1
55	M55	HSS4X4X4	.290	69.266	11	.110	0	z	11	69111.6..	92826.3..	10765.4..	10765.4..	1...	H1-1b
56	M56	C10X15.3	.377	282	7	.045	188	y	11	38562.5..	96574.85	3318.693	26208.1..	1...	H1-1a
57	M57	C10X15.3	.206	94	9	.030	188	y	9	38562.5..	96574.85	3318.693	27753.4..	1...	H1-1b
58	M58	C10X15.3	.206	94	9	.032	188	y	9	38562.5..	96574.85	3318.693	27773.2..	1...	H1-1b
59	M59	L3X3X4	.048	69.5	7	.003	0	y	17	14765.6..	31041.9..	1123.179	2114.686	1	H2-1
60	M60	L3X3X4	.048	69.5	7	.003	0	y	7	14765.6..	31041.9..	1123.179	2114.686	1	H2-1
61	M61	L3X3X4	.354	58.451	7	.003	0	y	17	7243.918	31041.9..	1123.179	1879.89	1...	H2-1
62	M62	L4X4X6	.341	57.234	7	.003	116....	y	9	25392.26	61652.6..	2926.466	5603.756	1...	H2-1
63	M63	L4X4X6	.342	59.669	7	.003	0	y	19	25392.26	61652.6..	2926.466	5603.756	1...	H2-1
64	M64	L3X3X4	.354	58.451	7	.003	0	y	17	7243.918	31041.9..	1123.179	1879.89	1...	H2-1
65	M65	L3X3X4	.859	54.729	11	.002	105....	y	10	10482.01	31041.9..	1123.179	1948.352	1...	H2-1
66	M66	12B14	.724	48.958	16	.188	0	y	16	66540.1..	87757.2..	3376.96	28798.9..	1	H1-1b
67	M67	12B14	.890	76.375	16	.227	0	y	16	66540.1..	87757.2..	3376.96	28798.9..	1	H1-1b
68	M68	12B14	.843	115.542	18	.196	188	y	18	66540.1..	87757.2..	3376.96	28798.9..	1	H1-1b
69	M69	12B14	.901	111.625	18	.228	188	y	18	66540.1..	87757.2..	3376.96	28798.9..	1	H1-1b
70	M70	10B19	.410	78.667	16	.099	115....	y	7	108110...	119279...	5984.628	38095.1..	1...	H1-1b
71	M71	16WFx38.7_1...	.278	121.042	7	.190	166	y	18	225813...	245532...	18827.3..	123952...	1...	H1-1b
72	M72	10B19	.354	78.667	16	.083	120....	y	7	77987.4..	119279...	5984.628	38095.1..	1...	H1-1b
73	M73	10B19	.642	118	18	.320	169....	y	7	106380...	119279...	5984.628	38095.1..	1...	H1-1b
74	M74	16WFx38.7_1...	.286	121.042	7	.187	166	y	16	225813...	245532...	18827.3..	123952...	1...	H1-1b
75	M75	10B19	.382	157.333	18	.081	115....	y	7	77987.4..	119279...	5984.628	38095.1..	1...	H1-1b
76	M76	16WFx38.7_1...	.602	191.917	7	.127	376	y	18	202568...	245532...	18827.3..	123952...	1	H1-1b
77	M77	16WFx38.7_1...	.936	188	7	.211	376	y	18	202568...	245532...	18827.3..	123952...	1	H1-1b
78	M78	14WFx32.4_1...	.591	169.656	7	.149	172....	y	7	91343.6..	205437...	15453.4..	91976.0..	2...	H1-1b
79	M79	14WFx32.4_1...	.609	169.656	7	.154	172....	y	7	190750...	205437...	15453.4..	91976.0..	2...	H1-1b
80	M80	10B19	.433	162.25	11	.229	120....	y	19	99921.0..	119279...	5984.628	38095.1..	1...	H1-1b
81	M81	10B19	.509	73.75	9	.256	115....	y	17	81327.8..	119279...	5984.628	38095.1..	1...	H1-1b
82	M98	14WFx32.4_1...	.352	92	7	.102	184	y	7	161827...	205437...	15453.4..	91976.0..	1...	H1-1b
83	M99	14WFx32.4_1...	.591	97.344	7	.149	94.5...	y	7	91343.6..	205437...	15453.4..	91976.0..	1...	H1-1b
84	M100	14WFx32.4_1...	.360	92	7	.105	0	y	7	195612...	205437...	15453.4..	91976.0..	1	H1-1b
85	M101	14WFx32.4_1...	.609	97.344	7	.154	94.5...	y	7	190750...	205437...	15453.4..	91976.0..	2...	H1-1b
86	M147	8B10	.840	42	8	.197	41.1...	y	8	54607.4..	62108.8..	2941.683	15397.4..	1...	H1-1b
87	M148	8B10	.885	42	10	.207	41.1...	y	10	54607.4..	62108.8..	2941.683	15397.4..	1...	H1-1b
88	M154	W6X15	.029	0	8	.023	48	y	7	122428...	132634...	10833.88	25364.1..	1...	H1-1b*
89	M155	W6X15	.031	0	10	.023	0	y	7	122428...	132634...	10833.88	25364.1..	1...	H1-1b*

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_13220
Site Name:	Riverside CT
Date:	3/24/2023
Prepared By:	J.Vassell
Checked By:	M. Trodden

BLOCK SHEAR CONNECTION CHECK

>> Max Reactions per RISA Output: M49, LC7 **[Max Member Axial]**

Max Axial = 22.7 kips

>> Proposed Connection:

	L, in		W, in				
Member Size =	4	x	4	Proposed L4x4x3/8			
	L_1, in		W, in		L_2, in		t, in
Gusset Plate =	7.5	x	17	x	3	x	0.375
Bolt Shear Spac. =	3 in			Fy =	36	ksi	
Bolt Tension Spac. =	1.5 in			Fu =	58	ksi	
Bolt Dia =	0.625 in			Grade =	A325		
# of Bolts =	2						

>> Check Proposed Bolts: 5/8" DIA A325 Bolts

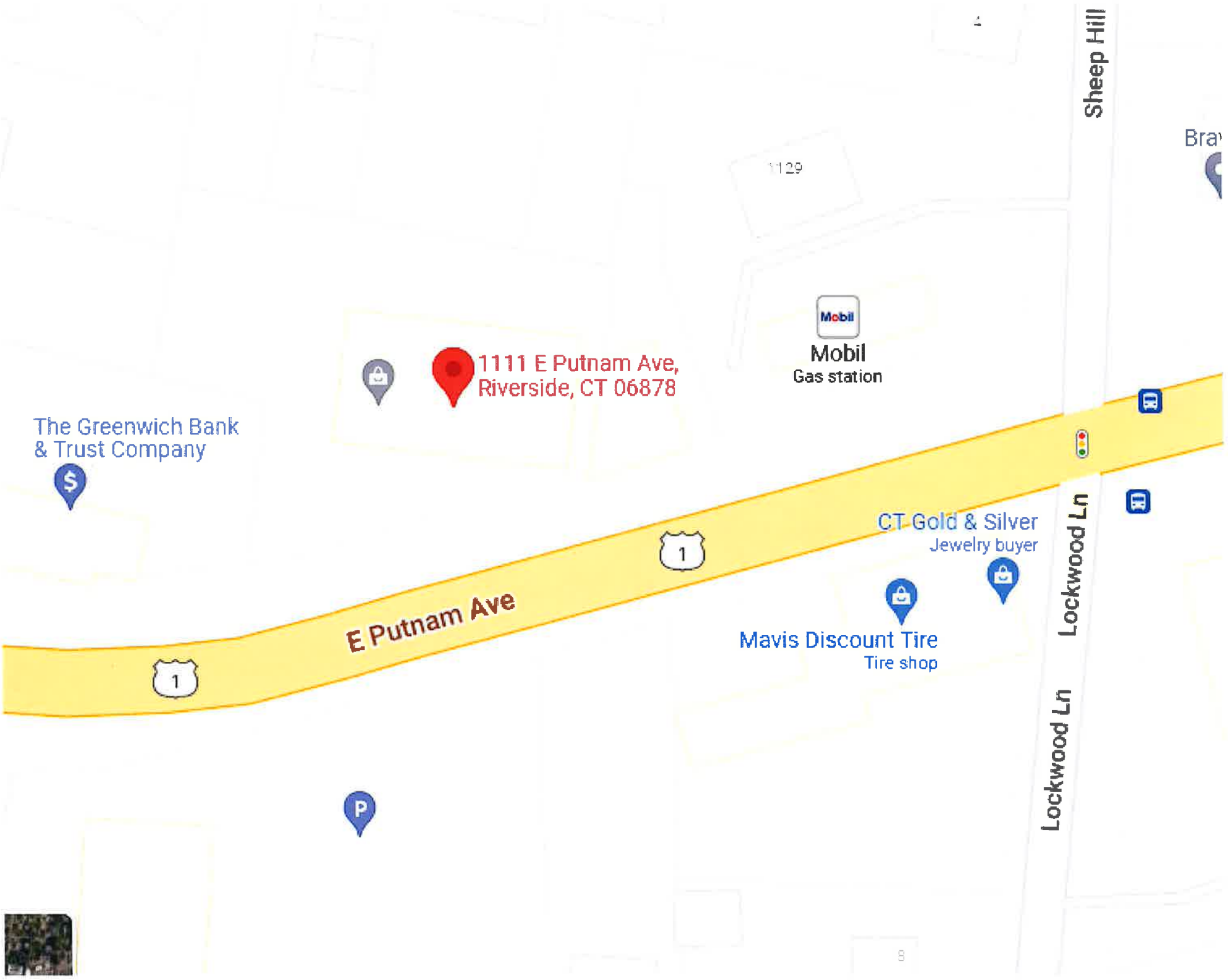
A_{nv} = 1.266 in^2 A_{gv} = 1.688 in^2 A_{nt} = 0.422 in^2

R_N = 30.46 kips *Per Eq. J4-5 of AISC Steel Manual 16th Ed.*

>> Block Shear Interaction:

0.746 **< 1.0, OK**

ATTACHMENT 5


Sheep Hill
1129
Mobil
Mobil
Gas station
1111 E Putnam Ave,
Riverside, CT 06878
The Greenwich Bank
& Trust Company
CT Gold & Silver
Jewelry buyer
E Putnam Ave
1
1
Mavis Discount Tire
Tire shop
Lockwood Ln
Lockwood Ln
P

Tax ID 407/054 Printed 05/29/2018 Card No. 1 of 1

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
12-1010/S

Parent Parcel Number

Property Address
EAST PUTNAM AVENUE 1111

Neighborhood
2300 EAST PUTNAM

Property Class
212 General Office

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	12	
Section & Plat	352	
Routing Number	2365N0104	

Site Description

Topography:

Public Utilities:
Sewer, Electric

Street or Road:

Neighborhood:

Zoning:
LB Local Business

Legal Acres:
0.4993

OWNERSHIP

FOUNTAINHEAD PROPERTIES LLC
% ALLIED PROP MGMT-ATT T TORELLI
116 MASON ST
GREENWICH, CT 06830

LOT NO 10 11 12 & 39B-1 E PUTNAM AVE N 104

TRANSFER OF OWNERSHIP

Date		
12/22/1999	FOUNTAINHEAD PROPERTIES L	Bk/Pg: 3369, 199 $3000000
01/11/1967	NA	Bk/Pg: 750, 310 $0

COMMERCIAL

VALUATION RECORD

Assessment Year		10/31/2005	10/01/2010	10/01/2015	10/01/2015	10/01/2015	10/01/2016	10/01/2017
Reason for Change		2005 Revised	2010 Reval	2015 Prelim	2015 Final	2015 BAA	2016 List	2017 List
VALUATION	L	2967500	2323700	2383600	2383600	2383600	2383600	2383600
Market	B	3192300	2894700	4115900	4115900	3615900	3615900	3216400
	T	6159800	5218400	6499500	6499500	5999500	5999500	5600000
VALUATION	L	2077250	1626590	1668520	1668520	1668520	1668520	1668520
70% Assessed	B	2234610	2026290	2881130	2881130	2531130	2531130	2251480
	T	4311860	3652880	4549650	4549650	4199650	4199650	3920000

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				21749.50	109.59	109.59	2383600		2383600

BA15: Decrease Total value by $500,000
BP14: 14-2192: Lessee - Version Wireless, Antennas $21,000, nvc
DBA: Wind Office Bldg
GEN: Ext wall material: Brk, Stl, Gls
Antennas Income $192,548 2015 Income
STIP: 2015 GL & 2016 GL

Permit Number / Type	FilingDate	Est. Cost Field Visit / Est. Sqft

Supplemental Cards

TRUE TAX VALUE 2383600

Supplemental Cards
TOTAL LAND VALUE 2383600

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

	B	1	2	U
Frame		Yes	Yes	Yes
Brick				
Metal				
Guard				

FRAMING

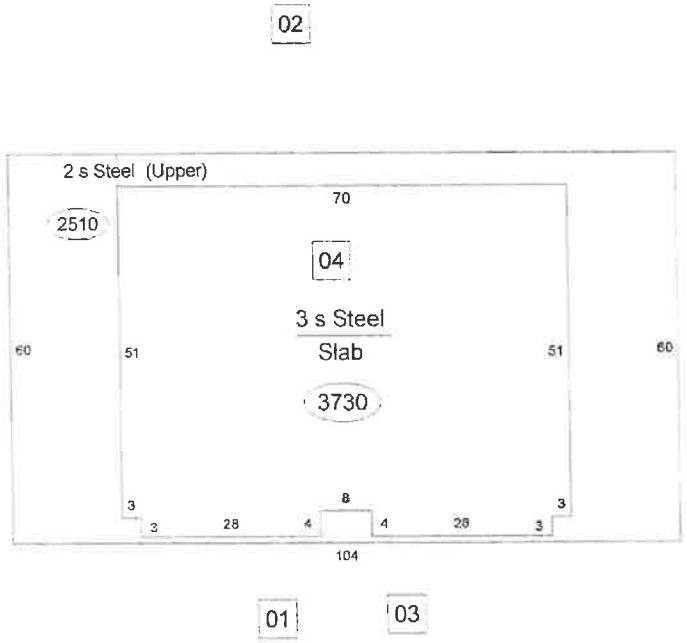
	B	1	2	U
F Prf	0	3730	6240	6240

FINISH

	UF	SF	FO	FD
1	0	0	0	3730
2	0	0	0	6240
U	0	0	0	6240
Total	0	0	0	16210

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	3730	6240	6240
Sprink	0	3730	6240	6240



(LCM: 150.00)

SPECIAL FEATURES

Description	Value

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	GENOFF	0.00		Avg-	1969	1985	AV	0.00	N	0.00	6240	0	0	0	150	100	3699600
01	PAVING	0.00	85	Good	1969	1985	AV	4.60	N	10.35	16000	165600	13	0	100	100	144100
02	RTMCONC	10.00	6D	Good	1969	1985	AV	26.00	N	58.50	10x 56	3280	13	0	100	100	2900
03	RTMCONC	5.00	6D	Good	1969	1985	AV	26.00	N	58.50	5x 90	5270	13	0	100	100	4600
04	ELEVCON	3.00	2B	Avg+	1969	1985	AV	169000	N	304200	1@ 0	304200	13	0	100	100	264700

Data Collector/Date	Appraiser/Date	Neighborhood	Supplemental Cards TOTAL IMPROVEMENT VALUE	4115900
JLT 12/08/1999	TOS 10/01/2015	Neigh 9300 AV		

ATTACHMENT 6

Riverside

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 05/24/2023 US POSTAGE $003.19 ZIP 06103 041L12203937 OLD STATE HOUSE STATION 06103 MAY 24 2023
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Fred Camillo, First Selectman Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
2.	Patrick LaRow, Director of Planning and Zoning Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
3.	Fountainhead Property LLC 116 Mason Street Greenwich, CT 06830				
4.					
5.					
6.					