Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts

January 17, 2020

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**
630 James Farm Road, Stratford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 98-foot level of the existing 110-foot tower at 630 James Farm Road in Stratford, Connecticut (the "Property"). The tower and Property are owned by Dana Ravanis and Darcy Stiber. The Siting Council approved Cellco's shared use of the tower in 2002 (TS-VER-138-021017). The tower was approved by the Stratford Zoning Commission in 1984. A copy of the Zoning Commission approval is included in Attachment 1.

On May 28, 2019, the Council approved Cellco's proposed facility modifications (EM-VER-138-190418). Cellco expects to complete those modifications in Q1 of 2020. In addition to that work, Cellco also intends to install three (3) integrated antenna/RRH devices and six (6) additional HYBRIFLEX™ fiber optic antenna cables. Included in Attachment 2 is a set of project plans and specifications for the integrated antenna/RRH unit and HYBRIFLEX™ antenna cable.

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 Stratford Mayor, Laura R. Hoydick; Susmitha Attota, Stratford's Town Planner; and Dana Ravanis and Darcy Stiber, the owners of the Property and tower.

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. Cellco's additional integrated antenna/RRH units will be located on Cellco's antenna mounting platform at the 98-foot level on the 110-foot tower.

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 operation of the facility with the new integrated antenna/RRH units together with the modifications approved in EM-VER-138-190418 will not increase radio frequency (RF) emissions to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for RF emissions at each of Cellco's operating frequencies, as modified, are included behind Attachment 3. These tables demonstrate that Cellco's modified facility will comply with the RF emissions standards established by the FCC.

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

6. The tower, the tower foundation and the antenna mounts can support Cellco's proposed modifications. (*See* Structural Analysis Report and Mount Analysis Opinion Letter included in Attachment 4).

A copy of the parcel map and owner information for the Property is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owners of the Property 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:
Laura R. Hoydick, Stratford Mayor
Susmitha Attota, Stratford Town Planner
Dana Ravanis and Darcy Stiber
Tim Parks

ATTACHMENT 1

600226 VOL. 589 PG. 857

TOWN OF STRATFORD

ZONING - SPECIAL EXCEPTION OR VARIANCE, RECORDING, GEN. STAT. SEC. 8-3d

1. NAME OF RECORD OWNER EVERD FEDORKO & VELMA R. FEDORKO

NAME OF APPLICANT (If other than owner)

2. DESCRIPTION OF PREMISES

A. Street Address 630 JAMES FARM ROAD

B. Lot No. NONE Name of Record Map NONE

C. Description of Property (If lot number is not available.)

DEED REFERENCE - Volume 208 Page 389 Zone RSm1

3. NATURE OF VARIANCE

NATURE OF SPECIAL PERMIT

NATURE OF SPECIAL EXCEPTION TO ERECT A WINDMILL FOR ELECTRICITY

4. BY-LAW, ORDINANCE OR REGULATION WHICH IS VARIED - Sec. 30

of the Zoning Regulations

CONDITIONS ATTACHED TO DECISION YES

5. DATE OF PUBLIC HEARING NOVEMBER 16, 1983

6. DATE OF DECISION DECEMBER 20, 1983

LEGAL NOTICE PUBLISHED IN THE BRIDGEPORT POST ON DECEMBER 22, 1983

7. APPROVED BY: BOARD OF ZONING APPEALS

PLANNING AND ZONING COMMISSION XX

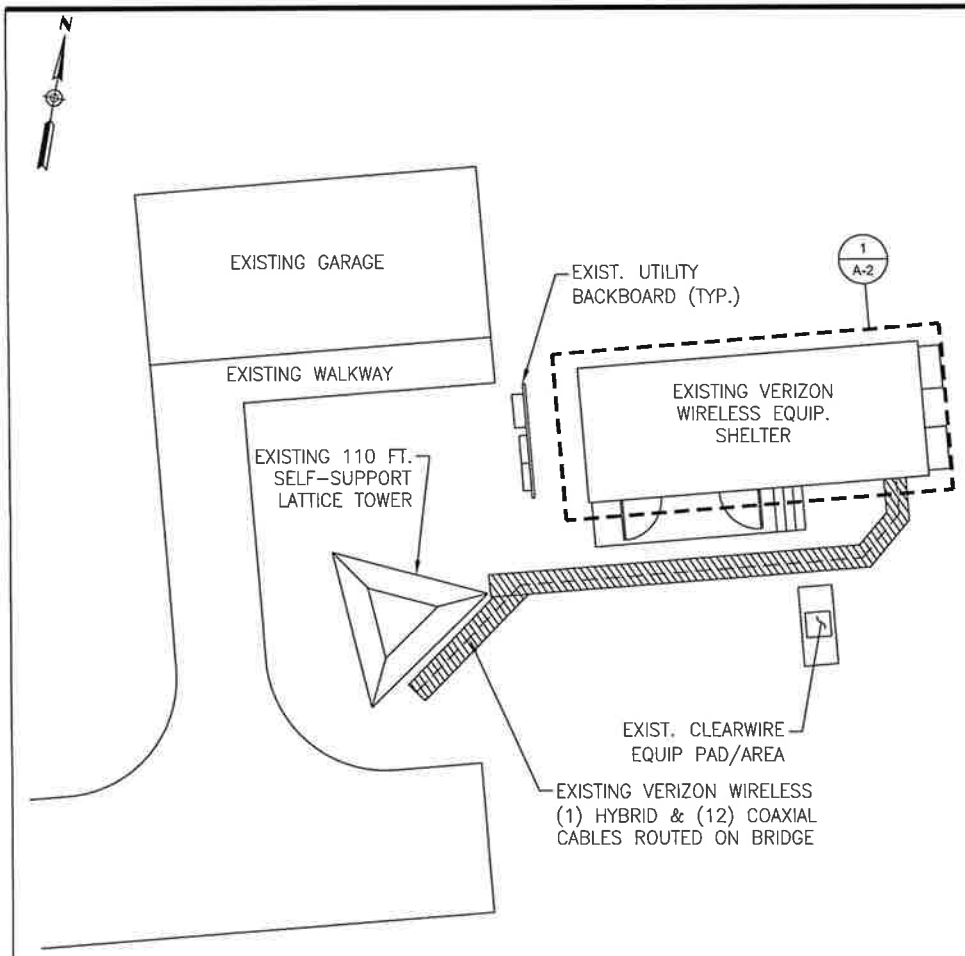
SECRETARY/PLANNING ADMINISTRATOR Michael Sotto

DATE JANUARY 13, 1984

NOTE: In accordance with Section 21.2 of the Zoning Regulations of the Town of Stratford, if a building permit is not obtained within eighteen months from the date of decision, this approval is null and void.

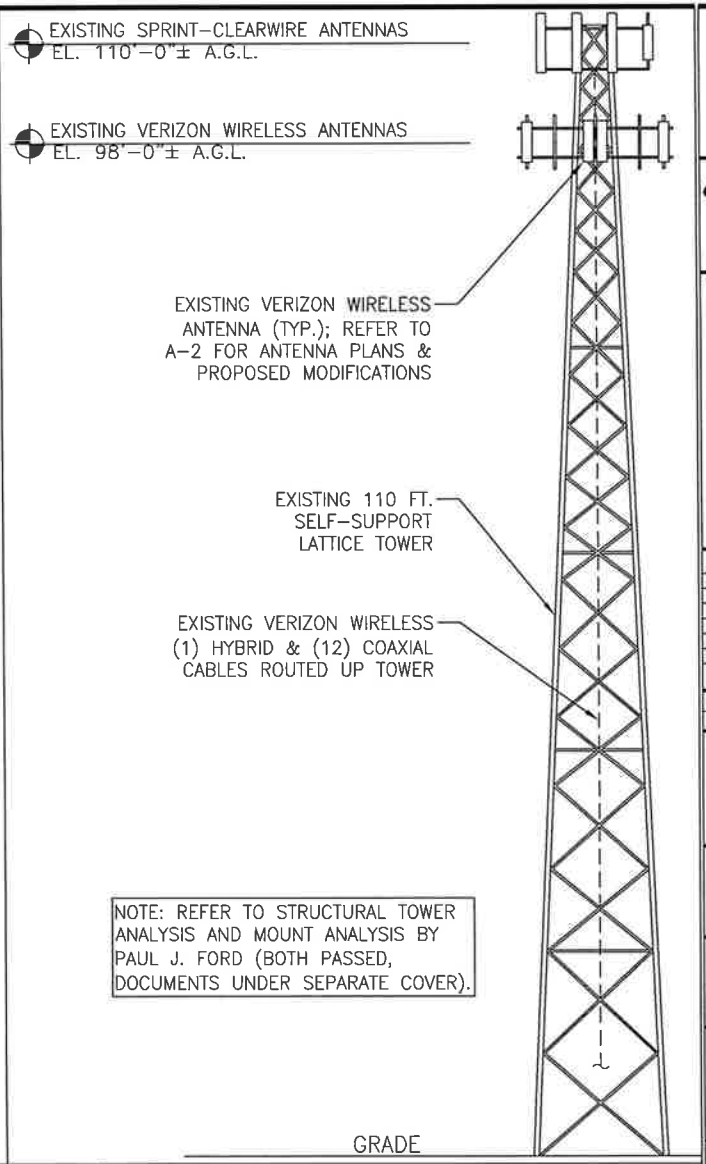
Received for record JAN 17 1984 at 9:41 AM Attest Town Clerk

ATTACHMENT 2



NOTES:
1. COMPOUND PLAN IS BASED EXISTING DRAWINGS ON FILE WITH CT SITING COUNCIL AND A LIMITED DESIGN VISIT ON 3-27-18 FOR THE PURPOSE OF DETERMINING CABLE LENGTHS. A COMPOUND SURVEY WAS NOT PERFORMED.
2. PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
3. ELEVATION HEIGHTS ARE BASED ON EXISTING DRAWINGS ON FILE WITH CT SITING COUNCIL.
4. REFER TO STRUCTURAL EVALUATION BY OTHERS.

1 COMPOUND PLAN
Scale: 3/32" = 1'-0"



NOTE: REFER TO STRUCTURAL TOWER ANALYSIS AND MOUNT ANALYSIS BY PAUL J. FORD (BOTH PASSED, DOCUMENTS UNDER SEPARATE COVER).

2 ELEVATION
Scale: 1/16" = 1'-0"

verizon
WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
201-456-1624
onair@optonline.net

LICENSURE

STATE OF CONNECTICUT
DAVID A. WEINPAHL
NO. 22144
LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO	DATE	DESCRIPTION
0	11-21-18	REVIEW
1	01-13-19	REVISED PER CLIENT COMMENTS

DRAWN BY:	MF
CHECKED BY:	DW

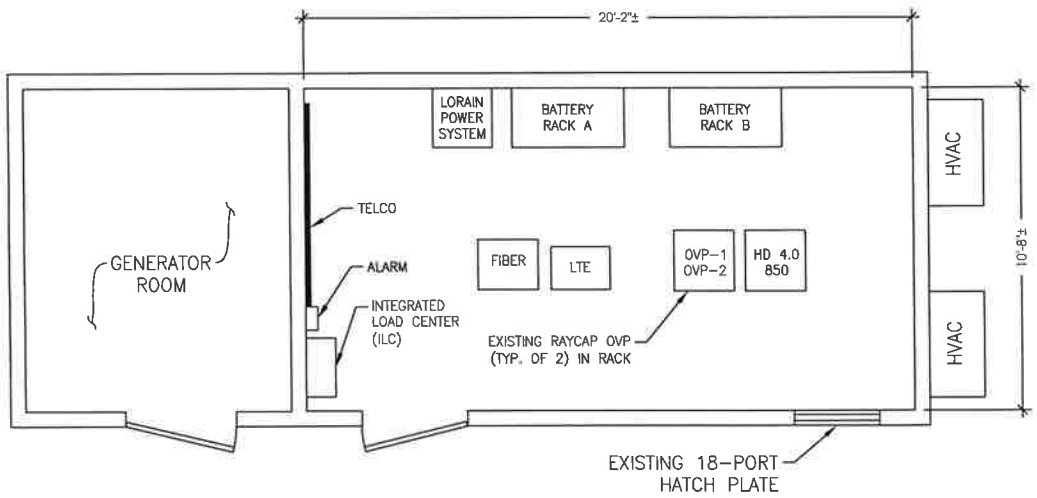
PROJECT NAME:
ANTMO CBRS CARRIER ADD CABLE DRAWINGS

SITE NAME:
STRATFORD N CT

SITE ADDRESS:
FEDORKO TOWER
630 JAMES FARM RD.
STRATFORD, CT 06614

SHEET TITLE:
COMPOUND PLAN & ELEVATION

SHEET NUMBER:
A-1

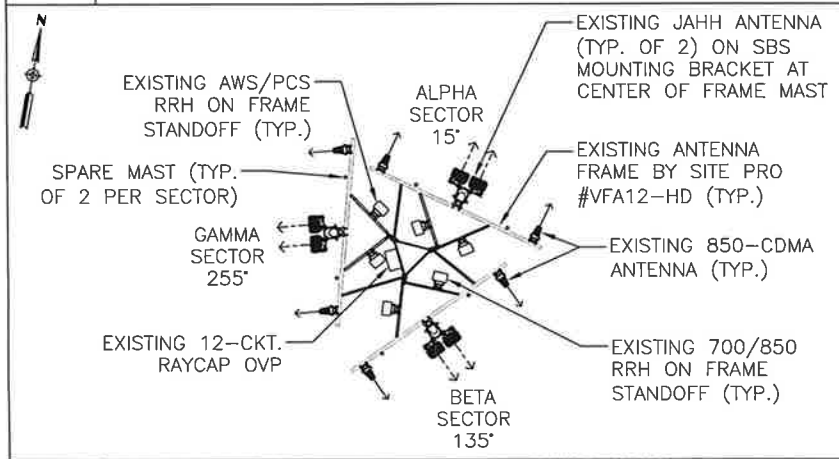


NOTES:
1. CONTRACTOR TO INSTALL NEW AND/OR MODIFY EXISTING EQUIP. RM. CABLE ENTRY PORTS FOR THE PROJECT AS REQUIRED INCLUDING THE REMOVAL OF ANY EXISTING COAXIAL CABLES AS DIRECTED BY VERIZON WIRELESS.

2. SHELTER PLAN IS BASED ON LIMITED MEASUREMENTS FOR THE PURPOSE OF LOCATING THE PROPOSED OVP INSIDE. A DETAILED EQUIPMENT ROOM SURVEY WAS NOT PERFORMED.

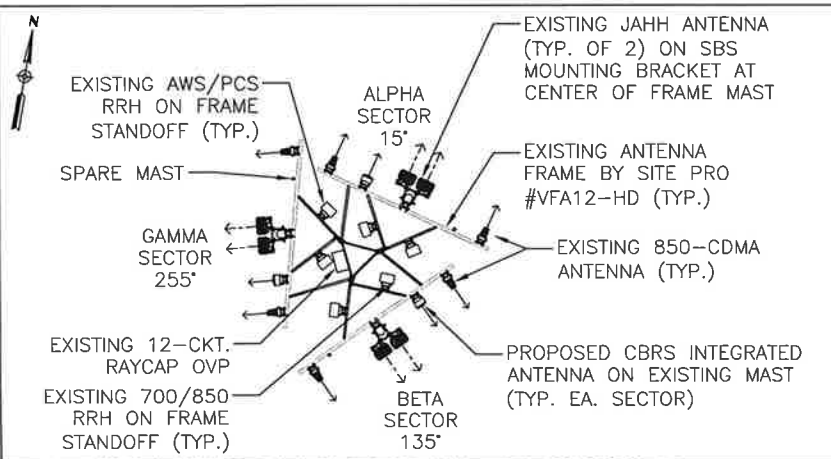
1 SHELTER PLAN - GRADE

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



2 ANTENNA PLAN @ 98 FT. - EXISTING

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



3 ANTENNA PLAN @ 98 FT. - PROPOSED

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

verizon
WIRELESS COMMUNICATIONS FACILITY

20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC
88 Foundry Pond Road
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STATE OF CONNECTICUT · DAVID A. WEIMPAHL · NO. 22144 · LICENSED PROFESSIONAL ENGINEER

DAVID A. WEIMPAHL, P.E.
CT LIC NO. 22144

SUBMITTALS

NO.	DATE	DESCRIPTION
0	11.25.19	REVIEW
1	01.13.20	REVISED PER CLIENT COMMENTS

NO.	DATE	DESCRIPTION

DRAWN BY:	MF
CHECKED BY:	DW

PROJECT NAME:
ANTMO CBRS CARRIER ADD CABLE DRAWINGS

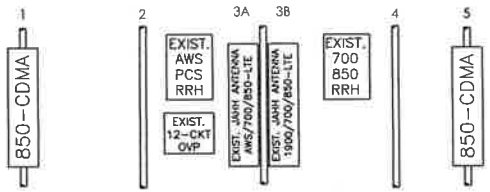
SITE NAME:
STRATFORD N CT

SITE ADDRESS:
FEDORKO TOWER
630 JAMES FARM RD.
STRATFORD, CT 06614

SHEET TITLE:
SHELTER PLAN & ANTENNA PLANS

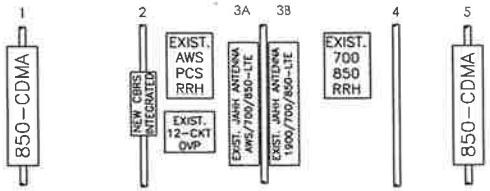
SHEET NUMBER:
A-2

EXISTING - ALPHA



(VIEWED FROM REAR)

PROPOSED - ALPHA



(VIEWED FROM REAR)

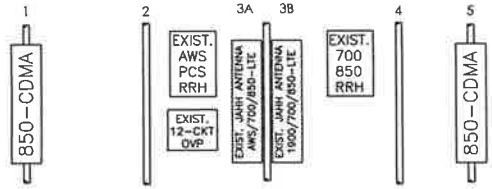
SECTOR: ALPHA				
POSITION	EXISTING ANTENNA	PROPOSED - SEE NOTE 1		
		ANTENNA	RRH	OVP
1	850-CDMA	EXISTING TO REMAIN	-	-
2	SPARE MAST	CBRS INTEGRATED	EXIST. DUAL BAND AWS/PCS	SEE NOTE 1
3	JAHH's ON SBS BRACKET	EXISTING TO REMAIN	-	-
4	SPARE MAST	SPARE MAST	EXIST. DUAL BAND 700-850	-
5	850-CDMA	EXISTING TO REMAIN	-	-

NOTES:
1. EXISTING 12-CKT. RAYCAP OVP (ALL SECTORS TO USE ONE OVP CENTRALLY LOCATED ON TOWER; ONE OVP WILL FEED ALL NEW CBRS INTEGRATED RRH's)

1 ANTENNA SECTOR CONFIGURATIONS - ALPHA

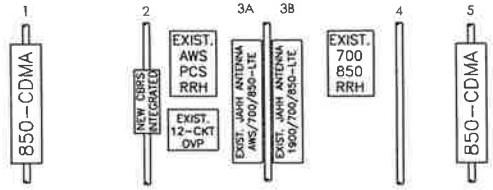
Scale: N.T.S.

EXISTING - BETA



(VIEWED FROM REAR)

PROPOSED - BETA



(VIEWED FROM REAR)

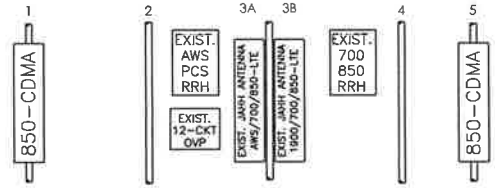
SECTOR: BETA				
POSITION	EXISTING ANTENNA	PROPOSED - SEE NOTE 1		
		ANTENNA	RRH	OVP
1	850-CDMA	EXISTING TO REMAIN	-	-
2	SPARE MAST	CBRS INTEGRATED	EXIST. DUAL BAND AWS/PCS	SEE NOTE 1
3	JAHH's ON SBS BRACKET	EXISTING TO REMAIN	-	-
4	SPARE MAST	SPARE MAST	EXIST. DUAL BAND 700-850	-
5	850-CDMA	EXISTING TO REMAIN	-	-

NOTES:
1. EXISTING 12-CKT. RAYCAP OVP (ALL SECTORS TO USE ONE OVP CENTRALLY LOCATED ON TOWER; ONE OVP WILL FEED ALL NEW CBRS INTEGRATED RRH's)

2 ANTENNA SECTOR CONFIGURATIONS - BETA

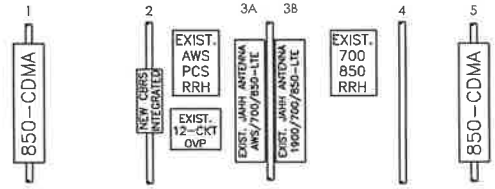
Scale: N.T.S.

EXISTING - GAMMA



(VIEWED FROM REAR)

PROPOSED - GAMMA



(VIEWED FROM REAR)

SECTOR: GAMMA				
POSITION	EXISTING ANTENNA	PROPOSED - SEE NOTE 1		
		ANTENNA	RRH	OVP
1	850-CDMA	EXISTING TO REMAIN	-	-
2	SPARE MAST	CBRS INTEGRATED	EXIST. DUAL BAND AWS/PCS	SEE NOTE 1
3	JAHH's ON SBS BRACKET	EXISTING TO REMAIN	-	-
4	SPARE MAST	SPARE MAST	EXIST. DUAL BAND 700-850	-
5	850-CDMA	EXISTING TO REMAIN	-	-

NOTES:
1. EXISTING 12-CKT. RAYCAP OVP (ALL SECTORS TO USE ONE OVP CENTRALLY LOCATED ON TOWER; ONE OVP WILL FEED ALL NEW CBRS INTEGRATED RRH's)

3 ANTENNA SECTOR CONFIGURATIONS - GAMMA

Scale: N.T.S.

verizon

WIRELESS COMMUNICATIONS FACILITY

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DAVID WEINPAHL, P.E.
CT LIC NO 22144

SUBMITTALS

NO	DATE	DESCRIPTION
0	11.25.19	REVIEW
1	01.13.20	REVISED PER CLIENT COMMENTS

DRAWN BY:	MF
CHECKED BY:	DW

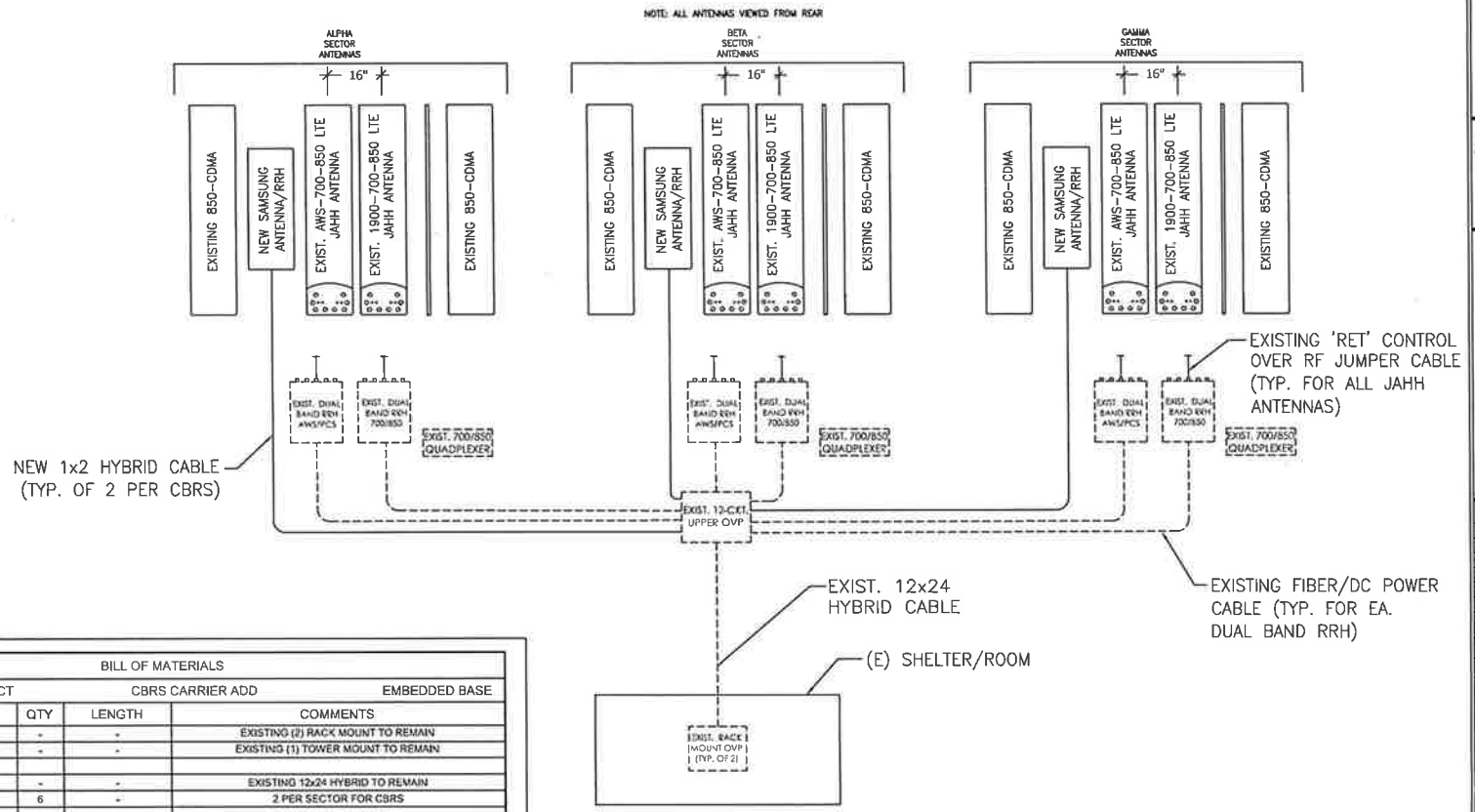
PROJECT NAME:
ANTMO CBRS CARRIER ADD CABLE DRAWINGS

SITE NAME:
STRATFORD N CT

SITE ADDRESS:
FEDORKO TOWER
630 JAMES FARM RD.
STRATFORD, CT 06614

SHEET TITLE:
ANTENNA SECTOR CONFIGURATIONS

SHEET NUMBER:
A-3



BILL OF MATERIALS			
SITE NAME: STRATFORD N CT	CBRS CARRIER ADD		EMBEDDED BASE
DESCRIPTION	QTY	LENGTH	COMMENTS
LOWER OVP	-	-	EXISTING (2) RACK MOUNT TO REMAIN
12-CKT. UPPER OVP	-	-	EXISTING (1) TOWER MOUNT TO REMAIN
12x24 HYBRID CABLE	-	-	EXISTING 12x24 HYBRID TO REMAIN
1x2 HYBRID CABLE	6	-	2 PER SECTOR FOR CBRS
RET CONTROL CABLE	-	-	
1/2" JUMPERS	-	-	
DUAL BAND AWS/PCS RRH	-	-	EXISTING TO REMAIN
DUAL BAND 700/850 RRH	-	-	EXISTING TO REMAIN
QUADPLEXERS	-	-	EXISTING TO REMAIN
CBRS INTEGRATED	3	-	SAMSUNG ANTENNA/RRH - 1 PER SECTOR
AWS ANTENNA	-	-	EXISTING JAHH ANTENNA WITH 700 & 850-LTE
700 ANTENNA	-	-	SHARED WITH AWS & 1900 JAHH
1900 ANTENNA	-	-	EXISTING JAHH ANTENNA WITH 700 & 850-LTE
850-CDMA ANTENNA	-	-	EXISTING TO REMAIN - 2 PER SECTOR
850-LTE ANTENNA	-	-	SHARED WITH AWS & 1900 JAHH
SBS MOUNTING BRACKET	-	-	EXISTING TO REMAIN

NOTES:
1. ITEMS SHOWN ARE FOR MAJOR DESIGN ELEMENTS ONLY. REFER TO VERIZON WIRELESS B.O.M. FOR ALL MANUFACTURER PART NUMBERS AND ACCESSORY ITEMS REQUIRED FOR A COMPLETE INSTALLATION.
2. PROVIDE TERMINATION CAPS ON ALL UN-USED ANTENNA PORTS.

GENERAL NOTES:

1. CONTRACTOR SHALL REFER TO THE LATEST VERIZON WIRELESS RF DATA SHEET WHICH MAY INCLUDE ANTENNA SECTOR AZIMUTHS/ANTENNA CHANGES, ETC. THAT ARE REQUIRED AS PART OF THE PROJECT.
2. CONTRACTOR SHALL SECURE ALL CONTROL CABLES IN ACCORDANCE WITH INDUSTRY STANDARDS AND MANUFACTURERS INSTRUCTIONS. EXTERIOR CONTROL CABLES MAY BE TAPED OR TIE-WRAPPED TO EXISTING COAXIAL CABLES EVERY 4 FT. MAX. FOR HORIZONTAL RUNS. CONTRACTOR MAY USE HOISTING GRIPS AT TOP OF VERTICAL CABLE RUNS IN CERTAIN APPLICATIONS.
3. RET CABLES SHALL BE ROUTED AND SECURED ON STRUCTURAL MEMBERS ONLY - DO NOT "LOOP" THE CABLES IN MID-AIR BETWEEN ANTENNAS
4. COAX, RF JUMPER CABLES AND QUADPLEXER WIRING NOT SHOWN.

1 BILL OF MATERIALS
Scale: N.T.S.

2 RF PLUMBING DIAGRAM
Scale: N.T.S.

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STATE OF CONNECTICUT DAVID A. WEINPAHL NO. 22144 LICENSED PROFESSIONAL ENGINEER

DAVID WEINPAHL, P.E.
CT LIC NO. 22144

NO	DATE	DESCRIPTION
0	01.25.19	REVIEW
1	01.15.20	REVISED PER CLIENT COMMENTS

DRAWN BY: MF
CHECKED BY: DW

PROJECT NAME:
ANTMO CBRS CARRIER ADD CABLE DRAWINGS

SITE NAME:
STRATFORD N CT

SITE ADDRESS:
FEDORKO TOWER
630 JAMES FARM RD.
STRATFORD, CT 06614

SHEET TITLE:
RF PLUMBING DIAGRAM & B.O.M.

SHEET NUMBER:
A-4

[CBRS] Clip-on Antenna Specifications

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

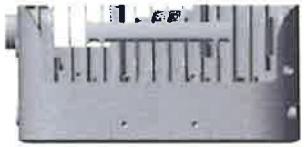
Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D)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

Antenna includes integrated cable with connector

* Design is subject to minor change

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

[CBRS RRH] Spec.



Current Size: 216 x 307 x 105.5 mm (6.99L)
(8.5 x 12.1 x 4.1 inch., excluding Port Guard)
Design is subject to minor change

Item	Specification
Band	Band 48 (3.5 GHz)
Frequency	3550~3700 MHz
IBW	150 MHz
OBW	80 MHz
# of Carriers	5/10/15/20 MHz x 4 carriers
RF Chain	4TX / 4RX
RF Output Power & EIRP	4 path x 5 W (Total: 20 W = 43 dBm) (EIRP: 47 dBm / 10 MHz)
RX Sensitivity	Typical : -101.5 dBm @ 1 Rx (3GPP 36.104, Wide Area)
Modulation	256-QAM support (1024-QAM with 1~2dB power back-off)
Input Power	-48 VDC (-38 to -57 VDC, 1 SKU), with clip-on AC-DC converter (Option)
Power Consumption	About 160 Watt @ 100% RF load, typical conditions
Volume	Under 7L (w/o Antenna), Under 9.6L (with antenna)
Weight	Under 8.0 kg (18.64 lb) (w/o Antenna), Under 10.5 Kg (with ant.)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (W/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A [B48] : FCC 47 CFR 96.41 e)
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, duplex or Bi-Di
CPRI Cascade	Not supported
# of Antenna Port	4
External Alarm (UDA)	4
RET	AISG 2.2
TMA & built-in Bias-T I//F and PIM cancellation	Not supported
Mounting Options	Pole, wall, tower, back to back, side by side (for external ant), 3 RRH with Clip-on Antenna on the pole
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
NB-IoT	Not Supported (HW Resource reserved for 1 Guard Band NB-IoT per LTE carrier)
Spectrum Analyzer	TX/RX Support
External Alarm (UDA)	4
5G NR	Support with S/W upgrade
XRAN	Support with S/W upgrade

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

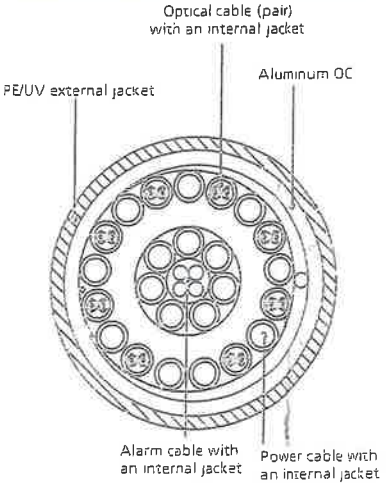


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 3

Far Field Approximation
with downtilt variation

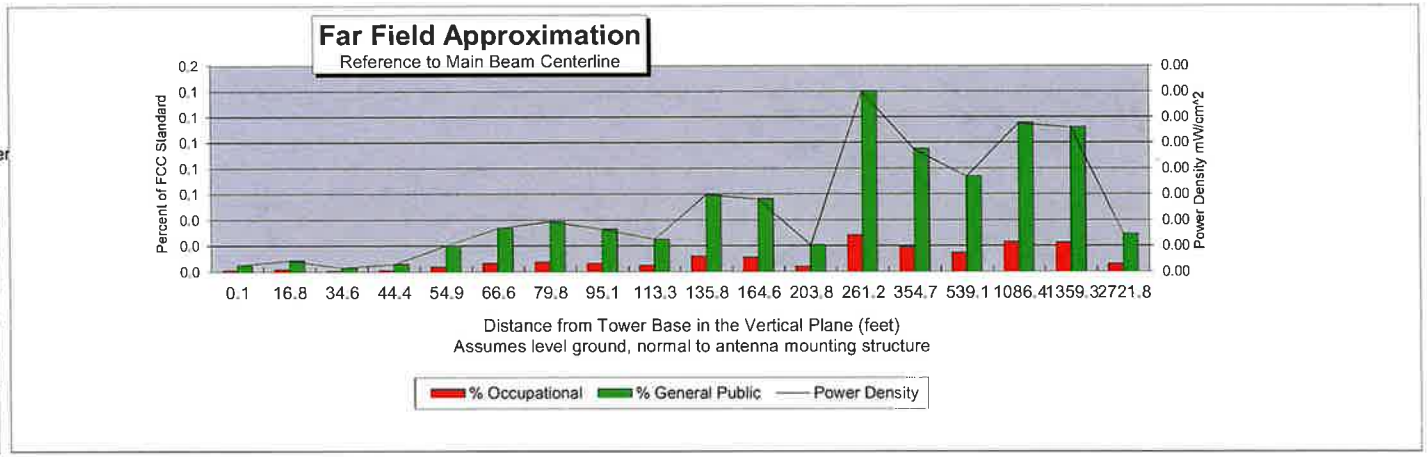
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**746.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**14.9**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
Number of channels:	



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	

Antenna Type JAHH-65B-R3B
Max% 0.14%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

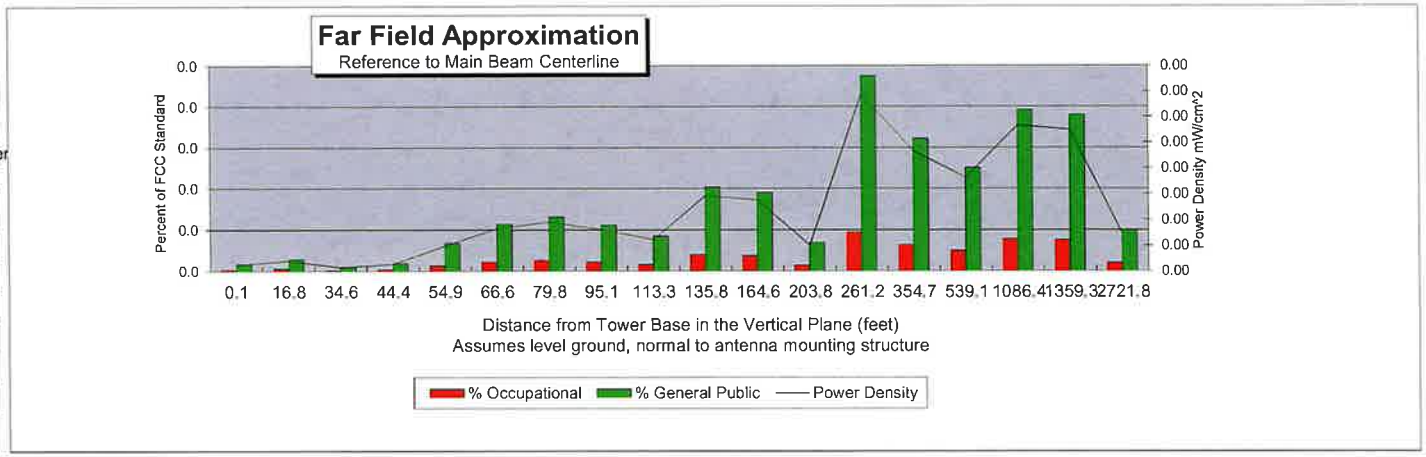
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**14.1**
Antenna Size (in.):	**48.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**2.0**
Power @ J4 (w):	**60.0**
Number of channels:	**3**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Antenna Type APL868013
Max% 0.02%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

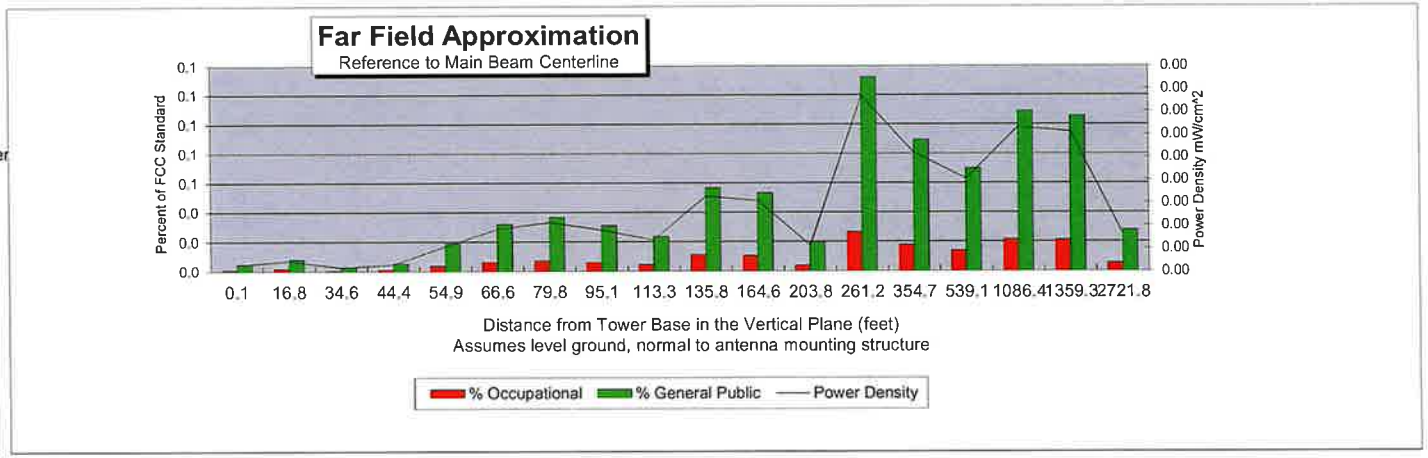
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**15.3**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
Number of channels:	



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0

Antenna Type JAHH-65B-R3B
Max% 0.13%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

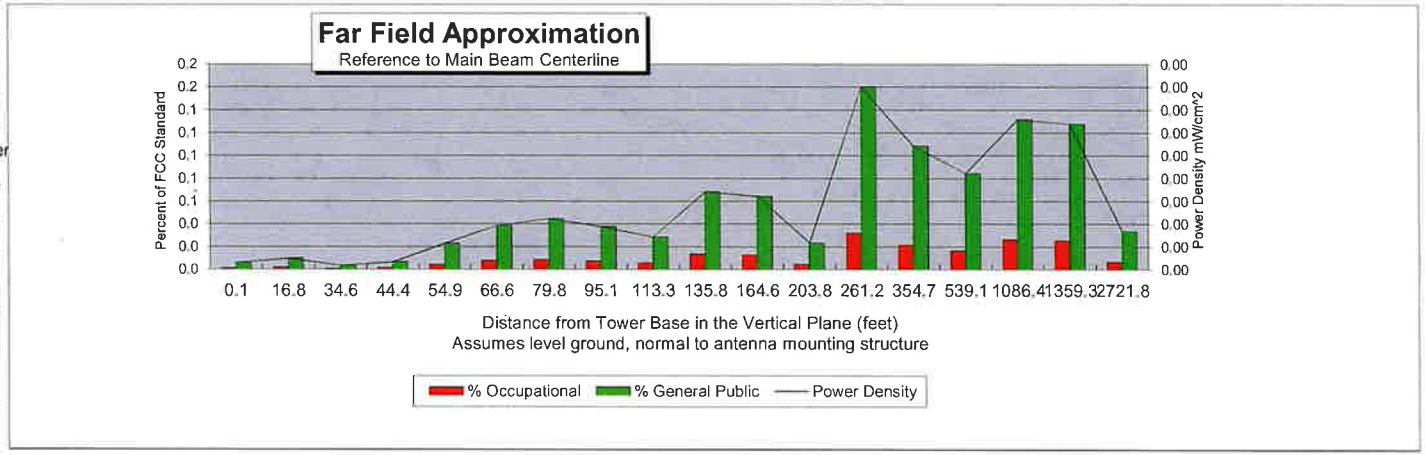
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**1970.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**18.5**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
Number of channels:	**4**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.0

Antenna Type JAHH-65B-R3B
Max% 0.16%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

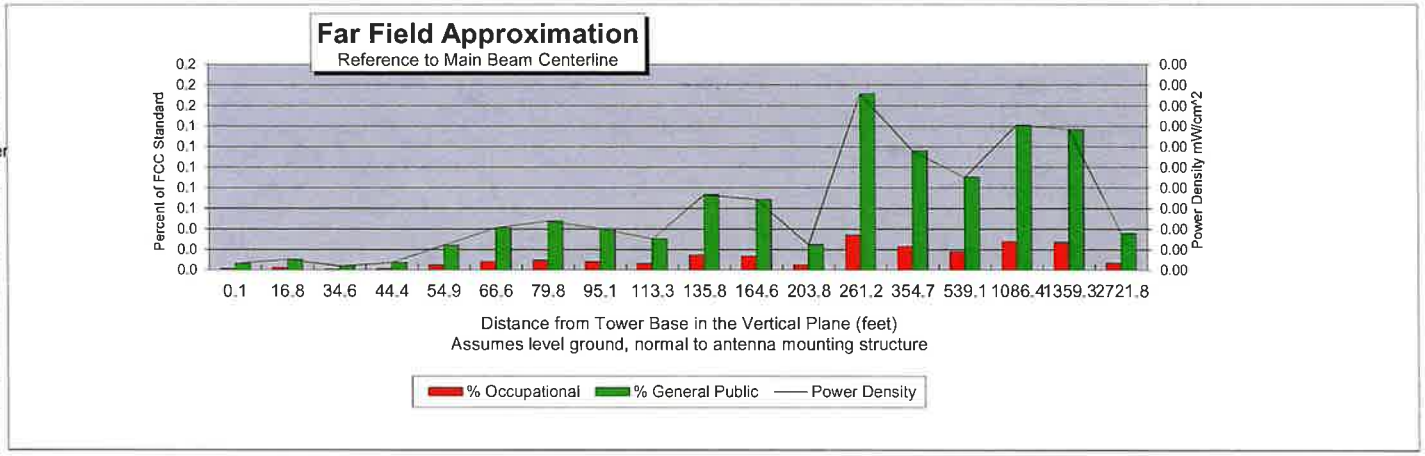
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**2145.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**18.8**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**160.0**
Number of channels:	



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.0	

Antenna Type JAHH-65B-R3B
Max% 0.17%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

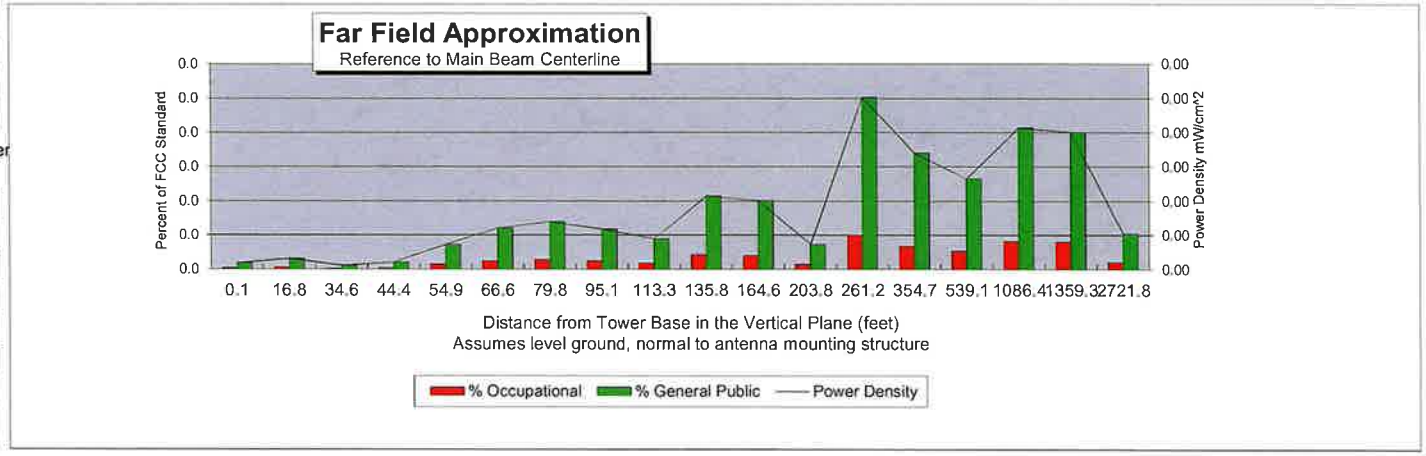
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	STRATFORD N CT
Site #:	65145
Date:	01/08/20
Name:	Shiva Gadasu
File Name:	STRATFORD N CT - FF Power

Operating Freq. (MHz)	**3550.0**
Antenna Height (ft):	**98.0**
Antenna Gain (dBi):	**12.5**
Antenna Size (in.):	**12.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**20.0**
Number of channels:	**4**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	95.0	96.5	101.1	104.8	109.7	116.0	124.1	134.4	147.9	165.7	190.1	224.9	277.9	367.2	547.4	1090.6	1362.6	2723.5
Distance from Antenna Structure Base in Horizontal plane	0.1	16.8	34.6	44.4	54.9	66.6	79.8	95.1	113.3	135.8	164.6	203.8	261.2	354.7	539.1	1086.4	1359.3	2721.8
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Antenna Type XXDWMM-12.5-65-8T
Max% 0.01%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 P
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 4

PAUL J. FORD & COMPANY

Report Date:	January 14, 2020
Client:	On Air Engineering, LLC 88 Foundry Pond Road Cold Spring, NY 10516 Attn: David Weinpahl, P.E. (201) 456-4624 dweinpahl@onaireng.com
Structure:	Existing 110-ft Self Support
Verizon Site Name:	Stratford N CT
Site Address:	630 James Farm Rd.
City, County, State:	Stratford, Fairfield County, CT
Latitude, Longitude:	41.2453, -73.1201
PJF Project:	42918-0023.004.8700_R1

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the tower stress level for a proposed Verizon antenna/equipment modification.

Analysis Criteria:

Reference Standard:	2018 Connecticut State Building Code with the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1.
Ultimate Wind Speed:	125 mph 3-second gust wind speed without ice
Nominal Wind Speed:	97 mph 3-second gust wind speed without ice
Ice Wind Speed:	50 mph 3-second gust wind speed with 0.75" ice
Service Wind Speed:	60 mph (Serviceability) without ice
IBC Site Criteria:	Risk Category II, Topographic Category 1, Exposure Category B

Proposed Appurtenance Loads:

The structure was analyzed with the addition of the proposed appurtenance loads shown in Table 1 combined with the existing loads shown in Table 2 of this report.

Summary of Analysis Results:

Existing Structure:	Pass - 79.5%
Existing Foundation:	Pass - 68.2%

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and On Air Engineering, LLC. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Anthony Pelino

Anthony Pelino, E.I.
Structural Designer
apelino@pauljford.com

RMD

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

01/14/2020

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 110 ft Self Support tower designed by Rohn.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Nominal Wind Speed:	96.1 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
98.0	98.0	3	samsung telecommunications	CBRS Integrated XXDWMM-12.5-65-8T/RRH-RT4401-48A	-	-	-

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
110.0	110.0	1	andrew	VHLP25 11-DW2	2 2	1/2 2	1
		3	alcatel lucent	RRH2WB0			
		3	argus technologies	LLPX310VR-V1 w/ Mount Pipe			
		1	andrew	VHLP2-18-DW1			
		1	miscl	Junction Box			
		3	tower mounts	Pirod 12' V Frame			
98.0	98.0	6	rfs celwave	APL868013 w/ Mount Pipe	12 1	1-5/8 Hybrid	1
		6	commscope	JAHH-65B-R3B w/ Mount Pipe			
		3	commscope	BSAMNT-SBS-2-2			
		3	samsung telecommunications	B5/13 RRH-BR04C			
		3	samsung telecommunications	B2/B66A RRH-BR049			
		3	commscope	CBC78T-DS-43-2X			
		1	rfs celwave	DB-C1-12C-24AB-0Z			
		3	tower mounts	Site Pro 1 VFA12-HD			

Notes:
1) Existing Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Mapping	ProVertic, CTFF682A, 11/2/2018	-	On Air Engineering
Previous Structural Analysis	Centek, 15001.096, 11/7/2016	-	On Air Engineering
Previous Structural Analysis	Westchester, 11/15/2017	-	On Air Engineering
Previous Structural Analysis	CHA, 20621.1047.1203 R1, 3/1/2010	-	On Air Engineering
Photos	On Air Engineering	-	On Air Engineering
RFDS	Verizon, 1554527, 9/18/2019	-	On Air Engineering

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	110 - 100	Leg	Pipe 3.5" x 0.300" (3 XS)	3	-9.59	129.06	7.4	Pass
T2	100 - 80	Leg	Pipe 3.5" x 0.300" (3 XS)	31	-34.05	119.32	28.5	Pass
T3	80 - 60	Leg	Pipe 3.5" x 0.300" (3 XS)	67	-52.87	119.32	44.3	Pass
T4	60 - 40	Leg	Pipe 3.5" x 0.300" (3 XS)	103	-69.02	128.67	53.6	Pass
T5	40 - 20	Leg	Pipe 4.0" x 0.318" (3.5 XS)	145	-84.84	126.30	67.2	Pass
T6	20 - 0	Leg	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	169	-100.79	139.49	72.3	Pass
T1	110 - 100	Diagonal	L 1.5 x 1.5 x 1/8	27	-2.07	9.04	22.9 63.5 (b)	Pass
T2	100 - 80	Diagonal	L 1.5 x 1.5 x 1/8	60	-2.53	6.67	37.9 79.5 (b)	Pass
T3	80 - 60	Diagonal	L 1.5 x 1.5 x 1/8	75	-1.95	3.82	51.0 60.6 (b)	Pass
T4	60 - 40	Diagonal	L 2.5 x 2.5 x 3/16	111	-2.66	14.20	18.7 39.0 (b)	Pass
T5	40 - 20	Diagonal	L 2 x 2 x 1/8	153	-2.92	7.55	38.7 64.8 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T6	20 - 0	Diagonal	L 2.5 x 2.5 x 3/16	177	-3.19	7.47	42.6 47.3 (b)	Pass
T4	60 - 40	Secondary Horizontal	L 2 x 2 x 1/8	115	-1.20	7.16	16.7	Pass
T1	110 - 100	Top Girt	L 1.5 x 1.5 x 1/8	5	-0.34	8.22	4.1 10.3 (b)	Pass
T2	100 - 80	Top Girt	L 1.5 x 1.5 x 1/8	35	0.06	9.18	0.7 2.0 (b)	Pass
T3	80 - 60	Top Girt	L 1.5 x 1.5 x 1/8	71	-0.34	2.97	11.4 13.4 (b)	Pass
T4	60 - 40	Top Girt	L 2.5 x 2.5 x 3/16	107	-0.55	8.73	6.3 9.6 (b)	Pass
T5	40 - 20	Top Girt	L 2.5 x 2.5 x 3/16	149	-0.67	5.06	13.3	Pass
T6	20 - 0	Top Girt	L 3.5 x 3.5 x 1/4	173	-0.85	12.88	6.6 12.5 (b)	Pass
							Summary	
						Leg (T6)	72.3	Pass
						Diagonal (T2)	79.5	Pass
						Secondary Horizontal (T4)	16.7	Pass
						Top Girt (T3)	13.4	Pass
						Bolt Checks	79.5	Pass
						Rating =	79.5	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	68.2	Pass
1	Base Foundation Structural	0	Unknown	Unknown
1	Base Foundation Soil Interaction	0	65.6	Pass

Structure Rating (max from all components) =	79.5%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

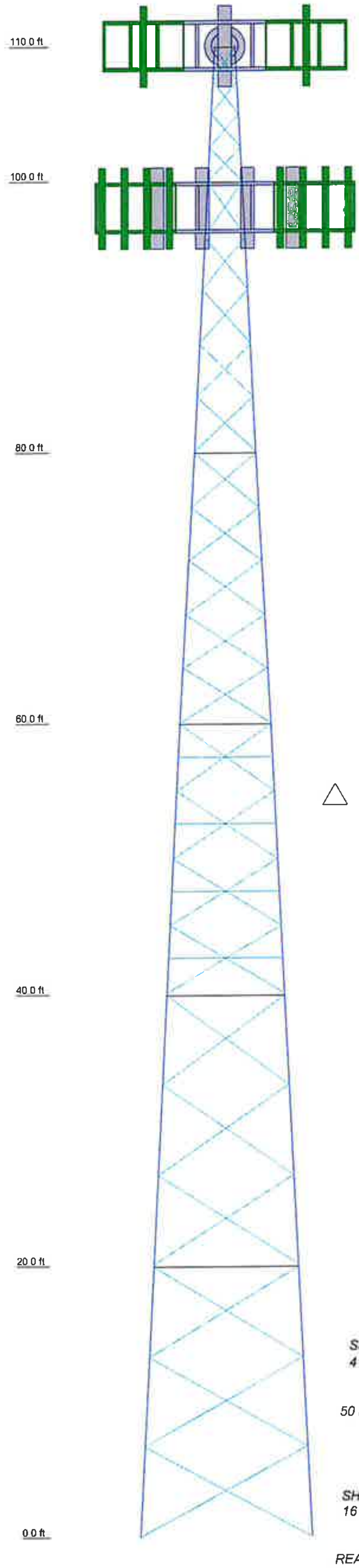
4.1) Recommendations

The tower and its foundation(s) have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	[illegible]	[illegible]	T4	[illegible]	[illegible]	[illegible]	
Legs	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	Pipe 4.0" x 0.318" (3.5 XS)	Pipe 3.5" x 0.300" (3 XS)				
Leg Grade	A572-50						
Diagonals	L 2.5 x 2.5 x 3/16	L 2 x 2 x 1/8	L 2.5 x 2.5 x 3/16	L 1.5 x 1.5 x 1/8			
Diagonal Grade	A36						
Top Girts	L 3.5 x 3.5 x 1/4	L 2.5 x 2.5 x 3/16		L 1.5 x 1.5 x 1/8			
Sec. Horizontals	N.A.		L 2 x 2 x 1/8	N.A.			
Face Width (ft)	12.635	10.619	8.603	6.587	4.571	2.555	1.547
# Panels @ (ft)	3 @ 6.63889	3 @ 6.61111	4 @ 4.95833	10 @ 3.96667		4 @ 2.47917	
Weight (K) 7.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pirod 12' V Frame	110	(2) JAHH-65A-R3B_TIA w/ Mount Pipe	98
Pirod 12' V Frame	110	(2) JAHH-65A-R3B_TIA w/ Mount Pipe	98
Pirod 12' V Frame	110	(2) JAHH-65A-R3B_TIA w/ Mount Pipe	98
ETCR-654L12H6 w/ Mount Pipe	110	BSAMNT-SBS-2-2 (Mount Bracket)	98
ETCR-654L12H6 w/ Mount Pipe	110	BSAMNT-SBS-2-2 (Mount Bracket)	98
ETCR-654L12H6 w/ Mount Pipe	110	BSAMNT-SBS-2-2 (Mount Bracket)	98
TD-RRH8x20-25	110	B2/B66A RRH-BR049	98
TD-RRH8x20-25	110	B2/B66A RRH-BR049	98
TD-RRH8x20-25	110	B2/B66A RRH-BR049	98
PCS 1900MHz 4x45W-65MHz	110	B5/B13 RRH-BR04C	98
PCS 1900MHz 4x45W-65MHz	110	B5/B13 RRH-BR04C	98
PCS 1900MHz 4x45W-65MHz	110	GPS	60
FD-RRH-2x50-800	110	L 2" x 2" x 1/4" x 4'-0"	37.6
FD-RRH-2x50-800	110	L 2" x 2" x 1/4" x 4'-0"	37.6
FD-RRH-2x50-800	110	L 2" x 2" x 1/4" x 4'-0"	37.6
3 ft standard	110	L 2" x 2" x 1/4" x 4'-0"	35.4
2 ft standard	110	L 2" x 2" x 1/4" x 4'-0"	35.4
B5/B13 RRH-BR04C	98	L 2" x 2" x 1/4" x 4'-0"	35.4
DB-C1-12C-24AB-0Z	98	L 2" x 2" x 1/4" x 4'-0"	31
CBC78T-DS-43-2X	98	L 2" x 2" x 1/4" x 4'-0"	31
CBC78T-DS-43-2X	98	L 2" x 2" x 1/4" x 4'-0"	31
CBC78T-DS-43-2X	98	L 2" x 2" x 1/4" x 4'-0"	28.81
Site Pro 1 VFA12-HD	98	L 2" x 2" x 1/4" x 4'-0"	28.81
Site Pro 1 VFA12-HD	98	L 2" x 2" x 1/4" x 4'-0"	28.81
Site Pro 1 VFA12-HD	98	L 2" x 2" x 1/4" x 4'-0"	24.4
CBRS w/ Mount Pipe	98	L 2" x 2" x 1/4" x 4'-0"	24.4
CBRS w/ Mount Pipe	98	L 2" x 2" x 1/4" x 4'-0"	24.4
CBRS w/ Mount Pipe	98	L 2" x 2" x 1/4" x 4'-0"	22.2
(2) APL868013_TIA w/ Mount Pipe	98	L 2" x 2" x 1/4" x 4'-0"	22.2
(2) APL868013_TIA w/ Mount Pipe	98	L 2" x 2" x 1/4" x 4'-0"	22.2
(2) APL868013_TIA w/ Mount Pipe	98		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 79.5%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 104 K
SHEAR: 11 K

UPLIFT: -91 K
SHEAR: 9 K

AXIAL 50 K
SHEAR 4 K
MOMENT 328 kip-ft
TORQUE 3 kip-ft
50 mph WIND - 0.75 in ICE

AXIAL 17 K
SHEAR 16 K
MOMENT 1070 kip-ft
TORQUE 8 kip-ft
REACTIONS - 97 mph WIND

Paul J. Ford and Company 250 E. Broad St., Ste 600 Columbus, OH 43215 Phone: 614-221-6679 FAX:	Job: Existing 110' SST, Stratford CT		
	Project: 42918-0023		
	Client: On Air Engineering	Drawn by: ADP	App'd:
	Code: TIA-222-G	Date: 12/05/19	Scale: NTS
	Path: [illegible]		Dwg No. E-1

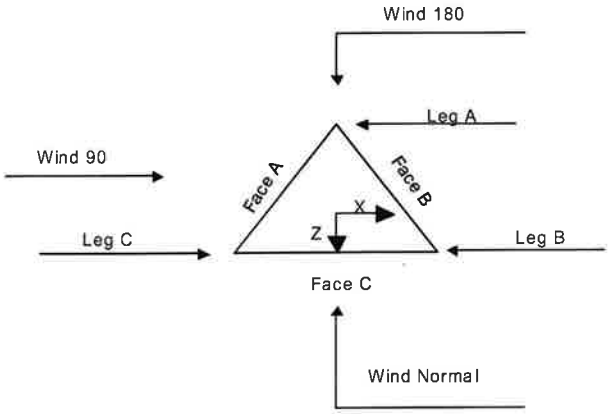
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 110.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 1.55 ft at the top and 12.64 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Fairfield County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97 mph.
4) Structure Class II.
5) Exposure Category B.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 0.75 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in tower member design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals		Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz		Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	110.00-100.00			1.55	1	10.00
T2	100.00-80.00			2.56	1	20.00
T3	80.00-60.00			4.57	1	20.00
T4	60.00-40.00			6.59	1	20.00
T5	40.00-20.00			8.60	1	20.00
T6	20.00-0.00			10.62	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	110.00-100.00	2.48	X Brace	No	No	1.00	0.00
T2	100.00-80.00	3.97	X Brace	No	No	1.00	1.00
T3	80.00-60.00	3.97	X Brace	No	No	1.00	1.00
T4	60.00-40.00	4.96	X Brace	No	Yes	1.00	1.00
T5	40.00-20.00	6.61	X Brace	No	No	1.00	1.00
T6	20.00-0.00	6.64	X Brace	No	No	1.00	0.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 110.00-100.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T2 100.00-80.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T3 80.00-60.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)
T4 60.00-40.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T5 40.00-20.00	Pipe	Pipe 4.0" x 0.318" (3.5 XS)	A572-50 (50 ksi)	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T6 20.00-0.00	Arbitrary Shape	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	A572-50 (50 ksi)	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 110.00-100.00	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 100.00-80.00	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 80.00-60.00	Equal Angle	L 1.5 x 1.5 x 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 60.00-40.00	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 40.00-20.00	Equal Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 20.00-0.00	Equal Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 60.00-40.00	Equal Angle	L 2 x 2 x 1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 110.00-100.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00
T2 100.00-80.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00
T3 80.00-60.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00
T4 60.00-40.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00
T5 40.00-20.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T6 20.00-0.00	0.00	0.00	A36 (36 ksi)	1	1	1.05	36.00	36.00	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors[1] X Brace Diags X	K Factors[1] X Brace Diags Y	K Factors[1] K Brace Diags X	K Factors[1] K Brace Diags Y	K Factors[1] Single Diags X	K Factors[1] Single Diags Y	K Factors[1] Girts X	K Factors[1] Girts Y	K Factors[1] Horiz. X	K Factors[1] Horiz. Y	K Factors[1] Sec. Horiz. X	K Factors[1] Sec. Horiz. Y	K Factors[1] Inner Brace X	K Factors[1] Inner Brace Y
T1 110.00-100.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 100.00-80.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 80.00-60.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 60.00-40.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	0.5	1	1
T5 40.00-20.00	No	No	1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 20.00-0.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 110.00-100.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 100.00-80.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 110.00-100.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T2 100.00-80.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T3 80.00-60.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T4 60.00-40.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T5 40.00-20.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T6 20.00-0.00	Flange	0.75 A325N	0	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	98.00 - 10.00	0.00	0.35	14	7	1.00	1.98		0.92
1.5" flat Cable Ladder Rail	B	No	No	Af (CaAa)	98.00 - 10.00	0.00	0.35	2	2	24.00 1.50	1.50		1.80
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	60.00 - 10.00	0.00	0.49	1	1	0.50	0.63		0.15
1.5" Conduit (1 1/4" EMT)	A	No	No	Ar (CaAa)	98.00 - 10.00	0.00	0.5	2	2	0.50	1.51		1.00
1.5" Conduit (1 1/4" EMT)	A	No	No	Ar (CaAa)	110.00 - 10.00	0.00	0.5	1	1	0.50	1.51		1.00
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	110.00 - 10.00	0.00	0.48	2	1	0.50	0.63		0.15
LDF6-50 (1 1/4" foam)	A	No	No	Ar (CaAa)	110.00 - 10.00	0.00	0.47	3	3	0.50	1.55		0.66
***													

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
CBRS w/ Mount Pipe	A	From Leg	4.00 0 0	0.000	98.00	No Ice	1.71	1.17	0.03
						1/2" Ice	1.93	1.44	0.05
						1" Ice	2.17	1.72	0.07
CBRS w/ Mount Pipe	B	From Leg	4.00 0 0	0.000	98.00	No Ice	1.71	1.17	0.03
						1/2" Ice	1.93	1.44	0.05
						1" Ice	2.17	1.72	0.07
CBRS w/ Mount Pipe	C	From Leg	4.00 0 0	0.000	98.00	No Ice	1.71	1.17	0.03
						1/2" Ice	1.93	1.44	0.05
						1" Ice	2.17	1.72	0.07
(2) APL868013_TIA w/ Mount Pipe	A	From Leg	4.00 0 0	0.000	98.00	No Ice	3.10	4.80	0.03
						1/2" Ice	3.48	5.42	0.07
							3.85	6.04	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(2) APL868013_TIA w/ Mount Pipe	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	3.10 3.48 3.85	4.80 5.42 6.04	0.03 0.07 0.11
(2) APL868013_TIA w/ Mount Pipe	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	3.10 3.48 3.85	4.80 5.42 6.04	0.03 0.07 0.11
(2) JAHH-65A-R3B_TIA w/ Mount Pipe	A	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	6.92 7.37 7.81	5.68 6.44 7.14	0.07 0.13 0.20
(2) JAHH-65A-R3B_TIA w/ Mount Pipe	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	6.92 7.37 7.81	5.68 6.44 7.14	0.07 0.13 0.20
(2) JAHH-65A-R3B_TIA w/ Mount Pipe	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	6.92 7.37 7.81	5.68 6.44 7.14	0.07 0.13 0.20
BSAMNT-SBS-2-2 (Mount Bracket)	A	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.07 0.09 0.11
BSAMNT-SBS-2-2 (Mount Bracket)	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.07 0.09 0.11
BSAMNT-SBS-2-2 (Mount Bracket)	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.07 0.09 0.11
B2/B66A RRH-BR049	A	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B2/B66A RRH-BR049	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B2/B66A RRH-BR049	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	A	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
DB-C1-12C-24AB-0Z	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	4.06 4.32 4.58	3.10 3.34 3.58	0.03 0.07 0.11
CBC78T-DS-43-2X	A	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
CBC78T-DS-43-2X	B	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
CBC78T-DS-43-2X	C	From Leg	4.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
Site Pro 1 VFA12-HD	A	From Leg	0.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	0.66 0.80 1.01
Site Pro 1 VFA12-HD	B	From Leg	0.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	0.66 0.80 1.01
Site Pro 1 VFA12-HD	C	From Leg	0.00 0 0	0.000	98.00	No Ice 1/2" Ice 1" Ice	13.20 19.50 25.80	9.20 14.60 19.50	0.66 0.80 1.01
***									
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00 0 0	0.000	22.20	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00 0 0	0.000	22.20	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00 0 0	0.000	22.20	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00 0 0	0.000	24.40	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00 0 0	0.000	24.40	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00 0 0	0.000	24.40	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00 0 0	0.000	28.81	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00 0 0	0.000	28.81	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00 0 0	0.000	28.81	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00 0 0	0.000	31.00	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00 0 0	0.000	31.00	No Ice 1/2" Ice 1" Ice	1.31 1.60 1.90	1.31 1.60 1.90	0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00	0	0	0.000	31.00	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00	0	0	0.000	35.40	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00	0	0	0.000	35.40	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00	0	0	0.000	35.40	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	A	From Face	0.00	0	0	0.000	37.60	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	B	From Face	0.00	0	0	0.000	37.60	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
L 2" x 2" x 1/4" x 4'-0"	C	From Face	0.00	0	0	0.000	37.60	No Ice	1.31	1.31	0.01
								1/2" Ice	1.60	1.60	0.02
								1" Ice	1.90	1.90	0.03
***											
Pirod 12' V Frame	A	From Leg	0.00	0	0	0.000	110.00	No Ice	9.22	3.08	0.30
								1/2" Ice	12.97	6.17	0.39
								1" Ice	16.72	9.26	0.48
Pirod 12' V Frame	B	From Leg	0.00	0	0	0.000	110.00	No Ice	9.22	3.08	0.30
								1/2" Ice	12.97	6.17	0.39
								1" Ice	16.72	9.26	0.48
Pirod 12' V Frame	C	From Leg	0.00	0	0	0.000	110.00	No Ice	9.22	3.08	0.30
								1/2" Ice	12.97	6.17	0.39
								1" Ice	16.72	9.26	0.48
ETCR-654L12H6 w/ Mount Pipe	A	From Leg	4.00	0	0	0.000	110.00	No Ice	10.90	4.61	0.10
								1/2" Ice	11.57	5.18	0.19
								1" Ice	12.24	5.77	0.28
ETCR-654L12H6 w/ Mount Pipe	B	From Leg	4.00	0	0	0.000	110.00	No Ice	10.90	4.61	0.10
								1/2" Ice	11.57	5.18	0.19
								1" Ice	12.24	5.77	0.28
ETCR-654L12H6 w/ Mount Pipe	C	From Leg	4.00	0	0	0.000	110.00	No Ice	10.90	4.61	0.10
								1/2" Ice	11.57	5.18	0.19
								1" Ice	12.24	5.77	0.28
TD-RRH8x20-25	A	From Leg	4.00	0	0	0.000	110.00	No Ice	4.05	1.53	0.07
								1/2" Ice	4.30	1.71	0.10
								1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	4.00	0	0	0.000	110.00	No Ice	4.05	1.53	0.07
								1/2" Ice	4.30	1.71	0.10
								1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00	0	0	0.000	110.00	No Ice	4.05	1.53	0.07
								1/2" Ice	4.30	1.71	0.10
								1" Ice	4.56	1.90	0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
FD-RRH-2x50-800	A	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
FD-RRH-2x50-800	B	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
FD-RRH-2x50-800	C	From Leg	4.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.36 1.52 1.68	3.01 3.22 3.45	0.05 0.08 0.10
***									
GPS	B	From Leg	0.50 0 0	0.000	60.00	No Ice 1/2" Ice 1" Ice	0.15 0.24 0.31	0.15 0.24 0.31	0.02 0.02 0.02
****									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
3 ft standard	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0 0	Worst		110.00	3.00	No Ice 1/2" Ice 1" Ice	7.06 7.47 7.88	0.10 0.18 0.25
2 ft standard	A	Paraboloid w/o Radome	From Leg	4.00 0 0	Worst		110.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	0.01 0.06 0.10
***											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice

Comb. No.	Description
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	110 - 100	2.17	42	0.176	0.101
T2	100 - 80	1.80	42	0.170	0.056
T3	80 - 60	1.12	42	0.140	0.028
T4	60 - 40	0.60	42	0.100	0.015
T5	40 - 20	0.26	47	0.058	0.010
T6	20 - 0	0.06	47	0.024	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	3 ft standard	42	2.17	0.176	0.101	130811

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
98.00	CBRS w/ Mount Pipe	42	1.73	0.168	0.050	58638
60.00	GPS	42	0.60	0.100	0.015	24426
37.60	L 2" x 2" x 1/4" x 4'-0"	47	0.23	0.053	0.010	35678
35.40	L 2" x 2" x 1/4" x 4'-0"	47	0.20	0.049	0.009	34949
31.00	L 2" x 2" x 1/4" x 4'-0"	47	0.15	0.041	0.007	33300
28.81	L 2" x 2" x 1/4" x 4'-0"	47	0.13	0.038	0.006	32535
24.40	L 2" x 2" x 1/4" x 4'-0"	47	0.09	0.031	0.005	31101
22.20	L 2" x 2" x 1/4" x 4'-0"	47	0.08	0.027	0.004	30701

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	110 - 100	9.06	18	0.728	0.424
T2	100 - 80	7.53	18	0.707	0.233
T3	80 - 60	4.71	18	0.585	0.118
T4	60 - 40	2.52	18	0.418	0.061
T5	40 - 20	1.09	18	0.243	0.043
T6	20 - 0	0.27	18	0.102	0.014

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	3 ft standard	18	9.06	0.728	0.424	34911
98.00	CBRS w/ Mount Pipe	18	7.23	0.700	0.210	15299
60.00	GPS	18	2.52	0.418	0.061	5853
37.60	L 2" x 2" x 1/4" x 4'-0"	18	0.96	0.224	0.040	8682
35.40	L 2" x 2" x 1/4" x 4'-0"	18	0.85	0.207	0.037	8468
31.00	L 2" x 2" x 1/4" x 4'-0"	18	0.65	0.174	0.030	8000
28.81	L 2" x 2" x 1/4" x 4'-0"	18	0.56	0.159	0.027	7786
24.40	L 2" x 2" x 1/4" x 4'-0"	18	0.40	0.129	0.020	7388
22.20	L 2" x 2" x 1/4" x 4'-0"	18	0.33	0.115	0.017	7270

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	110	Leg	A325N	0.88	4	1.95	40.59	0.048 ✔	1	Bolt Tension
		Diagonal	A325N	0.50	1	1.98	3.13	0.635 ✔	1	Member Block Shear
		Top Girt	A325N	0.50	1	0.32	3.13	0.103 ✔	1	Member Block Shear
T2	100	Leg	A325N	0.88	4	7.86	40.59	0.194 ✔	1	Bolt Tension
		Diagonal	A325N	0.50	1	2.48	3.13	0.795 ✔	1	Member Block Shear
		Top Girt	A325N	0.50	1	0.06	3.13	0.020 ✔	1	Member Block Shear
T3	80	Leg	A325N	0.88	4	12.12	40.59	0.299 ✔	1	Bolt Tension
		Diagonal	A325N	0.50	1	1.89	3.13	0.606 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Top Girt	A325N	0.50	1	0.42	3.13	0.134 ✔	1	Member Block Shear
T4	60	Leg	A325N	0.88	4	15.85	40.59	0.390 ✔	1	Bolt Tension
		Diagonal	A325N	0.50	1	2.42	6.20	0.390 ✔	1	Member Bearing
		Top Girt	A325N	0.50	1	0.59	6.20	0.096 ✔	1	Member Bearing
T5	40	Leg	A325N	0.88	4	19.41	40.59	0.478 ✔	1	Bolt Tension
		Diagonal	A325N	0.50	1	2.68	4.13	0.648 ✔	1	Member Bearing
		Top Girt	A325N	0.50	1	0.76	6.20	0.122 ✔	1	Member Bearing
T6	20	Diagonal	A325N	0.50	1	2.93	6.20	0.473 ✔	1	Member Bearing
		Top Girt	A325N	0.50	1	0.99	7.95	0.125 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110 - 100	Pipe 3.5" x 0.300" (3 XS)	10.02	2.48	26.2 K=1.00	3.02	-9.59	129.06	0.074 [1] ✔
T2	100 - 80	Pipe 3.5" x 0.300" (3 XS)	20.03	3.97	42.0 K=1.00	3.02	-34.05	119.32	0.285 [1] ✔
T3	80 - 60	Pipe 3.5" x 0.300" (3 XS)	20.03	3.97	42.0 K=1.00	3.02	-52.87	119.32	0.443 [1] ✔
T4	60 - 40	Pipe 3.5" x 0.300" (3 XS)	20.03	2.56	27.0 K=1.00	3.02	-69.02	128.67	0.536 [1] ✔
T5	40 - 20	Pipe 4.0" x 0.318" (3.5 XS)	20.03	6.62	60.8 K=1.00	3.68	-84.84	126.30	0.672 [1] ✔
T6	20 - 0	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	20.03	6.65	82.5 K=1.00	5.10	-100.79	139.49	0.723 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110 - 100	L 1.5 x 1.5 x 1/8	3.00	1.30	69.4 K=1.32	0.36	-2.07	9.04	0.229 [1] ✔
T2	100 - 80	L 1.5 x 1.5 x 1/8	5.07	2.40	102.8 K=1.06	0.36	-2.53	6.67	0.379 [1] ✔
T3	80 - 60	L 1.5 x 1.5 x 1/8	7.51	3.60	145.8 K=1.00	0.36	-1.95	3.82	0.510 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	60 - 40	L 2.5 x 2.5 x 3/16	9.71	4.83	117.1 K=1.00	0.90	-2.66	14.20	0.187 [1] ✔
T5	40 - 20	L 2 x 2 x 1/8	12.22	6.11	117.1 K=1.00	0.48	-2.92	7.55	0.387 [1] ✔
T6	20 - 0	L 2.5 x 2.5 x 3/16	13.98	6.81	165.1 K=1.00	0.90	-3.19	7.47	0.426 [1] ✔

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	60 - 40	L 2 x 2 x 1/8	8.34	4.02	121.4 K=1.00	0.48	-1.20	7.16	0.167 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110 - 100	L 1.5 x 1.5 x 1/8	1.56	1.06	81.4 K=1.90	0.36	-0.34	8.22	0.041 [1] ✔
T2	100 - 80	L 1.5 x 1.5 x 1/8	2.56	2.06	101.8 K=1.22	0.36	-0.04	6.75	0.005 [1] ✔
T3	80 - 60	L 1.5 x 1.5 x 1/8	4.58	4.08	165.3 K=1.00	0.36	-0.34	2.97	0.114 [1] ✔
T4	60 - 40	L 2.5 x 2.5 x 3/16	6.60	6.30	152.8 K=1.00	0.90	-0.55	8.73	0.063 [1] ✔
T5	40 - 20	L 2.5 x 2.5 x 3/16	8.61	8.28	200.7 K=1.00	0.90	-0.67	5.06	0.133 [1] ✔
T6	20 - 0	KL/R > 200 (C) - 149 L 3.5 x 3.5 x 1/4	10.63	9.96	172.1 K=1.00	1.69	-0.85	12.88	0.066 [1] ✔

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	110 - 100	Pipe 3.5" x 0.300" (3 XS)	10.02	2.48	26.2	3.02	7.79	135.72	0.057 [1] ✔

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	100 - 80	Pipe 3.5" x 0.300" (3 XS)	20.03	0.08	0.9	3.02	31.46	135.72	0.232 [1] ✔
T3	80 - 60	Pipe 3.5" x 0.300" (3 XS)	20.03	0.08	0.9	3.02	48.47	135.72	0.357 [1] ✔
T4	60 - 40	Pipe 3.5" x 0.300" (3 XS)	20.03	0.08	0.9	3.02	63.39	135.72	0.467 [1] ✔
T5	40 - 20	Pipe 4.0" x 0.318" (3.5 XS)	20.03	0.08	0.8	3.68	77.65	165.53	0.469 [1] ✔
T6	20 - 0	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	20.03	6.65	82.5	5.10	88.41	229.32	0.386 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	110 - 100	L 1.5 x 1.5 x 1/8	3.00	1.30	36.1	0.21	1.98	9.18	0.216 [1] ✔
T2	100 - 80	L 1.5 x 1.5 x 1/8	5.07	2.40	64.5	0.21	2.48	9.18	0.271 [1] ✔
T3	80 - 60	L 1.5 x 1.5 x 1/8	6.21	2.96	79.0	0.21	1.89	9.18	0.206 [1] ✔
T4	60 - 40	L 2.5 x 2.5 x 3/16	9.71	4.83	74.5	0.59	2.42	25.60	0.094 [1] ✔
T5	40 - 20	L 2 x 2 x 1/8	11.67	5.84	111.9	0.30	2.68	13.25	0.202 [1] ✔
T6	20 - 0	L 2.5 x 2.5 x 3/16	13.39	6.52	102.2	0.59	2.93	25.60	0.114 [1] ✔

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T4	60 - 40	L 2 x 2 x 1/8	8.34	4.02	154.2	0.48	1.20	15.69	0.076 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	110 - 100	L 1.5 x 1.5 x 1/8	1.56	1.06	32.6	0.21	0.32	9.18	0.035 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	100 - 80	L 1.5 x 1.5 x 1/8	2.56	2.06	58.6	0.21	0.06	9.18	0.007 [1] ✔
T3	80 - 60	L 1.5 x 1.5 x 1/8	4.58	4.08	110.6	0.21	0.42	9.18	0.046 [1] ✔
T4	60 - 40	L 2.5 x 2.5 x 3/16	6.60	6.30	97.2	0.59	0.59	25.60	0.023 [1] ✔
T5	40 - 20	L 2.5 x 2.5 x 3/16	8.61	8.28	127.7	0.59	0.76	25.60	0.030 [1] ✔
T6	20 - 0	L 3.5 x 3.5 x 1/4	10.63	9.96	111.9	1.15	0.99	50.04	0.020 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

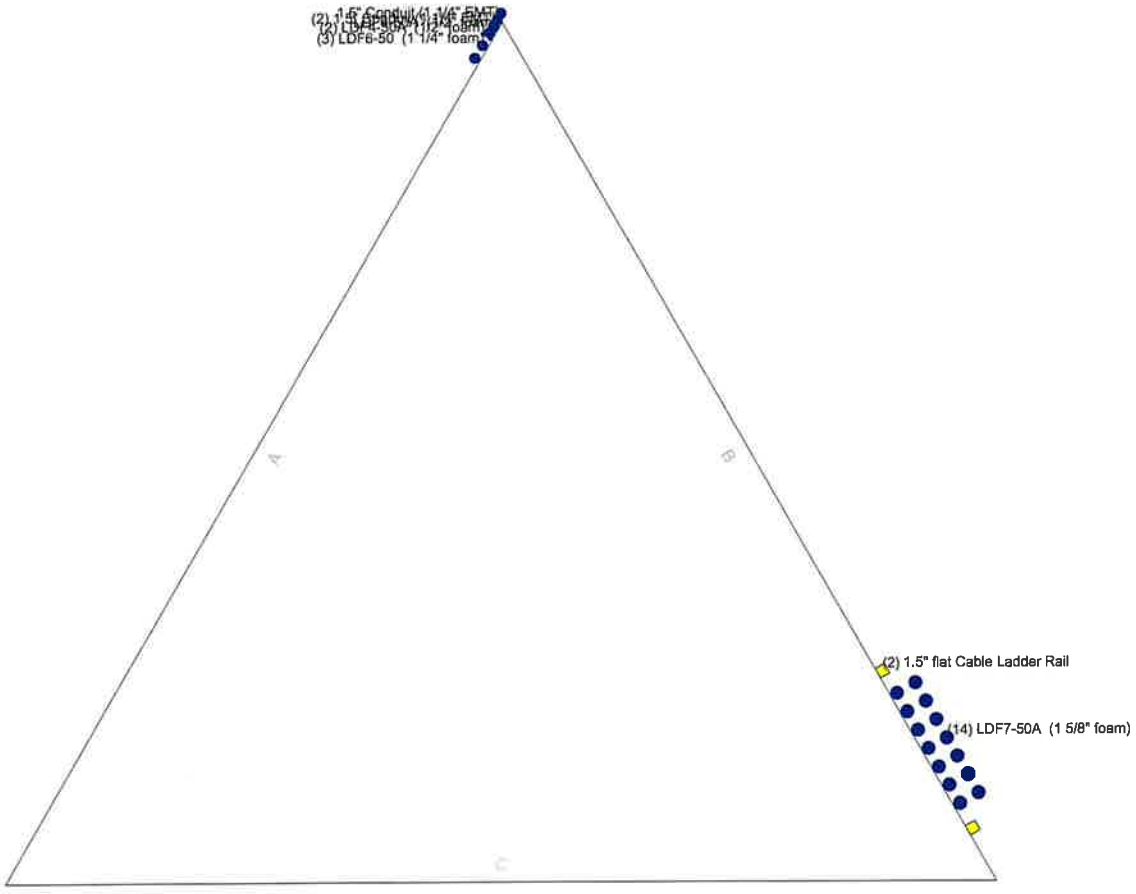
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	110 - 100	Leg	Pipe 3.5" x 0.300" (3 XS)	3	-9.59	129.06	7.4	Pass
T2	100 - 80	Leg	Pipe 3.5" x 0.300" (3 XS)	31	-34.05	119.32	28.5	Pass
T3	80 - 60	Leg	Pipe 3.5" x 0.300" (3 XS)	67	-52.87	119.32	44.3	Pass
T4	60 - 40	Leg	Pipe 3.5" x 0.300" (3 XS)	103	-69.02	128.67	53.6	Pass
T5	40 - 20	Leg	Pipe 4.0" x 0.318" (3.5 XS)	145	-84.84	126.30	67.2	Pass
T6	20 - 0	Leg	(42918-0023) P3.5XS w/ P5XXS Sleeve Reinforcing	169	-100.79	139.49	72.3	Pass
T1	110 - 100	Diagonal	L 1.5 x 1.5 x 1/8	27	-2.07	9.04	22.9 63.5 (b)	Pass
T2	100 - 80	Diagonal	L 1.5 x 1.5 x 1/8	60	-2.53	6.67	37.9 79.5 (b)	Pass
T3	80 - 60	Diagonal	L 1.5 x 1.5 x 1/8	75	-1.95	3.82	51.0 60.6 (b)	Pass
T4	60 - 40	Diagonal	L 2.5 x 2.5 x 3/16	111	-2.66	14.20	18.7 39.0 (b)	Pass
T5	40 - 20	Diagonal	L 2 x 2 x 1/8	153	-2.92	7.55	38.7 64.8 (b)	Pass
T6	20 - 0	Diagonal	L 2.5 x 2.5 x 3/16	177	-3.19	7.47	42.6 47.3 (b)	Pass
T4	60 - 40	Secondary Horizontal	L 2 x 2 x 1/8	115	-1.20	7.16	16.7	Pass
T1	110 - 100	Top Girt	L 1.5 x 1.5 x 1/8	5	-0.34	8.22	4.1 10.3 (b)	Pass
T2	100 - 80	Top Girt	L 1.5 x 1.5 x 1/8	35	0.06	9.18	0.7 2.0 (b)	Pass
T3	80 - 60	Top Girt	L 1.5 x 1.5 x 1/8	71	-0.34	2.97	11.4 13.4 (b)	Pass
T4	60 - 40	Top Girt	L 2.5 x 2.5 x 3/16	107	-0.55	8.73	6.3 9.6 (b)	Pass
T5	40 - 20	Top Girt	L 2.5 x 2.5 x 3/16	149	-0.67	5.06	13.3	Pass
T6	20 - 0	Top Girt	L 3.5 x 3.5 x 1/4	173	-0.85	12.88	6.6 12.5 (b)	Pass
							Summary	
						Leg (T6)	72.3	Pass
						Diagonal (T2)	79.5	Pass
						Secondary Horizontal (T4)	16.7	Pass
						Top Girt (T3)	13.4	Pass
						Bolt Checks	79.5	Pass
						RATING =	**79.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan

Round Flat App In Face App Out Face



Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: Existing 110' SST, Stratford CT			
Project: 42918-0023			
Client: On Air Engineering	Drawn by: ADP	App'd	
Code: TIA-222-G	Date: 12/05/19	Scale: NTS	
Path:		Dwg No. E-7	

APPENDIX C

ADDITIONAL CALCULATIONS

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

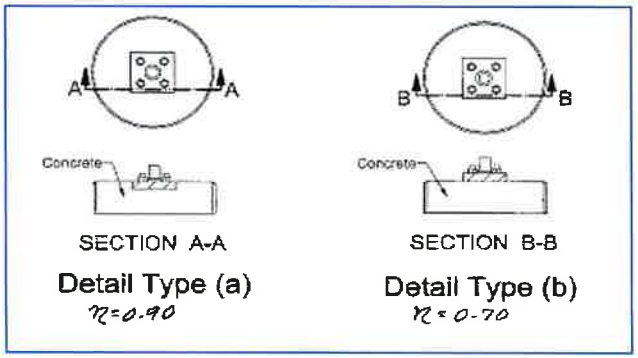
Self-Support Tower Anchor Rod Capacity - TIA-G

Loads

Compression :	104	kips	Tension :	91	kips	Code:	TIA-G
Comp. Shear :	11	kips	Ten.Shear :	9	kips	Maximum Ratio:	1.00

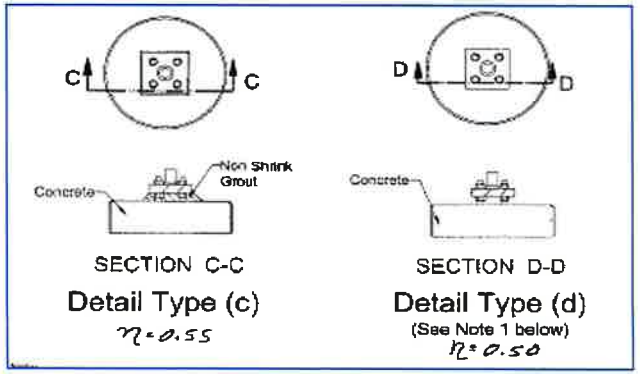
Existing Anchor Rods

Anchor Rod Condition (n) :	0.5			
Anchor Rod ø :	7/8	in	l_{ar} :	inches
Anchor Rod Quantity :	4		Comp. M_u :	0.00 k-in
Anchor Rod Grade :	A354 Gr. BC (1/4 to 2-1/2 incl.)			
F_y :	109	ksi		
F_u :	125	ksi		
Threads per Inch	9			
Net Tensile Area	0.46	in^2		
ϕ_t :	0.80			
$\phi_t R_{nt}$:	184.69	kip		
Anchor Rod Ratio :	0.682			



SECTION A-A
Detail Type (a)
η=0.90

SECTION B-B
Detail Type (b)
η = 0.70



SECTION C-C
Detail Type (c)
η=0.55

SECTION D-D
Detail Type (d)
(See Note 1 below)
η=0.50

PJF Job No. **42918-0023** Project Name: **Stratford** Engineer: MTB

Factored Foundation Loads:

	Comp	Uplift	
Factored Axial Load (+Comp, -Ten) =	122.62	-72.38	kips
Factored Horiz. Load at Top of Pier =	10	9	kips
Factored OTM at Top of Pier =	0	0	k-ft

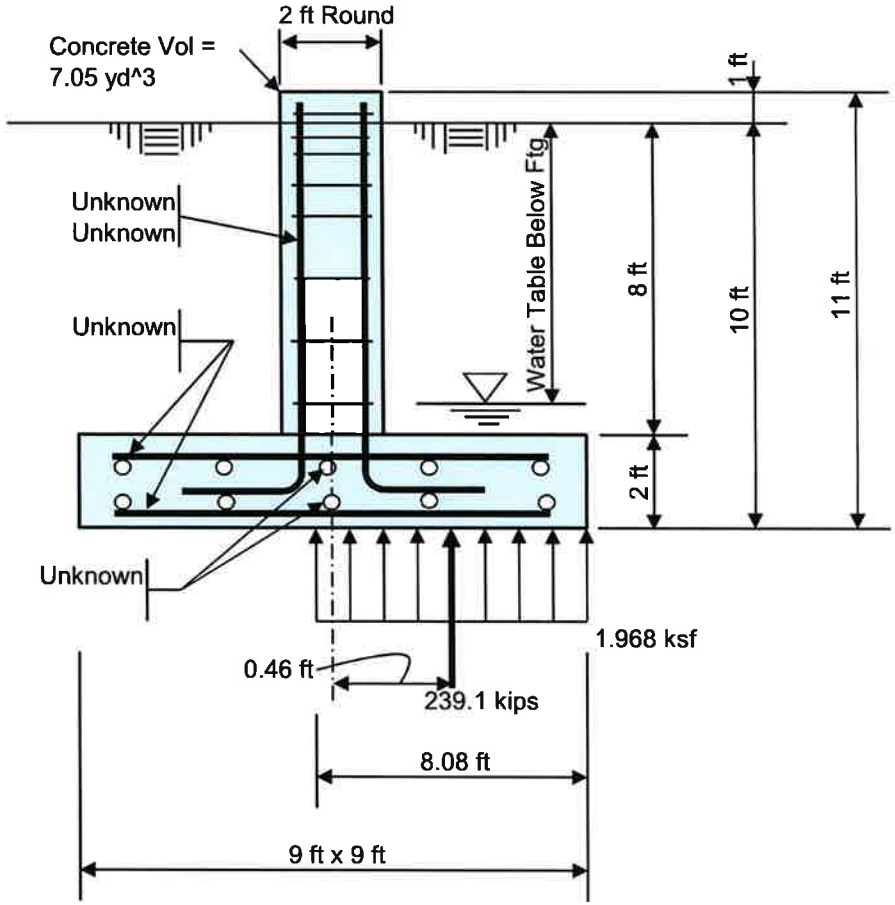
LRFD Resistance and Load Factors:

	Φ	Dead Load Factors	
Soil Bearing =	0.75		
Soil Weight =	0.75	1.2	0.9
Concrete Weight =	0.75	1.2	0.9

Soil Properties:

Depth to Water Table = 99 ft
Uplift Cone from Top of footing
Depth to Ignore for Uplift and PP = 0 ft

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
10	110	0	30	4	10.00



Dimensions:

Pier Shape = Round
Pier Width = 2 ft Diameter
Pier Height above Grade = 1 ft
Depth to Bottom of Footing = 10 ft
Footing Thickness = 2 ft
Footing Width, B = 9 ft
Footing Length, L = 9 ft

Concrete:

Concrete Strength = 3 ksi
Rebar Strength = 60 ksi

Total Pad Reinf Stl =
Total Pier Reinf Stl =
Footing Thickness = 2.00 ft >= 0.75 ft = Min Ftg Thk, OK

Summary Results:

	Required		Available			
Maximum Net Soil Bearing =	1.968	ksf	3.000	ksf	Stress Ratio =	65.6% in Soil Bearing
Uplift =	72.4	kips	146.4	kips	Stress Ratio =	49.4% in Uplift
Punching Shear Stress =	0.038	ksi	0.164	ksi	Stress Ratio =	22.9% in Punching Shear
Bending Shear Stress =	35.7	kips	186.3	kips	Stress Ratio =	19.1% in Bending Shear
Bending Moment =				Rebar Unknown	Stress Ratio =	in Bending Moment
Conc Pier Reinforcing Steel =				Rebar Unknown	Stress Ratio =	in Pier Rebar

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not made a field inspection to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.

2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.

3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

4) The structural integrity of the existing tower foundation can only be verified if the exact foundation reinforcement is known. Paul J. Ford and Company will not accept any responsibility for the adequacy of the existing foundations unless the foundation reinforcement is provided.

5) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard ANSI/TIA-222-G. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.

6) The enclosed sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.

7) Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

PAUL J. FORD & COMPANY

Report Date: January 13, 2020

Client: On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
Attn: David Weinpahl, P.E.
(201) 456-4624

Structure: Existing 110-ft Monopole
Carrier: Verizon Wireless
Carrier Site Name: Stratford N CT
Mount Type: (3) SitePro1 VFA12-HD
Site Address: 630 James Farm Rd.
City, County, State: Stratford, Fairfield County, CT
Latitude, Longitude: 41.2453, -73.1201

PJF Project: A42920-0001.002.8300

Paul J. Ford and Company is pleased to submit this "**Opinion Letter**" regarding the adequacy of the new SitePro1 VFA12-HD on the above referenced tower to replace existing overstressed mounting frames for a proposed Verizon Wireless antenna modification.

Opinion Criteria:

Reference Standard:	2018 Connecticut State Building Code with the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1.
Ultimate Wind Speed:	125 mph 3-second gust wind speed without ice
Nominal Wind Speed:	97 mph 3-second gust wind speed without ice
Ice Wind Speed:	50 mph 3-second gust wind speed with 0.75" ice
IBC Site Criteria:	Risk Category II, Topographic Category 1, Exposure Category B

Summary of Analysis Results:

Antenna Mount:	**66.0%**	**SUFFICIENT***

** Based on the load comparison and the above listed parameters, it is our opinion that **SitePro1 VFA12-HD will be adequate** for supporting the proposed loading listed in Table 1 of this letter.*

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and On Air Engineering, LLC. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Angela Sage, E.I.
Structural Designer
asage@pauljford.com ADP

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER
2020.01.14 15:04:07-05'00'

Columbus
250 E Broad St, Suite 600
Columbus, OH 43215
Phone 614.221.6679

Orlando
1801 Lee Rd, Suite 230
Winter Park, FL 32789
Phone 407.898.9039

Table 1 – Equipment Information

Mounting Level (feet)	Center Line Elevation (feet)	Quantity	Manufacturer	Model	Status	Mount Type
98	98	3	samsung telecommunications	CBRS Integrated XXDWMM-12.5-65-8T/RRH-RT4401-48A	Proposed	(3) SitePro1 VFA12-HD
		6	rfs celwave	APL868013 w/ Mount Pipe	Existing	
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	commscope	BSAMNT-SBS-2-2		
		3	samsung telecommunications	B5/13 RRH-BR04C		
		3	samsung telecommunications	B2/B66A RRH-BR049		
		3	commscope	CBC78T-DS-43-2X		
		1	rfs celwave	DB-C1-12C-24AB-0Z		

ATTACHMENT 5


SOUTH
BAYFIELD LN
BOXELDER LN
KEATING DR
JUDITH TER
CANDLEWOOD RD
JAMES FARM RD

TOWN OF STRATFORD

Recent Sales in Neighborhood | Previous Parcel | Next Parcel | Field Definitions | Return to Main Search | Stratford Home

Owner and Parcel Information

Owner Name	SHOOP DARCY (50%) & SHOOP DANA (50%)	**Today's Date**	February 13, 2019
Mailing Address	67 ELM ST	**Account #**	0857800
	HANOVER, MA 02339		
Location Address	630 JAMES FARM RD	**Census Tract**	0813
Map / Block / Lot	50 /19 / 3 / 28/ Dev Lot: 11.8 ACRES E/S	**Acreage**	9.61
Use Class / Description	101 Single Family	**Parcel Map**	Show Parcel Map / Owner List By Radius

Current Appraised Value Information

Building Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
No Apprasial Information available for this parcel						

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
2017	$ 89,390	$ 182,910	$ 272,090	$ 544,390
2016	$ 89,390	$ 182,910	$ 272,090	$ 544,390

Land Information

Use	Class	Zoning	Area	Value
Single Family	R	RS-1	1 AC	$ 109,300
Single Family	R	RS-1	8.61 AC	$ 108,900
Cell Site	I	RS-1	1 SF	$ 170,500

Residential Building Information

Style	Year Built	Living Area	Stories	Grade	Exterior Wall	Interior Wall	Fireplaces
Modern/Contemp	1947	2,312	2.00	C+	Stone	Plastered and Plastered	1
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC**	**Bedrooms/Full Baths/Half Baths/Total Rooms**	**Basement Sq Ft**
T&G/Rubber	Flat	Vinyl/Asphalt and Ceram Clay Til	Oil	Radiant	None	3 / 2 / 1 / 6	1,428

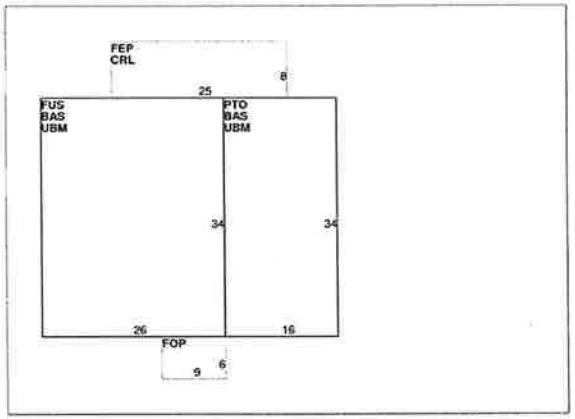
Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	1,428	1,428	
CRL	Crawl Space	0	200	
FEP	Finished Enclosed Porch	0	200	
FOP	Finished Open Porch	0	54	
FUS	Finished Upper	884	884	

Building Sketch Enlarge

Building Photo Enlarge

	Story			
PTO	Patio	0	544	
UBM	Unfinished Basement	0	1,428	
	Totals	**2,312**	**4,738**	**2,803**



Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
Garage	Frame	1,050 S.F.	1947	$ 14,300
Shed	Frame	240 S.F.	1953	$ 1,300
Shed	Metal	60 S.F.	2000	$ 0
Shed	Cell	360 S.F.	2006	$ 113,400
Shed	Cell	420 S.F.	2008	$ 132,300
ELEVATOR-NON FUNCTIONAL		1		$ 0

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
07/19/2012		3594/0229	Unqualified	Judicial Sale	Improved	SHOOP DARCY (50%) & SHOOP DANA (50%)
10/27/2011		3517/0310	Unqualified	Judicial Sale	Improved	FEDORKO WILHELMINA EST & SHOOP RANDY CO- SHOOP WILHELMINA J
02/24/2005		2587/ 348	Unqualified	Other	Improved	FEDORKO WILHELMINA & SHOOP RANDY CO-TRUSTEES
06/27/2003		2181/0244	Unqualified	NT		FEDORKO PETRO EST & WILMA B
05/11/1945		0208/0309	Unqualified		Improved	FEDORKO PETRO & WILMA B

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
39588	07/23/2018	BP	Building Permi	$ 25,000		0		SWAP 3 EXISTING ANTENNAS
23305	12/20/2016	BP	Building Permi	$ 15,000	08/04/2017	100		REPLACE ANTENNA TOWERS
21237	03/06/2014	BP	Building Permi	$ 9,000		100		ADD 3 ANTEENNAS; BELL ATLANTIC
18415	06/04/2010	EL	Electrical Per	$ 1,500	08/09/2010	100		WIRE NEW CABINET
18583	05/17/2010	BP	Building Permi	$ 20,000	07/13/2010	100		REPL ANTENNAS/DISHES & CAB.
18375	02/16/2010	BP	Building Permi	$ 39,000	05/24/2010	100		REPL ANTENNAE
11668	09/29/2005	EL	Electrical Per	$ 14,000	06/27/2006	100		WIRE CELL SITE
14848	06/20/2005	BP	Building Permi	$ 100,000	06/27/2006	100		TELE/COM ANTENNA
11207	06/16/2000					100		COMMUNICATION FACILITY;

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The Town of Stratford Assessor's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. Website Updated: September 9, 2018

ATTACHMENT 6

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 01/17/2020 US POSTAGE $002.79 ZIP 06103 041L12203937
	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.	Laura R. Hoydick, Mayor Town of Stratford 2757 Main Street Stratford, CT 06615				
2.	Susmitha Attota, Town Planner Town of Stratford 2757 Main Street Stratford, CT 06615				
3.	Dana Ravanis and Darcy Stiber 12 Michelle Way North Easton, MA 02356				
4.					
5.					
6.					