Cherundolo Consulting

1280 Route 46 West, Suite 9, Parsippany NJ, 07054

Melanie Bachman
Executive Director
CT Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification Application
623 Pine St, Bridgeport CT 06605

Latitude: N41.1938
Longitude: W73.1644

Dear Ms. Bachman:

Sprint currently maintains 3 existing panel antennas, 3 microwave dishes and 3 remote radio units at the 118' centerline level of the existing lattice tower. Sprint proposes to swap 3 panel antennas and 3 remote radio unit at the 118' centerline on the tower. Sprint further proposes to add 6 remote radio heads, 4 hybrid cable and 48 Antenna to RRH jumper cables. Sprint is performing a new high-performance upgrade for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

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Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, for construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to Mayor Joseph Ganim of the City of Bridgeport as well as the City Planner for the City of Bridgeport and Radio Communications Corp, the owner of the tower.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration as well as the latest CSC decision, tax sheet and tax map.

Existing Facility

CSC Summary Statement – CT52XC007 – 623 Pine St,
Bridgeport, CT 06605

The Communications Tower facility is located at 623 Pine St, Bridgeport CT and is owned by Radio Communications Corp, the Site coordinates are: N41.19385 W73.1644.

The existing facility consists of a 256' Lattice Tower. Sprint currently operates wireless communications equipment on a platform on a concrete slab at the facility and has 3 antennas, 2 microwave dishes and 3 RRU's mounted on at centerline of 118' feet.

Statutory Considerations

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

1. The height of the overall structure will be unaffected.

2. The proposed changes will not require an extension of the property boundaries.

3. The proposed additions will not increase the noise level at the existing facility by

six decibels or more, or to levels that exceed state and/or local criteria

4. The changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section §16-50j-72(b)(2).

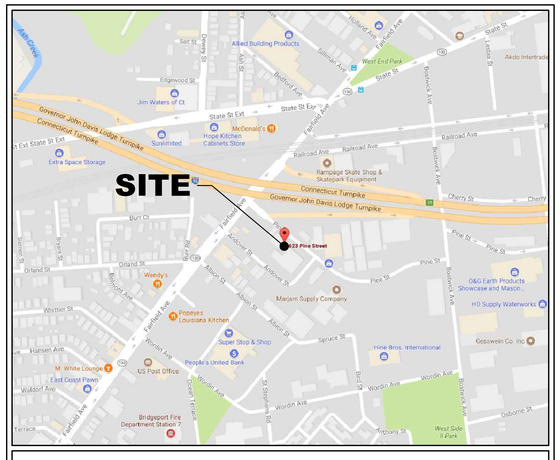
Respectfully submitted,

Ryan G Bailey
Charles Cherundolo Consulting
856-625-1596
ryan@mackenzierealtyconsulting.com

Additional Recipients:
Mayor Jospeh P Ganim – City of Bridgeport Mayor– Via FedEx
Thomas Gill - City Planner, City of Bridgeport - Via FedEx
Radio Communications Corp, owner of the tower – Via FedEx

"SPRINT MiMO UPGRADE"

CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605



KEY MAP

SCALE = N.T.S.

SITE LOCATION INFORMATION

SITE ID NUMBER:	CT52XC007
SITE NAME:	BRIDGEPORT WEST
SITE ADDRESS:	623 PINE STREET BRIDGEPORT, CT 06605
PARCEL ID:	19 307 25
CENSUS TRACT:	070300
CENSUS BLOCK:	1046
PROPERTY OWNER:	ANDREW KNAPP
APPLICANT:	SPRINT CORPORATION 217 ROUTE 17 N, 3RD FLOOR RUTHERFORD, NJ 07070
COUNTY:	NEW HAVEN COUNTY

SITE CHARACTERISTICS

LATITUDE:	41.193853
LONGITUDE:	-73.164447
STRUCTURE TYPE:	SELF-SUPPORT TOWER
LOCATION OF PROPOSED EQUIPMENT:	EXISTING EQUIPMENT ROOM
STRUCTURE HEIGHT:	±256'-0" AGL
ANTENNA (RAD CENTER):	±118'-0" AGL (ALPHA) ±118'-0" AGL (BETA) ±118'-0" AGL (GAMMA)

SHEET INDEX

SCOPE OF WORK

THE APPLICANT PROPOSES TO REPLACE THREE (3) EXISTING ANTENNAS WITH SIX (6) NEW ANTENNAS, REMOVE THREE (3) EXISTING RRHs AND REPLACE WITH NINE (9) NEW RRHs ON EXISTING/PROPOSED MOUNTING HARDWARE, AS WELL AS REPLACE ONE (1) EQUIPMENT CABINET IN AN EXISTING BUILDING.

COM-EX Consultants
115 Route 46
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Mountain Lakes, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

Sprint

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SCHEDULE OF REVISIONS

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DRAWN BY:	AM
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JOB NO:	17051-CHE

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NICHOLAS D. BARILE
PROFESSIONAL ENGINEER, CT LIC. No. 28643

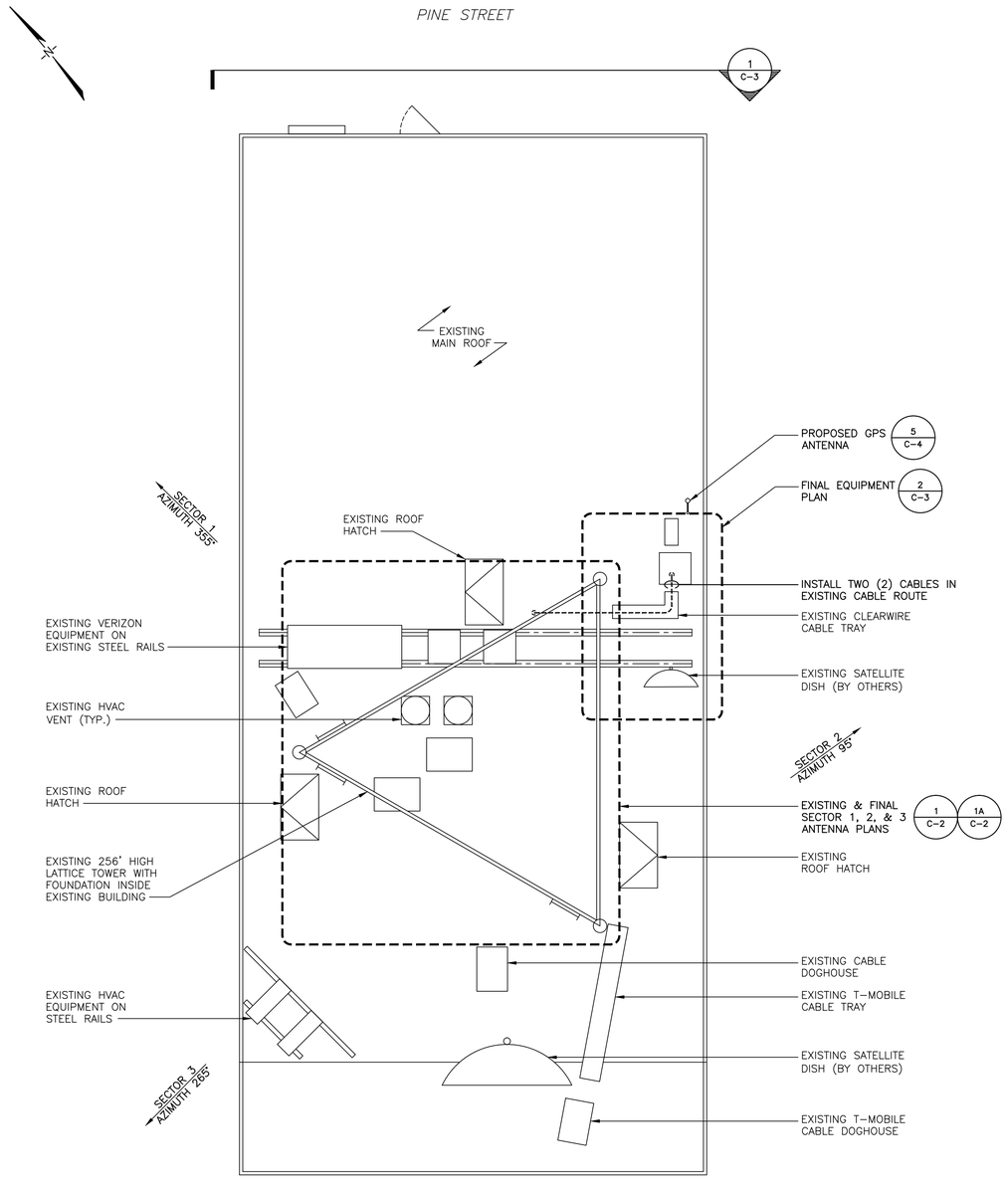
CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

TITLE SHEET

DRAWING SHEET: 1 OF 8

T-1



1 / C-1 ROOF PLAN
SCALE: 3/16"=1'
(24"x36" SHEET SIZE)

GENERAL NOTES:

1. SUBJECT PROPERTY IS KNOWN AS TAX PARCEL ID 19 307 25, CENSUS TRACT 070300, CENSUS BLOCK 1046 AS SHOWN THE OFFICIAL TAX MAP OF THE TOWN OF BRIDGEPORT, CT.
2. THE APPLICANT PROPOSES TO REPLACE THREE (3) EXISTING ANTENNAS WITH SIX (6) NEW ANTENNAS, REMOVE THREE (3) EXISTING RRHs AND REPLACE WITH NINE (9) NEW RRHs ON EXISTING/PROPOSED MOUNTING HARDWARE, AS WELL AS REPLACE ONE (1) EQUIPMENT CABINET IN AN EXISTING BUILDING.
3. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY SPRINT, THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
4. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION".
5. SITE INFORMATION SHOWN TAKEN FROM PLANS PREPARED BY URS CORPORATION AES FOR SPRINT'S INSTALLATION ON THIS FACILITY. DRAWINGS ENTITLED "SPRINT, SITE NAME: BRIDGEPORT WEST, SPRINT NUMBER: CT52XC007" DATED 10/28/09 REVISED 03/28/10. ADDITIONAL SITE INFORMATION WAS SUPPLEMENTED WITH A LIMITED SITE VISIT BY COM-EX CONSULTANTS ON 05/19/17.
6. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES OR OTHER PUBLIC AUTHORITIES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
8. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THIS PROJECT IN ACCORDANCE WITH THE OVERALL INTENT OF THESE DRAWINGS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
10. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
11. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
12. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
13. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
14. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
15. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
16. THE CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND RELATED PARTIES. THE SUBCONTRACTOR SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT EFFECTS THEIR WORK.
17. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON THE SITE AT ALL TIMES AND INSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA CONTRACTOR FURNISH 3 SETS OF REDLINE "AS-BUILT" DRAWINGS TO SPRINT UPON COMPLETION OF THE WORK.
18. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAT BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL INCLUDED AS PART OF THE WORK.
19. ALL MATERIAL PROVIDED BY IS TO BE REVIEWED BY THE CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTOR PRIOR TO INSTALLATION. ANY DEFICIENCIES TO PROVIDE MATERIALS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGERS ATTENTION IMMEDIATELY.
20. THE MATERIALS INSTALLED SHALL MEET REQUIREMENTS OF CONTRACTORS DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.
21. THE CONTRACTOR SHALL COORDINATE ALL CIVIL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR THE LOCATIONS OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC..
22. THE CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTACT DOCUMENTS.
23. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
24. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST-ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAND PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
25. THE CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
27. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS MAY TAKE PRECEDENCE.
28. THE CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
29. THE CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
30. BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORKS, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.
31. DESIGN REQUIREMENTS PER INTERNATIONAL BUILDING CODE 2015 AND THE EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

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NICHOLAS D. BARILE
PROFESSIONAL ENGINEER, CT LIC. No. 28643

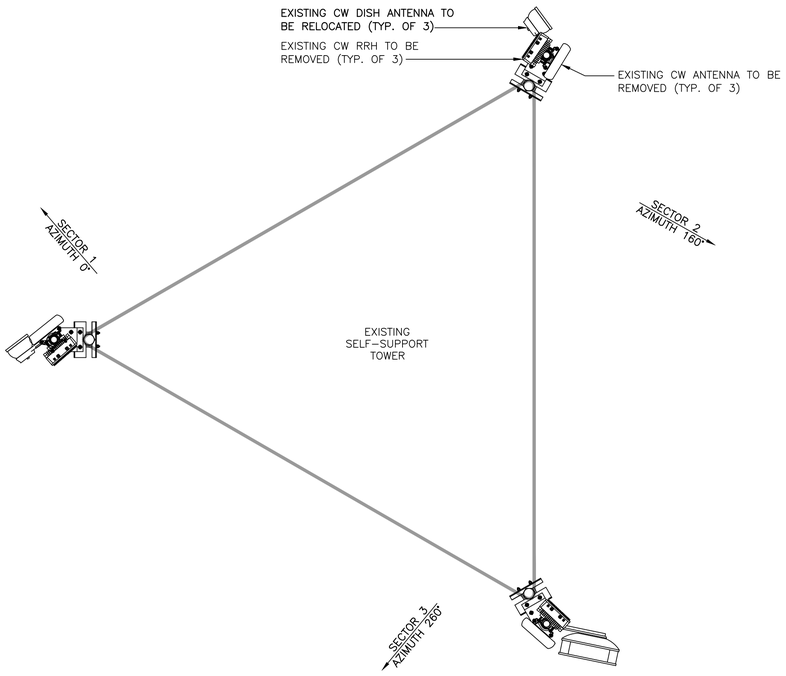
CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

ROOF PLAN & GENERAL NOTES

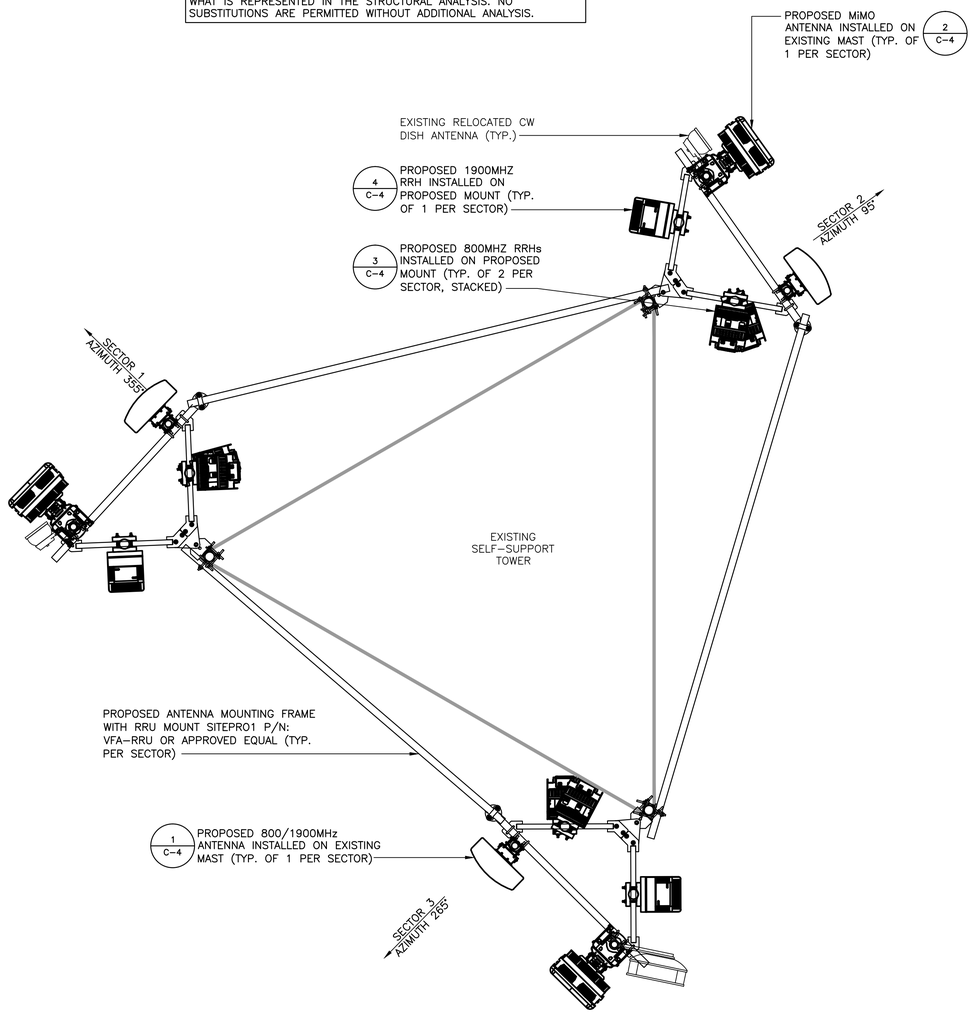
DRAWING SHEET: 2 OF 8

C-1



1 / C-2 EXISTING SECTOR 1, 2, & 3 ANTENNA PLAN
SCALE: 3/4"=1'

LOADING SHOWN ON THIS SET OF DRAWINGS IS BASED ON THE STRUCTURAL ANALYSIS PERFORMED BY DESTEK ENGINEERING, DATED 05/08/18 FOR THE SPRINT SITE CT52XC007. CONTRACTOR TO NOTIFY COM-EX AND SPRINT IN THE EVENT SITE CONDITIONS DIFFER FROM WHAT IS REPRESENTED IN THE STRUCTURAL ANALYSIS. NO SUBSTITUTIONS ARE PERMITTED WITHOUT ADDITIONAL ANALYSIS.



1A / C-2 FINAL SECTOR 1, 2, & 3 ANTENNA PLAN
SCALE: 3/4"=1'

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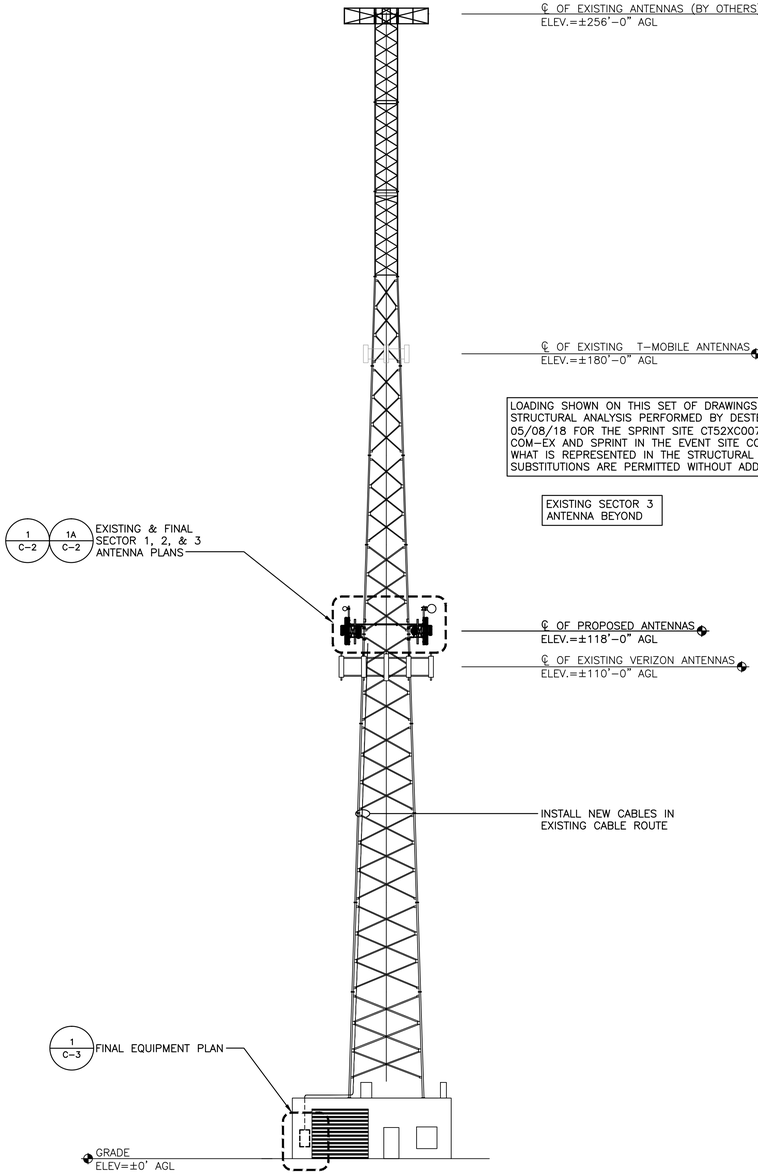
CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

EXISTING & FINAL ANTENNA PLANS

DRAWING SHEET: 3 OF 8

C-2



1 C-3 ELEVATION
SCALE: 1/16"=1'
(24"x36" SHEET SIZE)

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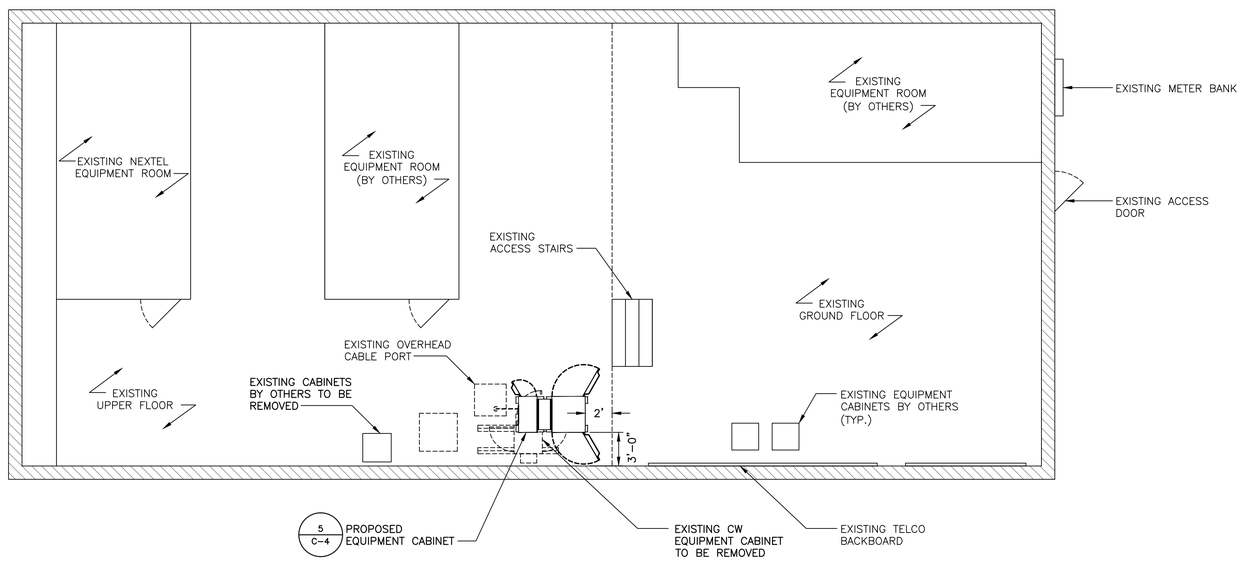
EXISTING SECTOR 3 ANTENNA BEYOND

BILL OF MATERIALS

	DESCRIPTION	QUANTITY EACH	DIMENSIONS (HxWxD)	WEIGHT (LBS) EACH	MANUFACTURER: PART/ MODEL#
ANTENNAS	800/1900MHz PANEL ANTENNA – SECTOR 1	1	72"x19.6"x7.8"	77.4 LBS W/OUT MOUNTING HARDWARE	COMMSCOPE: NNVV-65B-R4
	MiMO PANEL ANTENNA – SECTOR 1	1	25.6"x19.7"x9.6"	103.6 LBS W/OUT MOUNTING HARDWARE	NOKIA: 2.5G MAA-AAHC(64T64R)
	800 MHz RRH	2	15.7"x12.9"x9.8"	53 LBS W/OUT MOUNTING HARDWARE	ALCATEL LUCENT
	1900 MHz RRH	1	25.2"x11.8"x11.5"	N/A	ALCATEL LUCENT
	800/1900MHz PANEL ANTENNA – SECTOR 2	1	72"x19.6"x7.8"	77.4 LBS W/OUT MOUNTING HARDWARE	COMMSCOPE: NNVV-65B-R4
	MiMO PANEL ANTENNA – SECTOR 2	1	25.6"x19.7"x9.6"	103.6 LBS W/OUT MOUNTING HARDWARE	NOKIA: 2.5G MAA-AAHC(64T64R)
	800 MHz RRH	2	15.7"x12.9"x9.8"	53 LBS W/OUT MOUNTING HARDWARE	ALCATEL LUCENT
	1900 MHz RRH	1	25.2"x11.8"x11.5"	N/A	ALCATEL LUCENT
	800/1900MHz PANEL ANTENNA – SECTOR 3	1	72"x19.6"x7.8"	77.4 LBS W/OUT MOUNTING HARDWARE	COMMSCOPE: NNVV-65B-R4
	MiMO PANEL ANTENNA – SECTOR 3	1	25.6"x19.7"x9.6"	103.6 LBS W/OUT MOUNTING HARDWARE	NOKIA: 2.5G MAA-AAHC(64T64R)
	800 MHz RRH	2	15.7"x12.9"x9.8"	53 LBS W/OUT MOUNTING HARDWARE	ALCATEL LUCENT
	1900 MHz RRH	1	25.2"x11.8"x11.5"	N/A	ALCATEL LUCENT

	DESCRIPTION	QUANTITY EACH	DIMENSIONS (LENGTH)	WEIGHT (LBS/FOOT)	MANUFACTURER: SIZE/PART/MODEL#
	SECTOR 1 MiMO CABLE	1	±135'	2.39 LBS	RFS: 1-5/8" / HB158-21U6M48-200F
	SECTOR 1 COAX CABLE JUMPERS	11	10'	N/A	LDF4-50 (OR EQUIVALENT)
	SECTOR 1 R.E.T. CABLES	4	(3) 10' / (1) 2'	N/A	TBD
	SECTOR 2 MiMO CABLE	1	±135'	2.39 LBS	RFS: 1-5/8" / HB158-21U6M48-200F
	SECTOR 2 COAX CABLE JUMPERS	11	10'	N/A	LDF4-50 (OR EQUIVALENT)
	SECTOR 2 R.E.T. CABLES	4	(3) 10' / (1) 2'	N/A	TBD
	SECTOR 3 MiMO CABLE	1	±135'	2.39 LBS	RFS: 1-5/8" / HB158-21U6M48-200F
	SECTOR 3 COAX CABLE JUMPERS	11	10'	N/A	LDF4-50 (OR EQUIVALENT)
	SECTOR 3 R.E.T. CABLES	4	(3) 10' / (1) 2'	N/A	TBD

	DESCRIPTION	QUANTITY EACH	DIMENSIONS (LENGTH)	WEIGHT	MANUFACTURER: PART/MODEL#
EQUIP.	BTS CABINET	1	73.5"x38"x30"	505 LBS (1381 LBS FULLY LOADED)	ELTEK
	CABLING KIT	1	71.4"x12.1"x28.1"	180 LBS	ELTEK
	BATTERY CABINET	1	73.5"x34.7"x16.5"	330 LBS (1386 LBS FULLY LOADED)	BCAB ELTEK
	GPS UNIT	1	5"X3.2"	.5 LBS W/OUT MOUNTING HARDWARE	PCTEL: GPS-TMG-HR-26N



2 C-3 FINAL EQUIPMENT PLAN (IN BUILDING)
SCALE: 3/16"=1'

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STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER No. 28643

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER, CT LIC. No. 28643

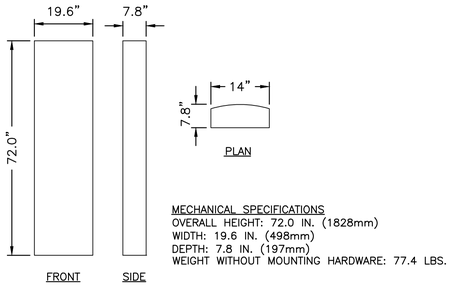
CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

ELEVATION, B.O.M., & FINAL EQUIPMENT PLAN

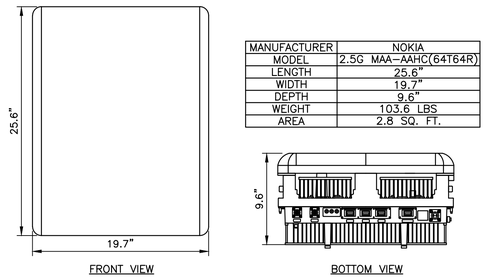
DRAWING SHEET: 4 OF 8

C-3



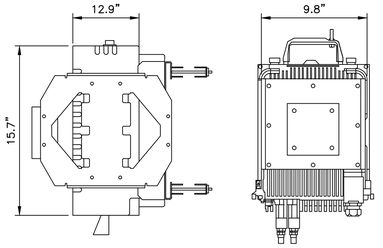
MECHANICAL SPECIFICATIONS
OVERALL HEIGHT: 72.0 IN. (1828mm)
WIDTH: 19.6 IN. (498mm)
DEPTH: 7.8 IN. (197mm)
WEIGHT WITHOUT MOUNTING HARDWARE: 77.4 LBS.

1 / C-4 — 800/1900MHz ANTENNA
COMMSCOPE: NNVV-65B-R4
SCALE: 1/2"=1'



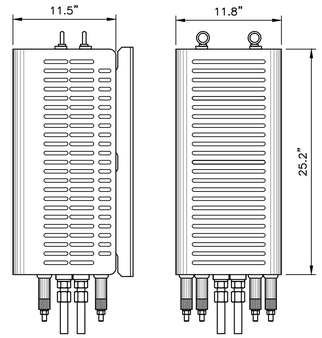
MANUFACTURER	NOKIA
MODEL	2.5G MAA-AAHC(64T64R)
LENGTH	25.6"
WIDTH	19.7"
DEPTH	9.6"
WEIGHT	103.6 LBS
AREA	2.8 SQ. FT.

2 / C-4 — MiMO ANTENNA/RRH
NOKIA: 2.5G MAA-AAHC(64T64R)
SCALE: N.T.S.



MODEL	H x W x D	WEIGHT
800MHz RRH 2x50W	15.7"x12.9"x9.8"	53 LBS

3 / C-4 — 800MHz RRH DETAIL
SCALE: N.T.S.



4 / C-4 — 1900MHz RRH DETAIL
SCALE: N.T.S.

GROUND MOUNT ASSEMBLY
FOR ECAB & BCAB CABINET

ELTEK ECAB STATS:

MECHANICAL SPECIFICATIONS
HEIGHT: 73.5 IN. (1866 mm)
WIDTH: 38 IN. (965 mm)
DEPTH: 30 IN. (762 mm)
WEIGHT: 1381 LBS.

CABLING KIT STATS:

MECHANICAL SPECIFICATIONS
HEIGHT: 71.4 IN. (1813 mm)
WIDTH: 12.1 IN. (306 mm)
DEPTH: 28.1 IN. (713 mm)
WEIGHT: 180 LBS.

ELTEK BCAB STATS:

MECHANICAL SPECIFICATIONS
HEIGHT: 73.5 IN. (1866 mm)
WIDTH: 16.5 IN. (419 mm)
DEPTH: 34.7 IN. (881 mm)
WEIGHT: 1386 LBS.

5 / C-4 — ELTEK EQUIPMENT DETAIL
SCALE: N.T.S.

GPS-TMG-HR-26N, High Rejection 26dB With Enhanced Narrow Band Filtering

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	≤1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
5.0" H x 3.2" D (126 H x 81 mm)	7.5" L x 4.4" W x 3.8" D (190 L x 112 x 96 mm)	0.6 lbs (0.3 kg)	1.9 lbs (0.9 kg)	White

Environmental Specifications

Temperature Range	Humidity
- 40˚C to + 85˚C	95%

Mounting

All mounting options fit pipes of 1"-1.45" (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-HR-26N	Antenna Only. Does not include mounting hardware.
GPS-TMG-HR-26NCM	Includes red powder coated collar mount (GPS-TMG-MNT-R)

GPS-TMG-HR-26N

GPS-TMG-MNT-R

GPS-TMG-HR-26NCM

PCTEL

6 / C-4 — GPS UNIT DETAIL
SCALE: N.T.S.

Prepared By	Revision Date	Revision Number
Mark Elliott	March 13, 2018	R1
Approved By	Approval Date	
RAN Hardware & Antenna Teams	Final-Macro Generated	

ALU 21-MIMO NNVV-65B-R4 wo Filters

Not to Scale

7 / C-4 — MiMO SCHEMATIC
SCALE: N.T.S.

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PROFESSIONAL ENGINEER, CT LIC. No. 28643

CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

CONSTRUCTION DETAILS

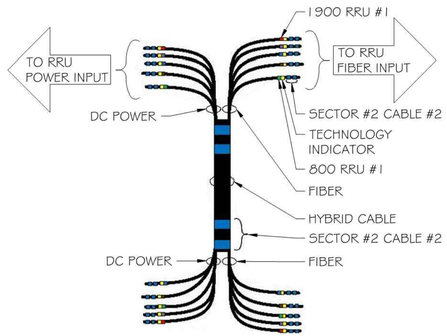
DRAWING SHEET: 5 OF 8

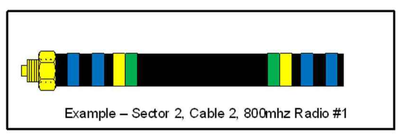
C-4

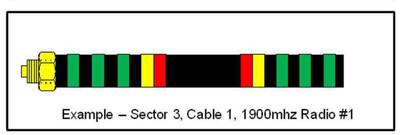
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

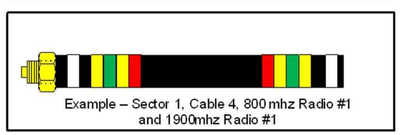
NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange




Example – Sector 2, Cable 2, 800mhz Radio #1


Example – Sector 3, Cable 1, 1900mhz Radio #1


Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

1 / C-5 COLOR CODING CHARTS
SCALE: NTS

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

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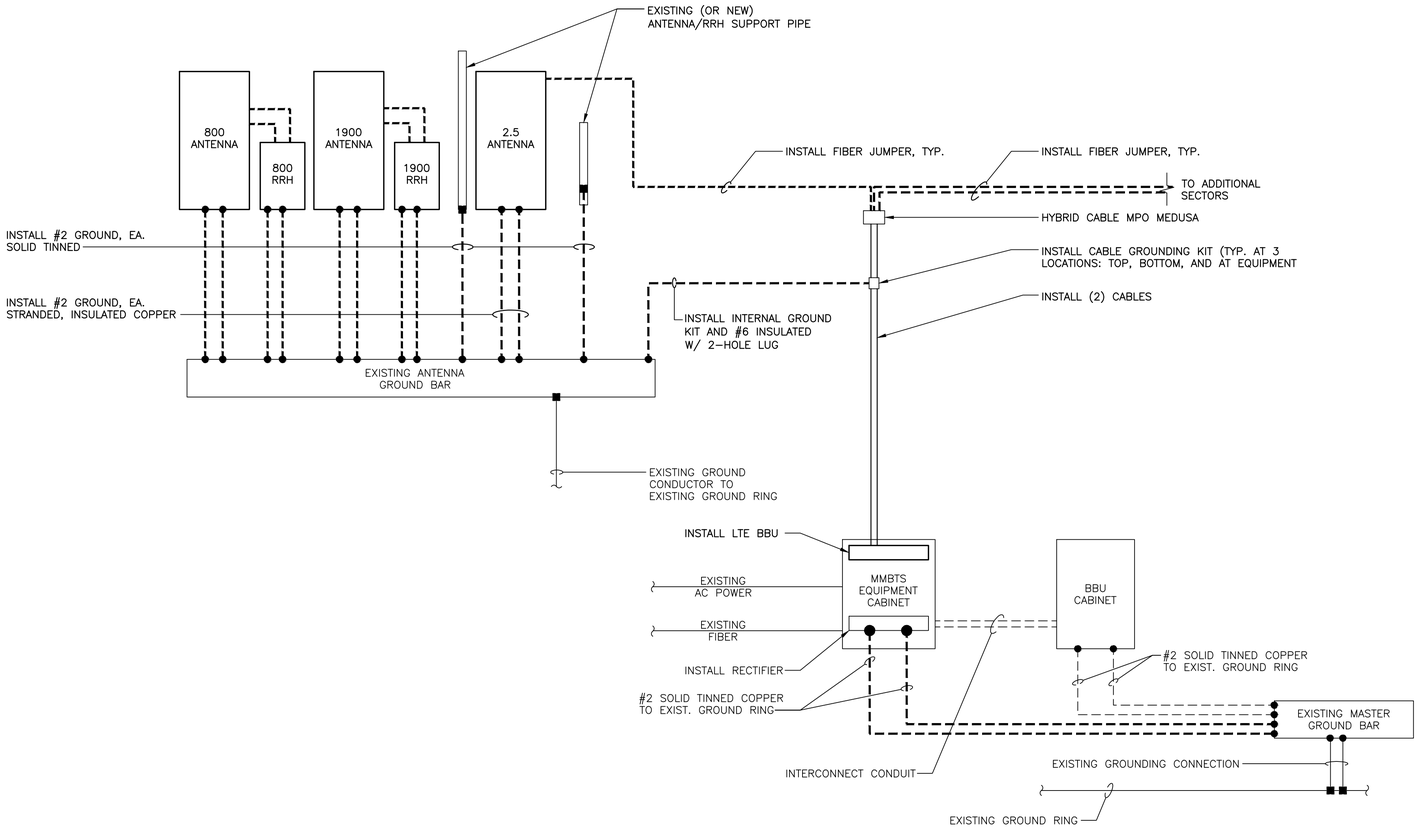
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

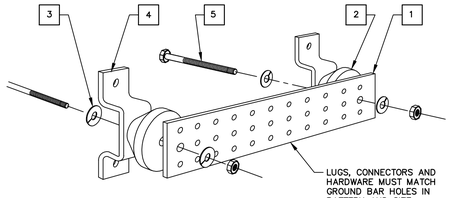
CABLE COLOR CODING

DRAWING SHEET: 6 OF 8

C-5



1 / E-1 TYPICAL POWER & GROUNDING ONE-LINE DIAGRAM
SCALE: N.T.S.



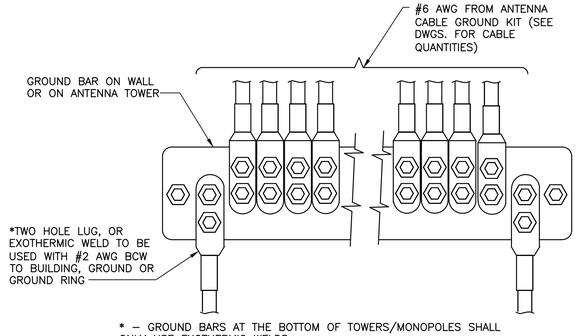
LEGEND

1. COPPER GROUND BAR, 7/16"X 4" X 20", NEWTON INSTRUMENT CO. CAT. NO. B-6142. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 X 1" H.H.C.S.BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

GROUND BAR SCHEDULE

TYPE	QTY.	MANUFACTURER	CAT. NO.	REMARKS
MGB	2	HARGER	GB14420TMGB	OR EQUAL
CGB	3	HARGER	GB14412TMGB	OR EQUAL

2 / E-1 TYPICAL GROUND BAR DETAIL
SCALE: NTS

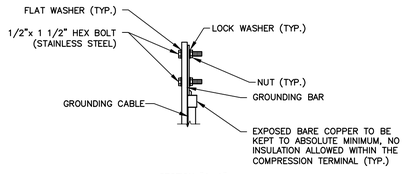


* - GROUND BARS AT THE BOTTOM OF TOWERS/MONOPOLES SHALL ONLY USE EXOTHERMIC WELDS.

- ATTACH "DO NOT DISCONNECT" LABELS TO GROUND BARS. CAN USE BRASS TAG "DO NOT DISCONNECT" AT EACH HYBRIFLEX GROUND POINT OR BACK-A-LITE PLATE LABEL ON GROUND BAR.

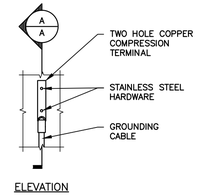
- CONNECT SEQUENCE- BOLT/WASHER/NO-OX/GROUND BAR/NO-OX/WASHER/LOCK-WASHER/NUT. THIS IS REPEATED FOR EACH LUG CONNECTION POINT.

3 / E-1 TYPICAL GROUND BAR CONNECTION PLAN
SCALE: NTS



SECTION "A-A"

NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.



ELEVATION

4 / E-1 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: NTS

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
4. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
5. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THNN INSULATION.
6. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
7. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
8. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
9. GROUNDING SHALL COMPLY WITH NEC ART. 250.
10. GROUND HYBRIFLEX CABLE SHIELDS AT 3 LOCATIONS USING MANUFACTURER'S HYBRIFLEX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
11. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
12. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
13. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
14. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
15. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
16. BOND ANTENNA MOUNTING BRACKETS, HYBRIFLEX CABLE GROUND KITS, AND RRHs TO EGB PLACED NEAR THE ANTENNA LOCATION.
17. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
18. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULT FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
19. CONTRACTOR SHALL CONDUCT ANTENNA, HYBRIFLEX CABLES, AND RRH RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
20. CONTRACTOR (CERTIFIED ELECTRICIAN) SHALL CHECK CAPACITY OF EXISTING SERVICE & PANEL ON SITE TO DETERMINE IF CAPACITY EXISTS TO ACCOMMODATE THE ADDED LOAD OF THIS PROJECT. ADVISE ENGINEER OF ANY DISCREPANCY.

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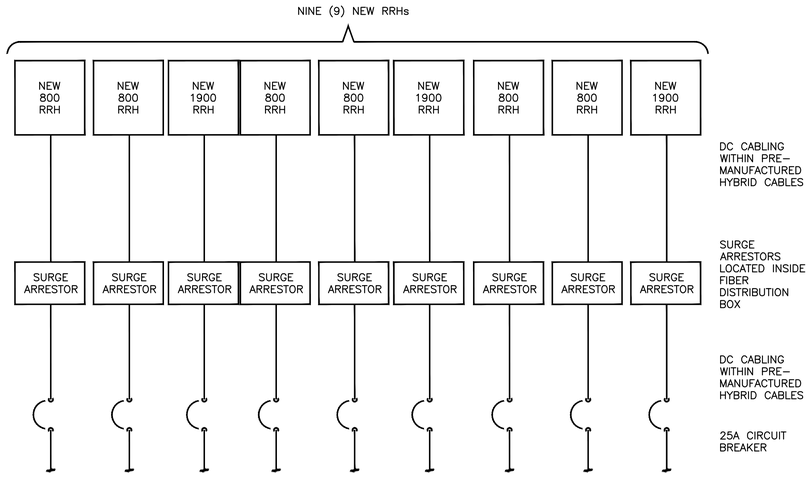
CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

GROUNDING DETAILS

DRAWING SHEET: 7 OF 8

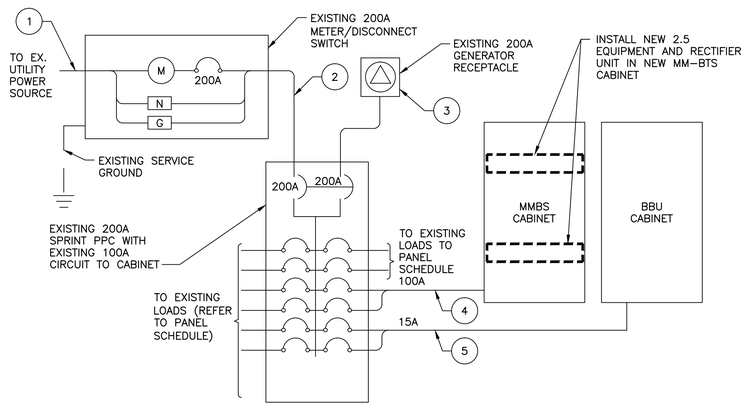
E-1



1 / E–2 DC ONE–LINE DIAGRAM
SCALE: NTS

A/C PANEL SCHEDULE						
VOLTAGE:	240V/120		PANEL STATUS:	EXISTING	N TO GROUND BOND:	YES
MAIN BREAKER:	200 AMP		MODEL NUMBER:	TBD	INTERNAL TVSS:	YES
MOUNT:	ROOFTOP		PHASE:	1	WIRE:	3
ENCLOSURE:	NEMA 3R		BUSS RATING:	200 AMP	GROUND BAR:	YES
			NEUTRAL BAR:	YES		

2 / E–2 AC PANEL SCHEDULE
SCALE: NTS



CIRCUIT SCHEDULE			
NO.	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/ DISCONNECT	EXISTING
2	METER/ DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EX. MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1–1/2" CONDUIT
5	TRANSFER & LOAD CENTER	EX. BBU CABINET	(2) #12 AWG, (1) #12 GND IN 3/4" CONDUIT

3 / E–2 ELECTRICAL ONE–LINE DIAGRAM
SCALE: NTS

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DRAWN BY:	AM
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PROFESSIONAL ENGINEER, CT LIC. No. 28643

CT52XC007
623 PINE STREET
BRIDGEPORT, CT 06605

DRAWING TITLE:

DC POWER DETAILS & PANEL SCHEDULES

DRAWING SHEET: 8 OF 8

E-2

STRUCTURAL ANALYSIS REPORT – REVISION. 1
SELF-SUPPORT TOWER

Prepared For:

Com-Ex Consultants, LLC
115 Route 46 – Suite E39
Mountain Lakes, NJ 07046

Structure Rating:

Tower:	**Pass**
Foundation:	**Pass**

Sincerely,
Destek Engineering, LLC

05-08-2017

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Sprint Site ID: CT52XC007
623 Pine Street
Bridgeport, CT 06605
Fairfield County

Destek Job No: 1729061 May 08, 2017

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 248' self-support tower located at 623 Pine Street, Bridgeport, CT 06605 for the additions and alterations proposed by Sprint.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- Structural Analysis Report by Destek, dated 12/21/2017.
- Tower Structural Analysis Report by KM Consulting Engineers, dated 06/20/2017.
- Tower Structural Analysis Report by URS Corporation, dated 04/12/2010.
- Construction Drawings prepared by Com-Ex, dated 04/09/2018.
- Site Photographs provided by Com-Ex, dated 05/18/2017.

1.1 STRUCTURE AND EXISTING EQUIPMENT

The structure is a 3-sided, 248' tall self-support tower. It is formed by (12) 20’ sections and (1) 8’ section. The first 20 feet section is K-braced with pipe legs and pipe bracing. The rest of the tower has pipe legs which is X-braced with angle members. The tower is 27.8333’ wide at the base with a constant taper down to 6.9’ wide at 200’ above grade. Please refer to the software output in Appendix A, for tower geometry, member sizes and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of Sprint Appurtenances:

Rad Center (Feet-AGL)	Antenna	Feedlines	Mount
118.0	(3) Panel Antennas (2) VHLP1-23-2WH (1) VHLP2.5-11-4WH	(6) 7/8” (3) 1/2”	(3) Pipe Mounts

Proposed and Final Configuration of Sprint Appurtenances:

Rad Center (Feet-AGL)	Antenna	Feedlines	Mount
118.0	(3) Commscope NNVV-65B-R4 (3) Nokia 2.5G MAA-AAHC(64T64R) (6) 800 MHz RRH (3) 1900 MHz RRH (2) VHLP1-23-2WH (1) VHLP2.5-11-4WH	(3) 1/2” (1) Hybriflex Cable	(3) New VFA-RRU Sector Mounts

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Existing Appurtenances by Others:

Rad Center (Feet-AGL)	Antenna	Feedlines	Mount
256.0	(1) Yagi Antenna (4) Omni Antennas	(7) 1-1/4” (1) 1/2”	(1) Platform Mount
248.0	(1) Omni Antenna	(2) 7/8”	(1) Standoff Mount
180.0	(6) Ericsson AIR21 Antennas (3) APX16PV_PVL (3) TMA	(30) 1-5/8”	(3) Sector Mounts
110.0	(6) APL-866513-42T6 (3) 2x60 AWS RRH (2) Distribution Boxes (3) 2x60 700 RRH B13 (1) GPS (6) HBXX-6516DS-A2M (3) 2x60 PCS RRH B25 (3) 800 10734V01	(20) 1-5/8”	(3) Sector Mounts
100.0	(2) TV 65 Antennas	(1) 1-1/4”	(1) Standoff Mount

3.0 CODES AND LOADING

The tower was analyzed per *TIA/EIA-222-G* as referenced by the *2016 Connecticut State Building Code* with all of the adopted Addendums and Supplements. The following wind loading was used:

- Ultimate design wind speed 125 mph (nominal design wind speed 97 mph) without ice (V)
- Basic wind speed 50 mph with 0.75” escalating ice (V_i)
- Exposure Category D
- Topographic Category 1
- Risk Category II (I_w = 1.0)

The following load combinations were used with wind blowing at 0°, 30°, 45°, 60°, and 90° measured from a line normal to the face of the tower.

- 1.2 D + 1.6 W_o
- 0.9 D + 1.6 W_o
- 1.2 D + 1.0 D_i + 1.0 W_i + 1.0 T_i

D: Dead load of structures and appurtenances
D_i: Weight of ice due to factored ice thickness (based upon t_i)
T_i: Load effects due to temperature
W_o: Wind load without ice (based upon V)
W_i: Wind load with ice (based upon V_i)

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4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided and is assumed to be current and correct. Unless otherwise noted, the structure is assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed appurtenances. Any deviation of the appurtenances and placement, etc., will require Destek to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

The connections of the tower are assumed to have as much capacity as the supporting member.

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6.0 CONCLUSION AND RESULTS

Based on an analysis per *TIA/EIA-222-G*, the existing tower has **adequate** structural capacity for the proposed modifications by Sprint. For the aforementioned load combinations and as a maximum, the tower diagonals between 0' & 20' are stressed to **95.5%** of their structural capacities. The tower legs are stressed to 65.6% of their structural capacities.

Based on a reaction comparison, the existing tower foundation has **adequate** structural capacity to support the proposed installation by Sprint.

Reaction Comparison:

Maximums	Destek Analysis	Original Design Reactions*	Usage (%)
Compression (kip)	482.0	524.8*1.35=708.5	68.0
Uplift (kip)	404.0	460.5*1.35=621.7	65.0
Total Shear (kip)	97.0	93.1*1.35=125.7	77.2
Moment (kips-ft)	10918.0	11758.6*1.35=15874.1	68.8

*Design reactions multiplied with 1.35 as shown, in order to compare ASD reactions with LRFD reactions.

Therefore, the proposed additions and alterations by Sprint **can** be implemented as intended with the conditions outlined in this report.

Should you have any questions about this report, please contact us at (770) 693-0835.

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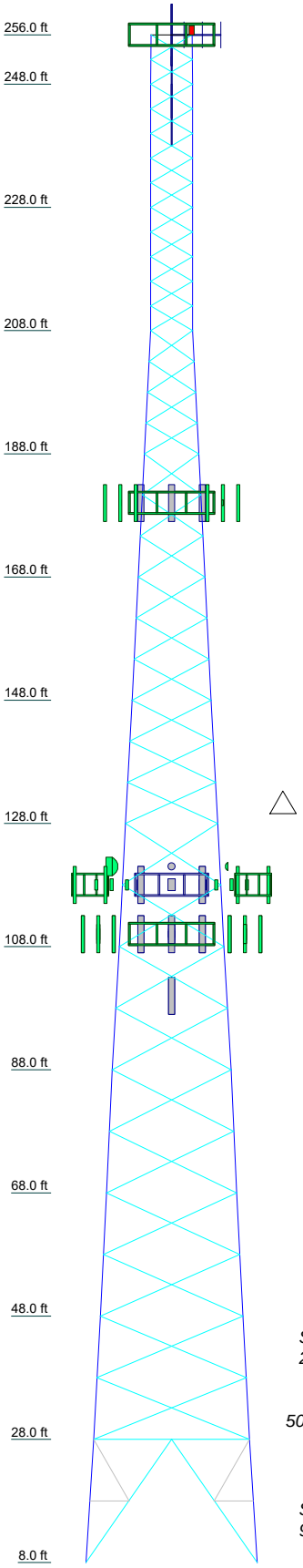
APPENDIX A
SOFTWARE OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13
Legs	A	ROHN 3 EH	ROHN 4 EH	ROHN 5 EH		ROHN 6 EH		ROHN 8 EHS	ROHN 8 EH		P10x.5		
Leg Grade							A572-50						
Diagonals	B		L2x2x1/4		L2 1/2x2 1/2x1/4	L3x3x1/4		L4x4x3/8	L4x4x5/16		L5x5x3/8		ROHN 3 STD
Diagonal Grade					A572-50								
Top Girts	C				N.A.								
Horizontals							N.A.						ROHN 3 STD
Red. Horizontals							N.A.						ROHN 3 STD
Red. Diagonals							N.A.						ROHN 3 STD
Red. Hips							N.A.						ROHN 1.5 STD
Inner Bracing							N.A.						ROHN 3 STD
Face Width (ft)	6.604	6.9		6.833	8.916	10.916	12.916	14.989	17.0833	19.25	21.25	23.229	25.333
# Panels @ (ft)	0.5	1.4	1.7	2.1	2.7	3.1	3.2	4.4	4.9	7.0	7.2	7.5	6.6
Weight (K)	52.3												



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' Yagi w/ (5) 6' Elements	256	(2) 800 MHz RRH	118
Beacon	256	RRH1900MHz	118
2" Dia 10' Omni	256	RRH1900MHz	118
2" Dia 10' Omni	256	RRH1900MHz	118
2" Dia 10' Omni	256 - 239	Sector Mount [SM 703-3]	118
2" Dia 10' Omni	256	B25 RRH2x60 PCS	110
Platform Mount [LP 102-1]	256	800 10736V01	110
2" Dia 10' Omni	248 - 238	800 10736V01	110
Side Arm Mount [SO 309-1]	248 - 238	800 10736V01	110
(2) AIR 21 w/ Mount Pipe	180	CW JUNCTION BOX	110
(2) AIR 21 w/ Mount Pipe	180	Sector Mount [SM 303-3]	110
(2) AIR 21 w/ Mount Pipe	180	RRH2x60-AWS	110
APX16PV-16PVL	180	RRH2x60-AWS	110
APX16PV-16PVL	180	RRH2x60-AWS	110
APX16PV-16PVL	180	CW JUNCTION BOX	110
dd B2 TMA	180	RRH2x60-700	110
dd B2 TMA	180	RRH2x60-700	110
dd B2 TMA	180	RRH2x60-700	110
Sector Mount [SM 404-3]	180	GPS	110
VHLP1-23	121	(2) HBXX-6516DS-A2M	110
VHLP1-23	121	(2) HBXX-6516DS-A2M	110
VHLP2.5-11	121	(2) HBXX-6516DS-A2M	110
NNVV-65B-R4 w/ Mount Pipe	118	B25 RRH2x60 PCS	110
NNVV-65B-R4 w/ Mount Pipe	118	B25 RRH2x60 PCS	110
NNVV-65B-R4 w/ Mount Pipe	118	(2) APL866513-42T6	110
AAHC w/ Mount Pipe	118	(2) APL866513-42T6	110
AAHC w/ Mount Pipe	118	(2) APL866513-42T6	110
AAHC w/ Mount Pipe	118	TV 65 Antenna	100
(2) 800 MHz RRH	118	Side Arm Mount [SO 309-1]	100
(2) 800 MHz RRH	118	TV 65 Antenna	100

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 3 STD	C	L3x3x1/4
B	L1 3/4x1 3/4x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

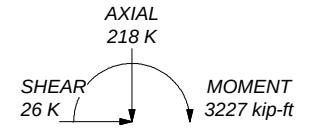
TOWER DESIGN NOTES

1. Tower designed for Exposure D to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 95.5%

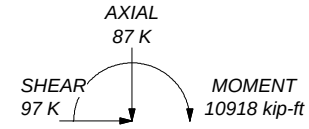
ALL RE
ARE FA

MAX. C[illegible] REACTIONS AT BASE:
DOWN: 482 K
SHEAR: 58 K

UPLIFT: -404 K
SHEAR: 52 K



TORQUE 7 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 43 kip-ft
REACTIONS - 97 mph WIND

Destek Engineering LLC
1281 Kennestone Circle,Suite 100
Marietta, GA 30066
Phone: 770693-0835
FAX:

Job: CT52XC007			
Project: 1729061			
Client: ComEx Consultants	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA-222-G	Date: 05/08/18	Scale: NTS	
Path: Z:\Projects\2017\29 - ComEx\061 - CT52XC007\Rev.1\Tnx\CT52XC007.eri		Dwg No. E-1	

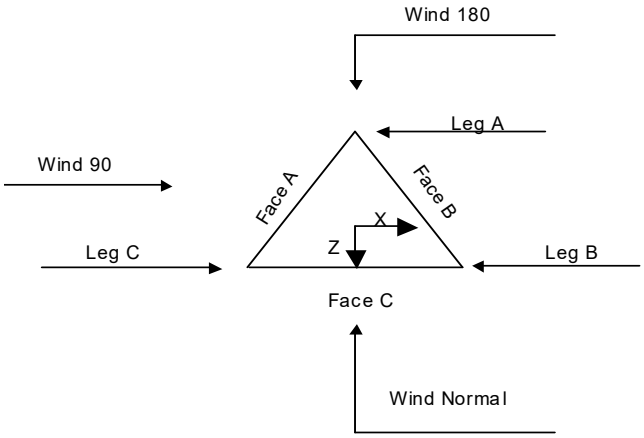
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 256.00 ft above the ground line.
The base of the tower is set at an elevation of 8.00 ft above the ground line.
The face width of the tower is 6.60 ft at the top and 27.83 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 97 mph.
Structure Class II.
Exposure Category D.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
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				



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	256.00-248.00			6.60	1	8.00
T2	248.00-228.00			6.90	1	20.00
T3	228.00-208.00			6.90	1	20.00
T4	208.00-188.00			6.83	1	20.00
T5	188.00-168.00			8.92	1	20.00
T6	168.00-148.00			10.92	1	20.00
T7	148.00-128.00			12.92	1	20.00
T8	128.00-108.00			14.99	1	20.00
T9	108.00-88.00			17.08	1	20.00
T10	88.00-68.00			19.25	1	20.00
T11	68.00-48.00			21.25	1	20.00
T12	48.00-28.00			23.23	1	20.00
T13	28.00-8.00			25.33	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	256.00-248.00	4.00	X Brace	No	No	0.0000	0.0000
T2	248.00-228.00	4.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	228.00-208.00	4.00	X Brace	No	No	0.0000	0.0000
T4	208.00-188.00	5.00	X Brace	No	No	0.0000	0.0000
T5	188.00-168.00	6.67	X Brace	No	No	0.0000	0.0000
T6	168.00-148.00	6.67	X Brace	No	No	0.0000	0.0000
T7	148.00-128.00	6.67	X Brace	No	No	0.0000	0.0000
T8	128.00-108.00	10.00	X Brace	No	No	0.0000	0.0000
T9	108.00-88.00	10.00	X Brace	No	No	0.0000	0.0000
T10	88.00-68.00	10.00	X Brace	No	No	0.0000	0.0000
T11	68.00-48.00	10.00	X Brace	No	No	0.0000	0.0000
T12	48.00-28.00	10.00	X Brace	No	No	0.0000	0.0000
T13	28.00-8.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 256.00-248.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A572-50 (50 ksi)
T2 248.00-228.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A572-50 (50 ksi)
T3 228.00-208.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A572-50 (50 ksi)
T4 208.00-188.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A572-50 (50 ksi)
T5 188.00-168.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)
T6 168.00-148.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T7 148.00-128.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T8 128.00-108.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A572-50 (50 ksi)
T9 108.00-88.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A572-50 (50 ksi)
T10 88.00-68.00	Pipe	P10x.5	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A572-50 (50 ksi)
T11 68.00-48.00	Pipe	P10x.5	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A572-50 (50 ksi)
T12 48.00-28.00	Pipe	P10x.5	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A572-50 (50 ksi)
T13 28.00-8.00	Pipe	P10x.5	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 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 256.00-248.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T13 28.00-8.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 3 STD	A572-50 (50 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
T13 28.00-8.00	Solid Round		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T13 28.00-8.00	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 3 STD	1
		Diagonal (1)	Pipe	ROHN 3 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal (1)	Pipe	ROHN 1.5 STD	1

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 256.00-248.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T2 248.00-228.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T3 228.00-208.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T4 208.00-188.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T5 188.00-168.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T6	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
168.00-148.00			(36 ksi)						
T7	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
148.00-128.00			(36 ksi)						
T8	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
128.00-108.00			(36 ksi)						
T9	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
108.00-88.00			(36 ksi)						
T10	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
88.00-68.00			(36 ksi)						
T11	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
68.00-48.00			(36 ksi)						
T12	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
48.00-28.00			(36 ksi)						
T13 28.00-8.00	0.00	0.0000	A36	1.03	1	1.05	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
256.00-248.00				1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
248.00-228.00				1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
228.00-208.00				1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
208.00-188.00				1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
188.00-168.00				1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
168.00-148.00				1	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
148.00-128.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
128.00-108.00				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
108.00-88.00				1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
88.00-68.00				1	1	1	1	1	1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
68.00-48.00				1	1	1	1	1	1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
48.00-28.00				1	1	1	1	1	1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
28.00-8.00				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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 256.00-248.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 248.00-228.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 228.00-208.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 208.00-188.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 188.00-168.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 168.00-148.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 148.00-128.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 128.00-108.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 108.00-88.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 88.00-68.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 68.00-48.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 48.00-28.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 28.00-8.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

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.
T1 256.00-248.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 248.00-228.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 228.00-208.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 208.00-188.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 188.00-168.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 168.00-148.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 148.00-128.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 128.00-108.00	Flange	1.0000 A325N	8	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 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.
T9	Flange	1.2500	8	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
108.00-88.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	1.2500	8	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
88.00-68.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	1.2500	8	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
68.00-48.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	1.2500	12	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
48.00-28.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13 28.00-8.00	Flange	0.7500	0	0.6250	3	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
****Face A***												
LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	110.00 - 18.00	0.0000	-0.4	18	9	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	110.00 - 18.00	0.0000	-0.5	2	2	1.9800	1.9800		0.82
LDF4-50A (1/2 FOAM)	A	No	Ar (CaAa)	121.00 - 18.00	0.0000	0.4	3	3	0.6300	0.6300		0.15
Face B												
Climbing Ladder	B	No	Ar (CaAa)	256.00 - 18.00	0.0000	0	1	1	0.2500	3.0000		7.90
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	180.00 - 18.00	0.0000	0.4	30	15	1.9800	1.9800		0.82
Face C												
LDF6-50A (1-1/4 FOAM)	C	No	Ar (CaAa)	100.00 - 18.00	0.0000	0	1	1	1.5500	1.5500		0.66
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	238.00 - 18.00	0.0000	0.45	2	2	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM)	C	No	Ar (CaAa)	256.00 - 18.00	0.0000	0.5	1	1	0.6300	0.6300		0.15
LDF6-50A (1-1/4 FOAM)	C	No	Ar (CaAa)	256.00 - 18.00	0.0000	0.4	6	6	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM)	C	No	Ar (CaAa)	256.00 - 18.00	0.0000	0.5	1	1	1.5500	1.5500		0.66
***												
RFS HYBRIFLEX 1 1/4	A	No	Ar (CaAa)	121.00 - 18.00	0.0000	0.425	1	1	1.5400	1.5400		1.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	256.00-248.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.400	0.000	0.06
		C	0.000	0.000	9.184	0.000	0.04
T2	248.00-228.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.000	0.000	0.16
		C	0.000	0.000	25.140	0.000	0.10
T3	228.00-208.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.000	0.000	0.16
		C	0.000	0.000	27.320	0.000	0.11
T4	208.00-188.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.000	0.000	0.16
		C	0.000	0.000	27.320	0.000	0.11
T5	188.00-168.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	77.280	0.000	0.45
		C	0.000	0.000	27.320	0.000	0.11
T6	168.00-148.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	27.320	0.000	0.11
T7	148.00-128.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	27.320	0.000	0.11
T8	128.00-108.00	A	0.000	0.000	12.379	0.000	0.06
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	27.320	0.000	0.11
T9	108.00-88.00	A	0.000	0.000	86.060	0.000	0.36
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	29.180	0.000	0.12
T10	88.00-68.00	A	0.000	0.000	86.060	0.000	0.36
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	30.420	0.000	0.12
T11	68.00-48.00	A	0.000	0.000	86.060	0.000	0.36
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	30.420	0.000	0.12
T12	48.00-28.00	A	0.000	0.000	86.060	0.000	0.36
		B	0.000	0.000	124.800	0.000	0.65
		C	0.000	0.000	30.420	0.000	0.12
T13	28.00-8.00	A	0.000	0.000	43.030	0.000	0.18
		B	0.000	0.000	62.400	0.000	0.33
		C	0.000	0.000	15.210	0.000	0.06

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	256.00-248.00	A	1.838	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.341	0.000	0.15
		C		0.000	0.000	29.001	0.000	0.43
T2	248.00-228.00	A	1.828	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	13.311	0.000	0.37
		C		0.000	0.000	82.849	0.000	1.17
T3	228.00-208.00	A	1.812	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	13.247	0.000	0.37
		C		0.000	0.000	93.008	0.000	1.27
T4	208.00-188.00	A	1.794	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	13.177	0.000	0.37
		C		0.000	0.000	92.643	0.000	1.25
T5	188.00-168.00	A	1.775	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	105.659	0.000	2.90
		C		0.000	0.000	92.244	0.000	1.24
T6	168.00-148.00	A	1.754	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	167.159	0.000	4.56
		C		0.000	0.000	91.802	0.000	1.22
T7	148.00-128.00	A	1.731	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	166.931	0.000	4.53
		C		0.000	0.000	91.307	0.000	1.21
T8	128.00-108.00	A	1.704	0.000	0.000	31.200	0.000	0.51
		B		0.000	0.000	166.670	0.000	4.50
		C		0.000	0.000	90.743	0.000	1.19
T9	108.00-88.00	A	1.672	0.000	0.000	150.946	0.000	3.14
		B		0.000	0.000	166.366	0.000	4.46
		C		0.000	0.000	95.960	0.000	1.25
T10	88.00-68.00	A	1.635	0.000	0.000	150.049	0.000	3.10
		B		0.000	0.000	166.000	0.000	4.42
		C		0.000	0.000	98.933	0.000	1.28
T11	68.00-48.00	A	1.587	0.000	0.000	148.916	0.000	3.05
		B		0.000	0.000	165.537	0.000	4.36
		C		0.000	0.000	97.743	0.000	1.24
T12	48.00-28.00	A	1.521	0.000	0.000	147.358	0.000	2.98
		B		0.000	0.000	164.901	0.000	4.28
		C		0.000	0.000	96.105	0.000	1.18
T13	28.00-8.00	A	1.412	0.000	0.000	72.382	0.000	1.43
		B		0.000	0.000	81.921	0.000	2.08
		C		0.000	0.000	46.690	0.000	0.55

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	256.00-248.00	-2.5911	1.9114	-2.4604	1.7345
T2	248.00-228.00	-3.0016	2.1859	-2.7909	1.9591
T3	228.00-208.00	-3.0161	2.1755	-2.7080	1.8954
T4	208.00-188.00	-3.2972	2.3676	-3.1238	2.1778
T5	188.00-168.00	4.9224	4.2003	1.8233	3.5354
T6	168.00-148.00	7.9493	5.2156	4.2321	4.4179
T7	148.00-128.00	9.0858	6.0365	4.8309	5.0973
T8	128.00-108.00	8.4922	6.1511	4.4530	4.9481
T9	108.00-88.00	1.3331	7.6570	-0.2107	5.9151
T10	88.00-68.00	1.3758	8.0492	-0.2188	6.4287
T11	68.00-48.00	1.4852	8.7601	-0.2275	7.0361
T12	48.00-28.00	1.5941	9.4684	-0.2263	7.6678
T13	28.00-8.00	1.3900	8.2971	-0.1604	6.6707

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	7	Climbing Ladder	248.00 -	0.6000	0.5435

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	12	LDF4-50A (1/2 FOAM)	256.00 248.00 -	0.6000	0.5435
T1	13	LDF6-50A (1-1/4 FOAM)	256.00 248.00 -	0.6000	0.5435
T1	15	LDF6-50A (1-1/4 FOAM)	256.00 248.00 -	0.6000	0.5435
T2	7	Climbing Ladder	256.00 228.00 -	0.6000	0.5983
T2	11	LDF5-50A (7/8 FOAM)	248.00 228.00 -	0.6000	0.5983
T2	12	LDF4-50A (1/2 FOAM)	238.00 228.00 -	0.6000	0.5983
T2	13	LDF6-50A (1-1/4 FOAM)	248.00 228.00 -	0.6000	0.5983
T2	15	LDF6-50A (1-1/4 FOAM)	248.00 228.00 -	0.6000	0.5983
T3	7	Climbing Ladder	248.00 208.00 -	0.6000	0.5844
T3	11	LDF5-50A (7/8 FOAM)	228.00 208.00 -	0.6000	0.5844
T3	12	LDF4-50A (1/2 FOAM)	228.00 208.00 -	0.6000	0.5844
T3	13	LDF6-50A (1-1/4 FOAM)	228.00 208.00 -	0.6000	0.5844
T3	15	LDF6-50A (1-1/4 FOAM)	228.00 208.00 -	0.6000	0.5844
T4	7	Climbing Ladder	228.00 188.00 -	0.6000	0.6000
T4	11	LDF5-50A (7/8 FOAM)	208.00 188.00 -	0.6000	0.6000
T4	12	LDF4-50A (1/2 FOAM)	208.00 188.00 -	0.6000	0.6000
T4	13	LDF6-50A (1-1/4 FOAM)	208.00 188.00 -	0.6000	0.6000
T4	15	LDF6-50A (1-1/4 FOAM)	208.00 188.00 -	0.6000	0.6000
T5	7	Climbing Ladder	208.00 168.00 -	0.6000	0.6000
T5	8	LDF7-50A (1-5/8 FOAM)	188.00 168.00 -	0.6000	0.6000
T5	11	LDF5-50A (7/8 FOAM)	180.00 168.00 -	0.6000	0.6000
T5	12	LDF4-50A (1/2 FOAM)	188.00 168.00 -	0.6000	0.6000
T5	13	LDF6-50A (1-1/4 FOAM)	188.00 168.00 -	0.6000	0.6000
T5	15	LDF6-50A (1-1/4 FOAM)	188.00 168.00 -	0.6000	0.6000
T6	7	Climbing Ladder	188.00 148.00 -	0.6000	0.6000
T6	8	LDF7-50A (1-5/8 FOAM)	168.00 148.00 -	0.6000	0.6000
T6	11	LDF5-50A (7/8 FOAM)	168.00 148.00 -	0.6000	0.6000
T6	12	LDF4-50A (1/2 FOAM)	168.00 148.00 -	0.6000	0.6000
T6	13	LDF6-50A (1-1/4 FOAM)	168.00 148.00 -	0.6000	0.6000
T6	15	LDF6-50A (1-1/4 FOAM)	168.00 148.00 -	0.6000	0.6000
T7	7	Climbing Ladder	168.00 128.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			148.00		
T7	8	LDF7-50A (1-5/8 FOAM)	128.00 - 148.00	0.6000	0.6000
T7	11	LDF5-50A (7/8 FOAM)	128.00 - 148.00	0.6000	0.6000
T7	12	LDF4-50A (1/2 FOAM)	128.00 - 148.00	0.6000	0.6000
T7	13	LDF6-50A (1-1/4 FOAM)	128.00 - 148.00	0.6000	0.6000
T7	15	LDF6-50A (1-1/4 FOAM)	128.00 - 148.00	0.6000	0.6000
T8	2	LDF7-50A (1-5/8 FOAM)	108.00 - 110.00	0.6000	0.6000
T8	4	LDF7-50A (1-5/8 FOAM)	108.00 - 110.00	0.6000	0.6000
T8	5	LDF4-50A (1/2 FOAM)	108.00 - 121.00	0.6000	0.6000
T8	7	Climbing Ladder	108.00 - 128.00	0.6000	0.6000
T8	8	LDF7-50A (1-5/8 FOAM)	108.00 - 128.00	0.6000	0.6000
T8	11	LDF5-50A (7/8 FOAM)	108.00 - 128.00	0.6000	0.6000
T8	12	LDF4-50A (1/2 FOAM)	108.00 - 128.00	0.6000	0.6000
T8	13	LDF6-50A (1-1/4 FOAM)	108.00 - 128.00	0.6000	0.6000
T8	15	LDF6-50A (1-1/4 FOAM)	108.00 - 128.00	0.6000	0.6000
T8	17	RFS HYBRIFLEX 1 1/4	108.00 - 121.00	0.6000	0.6000
T9	2	LDF7-50A (1-5/8 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	4	LDF7-50A (1-5/8 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	5	LDF4-50A (1/2 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	7	Climbing Ladder	88.00 - 108.00	0.6000	0.6000
T9	8	LDF7-50A (1-5/8 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	10	LDF6-50A (1-1/4 FOAM)	88.00 - 100.00	0.6000	0.6000
T9	11	LDF5-50A (7/8 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	12	LDF4-50A (1/2 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	13	LDF6-50A (1-1/4 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	15	LDF6-50A (1-1/4 FOAM)	88.00 - 108.00	0.6000	0.6000
T9	17	RFS HYBRIFLEX 1 1/4	88.00 - 108.00	0.6000	0.6000
T10	2	LDF7-50A (1-5/8 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	4	LDF7-50A (1-5/8 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	5	LDF4-50A (1/2 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	7	Climbing Ladder	68.00 - 88.00	0.6000	0.6000
T10	8	LDF7-50A (1-5/8 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	10	LDF6-50A (1-1/4 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	11	LDF5-50A (7/8 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	12	LDF4-50A (1/2 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	13	LDF6-50A (1-1/4 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	15	LDF6-50A (1-1/4 FOAM)	68.00 - 88.00	0.6000	0.6000
T10	17	RFS HYBRIFLEX 1 1/4	68.00 - 88.00	0.6000	0.6000
T11	2	LDF7-50A (1-5/8 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	4	LDF7-50A (1-5/8 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	5	LDF4-50A (1/2 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	7	Climbing Ladder	48.00 - 68.00	0.6000	0.6000
T11	8	LDF7-50A (1-5/8 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	10	LDF6-50A (1-1/4 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	11	LDF5-50A (7/8 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	12	LDF4-50A (1/2 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	13	LDF6-50A (1-1/4 FOAM)	48.00 - 68.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	15	LDF6-50A (1-1/4 FOAM)	48.00 - 68.00	0.6000	0.6000
T11	17	RFS HYBRIFLEX 1 1/4	48.00 - 68.00	0.6000	0.6000
T12	2	LDF7-50A (1-5/8 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	4	LDF7-50A (1-5/8 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	5	LDF4-50A (1/2 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	7	Climbing Ladder	28.00 - 48.00	0.6000	0.6000
T12	8	LDF7-50A (1-5/8 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	10	LDF6-50A (1-1/4 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	11	LDF5-50A (7/8 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	12	LDF4-50A (1/2 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	13	LDF6-50A (1-1/4 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	15	LDF6-50A (1-1/4 FOAM)	28.00 - 48.00	0.6000	0.6000
T12	17	RFS HYBRIFLEX 1 1/4	28.00 - 48.00	0.6000	0.6000
T13	2	LDF7-50A (1-5/8 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	4	LDF7-50A (1-5/8 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	5	LDF4-50A (1/2 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	7	Climbing Ladder	18.00 - 28.00	0.6000	0.6000
T13	8	LDF7-50A (1-5/8 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	10	LDF6-50A (1-1/4 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	11	LDF5-50A (7/8 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	12	LDF4-50A (1/2 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	13	LDF6-50A (1-1/4 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	15	LDF6-50A (1-1/4 FOAM)	18.00 - 28.00	0.6000	0.6000
T13	17	RFS HYBRIFLEX 1 1/4	18.00 - 28.00	0.6000	0.6000

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
10' Yagi w/ (5) 6' Elements	A	From Leg	0.00 0.00 0.00	0.0000	256.00	No Ice 1/2" Ice 1" Ice	2.70 4.50 6.30	1.50 2.00 2.50	0.11 0.19 0.27
Beacon	B	From Leg	0.00 0.00 0.00	0.0000	256.00	No Ice 1/2" Ice 1" Ice	1.20 1.39 1.59	1.20 1.39 1.59	0.03 0.04 0.06
2" Dia 10' Omni	A	From Leg	0.00 0.00 0.00	0.0000	256.00	No Ice 1/2" Ice 1" Ice	2.00 3.03 4.06	2.00 3.03 4.06	0.01 0.03 0.04
2" Dia 10' Omni	A	From Leg	0.00 0.00 0.00	0.0000	256.00	No Ice 1/2" Ice 1" Ice	2.00 3.03 4.06	2.00 3.03 4.06	0.01 0.03 0.04
2" Dia 10' Omni	A	From Leg	0.00 0.00 0.00	0.0000	239.00 - 256.00	No Ice 1/2" Ice 1" Ice	2.00 3.03 4.06	2.00 3.03 4.06	0.01 0.03 0.04
2" Dia 10' Omni	A	From Leg	0.00 0.00 0.00	0.0000	256.00	No Ice 1/2" Ice 1" Ice	2.00 3.03 4.06	2.00 3.03 4.06	0.01 0.03 0.04
Platform Mount [LP 102-1]	C	None		0.0000	256.00	No Ice 1/2" Ice 1" Ice	59.70 71.20 82.70	59.70 71.20 82.70	3.78 4.51 5.24

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***										
2" Dia 10' Omni	A	From Leg	0.00		0.0000	238.00 - 248.00	No Ice	2.00	2.00	0.01
			0.00				1/2" Ice	3.03	3.03	0.03
			0.00				1" Ice	4.06	4.06	0.04
Side Arm Mount [SO 309-1]	A	From Leg	0.00		0.0000	248.00 - 238.00	No Ice	2.82	2.20	0.04
			0.00				1/2" Ice	4.07	3.16	0.06
			0.00				1" Ice	5.32	4.12	0.08
180' T-Mobile										
(2) AIR 21 w/ Mount Pipe	A	From Leg	4.00		0.0000	180.00	No Ice	6.29	5.70	0.11
			0.00				1/2" Ice	6.73	6.48	0.17
			0.00				1" Ice	7.17	7.19	0.23
(2) AIR 21 w/ Mount Pipe	B	From Leg	4.00		0.0000	180.00	No Ice	6.29	5.70	0.11
			0.00				1/2" Ice	6.73	6.48	0.17
			0.00				1" Ice	7.17	7.19	0.23
(2) AIR 21 w/ Mount Pipe	C	From Leg	4.00		0.0000	180.00	No Ice	6.29	5.70	0.11
			0.00				1/2" Ice	6.73	6.48	0.17
			0.00				1" Ice	7.17	7.19	0.23
APX16PV-16PVL	A	From Leg	4.00		0.0000	180.00	No Ice	6.04	1.98	0.04
			0.00				1/2" Ice	6.39	2.30	0.07
			0.00				1" Ice	6.76	2.63	0.11
APX16PV-16PVL	B	From Leg	4.00		0.0000	180.00	No Ice	6.04	1.98	0.04
			0.00				1/2" Ice	6.39	2.30	0.07
			0.00				1" Ice	6.76	2.63	0.11
APX16PV-16PVL	C	From Leg	4.00		0.0000	180.00	No Ice	6.04	1.98	0.04
			0.00				1/2" Ice	6.39	2.30	0.07
			0.00				1" Ice	6.76	2.63	0.11
dd B2 TMA	A	From Leg	4.00		0.0000	180.00	No Ice	0.77	0.79	0.03
			0.00				1/2" Ice	0.95	1.03	0.04
			0.00				1" Ice	1.13	1.26	0.06
dd B2 TMA	B	From Leg	4.00		0.0000	180.00	No Ice	0.77	0.79	0.03
			0.00				1/2" Ice	0.95	1.03	0.04
			0.00				1" Ice	1.13	1.26	0.06
dd B2 TMA	C	From Leg	4.00		0.0000	180.00	No Ice	0.77	0.79	0.03
			0.00				1/2" Ice	0.95	1.03	0.04
			0.00				1" Ice	1.13	1.26	0.06
Sector Mount [SM 404-3]	C	None			0.0000	180.00	No Ice	20.47	20.47	0.92
							1/2" Ice	28.97	28.97	1.34
							1" Ice	37.47	37.47	1.75
138' MetroPCS										
121' Clearwire										
110' Verizon										
(2) APL866513-42T6	A	From Leg	4.00		0.0000	110.00	No Ice	4.05	3.61	0.02
			0.00				1/2" Ice	4.36	3.92	0.05
			0.00				1" Ice	4.68	4.23	0.08
(2) APL866513-42T6	B	From Leg	4.00		0.0000	110.00	No Ice	4.05	3.61	0.02
			0.00				1/2" Ice	4.36	3.92	0.05
			0.00				1" Ice	4.68	4.23	0.08
(2) APL866513-42T6	C	From Leg	4.00		0.0000	110.00	No Ice	4.05	3.61	0.02
			0.00				1/2" Ice	4.36	3.92	0.05
			0.00				1" Ice	4.68	4.23	0.08
RRH2x60-AWS	A	From Leg	4.00		0.0000	110.00	No Ice	3.50	2.10	0.06
			0.00				1/2" Ice	3.76	2.34	0.08
			0.00				1" Ice	4.03	2.58	0.11
RRH2x60-AWS	B	From Leg	4.00		0.0000	110.00	No Ice	3.50	2.10	0.06
			0.00				1/2" Ice	3.76	2.34	0.08
			0.00				1" Ice	4.03	2.58	0.11
RRH2x60-AWS	C	From Leg	4.00		0.0000	110.00	No Ice	3.50	2.10	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	3.76	2.34	0.08
			0.00				1" Ice	4.03	2.58	0.11
CW JUNCTION BOX	A	From Leg	4.00		0.0000	110.00	No Ice	1.20	0.60	0.00
			0.00				1/2" Ice	1.34	0.70	0.01
			0.00				1" Ice	1.48	0.81	0.02
RRH2x60-700	A	From Leg	4.00		0.0000	110.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	B	From Leg	4.00		0.0000	110.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	C	From Leg	4.00		0.0000	110.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
GPS	A	From Leg	4.00		0.0000	110.00	No Ice	0.33	0.33	0.01
			0.00				1/2" Ice	0.48	0.48	0.01
			0.00				1" Ice	0.65	0.65	0.02
(2) HBXX-6516DS-A2M	A	From Leg	4.00		0.0000	110.00	No Ice	5.42	3.28	0.03
			0.00				1/2" Ice	5.76	3.61	0.07
			0.00				1" Ice	6.11	3.94	0.11
(2) HBXX-6516DS-A2M	B	From Leg	4.00		0.0000	110.00	No Ice	5.42	3.28	0.03
			0.00				1/2" Ice	5.76	3.61	0.07
			0.00				1" Ice	6.11	3.94	0.11
(2) HBXX-6516DS-A2M	C	From Leg	4.00		0.0000	110.00	No Ice	5.42	3.28	0.03
			0.00				1/2" Ice	5.76	3.61	0.07
			0.00				1" Ice	6.11	3.94	0.11
B25 RRH2x60 PCS	A	From Leg	4.00		0.0000	110.00	No Ice	2.14	1.31	0.05
			0.00				1/2" Ice	2.33	1.46	0.07
			0.00				1" Ice	2.53	1.63	0.09
B25 RRH2x60 PCS	B	From Leg	4.00		0.0000	110.00	No Ice	2.14	1.31	0.05
			0.00				1/2" Ice	2.33	1.46	0.07
			0.00				1" Ice	2.53	1.63	0.09
B25 RRH2x60 PCS	C	From Leg	4.00		0.0000	110.00	No Ice	2.14	1.31	0.05
			0.00				1/2" Ice	2.33	1.46	0.07
			0.00				1" Ice	2.53	1.63	0.09
800 10736V01	A	From Leg	4.00		0.0000	110.00	No Ice	11.39	5.17	0.04
			0.00				1/2" Ice	12.01	5.74	0.09
			0.00				1" Ice	12.63	6.32	0.15
800 10736V01	B	From Leg	4.00		0.0000	110.00	No Ice	11.39	5.17	0.04
			0.00				1/2" Ice	12.01	5.74	0.09
			0.00				1" Ice	12.63	6.32	0.15
800 10736V01	C	From Leg	4.00		0.0000	110.00	No Ice	11.39	5.17	0.04
			0.00				1/2" Ice	12.01	5.74	0.09
			0.00				1" Ice	12.63	6.32	0.15
CW JUNCTION BOX	A	From Leg	4.00		0.0000	110.00	No Ice	1.20	0.60	0.00
			0.00				1/2" Ice	1.34	0.70	0.01
			0.00				1" Ice	1.48	0.81	0.02
Sector Mount [SM 303-3]	C	None			0.0000	110.00	No Ice	43.57	43.57	1.88
							1/2" Ice	61.82	61.82	2.70
							1" Ice	80.07	80.07	3.53
100'										
TV 65 Antenna	A	From Leg	1.00		0.0000	100.00	No Ice	3.88	3.44	0.04
			0.00				1/2" Ice	4.20	3.93	0.08
			0.00				1" Ice	4.54	4.43	0.12
TV 65 Antenna	A	From Leg	1.00		0.0000	100.00	No Ice	3.88	3.44	0.04
			0.00				1/2" Ice	4.20	3.93	0.08
			0.00				1" Ice	4.54	4.43	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 309-1]	A	From Leg	0.00	0.0000	100.00	No Ice	2.82	2.20	0.04
			0.00			1/2" Ice	4.07	3.16	0.06
			0.00			1" Ice	5.32	4.12	0.08
Sprint									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	2.00	0.0000	118.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	2.00	0.0000	118.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	2.00	0.0000	118.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
AAHC w/ Mount Pipe	A	From Leg	2.00	0.0000	118.00	No Ice	4.41	2.69	0.12
			0.00			1/2" Ice	4.73	3.08	0.16
			0.00			1" Ice	5.06	3.49	0.20
AAHC w/ Mount Pipe	B	From Leg	2.00	0.0000	118.00	No Ice	4.41	2.69	0.12
			0.00			1/2" Ice	4.73	3.08	0.16
			0.00			1" Ice	5.06	3.49	0.20
AAHC w/ Mount Pipe	C	From Leg	2.00	0.0000	118.00	No Ice	4.41	2.69	0.12
			0.00			1/2" Ice	4.73	3.08	0.16
			0.00			1" Ice	5.06	3.49	0.20
(2) 800 MHz RRH	A	From Leg	2.00	0.0000	118.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
(2) 800 MHz RRH	B	From Leg	2.00	0.0000	118.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
(2) 800 MHz RRH	C	From Leg	2.00	0.0000	118.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
RRH1900MHz	A	From Leg	2.00	0.0000	118.00	No Ice	2.60	3.72	0.06
			0.00			1/2" Ice	2.84	4.10	0.10
			0.00			1" Ice	3.09	4.50	0.14
RRH1900MHz	B	From Leg	2.00	0.0000	118.00	No Ice	2.60	3.72	0.06
			0.00			1/2" Ice	2.84	4.10	0.10
			0.00			1" Ice	3.09	4.50	0.14
RRH1900MHz	C	From Leg	2.00	0.0000	118.00	No Ice	2.60	3.72	0.06
			0.00			1/2" Ice	2.84	4.10	0.10
			0.00			1" Ice	3.09	4.50	0.14
Sector Mount [SM 703-3]	C	None		0.0000	118.00	No Ice	25.30	25.30	1.04
						1/2" Ice	35.43	35.43	1.46
						1" Ice	45.56	45.56	1.88
***									

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
VHLP1-23	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		121.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	0.01 0.02 0.03
VHLP1-23	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		121.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	0.01 0.02 0.03
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		121.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	0.05 0.08 0.12

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
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+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service

Comb. No.	Description
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	256 - 248	Leg	Max Tension	7	2.56	-0.03	0.00
			Max. Compression	2	-5.84	0.06	0.00
			Max. Mx	2	-5.84	0.06	0.00
			Max. My	8	-1.89	0.00	0.06
			Max. Vy	14	-1.18	0.00	-0.00
			Max. Vx	8	1.24	0.00	-0.00
		Diagonal	Max Tension	16	1.71	0.00	0.00
			Max. Compression	16	-1.67	0.00	0.00
			Max. Mx	38	0.62	0.02	0.00
			Max. My	31	-0.01	0.02	0.00
			Max. Vy	37	0.03	0.02	0.00
			Max. Vx	31	-0.00	0.00	0.00
		Top Girt	Max Tension	2	0.60	0.00	0.00
			Max. Compression	14	-0.62	0.00	0.00
			Max. Mx	26	-0.04	-0.11	0.00
			Max. My	29	0.05	0.00	0.00
			Max. Vy	26	0.07	0.00	0.00
			Max. Vx	29	-0.00	0.00	0.00
T2	248 - 228	Leg	Max Tension	15	21.97	0.00	-0.06
			Max. Compression	2	-27.56	-0.00	0.09
			Max. Mx	8	18.33	-0.09	-0.00
			Max. My	2	10.13	0.00	0.10
			Max. Vy	8	0.07	-0.07	-0.00
			Max. Vx	2	-0.07	0.00	0.07
		Diagonal	Max Tension	16	3.13	0.00	0.00
			Max. Compression	4	-3.14	0.00	0.00
			Max. Mx	35	1.01	0.03	-0.00
			Max. My	8	-1.51	0.01	0.00
			Max. Vy	35	-0.03	0.03	-0.00
			Max. Vx	8	0.00	0.00	0.00
T3	228 - 208	Leg	Max Tension	15	52.15	0.07	0.00
			Max. Compression	2	-61.12	-0.73	0.00
			Max. Mx	2	-61.12	-0.73	0.00
			Max. My	24	-2.81	0.04	-0.43
			Max. Vy	2	0.22	-0.73	0.00
			Max. Vx	24	0.14	0.04	-0.43
		Diagonal	Max Tension	16	4.37	0.00	0.00
			Max. Compression	4	-4.51	0.00	0.00
			Max. Mx	35	1.21	0.03	-0.00
			Max. My	18	-3.96	0.00	-0.00
			Max. Vy	35	-0.03	0.03	-0.00
			Max. Vx	18	0.00	0.00	0.00
T4	208 - 188	Leg	Max Tension	15	71.99	-0.39	-0.00
			Max. Compression	2	-84.35	0.42	0.01
			Max. Mx	2	-67.69	0.73	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	24	-3.06	-0.05	0.69
			Max. Vy	2	0.17	0.73	-0.00
			Max. Vx	24	-0.18	-0.05	0.69
		Diagonal	Max Tension	16	2.89	0.00	0.00
			Max. Compression	16	-2.91	0.00	0.00
			Max. Mx	33	0.71	0.04	-0.01
			Max. My	35	-0.12	0.04	-0.01
			Max. Vy	33	0.04	0.04	-0.01
			Max. Vx	35	0.00	0.00	0.00
T5	188 - 168	Leg	Max Tension	15	92.68	-0.71	0.01
			Max. Compression	2	-109.87	0.72	-0.02
			Max. Mx	3	-89.00	0.96	-0.02
			Max. My	4	-5.52	-0.03	-0.88
			Max. Vy	22	-0.88	-0.94	-0.00
			Max. Vx	4	-0.81	-0.02	-0.68
		Diagonal	Max Tension	20	5.16	0.00	0.00
			Max. Compression	20	-5.22	0.00	0.00
			Max. Mx	33	1.32	0.08	0.01
			Max. My	27	-0.09	0.07	0.01
			Max. Vy	33	0.06	0.08	-0.01
			Max. Vx	31	-0.00	0.00	0.00
T6	168 - 148	Leg	Max Tension	15	120.73	-0.60	0.02
			Max. Compression	10	-142.24	0.71	-0.00
			Max. Mx	2	-120.04	0.72	-0.02
			Max. My	4	-7.22	-0.02	-0.69
			Max. Vy	19	0.11	0.71	0.03
			Max. Vx	16	0.15	-0.01	0.69
		Diagonal	Max Tension	20	6.59	0.00	0.00
			Max. Compression	20	-6.69	0.00	0.00
			Max. Mx	33	1.46	0.12	0.01
			Max. My	31	-0.09	0.11	-0.02
			Max. Vy	33	0.08	0.12	-0.01
			Max. Vx	31	-0.00	0.00	0.00
T7	148 - 128	Leg	Max Tension	15	150.99	-0.52	0.02
			Max. Compression	10	-177.57	1.70	-0.05
			Max. Mx	18	-176.38	1.71	0.13
			Max. My	4	-9.66	0.04	-1.60
			Max. Vy	18	-0.27	1.71	0.13
			Max. Vx	4	0.34	0.04	-1.60
		Diagonal	Max Tension	20	7.71	0.00	0.00
			Max. Compression	20	-7.82	0.00	0.00
			Max. Mx	33	1.54	0.15	0.02
			Max. My	34	-0.81	0.13	0.02
			Max. Vy	33	0.09	0.15	0.02
			Max. Vx	34	0.00	0.00	0.00
T8	128 - 108	Leg	Max Tension	15	180.59	-1.72	0.01
			Max. Compression	10	-214.73	2.67	0.04
			Max. Mx	3	-210.45	2.69	-0.03
			Max. My	4	-10.62	-0.09	-2.55
			Max. Vy	14	1.64	-2.59	0.04
			Max. Vx	16	1.66	-0.13	2.54
		Diagonal	Max Tension	20	11.70	0.00	0.00
			Max. Compression	20	-11.92	0.00	0.00
			Max. Mx	31	2.55	0.32	0.04
			Max. My	29	2.85	0.29	-0.04
			Max. Vy	33	0.15	0.31	-0.04
			Max. Vx	30	-0.01	0.00	0.00
T9	108 - 88	Leg	Max Tension	15	221.51	-0.90	0.00
			Max. Compression	10	-263.60	2.57	-0.07
			Max. Mx	3	-233.61	2.69	-0.03
			Max. My	4	-16.40	0.03	-2.43

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	3	0.38	2.69	-0.03
			Max. Vx	18	-0.31	-1.24	2.26
		Diagonal	Max Tension	20	14.25	0.00	0.00
			Max. Compression	20	-14.51	0.00	0.00
			Max. Mx	33	2.71	0.34	-0.05
			Max. My	35	0.39	0.29	0.05
			Max. Vy	33	0.15	0.34	-0.05
			Max. Vx	35	0.01	0.00	0.00
T10	88 - 68	Leg	Max Tension	15	265.99	-2.31	0.00
			Max. Compression	10	-316.07	2.64	-0.04
			Max. Mx	2	-315.17	2.64	0.00
			Max. My	4	-17.18	0.03	-2.43
			Max. Vy	2	-0.24	2.64	0.00
			Max. Vx	18	0.27	-1.24	2.26
		Diagonal	Max Tension	20	17.00	0.00	0.00
			Max. Compression	20	-17.24	0.00	0.00
			Max. Mx	33	3.01	0.53	-0.06
			Max. My	34	-1.56	0.45	0.07
			Max. Vy	33	0.22	0.53	-0.06
			Max. Vx	35	0.01	0.00	0.00
T11	68 - 48	Leg	Max Tension	15	311.87	-2.16	0.01
			Max. Compression	10	-370.67	3.48	-0.04
			Max. Mx	10	-370.67	3.48	-0.04
			Max. My	16	-21.89	-0.24	3.47
			Max. Vy	2	-0.36	3.48	-0.01
			Max. Vx	16	0.53	-0.24	3.47
		Diagonal	Max Tension	20	18.97	0.00	0.00
			Max. Compression	20	-19.40	0.00	0.00
			Max. Mx	31	4.17	0.61	0.07
			Max. My	30	2.90	0.56	-0.07
			Max. Vy	33	0.24	0.61	-0.07
			Max. Vx	30	-0.01	0.00	0.00
T12	48 - 28	Leg	Max Tension	15	356.85	-3.04	0.00
			Max. Compression	10	-424.92	-5.42	-0.01
			Max. Mx	10	-424.92	-5.42	-0.01
			Max. My	12	-25.96	-0.83	-6.08
			Max. Vy	2	1.03	3.04	0.01
			Max. Vx	16	-0.66	-0.16	4.85
		Diagonal	Max Tension	20	20.15	0.00	0.00
			Max. Compression	20	-20.60	0.00	0.00
			Max. Mx	32	2.19	0.71	0.09
			Max. My	34	3.61	0.70	0.09
			Max. Vy	32	0.25	0.70	-0.09
			Max. Vx	34	0.01	0.00	0.00
T13	28 - 8	Leg	Max Tension	15	365.09	3.38	0.01
			Max. Compression	10	-438.80	-0.00	0.00
			Max. Mx	10	-438.05	15.87	0.32
			Max. My	4	-28.23	1.41	6.48
			Max. Vy	10	-2.22	15.87	0.32
			Max. Vx	16	1.38	-0.85	6.06
		Diagonal	Max Tension	21	29.84	-0.13	-0.03
			Max. Compression	20	-30.44	0.00	0.00
			Max. Mx	20	14.95	-0.21	0.04
			Max. My	20	-30.34	-0.01	-0.15
			Max. Vy	33	0.08	-0.20	0.02
			Max. Vx	20	-0.01	0.00	0.00
		Horizontal	Max Tension	20	16.62	-0.20	0.00
			Max. Compression	21	-16.81	-0.15	0.00
			Max. Mx	33	-2.32	-0.39	-0.01
			Max. My	2	1.36	-0.11	0.04
			Max. Vy	33	0.14	-0.39	-0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-0.00	-0.11	0.04
		Redund Horz 1 Bracing	Max Tension	10	7.62	0.00	0.00
			Max. Compression	10	-7.62	0.00	0.00
			Max. Mx	38	2.73	0.09	0.00
			Max. My	4	6.38	0.00	-0.00
			Max. Vy	38	-0.06	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	10	6.93	0.00	0.00
			Max. Compression	10	-6.93	0.00	0.00
			Max. Mx	31	3.06	0.15	0.00
			Max. My	10	6.93	0.00	-0.00
			Max. Vy	31	-0.05	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-0.10	0.00	0.00
			Max. Mx	26	-0.02	0.05	0.00
			Max. Vy	26	-0.03	0.00	0.00
		Redund Hip Diagonal 1 Bracing	Max Tension	8	0.15	0.00	0.00
			Max. Compression	18	-0.07	0.00	0.00
			Max. Mx	33	0.05	0.20	0.00
			Max. My	18	0.06	0.00	0.00
			Max. Vy	33	-0.05	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Inner Bracing	Max Tension	9	0.01	0.00	0.00
			Max. Compression	8	-0.03	0.00	0.00
			Max. Mx	26	-0.02	0.36	0.00
			Max. My	18	-0.00	0.00	0.00
			Max. Vy	26	0.11	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	480.67	50.96	-28.41
	Max. H_x	18	480.67	50.96	-28.41
	Max. H_z	5	-354.72	-37.86	26.02
	Min. Vert	7	-402.67	-45.05	25.04
	Min. H_x	7	-402.67	-45.05	25.04
	Min. H_z	18	480.67	50.96	-28.41
Leg B	Max. Vert	10	481.84	-50.73	-28.79
	Max. H_x	23	-401.13	44.77	25.37
	Max. H_z	25	-353.14	37.49	26.53
	Min. Vert	23	-401.13	44.77	25.37
	Min. H_x	10	481.84	-50.73	-28.79
	Min. H_z	10	481.84	-50.73	-28.79
Leg A	Max. Vert	2	480.67	0.32	58.37
	Max. H_x	21	20.75	7.47	1.80
	Max. H_z	2	480.67	0.32	58.37
	Min. Vert	15	-403.67	-0.28	-51.57
	Min. H_x	9	21.48	-7.45	1.89
	Min. H_z	15	-403.67	-0.28	-51.57

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	72.22	0.00	-0.00	18.65	-16.76	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	86.67	0.11	-97.28	-10889.98	-32.52	15.23
0.9 Dead+1.6 Wind 0 deg - No Ice	65.00	0.11	-97.28	-10885.10	-27.43	15.20
1.2 Dead+1.6 Wind 30 deg - No Ice	86.67	47.13	-81.57	-9054.72	-5260.06	33.23
0.9 Dead+1.6 Wind 30 deg - No Ice	65.00	47.13	-81.57	-9051.74	-5250.03	33.19
1.2 Dead+1.6 Wind 60 deg - No Ice	86.67	78.92	-45.66	-5105.64	-8876.14	39.88
0.9 Dead+1.6 Wind 60 deg - No Ice	65.00	78.92	-45.66	-5106.38	-8862.65	39.85
1.2 Dead+1.6 Wind 90 deg - No Ice	86.67	94.07	-0.11	10.16	-10478.39	36.37
0.9 Dead+1.6 Wind 90 deg - No Ice	65.00	94.07	-0.11	4.55	-10463.41	36.35
1.2 Dead+1.6 Wind 120 deg - No Ice	86.67	84.14	48.55	5468.14	-9450.06	21.20
0.9 Dead+1.6 Wind 120 deg - No Ice	65.00	84.14	48.55	5457.75	-9436.03	21.22
1.2 Dead+1.6 Wind 150 deg - No Ice	86.67	46.92	81.57	9100.28	-5236.93	3.76
0.9 Dead+1.6 Wind 150 deg - No Ice	65.00	46.92	81.57	9086.05	-5226.91	3.77
1.2 Dead+1.6 Wind 180 deg - No Ice	86.67	-0.10	91.22	10267.82	-8.84	-13.73
0.9 Dead+1.6 Wind 180 deg - No Ice	65.00	-0.10	91.22	10252.44	-3.78	-13.71
1.2 Dead+1.6 Wind 210 deg - No Ice	86.67	-47.05	81.56	9098.89	5210.92	-33.53
0.9 Dead+1.6 Wind 210 deg - No Ice	65.00	-47.05	81.56	9084.65	5211.03	-33.50
1.2 Dead+1.6 Wind 240 deg - No Ice	86.67	-84.14	48.67	5482.05	9409.60	-43.39
0.9 Dead+1.6 Wind 240 deg - No Ice	65.00	-84.14	48.67	5471.23	9405.70	-43.36
1.2 Dead+1.6 Wind 270 deg - No Ice	86.67	-94.02	0.05	27.81	10432.99	-36.07
0.9 Dead+1.6 Wind 270 deg - No Ice	65.00	-94.02	0.05	22.19	10428.16	-36.05
1.2 Dead+1.6 Wind 300 deg - No Ice	86.67	-78.89	-45.52	-5090.36	8831.94	-19.21
0.9 Dead+1.6 Wind 300 deg - No Ice	65.00	-78.89	-45.52	-5091.11	8828.59	-19.20
1.2 Dead+1.6 Wind 330 deg - No Ice	86.67	-47.05	-81.50	-9047.45	5210.27	-3.76
0.9 Dead+1.6 Wind 330 deg - No Ice	65.00	-47.05	-81.50	-9044.47	5210.39	-3.77
1.2 Dead+1.0 Ice+1.0 Temp	218.13	-0.00	-0.00	202.93	-79.56	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	218.13	0.02	-25.69	-2862.06	-81.92	0.99
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	218.13	12.36	-21.42	-2345.67	-1546.28	4.24
1.2 Dead+1.0 Wind 60 deg+1.0	218.13	21.42	-12.41	-1283.39	-2641.11	6.34

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Ice+1.0 Temp 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	218.13	24.67	-0.02	201.13	-3008.44	6.38
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	218.13	22.19	12.83	1734.62	-2721.55	4.84
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	218.13	12.31	21.43	2753.27	-1541.63	2.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	218.13	-0.02	24.80	3175.57	-77.62	-0.91
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	218.13	-12.34	21.42	2752.88	1384.73	-4.31
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	218.13	-22.19	12.85	1737.09	2562.00	-6.72
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	218.13	-24.67	0.01	204.43	2847.85	-6.31
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	218.13	-21.42	-12.38	-1280.48	2480.83	-4.55
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	218.13	-12.34	-21.41	-2344.33	1385.01	-2.22
Dead+Wind 0 deg - Service	72.22	0.03	-23.26	-2589.21	-19.72	3.63
Dead+Wind 30 deg - Service	72.22	11.27	-19.51	-2150.62	-1269.05	7.94
Dead+Wind 60 deg - Service	72.22	18.87	-10.92	-1206.86	-2133.32	9.53
Dead+Wind 90 deg - Service	72.22	22.49	-0.03	15.74	-2516.18	8.70
Dead+Wind 120 deg - Service	72.22	20.12	11.61	1320.20	-2270.49	5.07
Dead+Wind 150 deg - Service	72.22	11.22	19.51	2188.16	-1263.55	0.90
Dead+Wind 180 deg - Service	72.22	-0.02	21.81	2467.24	-14.11	-3.28
Dead+Wind 210 deg - Service	72.22	-11.25	19.50	2187.82	1233.35	-8.01
Dead+Wind 240 deg - Service	72.22	-20.12	11.64	1323.53	2236.81	-10.37
Dead+Wind 270 deg - Service	72.22	-22.48	0.01	19.97	2481.33	-8.62
Dead+Wind 300 deg - Service	72.22	-18.86	-10.89	-1203.19	2098.70	-4.59
Dead+Wind 330 deg - Service	72.22	-11.25	-19.49	-2148.87	1233.19	-0.90

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-72.22	0.00	-0.00	72.22	0.00	0.000%
2	0.11	-86.67	-97.28	-0.11	86.67	97.28	0.001%
3	0.11	-65.00	-97.28	-0.11	65.00	97.28	0.001%
4	47.13	-86.67	-81.57	-47.13	86.67	81.57	0.001%
5	47.13	-65.00	-81.57	-47.13	65.00	81.57	0.001%
6	78.92	-86.67	-45.66	-78.92	86.67	45.66	0.001%
7	78.92	-65.00	-45.66	-78.92	65.00	45.66	0.001%
8	94.07	-86.67	-0.11	-94.07	86.67	0.11	0.001%
9	94.07	-65.00	-0.11	-94.07	65.00	0.11	0.001%
10	84.14	-86.67	48.55	-84.14	86.67	-48.55	0.001%
11	84.14	-65.00	48.55	-84.14	65.00	-48.55	0.001%
12	46.92	-86.67	81.58	-46.92	86.67	-81.57	0.001%
13	46.92	-65.00	81.58	-46.92	65.00	-81.57	0.001%
14	-0.10	-86.67	91.22	0.10	86.67	-91.22	0.001%
15	-0.10	-65.00	91.22	0.10	65.00	-91.22	0.001%
16	-47.05	-86.67	81.56	47.05	86.67	-81.56	0.001%
17	-47.05	-65.00	81.56	47.05	65.00	-81.56	0.001%
18	-84.14	-86.67	48.67	84.14	86.67	-48.67	0.001%
19	-84.14	-65.00	48.67	84.14	65.00	-48.67	0.001%
20	-94.02	-86.67	0.05	94.02	86.67	-0.05	0.001%
21	-94.02	-65.00	0.05	94.02	65.00	-0.05	0.001%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
22	-78.89	-86.67	-45.52	78.89	86.67	45.52	0.001%
23	-78.89	-65.00	-45.52	78.89	65.00	45.52	0.001%
24	-47.05	-86.67	-81.51	47.05	86.67	81.50	0.001%
25	-47.05	-65.00	-81.51	47.05	65.00	81.50	0.001%
26	0.00	-218.13	0.00	0.00	218.13	0.00	0.000%
27	0.02	-218.13	-25.69	-0.02	218.13	25.69	0.000%
28	12.36	-218.13	-21.42	-12.36	218.13	21.42	0.000%
29	21.42	-218.13	-12.41	-21.42	218.13	12.41	0.000%
30	24.67	-218.13	-0.02	-24.67	218.13	0.02	0.000%
31	22.19	-218.13	12.83	-22.19	218.13	-12.83	0.000%
32	12.32	-218.13	21.43	-12.31	218.13	-21.43	0.000%
33	-0.02	-218.13	24.80	0.02	218.13	-24.80	0.000%
34	-12.34	-218.13	21.42	12.34	218.13	-21.42	0.000%
35	-22.19	-218.13	12.85	22.19	218.13	-12.85	0.000%
36	-24.67	-218.13	0.01	24.67	218.13	-0.01	0.000%
37	-21.42	-218.13	-12.38	21.42	218.13	12.38	0.000%
38	-12.34	-218.13	-21.41	12.34	218.13	21.41	0.000%
39	0.03	-72.22	-23.26	-0.03	72.22	23.26	0.000%
40	11.27	-72.22	-19.51	-11.27	72.22	19.51	0.000%
41	18.87	-72.22	-10.92	-18.87	72.22	10.92	0.000%
42	22.49	-72.22	-0.03	-22.49	72.22	0.03	0.000%
43	20.12	-72.22	11.61	-20.12	72.22	-11.61	0.000%
44	11.22	-72.22	19.51	-11.22	72.22	-19.51	0.000%
45	-0.02	-72.22	21.81	0.02	72.22	-21.81	0.000%
46	-11.25	-72.22	19.50	11.25	72.22	-19.50	0.000%
47	-20.12	-72.22	11.64	20.12	72.22	-11.64	0.000%
48	-22.48	-72.22	0.01	22.48	72.22	-0.01	0.000%
49	-18.87	-72.22	-10.89	18.86	72.22	10.89	0.000%
50	-11.25	-72.22	-19.49	11.25	72.22	19.49	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00000001	0.00008257
3	Yes	11	0.00000001	0.00006138
4	Yes	11	0.00000001	0.00008296
5	Yes	11	0.00000001	0.00006176
6	Yes	11	0.00000001	0.00008336
7	Yes	11	0.00000001	0.00006214
8	Yes	11	0.00000001	0.00008284
9	Yes	11	0.00000001	0.00006166
10	Yes	11	0.00000001	0.00008263
11	Yes	11	0.00000001	0.00006133
12	Yes	11	0.00000001	0.00008293
13	Yes	11	0.00000001	0.00006175
14	Yes	11	0.00000001	0.00008337
15	Yes	11	0.00000001	0.00006216
16	Yes	11	0.00000001	0.00008286
17	Yes	11	0.00000001	0.00006169
18	Yes	11	0.00000001	0.00008261
19	Yes	11	0.00000001	0.00006141
20	Yes	11	0.00000001	0.00008290
21	Yes	11	0.00000001	0.00006173
22	Yes	11	0.00000001	0.00008336

23	Yes	11	0.00000001	0.00006215
24	Yes	11	0.00000001	0.00008290
25	Yes	11	0.00000001	0.00006170
26	Yes	9	0.00000001	0.00009251
27	Yes	12	0.00000001	0.00006529
28	Yes	12	0.00000001	0.00006470
29	Yes	12	0.00000001	0.00006595
30	Yes	12	0.00000001	0.00006618
31	Yes	12	0.00000001	0.00006778
32	Yes	12	0.00000001	0.00006718
33	Yes	12	0.00000001	0.00006757
34	Yes	12	0.00000001	0.00006656
35	Yes	12	0.00000001	0.00006671
36	Yes	12	0.00000001	0.00006469
37	Yes	12	0.00000001	0.00006459
38	Yes	12	0.00000001	0.00006383
39	Yes	11	0.00000001	0.00006593
40	Yes	11	0.00000001	0.00006579
41	Yes	11	0.00000001	0.00006570
42	Yes	11	0.00000001	0.00006572
43	Yes	11	0.00000001	0.00006587
44	Yes	11	0.00000001	0.00006571
45	Yes	11	0.00000001	0.00006567
46	Yes	11	0.00000001	0.00006560
47	Yes	11	0.00000001	0.00006574
48	Yes	11	0.00000001	0.00006556
49	Yes	11	0.00000001	0.00006568
50	Yes	11	0.00000001	0.00006569

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	256 - 248	5.737	43	0.2144	0.0038
T2	248 - 228	5.374	43	0.2135	0.0045
T3	228 - 208	4.486	43	0.2015	0.0064
T4	208 - 188	3.667	43	0.1781	0.0084
T5	188 - 168	2.957	43	0.1544	0.0099
T6	168 - 148	2.331	43	0.1367	0.0101
T7	148 - 128	1.779	43	0.1171	0.0092
T8	128 - 108	1.307	43	0.0958	0.0074
T9	108 - 88	0.931	43	0.0759	0.0064
T10	88 - 68	0.620	43	0.0598	0.0052
T11	68 - 48	0.376	43	0.0459	0.0043
T12	48 - 28	0.189	43	0.0309	0.0034
T13	28 - 8	0.065	39	0.0152	0.0024

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
256.00	10' Yagi w/ (5) 6' Elements	43	5.737	0.2144	0.0038	319096
250.33	2" Dia 10' Omni	43	5.480	0.2139	0.0043	282700
248.00	2" Dia 10' Omni	43	5.374	0.2135	0.0045	205720

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
244.67	2" Dia 10' Omni	43	5.223	0.2125	0.0048	154784
243.00	2" Dia 10' Omni	43	5.148	0.2118	0.0050	139117
239.00	2" Dia 10' Omni	43	4.969	0.2099	0.0053	112107
238.00	2" Dia 10' Omni	43	4.925	0.2093	0.0054	106918
180.00	(2) AIR 21 w/ Mount Pipe	43	2.698	0.1469	0.0101	64121
121.00	VHLP1-23	43	1.166	0.0885	0.0070	52104
118.00	NNVV-65B-R4 w/ Mount Pipe	43	1.109	0.0855	0.0068	58719
110.00	(2) APL866513-42T6	43	0.966	0.0777	0.0065	87328
100.00	TV 65 Antenna	43	0.799	0.0690	0.0059	80991

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	256 - 248	23.854	10	0.8963	0.0159
T2	248 - 228	22.341	10	0.8919	0.0189
T3	228 - 208	18.644	10	0.8402	0.0269
T4	208 - 188	15.232	10	0.7405	0.0354
T5	188 - 168	12.283	10	0.6412	0.0415
T6	168 - 148	9.683	10	0.5670	0.0422
T7	148 - 128	7.394	10	0.4854	0.0385
T8	128 - 108	5.433	10	0.3974	0.0311
T9	108 - 88	3.874	10	0.3150	0.0267
T10	88 - 68	2.579	10	0.2482	0.0217
T11	68 - 48	1.566	10	0.1905	0.0181
T12	48 - 28	0.789	2	0.1285	0.0143
T13	28 - 8	0.270	3	0.0631	0.0101

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
256.00	10' Yagi w/ (5) 6' Elements	10	23.854	0.8963	0.0159	79855
250.33	2" Dia 10' Omni	10	22.781	0.8938	0.0180	70716
248.00	2" Dia 10' Omni	10	22.341	0.8919	0.0189	51398
244.67	2" Dia 10' Omni	10	21.714	0.8876	0.0202	38336
243.00	2" Dia 10' Omni	10	21.401	0.8848	0.0208	34306
239.00	2" Dia 10' Omni	10	20.655	0.8763	0.0224	27433
238.00	2" Dia 10' Omni	10	20.470	0.8738	0.0228	26124
180.00	(2) AIR 21 w/ Mount Pipe	10	11.206	0.6100	0.0424	15325
121.00	VHLP1-23	10	4.847	0.3672	0.0293	12567
118.00	NNVV-65B-R4 w/ Mount Pipe	10	4.611	0.3546	0.0287	14180
110.00	(2) APL866513-42T6	10	4.016	0.3226	0.0272	21203
100.00	TV 65 Antenna	10	3.326	0.2864	0.0247	19591

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	256	Leg	A325N	1.0000	8	0.32	53.01	0.006	1	Bolt Tension
		Diagonal	A325N	0.8750	2	0.86	7.83	0.110	1	Member Block Shear
T2	248	Leg	A325N	1.0000	8	2.75	53.01	0.052	1	Bolt Tension
		Diagonal	A325N	0.8750	2	1.56	11.20	0.140	1	Member Block Shear
T3	228	Leg	A325N	1.0000	8	6.52	53.01	0.123	1	Bolt Tension
		Diagonal	A325N	0.8750	2	2.19	11.20	0.195	1	Member Block Shear
T4	208	Leg	A325N	1.0000	8	9.00	53.01	0.170	1	Bolt Tension
		Diagonal	A325N	0.8750	2	1.44	11.20	0.129	1	Member Block Shear
T5	188	Leg	A325N	1.0000	8	11.59	53.01	0.219	1	Bolt Tension
		Diagonal	A325N	0.8750	2	2.58	12.72	0.203	1	Member Block Shear
T6	168	Leg	A325N	1.0000	8	15.09	53.01	0.285	1	Bolt Tension
		Diagonal	A325N	0.8750	2	3.30	13.48	0.244	1	Member Block Shear
T7	148	Leg	A325N	1.0000	8	18.87	53.01	0.356	1	Bolt Tension
		Diagonal	A325N	0.8750	2	3.85	13.48	0.286	1	Member Block Shear
T8	128	Leg	A325N	1.0000	8	22.50	53.01	0.424	1	Bolt Tension
		Diagonal	A325N	0.8750	2	5.85	22.51	0.260	1	Member Block Shear
T9	108	Leg	A325N	1.2500	8	27.69	82.83	0.334	1	Bolt Tension
		Diagonal	A325N	0.8750	2	7.12	18.76	0.380	1	Member Block Shear
T10	88	Leg	A325N	1.2500	8	33.25	82.83	0.401	1	Bolt Tension
		Diagonal	A325N	0.8750	2	8.62	24.35	0.354	1	Bolt Shear
T11	68	Leg	A325N	1.2500	8	38.98	82.83	0.471	1	Bolt Tension
		Diagonal	A325N	0.8750	2	9.70	24.35	0.398	1	Bolt Shear
T12	48	Leg	A325N	1.2500	12	29.74	82.83	0.359	1	Bolt Tension
		Diagonal	A325N	0.8750	2	10.30	24.35	0.423	1	Bolt Shear
T13	28	Diagonal	A325N	0.6250	3	10.15	12.43	0.817	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	256 - 248	ROHN 3 STD	8.00	4.00	41.3 K=1.00	2.2285	-5.84	88.54	0.066 [1]
T2	248 - 228	ROHN 3 EH	20.00	4.00	42.2 K=1.00	3.0159	-27.56	119.12	0.231 [1]
T3	228 - 208	ROHN 4 EH	20.00	4.00	32.5 K=1.00	4.4074	-61.12	183.59	0.333 [1]
T4	208 - 188	ROHN 5 EH	20.04	5.01	32.7 K=1.00	6.1120	-84.35	254.37	0.332 [1]
T5	188 - 168	ROHN 6 EH	20.03	6.68	36.5	8.4049	-109.87	343.10	0.320 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	168 - 148	ROHN 6 EH	20.03	6.68	K=1.00 36.5	8.4049	-142.24	343.10	0.415 [1]
T7	148 - 128	ROHN 6 EH	20.04	6.68	K=1.00 36.5	8.4049	-177.57	343.09	0.518 [1]
T8	128 - 108	ROHN 8 EHS	20.04	10.02	K=1.00 41.2	9.7193	-214.73	386.38	0.556 [1]
T9	108 - 88	ROHN 8 EH	20.04	10.02	K=1.00 41.8	12.7627	-263.60	505.52	0.521 [1]
T10	88 - 68	P10x.5	20.03	10.02	K=1.00 33.1	16.1007	-316.07	668.66	0.473 [1]
T11	68 - 48	P10x.5	20.03	10.02	K=1.00 33.1	16.1007	-370.67	668.66	0.554 [1]
T12	48 - 28	P10x.5	20.04	10.02	K=1.00 33.1	16.1007	-424.92	668.64	0.635 [1]
T13	28 - 8	P10x.5	20.05	10.03	K=1.00 33.2	16.1007	-438.80	668.56	0.656 [1]
					K=1.00				

[1] P_u / ϕP_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	256 - 248	L1 3/4x1 3/4x3/16	7.91	3.57	123.6 K=0.99	0.6211	-1.67	9.18	0.182 [1]
T2	248 - 228	L2x2x1/4	7.98	3.56	111.9 K=1.02	0.9380	-3.14	16.89	0.186 [1]
T3	228 - 208	L2x2x1/4	7.92	3.49	110.3 K=1.03	0.9380	-4.51	17.35	0.260 [1]
T4	208 - 188	L2x2x1/4	10.00	4.62	136.7 K=0.96	0.9380	-2.91	11.35	0.256 [1]
T5	188 - 168	L2 1/2x2 1/2x1/4	12.51	5.86	137.8 K=0.96	1.1900	-5.22	14.15	0.369 [1]
T6	168 - 148	L3x3x1/4	14.24	6.74	132.6 K=0.97	1.4400	-6.69	18.49	0.362 [1]
T7	148 - 128	L3x3x1/4	16.09	7.67	147.1 K=0.95	1.4400	-7.82	15.04	0.520 [1]
T8	128 - 108	L4x4x3/8	19.35	9.30	136.5 K=0.96	2.8600	-11.92	34.67	0.344 [1]
T9	108 - 88	L4x4x5/16	21.22	10.25	147.1 K=0.95	2.4000	-14.51	25.07	0.579 [1]
T10	88 - 68	L5x5x3/8	23.04	11.04	130.5 K=0.98	3.6100	-17.24	47.85	0.360 [1]
T11	68 - 48	L5x5x3/8	24.84	11.94	138.9 K=0.96	3.6100	-19.40	42.28	0.459 [1]
T12	48 - 28	L5x5x3/8	26.75	12.91	147.9 K=0.94	3.6100	-20.60	37.29	0.552 [1]
T13	28 - 8	ROHN 3 STD	24.38	12.19	125.7 K=1.00	2.2285	-30.44	31.86	0.955 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

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	
T13	28 - 8	ROHN 3 STD	25.33	12.22	126.0 K=1.00	2.2285	-16.81	31.71	0.530 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

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	256 - 248	L3x3x1/4	6.60	6.31	124.9 K=0.98	1.4400	-0.62	20.53	0.030 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

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	
T13	28 - 8	ROHN 3 STD	6.33	5.89	60.7 K=1.00	2.2285	-7.62	59.47	0.128 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

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	
T13	28 - 8	ROHN 3 STD	11.52	10.62	109.5 K=1.00	2.2285	-6.93	38.41	0.180 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 1.5 STD	6.33	6.33	122.1 K=1.00	0.7995	-0.10	11.82	0.008 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 1.5 STD KL/R > 250 (C) - 268	15.13	15.13	291.5 K=1.00	0.7995	-0.07	2.13	0.033 [1]

[1] P_u / ϕP_n controls

Inner Bracing 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 3 STD	12.67	12.67	130.6 K=1.00	2.2285	-0.03	29.50	0.001 [1]

[1] P_u / ϕP_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	256 - 248	ROHN 3 STD	8.00	4.00	41.3	2.2285	2.56	100.28	0.026 [1]
T2	248 - 228	ROHN 3 EH	20.00	4.00	42.2	3.0159	21.97	135.72	0.162 [1]
T3	228 - 208	ROHN 4 EH	20.00	4.00	32.5	4.4074	52.15	198.34	0.263 [1]
T4	208 - 188	ROHN 5 EH	20.04	5.01	32.7	6.1120	71.99	275.04	0.262 [1]
T5	188 - 168	ROHN 6 EH	20.03	6.68	36.5	8.4049	92.68	378.22	0.245 [1]
T6	168 - 148	ROHN 6 EH	20.03	6.68	36.5	8.4049	120.74	378.22	0.319 [1]
T7	148 - 128	ROHN 6 EH	20.04	6.68	36.5	8.4049	150.99	378.22	0.399 [1]
T8	128 - 108	ROHN 8 EHS	20.04	10.02	41.2	9.7193	180.01	437.37	0.412 [1]
T9	108 - 88	ROHN 8 EH	20.04	10.02	41.8	12.7627	221.51	574.32	0.386 [1]
T10	88 - 68	P10x.5	20.03	10.02	33.1	16.1007	265.99	724.53	0.367 [1]
T11	68 - 48	P10x.5	20.03	10.02	33.1	16.1007	311.87	724.53	0.430 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	48 - 28	P10x.5	20.04	10.02	33.1	16.1007	356.85	724.53	0.493 [1]
T13	28 - 8	P10x.5	20.05	10.03	33.2	16.1007	365.09	724.53	0.504 [1]

[1] P_u / ϕP_n controls

Diagonal 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	256 - 248	L1 3/4x1 3/4x3/16	7.91	3.57	85.6	0.3252	1.71	15.85	0.108 [1]
T2	248 - 228	L2x2x1/4	7.98	3.56	75.3	0.5160	3.13	25.16	0.124 [1]
T3	228 - 208	L2x2x1/4	7.92	3.49	73.9	0.5160	4.37	25.16	0.174 [1]
T4	208 - 188	L2x2x1/4	10.00	4.62	96.2	0.5160	2.89	25.16	0.115 [1]
T5	188 - 168	L2 1/2x2 1/2x1/4	12.51	5.86	95.6	0.7050	5.16	34.37	0.150 [1]
T6	168 - 148	L3x3x1/4	14.24	6.74	90.3	0.8925	6.59	43.51	0.151 [1]
T7	148 - 128	L3x3x1/4	16.09	7.67	102.3	0.8925	7.71	43.51	0.177 [1]
T8	128 - 108	L4x4x3/8	19.35	9.30	93.3	1.8637	11.70	90.86	0.129 [1]
T9	108 - 88	L4x4x5/16	21.22	10.25	101.7	1.5656	14.25	76.32	0.187 [1]
T10	88 - 68	L5x5x3/8	23.04	11.04	86.9	2.4262	17.00	118.28	0.144 [1]
T11	68 - 48	L5x5x3/8	24.84	11.94	93.8	2.4262	18.97	118.28	0.160 [1]
T12	48 - 28	L5x5x3/8	26.75	12.91	101.3	2.4262	20.15	118.28	0.170 [1]
T13	28 - 8	ROHN 3 STD	24.38	12.19	125.7	2.2285	29.84	100.28	0.298 [1]

[1] P_u / ϕP_n controls

Horizontal 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 3 STD	25.33	12.22	126.0	2.2285	16.62	100.28	0.166 [1]

[1] P_u / ϕP_n controls

Top Girt 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	256 - 248	L3x3x1/4	6.60	6.31	81.4	1.4400	0.60	46.66	0.013 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 3 STD	6.33	5.89	60.7	2.2285	7.62	72.20	0.105 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 3 STD	11.52	10.62	109.5	2.2285	6.93	72.20	0.096 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 1.5 STD	15.13	15.13	291.5	0.7995	0.15	25.90	0.006 [1]

[1] P_u / ϕP_n controls

Inner Bracing 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 $\frac{P_u}{\phi P_n}$
T13	28 - 8	ROHN 3 STD	12.67	12.67	130.6	2.2285	0.01	100.28	0.000 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	256 - 248	Leg	ROHN 3 STD	3	-5.84	88.54	6.6	Pass
T2	248 - 228	Leg	ROHN 3 EH	21	-27.56	119.12	23.1	Pass
T3	228 - 208	Leg	ROHN 4 EH	54	-61.12	183.59	33.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T4	208 - 188	Leg	ROHN 5 EH	87	-84.35	254.37	33.2	Pass
T5	188 - 168	Leg	ROHN 6 EH	114	-109.87	343.10	32.0	Pass
T6	168 - 148	Leg	ROHN 6 EH	134	-142.24	343.10	41.5	Pass
T7	148 - 128	Leg	ROHN 6 EH	155	-177.57	343.09	51.8	Pass
T8	128 - 108	Leg	ROHN 8 EHS	176	-214.73	386.38	55.6	Pass
T9	108 - 88	Leg	ROHN 8 EH	191	-263.60	505.52	52.1	Pass
T10	88 - 68	Leg	P10x.5	206	-316.07	668.66	47.3	Pass
T11	68 - 48	Leg	P10x.5	221	-370.67	668.66	55.4	Pass
T12	48 - 28	Leg	P10x.5	236	-424.92	668.64	63.5	Pass
T13	28 - 8	Leg	P10x.5	251	-438.80	668.56	65.6	Pass
T1	256 - 248	Diagonal	L1 3/4x1 3/4x3/16	12	-1.67	9.18	18.2	Pass
T2	248 - 228	Diagonal	L2x2x1/4	26	-3.14	16.89	18.6	Pass
T3	228 - 208	Diagonal	L2x2x1/4	59	-4.51	17.35	26.0	Pass
T4	208 - 188	Diagonal	L2x2x1/4	93	-2.91	11.35	25.6	Pass
T5	188 - 168	Diagonal	L2 1/2x2 1/2x1/4	115	-5.22	14.15	36.9	Pass
T6	168 - 148	Diagonal	L3x3x1/4	136	-6.69	18.49	36.2	Pass
T7	148 - 128	Diagonal	L3x3x1/4	157	-7.82	15.04	52.0	Pass
T8	128 - 108	Diagonal	L4x4x3/8	178	-11.92	34.67	34.4	Pass
T9	108 - 88	Diagonal	L4x4x5/16	193	-14.51	25.07	57.9	Pass
T10	88 - 68	Diagonal	L5x5x3/8	208	-17.24	47.85	36.0	Pass
T11	68 - 48	Diagonal	L5x5x3/8	223	-19.40	42.28	45.9	Pass
T12	48 - 28	Diagonal	L5x5x3/8	238	-20.60	37.29	55.2	Pass
T13	28 - 8	Diagonal	ROHN 3 STD	254	-30.44	31.86	95.5	Pass
T13	28 - 8	Horizontal	ROHN 3 STD	253	-16.81	31.71	53.0	Pass
T1	256 - 248	Top Girt	L3x3x1/4	4	-0.62	20.53	3.0	Pass
T13	28 - 8	Redund Horz 1 Bracing	ROHN 3 STD	258	-7.62	59.47	12.8	Pass
T13	28 - 8	Redund Diag 1 Bracing	ROHN 3 STD	259	-6.93	38.41	18.0	Pass
T13	28 - 8	Redund Hip 1 Bracing	ROHN 1.5 STD	278	-0.10	11.82	0.8	Pass
T13	28 - 8	Redund Hip Diagonal 1 Bracing	ROHN 1.5 STD	268	-0.07	2.13	3.3	Pass
T13	28 - 8	Inner Bracing	ROHN 3 STD	281	-0.02	29.50	0.2	Pass
							Summary	
							Leg (T13) 65.6	Pass
							Diagonal (T13) 95.5	Pass
							Horizontal (T13) 53.0	Pass
							Top Girt (T1) 3.0	Pass
							Redund Horz 1 Bracing (T13) 12.8	Pass
							Redund Diag 1 Bracing (T13) 18.0	Pass
							Redund Hip 1 Bracing (T13) 0.8	Pass
							Redund Hip Diagonal 1 Bracing (T13) 3.3	Pass
							Inner Bracing (T13) 0.2	Pass
							Bolt Checks 81.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$øP_{allow}$ K	% Capacity	Pass Fail
						RATING =	**95.5**	**Pass**

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT52XC007

Bridgeport West
623 Pine Street
Bridgeport, CT 06605

May 22, 2018

EBI Project Number: 6218003931

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.20 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

May 22, 2018

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT52XC007 – Bridgeport West**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **623 Pine Street, Bridgeport, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS), 11 GHz microwave and 23 GHz microwave bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **623 Pine Street, Bridgeport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) 1 microwave backhaul channel (23 GHz) was considered for sectors A & B. 1 microwave backhaul channel (11 GHz) was considered for sector C. These channels have a transmit power of 1 Watt per channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands and the **Andrew VHLP1-23** and **Andrew VHLP2.5-11** parabolic dishes for the microwave backhaul. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerlines of the proposed antennas are **118 feet** above ground level (AGL) for **Sector A**, **118 feet** above ground level (AGL) for **Sector B** and **118 feet** above ground level (AGL) for Sector C.

    The antenna mounting height centerlines of the proposed microwave dishes are **121 feet** above ground level (AGL) for **Sector A**, **121feet** above ground level (AGL) for **Sector B** and **121 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**118 feet**	Height (AGL):	**118 feet**	Height (AGL):	**118 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	6,248.42	ERP (W):	6,248.42	ERP (W):	6,248.42
Antenna A1 MPE%	**2.04 %**	Antenna B1 MPE%	**2.04 %**	Antenna C1 MPE%	**2.04 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**118 feet**	Height (AGL):	**118 feet**	Height (AGL):	**118 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**1.47 %**	Antenna B2 MPE%	**1.47 %**	Antenna C2 MPE%	**1.47 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Andrew VHLP1-23	33.15 dBd	121	23 GHz	1	1	2,065.38	**0.05**	A
Andrew VHLP1-23	33.15 dBd	121	23 GHz	1	1	2,065.38	**0.05**	B
Andrew VHLP2.5-11	35.35 dBd	121	11 GHz	1	1	3,427.68	**0.09**	C

Site Composite MPE%

Carrier	MPE%
SPRINT – Sector C	**3.60 %**
Clearwire	0.14 %
Verizon Wireless	3.44 %
T-Mobile	2.16 %
Unknown	1.58 %
MetroPCS	1.28 %
Site Total MPE %:	**12.20 %**

SPRINT Sector A Total:	3.56 %
SPRINT Sector B Total:	3.56 %
SPRINT Sector C Total:	3.60 %
Site Total:	12.20 %

Sprint Max Power Values (Sector C)

SPRINT _ Frequency Band / Technology (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	118	1.08	850 MHz	567	0.19%
Sprint 850 MHz LTE	2	376.73	118	2.16	850 MHz	567	0.38%
Sprint 1900 MHz (PCS) CDMA	5	511.82	118	7.33	1900 MHz (PCS)	1000	0.73%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	118	7.33	1900 MHz (PCS)	1000	0.73%
Sprint 2500 MHz (BRS) LTE	8	639.78	118	14.67	2500 MHz (BRS)	1000	1.47%
Sprint 11 GHz Microwave	1	3,427.68	121	0.93	11 GHz	1000	0.09%
						Total*:	**3.60%**

*NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	3.56 %
Sector B:	3.56 %
Sector C:	3.60 %
SPRINT Maximum Total (Sector C):	3.60 %
Site Total:	12.20 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.20 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

BUILDING DEPARTMENT

City of Bridgeport, Connecticut

BUILDING PERMIT

Nº 3220

OCT 26 2010 20____

Permission is hereby granted to Andrew Knapp

to erect Telecommunications

Located at 623 Pine St.

This permit is granted on condition that all city, state and federal rules, regulations and laws are complied with. A certificate of occupancy must be granted before the permitted work can be used or occupied. This permit expires six (6) months from date of issue if work is not commenced.

CALL OFFICE WHEN WORK IS STARTED - 203-576-7225

Special Conditions: _____

BRUCE A. NELSON, *Deputy Building Official*

PETER J. PAAJANEN, *Building Official*

Form 38

City Of Bridgeport

City Of Bridgeport
325 CONGRESS STREET
BRIDGEPORT
(203) - 576 - 7241 (ASSESSC

Bill Information

Taxpayer Information			
Bill #	2013-1-0015965 (REAL ESTATE)	Town Benefit	
Unique ID	0307--25-------	Elderly Benefit	
District/Flag			
Name	KNAPP ANDREW & LILLIAN &	Assessment	250,987
Care of/DBA	ROBERT KNAPP (SURV OF THEM)	Exemption	0
Address		Net	250,987
Detail Information	623 PINE ST		
Volume/Page		Mill Rate	Town 42.198

Bill Information As of 06/19/2018

Installment	Due Date	Town/City	District	Other
Inst #1	07/01/2014	5,295.58		
Inst #2	01/01/2015	5,295.58		
Inst #3				
Inst #4				
Total Adjustments		0.00		
Total Installment + Adjustment		10,591.16		
Total Payments		10,591.16		

Total Due	
Tax/ Princ/ Bond Due	0.00
Interest Due	0.00
Lien Due	0.00
Fee Due	0.00
Total Due Now	0.00
Balance Due	0.00

***** Note: This is not a tax form, please contact your financial advisor for information regarding tax reporting. *****

Payment History

Payment Date	Type	Tax/Principal/Bond	Interest	Lien	Fee	Total
12/31/2014	PAY	5,295.58	0.00	0.00	0.00	5,295.58
08/01/2014	PAY	5,295.58	0.00	0.00	0.00	5,295.58

***** Total payments made to taxes in** 2017	$0.00

ORIGIN ID:CBZA (973) 477-8032
STEVE SOFMAN
CHARLES CHERUNDOLO CONSULTING
1280 ROUTE 46 WEST
SUITE 9
PARSIPPANY, NJ 07054
UNITED STATES US

SHIP DATE: 19JUN18
ACTWGT: 1.00 LB
CAD: 111040781/INET3980

BILL SENDER

TO **SITE LEASING**
RADIO COMMUNICATIONS CORP
24 ROCKDALE RD

WEST HAVEN CT 06516
(203) 933-2432 REF: CT52XC007 CSC
INV:
PO: DEPT:

552J2/93DF/DCA5

FedEx Express

E

J181118012601uv

TRK# 7725 0915 5855
0201

FRI - 22 JUN 4:30P
EXPRESS SAVER

K7 EFBA

06516
CT-US **BDL**

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:CBZA (973) 477-8032
STEVE SOFMAN
CHARLES CHERUNDOLO CONSULTING
1280 ROUTE 46 WEST
SUITE 9
PARSIPPANY, NJ 07054
UNITED STATES US

SHIP DATE: 19JUN18
ACTWGT: 1.00 LB
CAD: 111040781/INET3980

BILL SENDER

TO **MAYOR GANIM**
CITY OF BRIDGEPORT
999 BROAD ST
MARGARET E MORTON GOV CENTER
BRIDGEPORT CT 06604
(203) 576-7201 REF: CT52XC007
INV:
PO: DEPT:

552J2/93DF/DCA5

FedEx Express

E

J181118012601uv

FRI - 22 JUN 4:30P
EXPRESS SAVER

TRK# 0201 **7725 0910 7338**

06604
BDL

K7 BCCA CT-US

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ORIGIN ID:CBZA (973) 477-8032
STEVE SOFMAN
CHARLES CHERUNDOLO CONSULTING
1280 ROUTE 46 WEST
SUITE 9
PARSIPPANY, NJ 07054
UNITED STATES US

SHIP DATE: 19JUN18
ACTWGT: 1.00 LB
CAD: 111040781/INET3980

BILL SENDER

TO **THOMAS GILL**
CITY OF BRIDGEPORT
999 BROAD ST
MARGARET E MORTON GOV CENTER
BRIDGEPORT CT 06604
(203) 576-7201 REF: CT52XC007
INV:
PO: DEPT:

552J2/93DF/DCA5

FedEx Express

J181118012601uv

FRI - 22 JUN 4:30P
EXPRESS SAVER

TRK# 0201 **7725 0912 0004**

K7 BCCA

06604
CT-US **BDL**

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