THOMAS J. REGAN
direct dial: (860) 509-6522
tregan@brownrudnick.com

185 Asylum
Street
Hartford
Connecticut
06103
tel 860.509.6500
fax 860.509.6501

January 30, 2017

VIA OVERNIGHT COURIER &
E-MAIL (SITING.COUNCIL@CT.GOV)

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

RE: Notice of Exempt Modification
54 Waterbury Road, Prospect
41-30-40.37 N, 72-58-57.09 W

Dear Executive Director Bachman:

Sprint Corporation ("Sprint") currently maintains three (3) 2500 MHz LTE antennas, three (3) 1900 MHz remote radio heads ("RRH"s) and three (3) 800 MHz RRHs at the 146-foot level of the 160-foot guyed wire tower at 54 Waterbury Road in Prospect, Connecticut. Both the tower and the property are owned by Charles & Averyll Bradshaw (see **Exhibit A**, Letter of Authorization and Town of Prospect Assessor's information).

As you may recall, in July 2015, the Siting Council granted Sprint approval for modifications to this tower (EM-SPRINT-115-150623) so Sprint could install its Network Vision and 2.5 GHz equipment. Although Sprint was able to install its Network Vision antennas it was unable to complete the 2.5 GHz equipment installation as that equipment was not available. Sprint is now prepared to go forward with the 2.5 GHz portion of its upgrade. The key change in this current Notice versus the 2015 Notice is 1) the Network Vision antennas were installed and are therefore not included in this Notice, and 2) the make and model of the currently proposed 2.5 GHz equipment is different (smaller and lighter) than the equipment proposed in 2015.

Sprint now intends to add three (3) new 2.5 GHz antennas and three (3) Remote Radio Units ("RRU"s) at the 146-foot level. Sprint will also install one (1) 1" flexible corrugated innerduct conduit with fiber cables and an ethernet cable; and one (1) 1" flexible corrugated innerduct conduit with an AC power cable. The new cables will run within the existing underground conduit to Sprint's existing equipment room inside the existing equipment building, therefore this modification in no way impacts the size of the lease area.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to: Robert J. Chatfield, Mayor, Town of Prospect; E. Gil Graveline, Planning & Zoning Chairman, Town of Prospect; and Charles & Averyll Bradshaw, tower and property owners.

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

1. The proposed modifications will not result in an increase in the height of the existing structure (see **Exhibit B**, Site Plan);

2. The proposed modifications will not require the extension of the site boundary (see **Exhibit B**);

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

4. The operation of the new antennas and RRUs will not increase the radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard (see **Exhibit C**, RF Report);

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

6. The existing structure and its foundation can support the proposed loading (see **Exhibit D**, Structural Report).

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

Sincerely,

BROWN RUDNICK LLP

Thomas J. Regan

Enclosures

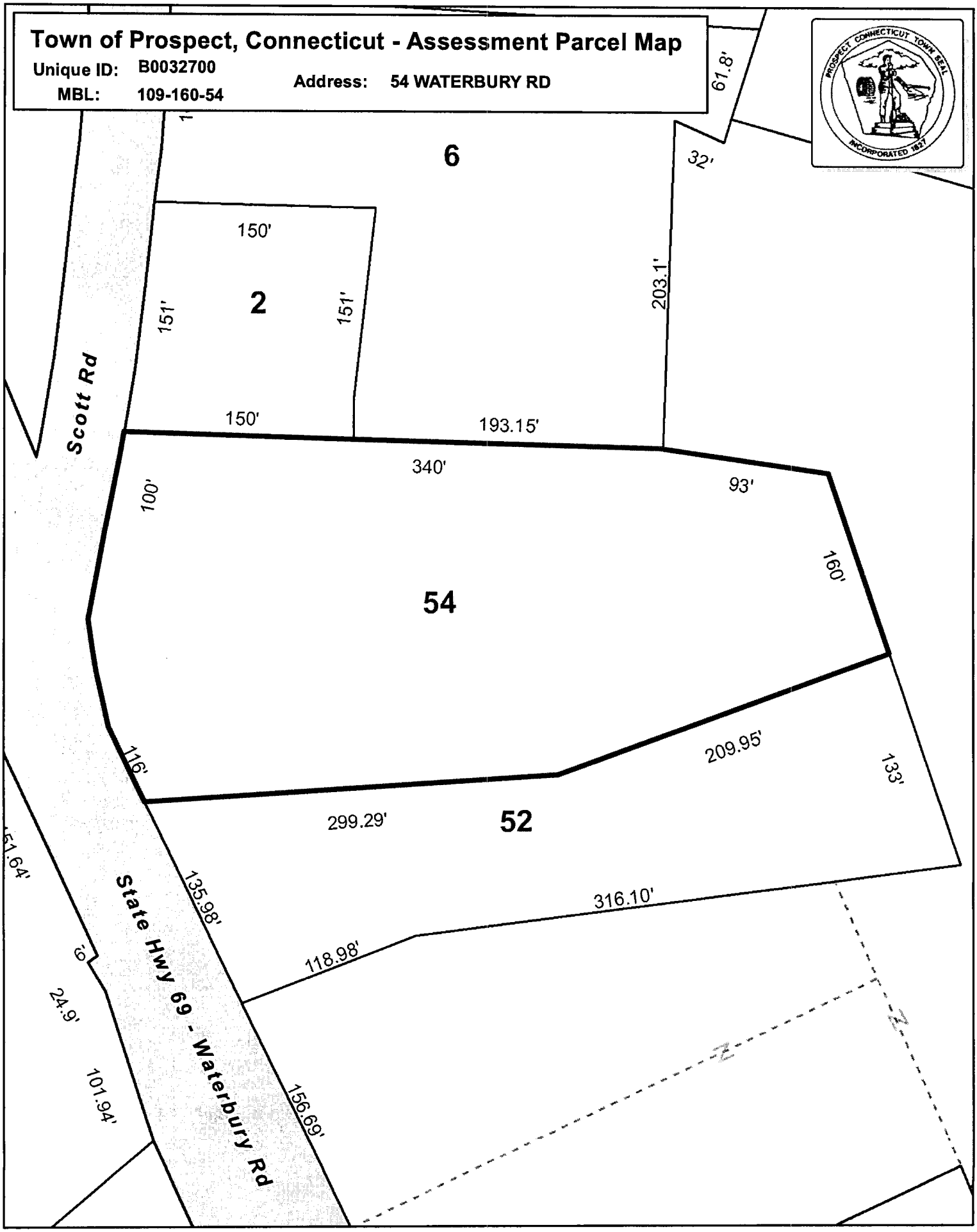
cc: Robert Chatfield, Mayor, Town of Prospect
E. Gil Graveline, Planning & Zoning Chairman, Town of Prospect
Charles & Averyll Bradshaw, Property & Tower Owners

62688286

EXHIBIT A

Town of Prospect, Connecticut - Assessment Parcel Map

Unique ID: B0032700
MBL: 109-160-54
Address: 54 WATERBURY RD



N
W E
S

Approximate Scale:
1 inch = 100 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Prospect and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced June 2016

TOWN OF
PROSPECT
CONNECTICUT
GIS & Real Property Information

Town Offices
36 Center Street
Prospect, CT 06712
ph: (203)758-4461

Property Search

Name: ex. Smith

House No:
54

Street:
WATERBURY RD

Unique Parcel Id: ex.P0324300

Information Updates

GIS Parcels Updated
May 2016

Property Info Data Updated
Nightly - not finalized

Current Parcel Count
3,758 +/-

Detailed Parcel Information

GIS ID
109 160 54

Parcel ID
109 160 54

Unique ID
B0032700

Owner
BRADSHAW CHARLES E &
AVERYLL B

Location
54 WATERBURY RD

MAILING ADDRESS
54 WATERBURY RD
PROSPECT CT 06712

Quick Links: Quick Map | eQuality Property Card | Assessor Tax Map | Zoom to GIS

Scroll Down For Complete Property Detail

PARCEL VALUATIONS

	Appraised Value	Assessed Value

Sprint

LETTER OF AUTHORIZATION – PERMIT APPLICATION

TO THE CONNECTICUT SITING COUNCIL

APPLICATIONS FOR PERMITS / APPROVALS

The undersigned (Charles Bradshaw and Averyll Bradshaw), owner of the below described property and tower ("Owner"), does hereby authorize applicant Sprint Corp., including its affiliates/subsidiaries, their employees and agents ("Sprint"), to file and complete the necessary applications for any and all required Connecticut Siting Council reviews, permits and approvals, as may be required for the construction/installation of Sprint's proposed 2.5 upgrade to its existing communication facility consisting of the installation of panel antennas, installation of remote radio units, installation of cabling and associated supporting equipment on the Property. Sprint will be responsible for all costs, fees and expenses incurred in securing its required permits and approvals from the Connecticut Siting Council.

Property Located at: 54 Waterbury Road, Town of Prospect, CT ("Property")

Assessor's Parcel Number ID: 109-160-54

Owner's Name: Charles Bradshaw and Averyll Bradshaw

Signature (and title, if applicable) of Property Owner Representative:

Charles Bradshaw
- Property Owner

By: Charles Bradshaw
Name: Charles Bradshaw
Title: Owner
Date: 1-16-17

Averyll Bradshaw
- Property Owner

By: Averyll Bradshaw
Name: Averyll Bradshaw
Title: Co-Owner
Date: 1/16/17

Site Cascade ID #: CT81XC010 / CT0946

Site Name: Prospect-Waterbury Rd.

EXHIBIT B

Sprint

PROJECT:	2.5 MM OVERLAY ON NETWORK VISION
SITE NAME:	PROSPECT - WATERBURY ROAD
SITE CASCADE:	CT81XC010
SITE NUMBER:	CT81XC010
SITE ADDRESS:	54 WATERBURY ROAD PROSPECT, CT 06712
SITE TYPE:	GUYED TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

LAND OWNER:
BRADSHAW, CHARLES & AVERYLL
54 WATERBURY ROAD
PROSPECT, CT 06712

LATITUDE (NAD83):
41° 30' 40.37" N

LONGITUDE (NAD83):
72° 58' 57.09" W

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
TOWN OF PROSPECT

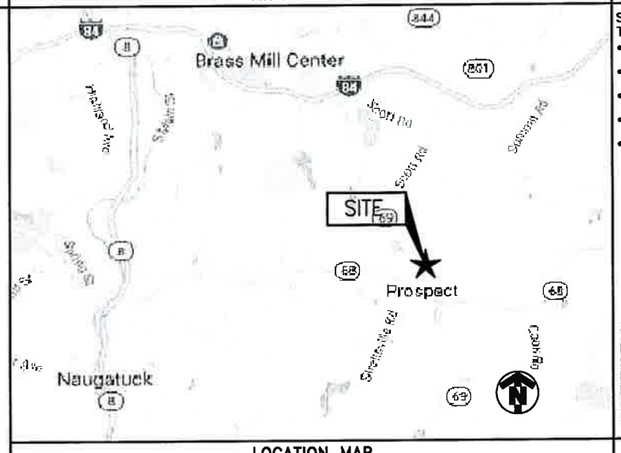
ZONING DISTRICT:

POWER COMPANY:
NIAGRA MOHAWK NATIONAL GRID
(800) 642-4273

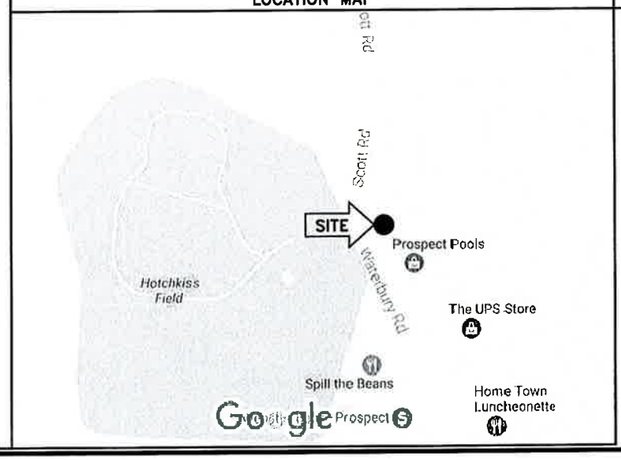
AAV PROVIDER:
VERIZON
(855) 277-5195

SPRINT CM:
MIKE DELIA
(781) 316-6348
MICHAEL.DELIA@SPRINT.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) MINI MACRO RADIOS
- INSTALL (1) DIN-RAIL IN EXISTING PPC
- INSTALL (1) 10"x8"x8" POLY-CARBONATE JUNCTION BOXES
- INSTALL (2) CORRUGATED FLEXIBLE CONDUITS WITH CABLING

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-EIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

811 Know what's below. Call before you dig. www.call811.com

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
A-1	OVERALL COMPOUND SITE PLAN	0
A-2	TOWER ELEVATION & CABLE PLAN	0
A-3	ANTENNA AND EQUIPMENT PLAN	0
A-4	EQUIPMENT DETAILS	0
A-5	EQUIPMENT DETAILS	0
A-6	EQUIPMENT DETAILS	0

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 340-000

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
REGISTERED PROFESSIONAL ENGINEER
JAN 12 2017

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	0
ISSUED FOR REVIEW	12/9/16	JDL	A

SITE NAME:
PROSPECT - WATERBURY RD

SITE CASCADE:
CT81XC010

SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:
TITLE SHEET

SHEET NUMBER:
T1

SPRINT CONSTRUCTION SPECIFICATIONS
MINI–MACRO CELL SITES
REV. 0 7/25/16

1) BASIC REQUIREMENTS

a) MEET ALL REQUIREMENTS OF JURISDICTIONS.

b) IF EQUIPMENT FURNISHED BY COMPANY DOES NOT MATCH THE EQUIPMENT LISTED ON THE RFDS AND SHOWN ON THE PERMITTING DRAWINGS, RESOLVE DISCREPANCY THROUGH INSTALLER'S CONSTRUCTION MANAGER AND COMPANY'S POINT OF CONTACT.

c) CABLE INSTALLATIONS

i) ALL CABLES MUST BE OUTDOOR RATED AND HAVE UV RESISTANT OUTER JACKETS.

ii) CABLE BENDS MUST NOT EXCEED MANUFACTURER'S ALLOWABLE CABLE BEND RADII.

iii) AT RADIOS INSTALL SERVICE LOOPS FOR POWER, FIBER AND ETHERNET SECURED AT LEAST TWICE AT 180 TO THE STRUCTURE.

iv) SPARE FIBERS MUST BE ENCASED IN A LOW PROFILE WEATHERTIGHT ASSEMBLY

d) FIBERS MUST BE FIELD–TERMINATED WITH LC–TYPE CONNECTORS.

e) CONDUITS IN EARTH: PROVIDE PVC. CONDUITS EXPOSED AND IN FACILITIES: PROVIDE RGS. HAND DIG TRENCHES IN COMPOUNDS.

f) SECURE AND SUPPORT CONDUITS AND CABLES ON NO MORE THAN 48" INTERVALS.

g) ON TOWER SITES RGS CONDUITS MAY BE SURFACE MOUNTED AWAY FROM WALKWAYS AND ACCESS/EGRESS PATHS. IF INSTALLATIONS IN WALKWAYS AND ACCESS/EGRESS PATHS CANNOT BE AVOIDED, IDENTIFY THE CONDUIT ENVELOPE / TRIP HAZARD BY ALTERNATING YELLOW AND BLACK STRIPES PAINTED ON CONCRETE AND CONDUIT.

2) SPRINT–FURNISHED EQUIPMENT

a) INSTALL THE FOLLOWING EQUIPMENT AT LOCATIONS AND AZIMUTHS SHOWN ON THE CONSTRUCTION DRAWINGS.

i) PANEL ANTENNAS

ii) RADIOS

iii) GPS ANTENNAS

iv) FILTERS

v) 120 VOLT DIN–RAIL CIRCUIT BREAKER ASSEMBLY

3) TOWER INSTALLATIONS

a) MEET ALL REQUIREMENTS OF THE TOWER OWNER.

b) INSTALL CORRUGATED FLEXIBLE CONDUIT UP THE TOWER TO COMPANY'S RAD CENTER.

c) PROVIDE HANGING GRIPS OR CONDUIT CLAMPS AND ENSURE CONDUITS AS WELL AS INNER CABLES ARE SUPPORTED.

d) CONDUIT RISERS: AT TOP OF TOWER TURN CONDUIT DOWN AND PROVIDE CABLE TERMINATION FITTINGS. EXTEND CABLES TO RADIOS EXPOSED AND SECURED TO STRUCTURE. AT CONDUIT EXIT FROM TOWER, PROVIDE DRIP LOOPS AND WEEP HOLES.

e) AT ICE BRIDGE RUN CABLES IN RGS CONDUIT. UTILIZE CONDULETS TO MAKE COMPACT 90 DEGREE TURNS.

4) AC POWER TIE–IN

a) INSTALL SPRINT'S 120 VOLT DIN–RAIL CIRCUIT BREAKER ASSEMBLY IN THE EXISTING POWER PROTECTION CABINET TELCO SECTION.

b) INSTALL A 20 AMPERE MOLDED CASE CIRCUIT BREAKER IN AVAILABLE SPACE IN THE ADJACENT PPC POWER SECTION LOAD CENTER.

5) GROUNDING

a) 120 VOLT CIRCUITS: POWER CABLES MUST BE 3–WIRE WITH EQUIPMENT GROUNDING CONDUCTOR.

b) SUPPLEMENTAL GROUNDING: ALL GROUNDING HARDWARE MUST BE UL STAMPED AS SUITABLE FOR GROUNDING HARDWARE.

c) RADIOS: BOND RADIO TO THE TOWER TOP OR SECTOR GROUND BAR WITH #8 BARE TINNED COPPER WIRE (GREEN INSULATED ON ROOFTOPS).

d) DIN–RAIL CIRCUIT BREAKER ASSEMBLY: BOND SURGE ARRESTOR TO PPC TELCO BOARD GROUND BAR.

6) MINOR MATERIALS

a) CONDUIT

i) RIGID GALVANIZED STEEL CONDUIT (RGS): UL LISTED, COMPLIANT WITH ANSI STANDARD C80, HOT–DIP GALVANIZED, WITH THREADED FITTINGS. MANUFACTURERS: ALLIED, REPUBLIC, WHEATLAND, OR EQUAL.

ii) CORRUGATED FLEXIBLE CONDUIT: DURALINE OR EQUAL.

iii) LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LFMC): UL LABELED, UV RESISTANT, FLAME RETARDANT PVC JACKET, HOT–DIP GALVANIZED, GREY. MANUFACTURERS: AFC, ANACONDA, SOUTHWIRE OR EQUAL.

iv) PVC CONDUIT: SCHEDULE 40. CARLON OR EQUAL.

v) CABINET HUBS AND CABLE TERMINATION FITTINGS: OZ GEDNEY OR ROXTEC

b) COAXIAL CABLE JUMPERS: ½" LDF–4. MANUFACTURERS: COMMSCOPE, RFS OR FCT.

c) FASTENERS AND HARDWARE

i) TO SECURE RACEWAYS, UTILIZE NON CORRODING NON–MAGNETIC METALLIC FASTENERS AND HARDWARE SUITABLE FOR THE PURPOSE.

d) POWER CABLES – 3/C #12 SOOW BY SOUTHWIRE OR EQUAL.

e) ETHERNET CABLES AND CONNECTORS: OUTDOOR RATED, CAT 5E, BELDEN OR EQUAL.

f) FIBER CABLES: CORNING 'FREEDOM FAN OUT" OUTDOOR RISER CABLE, 4F, SINGLE MODE, OR EQUAL.

g) RF TRANSPARENT PAINT FOR ANTENNA CONCEALMENT: SELECT NO/LOW CARBON PAINTS, WITH NO/LOW TITANIUM DIOXIDE, AND WITHOUT SUSPENDED METAL PARTICLES (ALUMINUM, ZINC, COPPER, ETC.)

7) COLOR CODING

a) COLOR CODE CABLES AND CONDUITS AS REQUIRED BY SPRINT STANDARD TS–0200.

8) TESTING AND CONSTRUCTION COMPLETE

a) SWEEP ALL COAXIAL CABLES ACCORDING TO SPRINT STANDARD TS–0200.

b) PANEL ANTENNA ALIGNMENT – USING ELECTRONIC ALIGNMENT TOOL. AZIMUTH/DOWNTILT +/– 1 DEGREE.

c) LEAVE EQUIPMENT DE–ENERGIZED UNTIL INSTRUCTED BY THE COMMISSIONING AND INTEGRATION TEAM TO ENERGIZE.

d) OTHER REQUIREMENTS AND DELIVERABLES MAY BE REQUIRED BEFORE THE CONSTRUCTION COMPLETE MILESTONE CAN BE ACTUALIZED IN SITERRA (SPRINT'S DATABASE–OF–RECORD).

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 340–000

ENGINEERING LICENSE:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	D
ISSUED FOR REVIEW	12/9/16	JDL	A

SITE NAME:
PROSPECT - WATERBURY RD

SITE CASCADE:
CT81XC010

SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

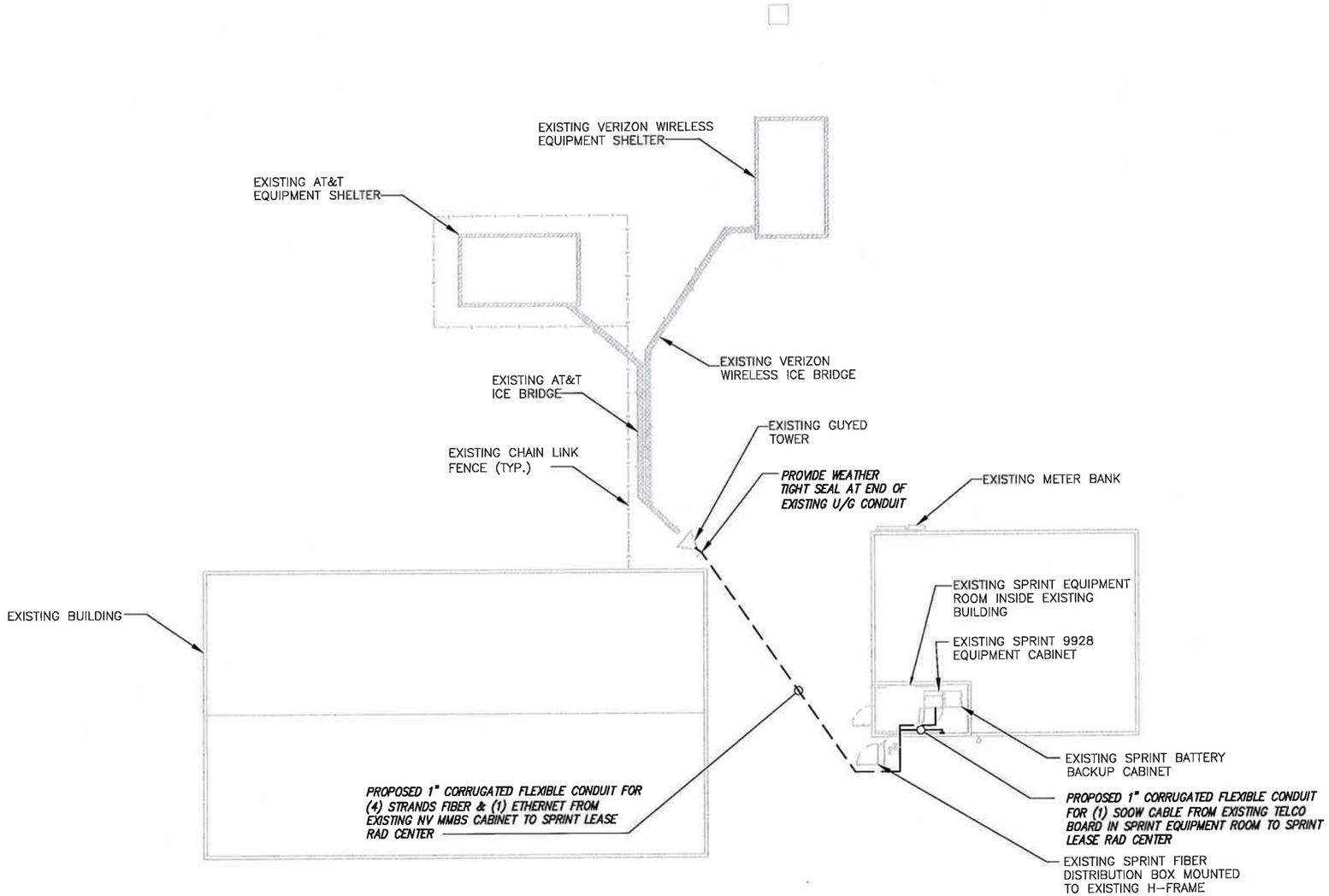
SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
A-1

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

LEGEND:

- 1" RGS CONDUIT
- 1" CORRUGATED PVC CONDUIT
- P — SOOW CABLE



N

GRAPHIC SCALE:

20' 10' 0 10' 20'

SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

OVERALL SITE PLAN

SCALE: AS NOTED | 1

PLANS PREPARED FOR:

Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:

INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 340-000

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
REGISTERED PROFESSIONAL ENGINEER
JAN 12 2017

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	0
ISSUED FOR REVIEW	12/9/16	JDL	A

SITE NAME:

PROSPECT - WATERBURY RD

SITE CASCADE:

CT81XC010

SITE ADDRESS:

54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:

OVERALL COMPOUND SITE PLAN

SHEET NUMBER:

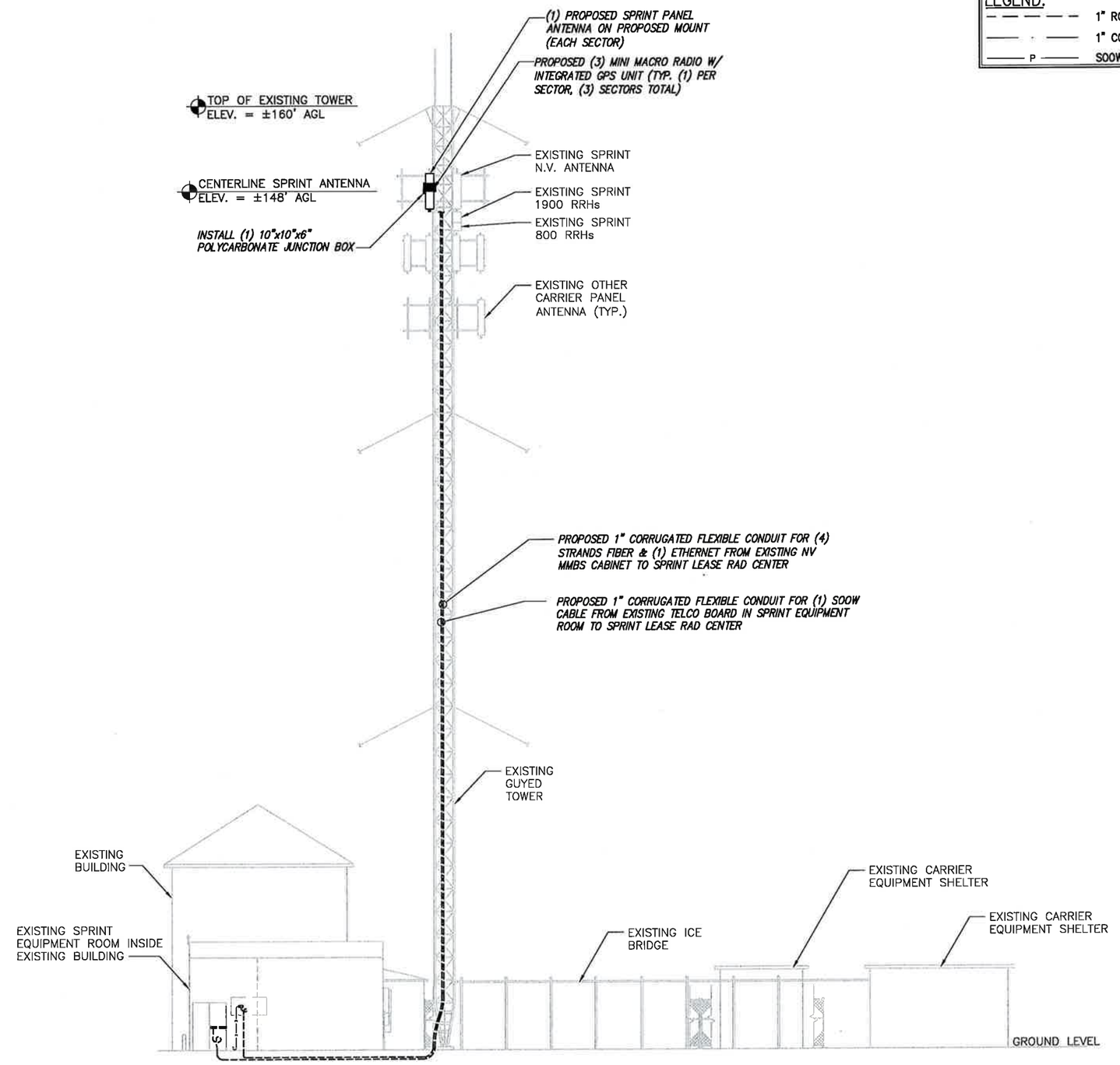
A-1

NOTE:
ALL EXISTING AND PROPOSED EQUIPMENT, CONDUITS AND CABLE TRAYS ARE TO BE LABELED WITH SPRINT IDENTIFICATION

NOTE:
EMERGENCY CONTACT INFORMATION TO BE DISPLAYED ON FACE OF SPRINT BTS CABINET

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING TOWER OR MOUNT FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

NOTE:
MOUNT ANALYSIS COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION, SEE REPORT COMPLETED BY INFINIGY DATED 1/12/16.



LEGEND:

— — — — — —	1" RGS CONDUIT
——— · ———	1" CORRUGATED PVC CONDUIT
——— P ———	SOOW CABLE

BASEMAPPING PREPARED FROM A SITE VISIT PERFORMED BY INFINIGY ON 6/12/14.

SITE ELEVATION | SCALE: NTS | 1

PLANS PREPARED FOR:

Sprint

3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:

INFINIGY

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 340-000

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ISSUED FOR REVIEW	12/9/16	JDL	A

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PROSPECT - WATERBURY RD

SITE CASCADE:

CT81XC010

SITE ADDRESS:

54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:

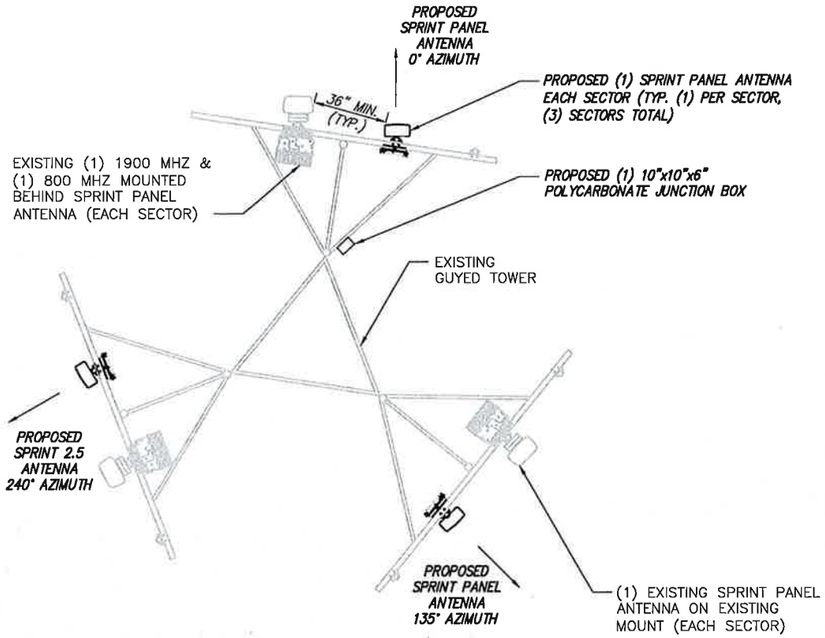
TOWER ELEVATION & CABLE PLAN

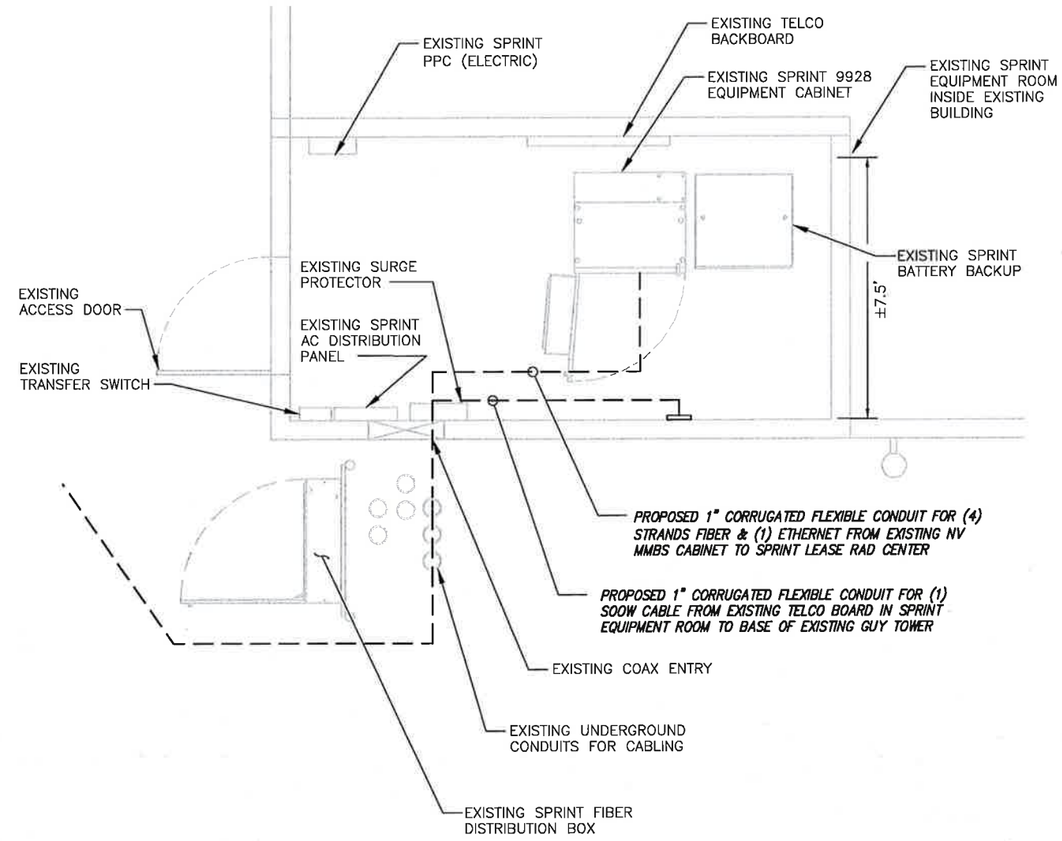
SHEET NUMBER:

A-2

NOTE:
MOUNT ANALYSIS COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION, SEE REPORT COMPLETED BY INFINIGY DATED 1/12/16.

NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.





N

N

GRAPHIC SCALE:
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

ANTENNA LAYOUT | SCALE: NTS | 1

EQUIPMENT SITE PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
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ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JAN 12 2017

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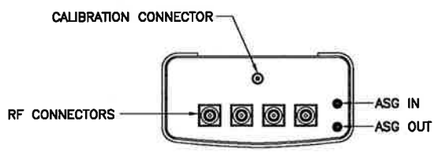
SITE CASCADE:
CT81XC010

SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

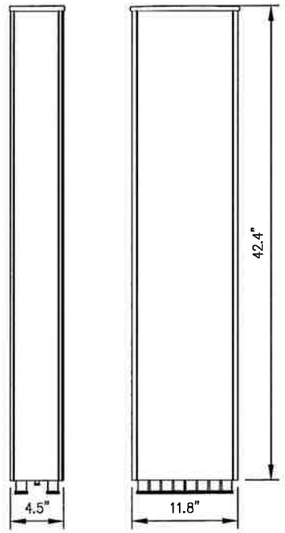
SHEET DESCRIPTION:
ANTENNA & EQUIPMENT PLAN

SHEET NUMBER:
A-3

RFS: COMMSCOPE LLPX310R-V1	
RADOME MATERIAL:	POLYESTER FIBERGLASS PULTRUSION
DIMENSIONS, HxWxD.:	42.4"x11.8"x4.5"
WEIGHT:	27.6 lbs
CONNECTORS:	(8) 7-16 DIN FEMALE



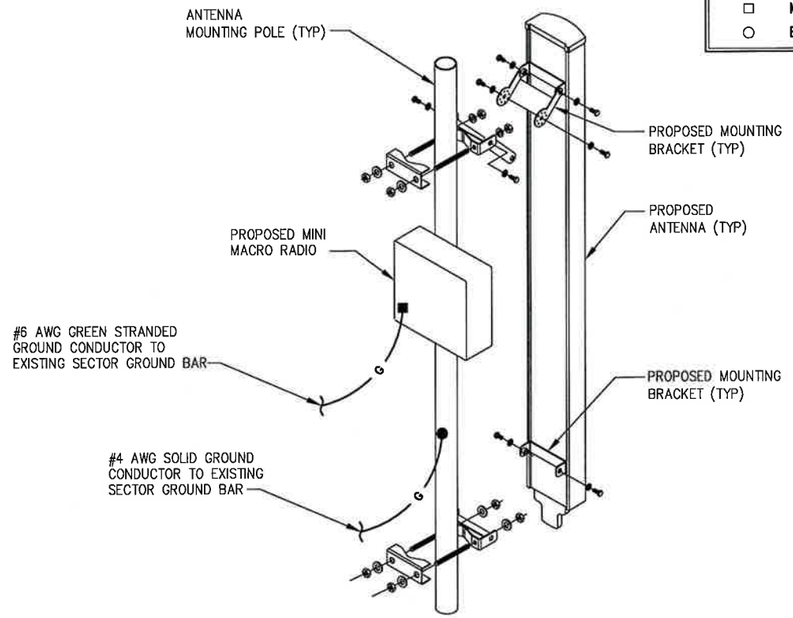
PLAN VIEW



SIDE VIEW FRONT VIEW

PROPOSED ANTENNA DETAIL

NO SCALE | 1



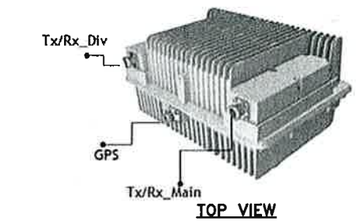
LEGEND:
- G — GROUND CONDUCTOR
- □ MECHANICAL CONNECTION
- ○ EXOTHERMIC CONNECTION

ANTENNA & MMBTS MOUNTING DETAIL

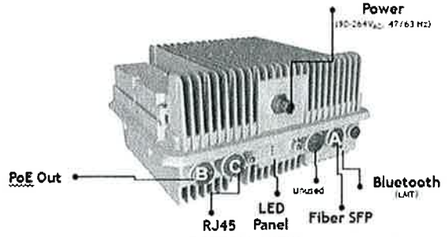
NO SCALE | 2

NOKIA: FWHR 2500 MHz 2 x 20W Micro BTS	
OPERATING AC VOLTAGE:	90-264 VAC
DIMENSION (H×W×D):	9.72"x12.87"x9.30"
WEIGHT:	24.7 LBS.

FRONT VIEW



TOP VIEW



BOTTOM VIEW

MINI MACRO RADIO DETAIL

NO SCALE | 3

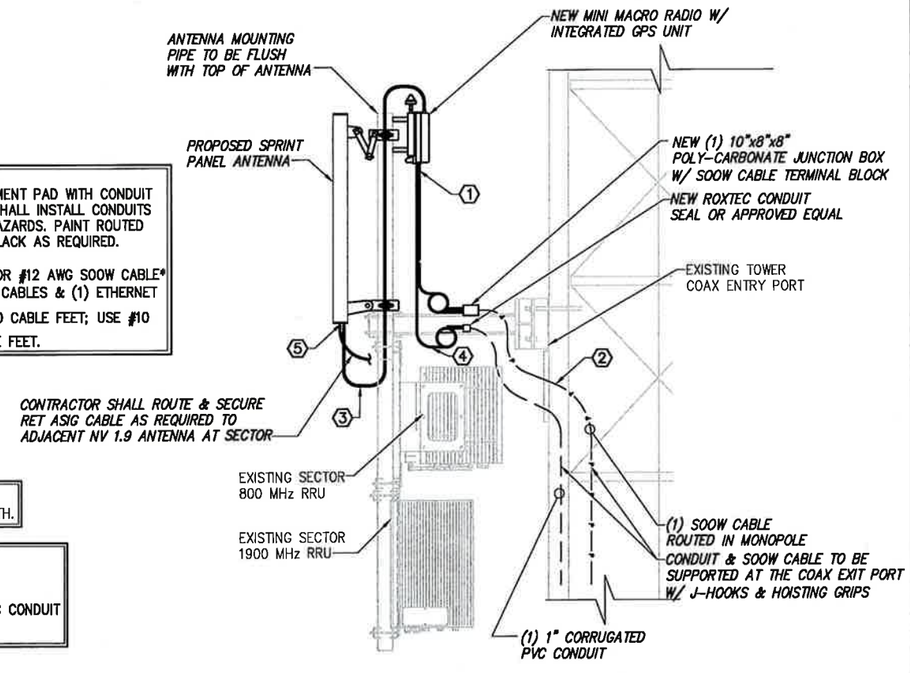
LEGEND:
1. OEM PROPRIETARY POWER CABLE
2. SOOW CABLE
3. 1/2" RF JUMPERS
4. ETHERNET/FIBER CABLES
5. RET CABLE

NOTE:
1. SECURE CONDUITS TO EXISTING EQUIPMENT PAD WITH CONDUIT CLAMPS AS REQUIRED. CONTRACTOR SHALL INSTALL CONDUITS IN A MANNER TO REDUCE TRIPPING HAZARDS. PAINT ROUTED COMMON ACCESS PATHS YELLOW & BLACK AS REQUIRED.
2. CONDUIT FILL: (1) - 9/C #10 OR #12 AWG SOOW CABLE* (2) - (4) FIBER CABLES & (1) ETHERNET

* USE #12 AWG FOR RUNS LESS THAN 200 CABLE FEET; USE #10 AWG FOR RUNS GREATER THAN 200 CABLE FEET.

1/2" RF JUMPERS FOR 2.5 DEPLOYMENT ARE NOT TO EXCEED 8' IN OVERALL LENGTH.

LEGEND:
- 1" RGS CONDUIT
- 1" CORRUGATED PVC CONDUIT
- P SOOW CABLE



ANTENNA MOUNTING ELEVATION

NO SCALE | 4

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 340-000

ENGINEERING LICENSE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	0
ISSUED FOR REVIEW	12/9/16	JDL	A

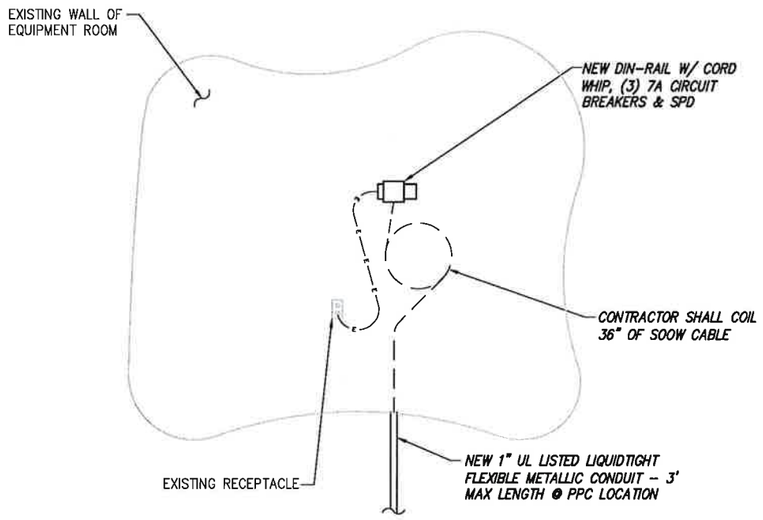
SITE NAME:
PROSPECT - WATERBURY RD

SITE CASCADE:
CT81XC010

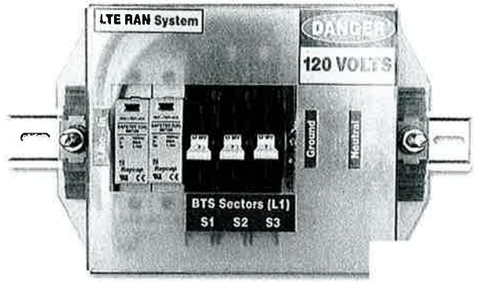
SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:
EQUIPMENT DETAILS

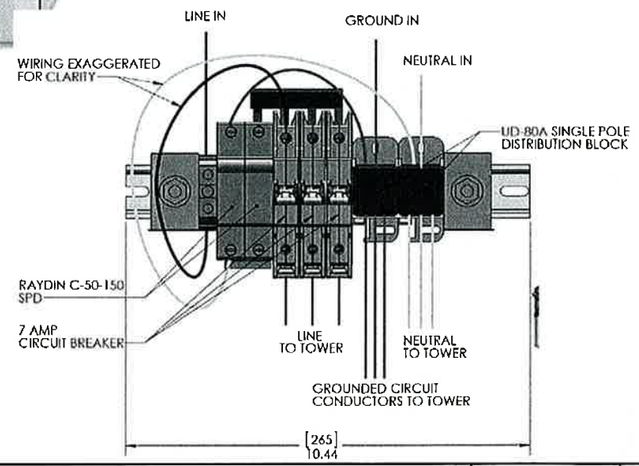
SHEET NUMBER:
A-4



POWER DETAIL | NO SCALE | 1



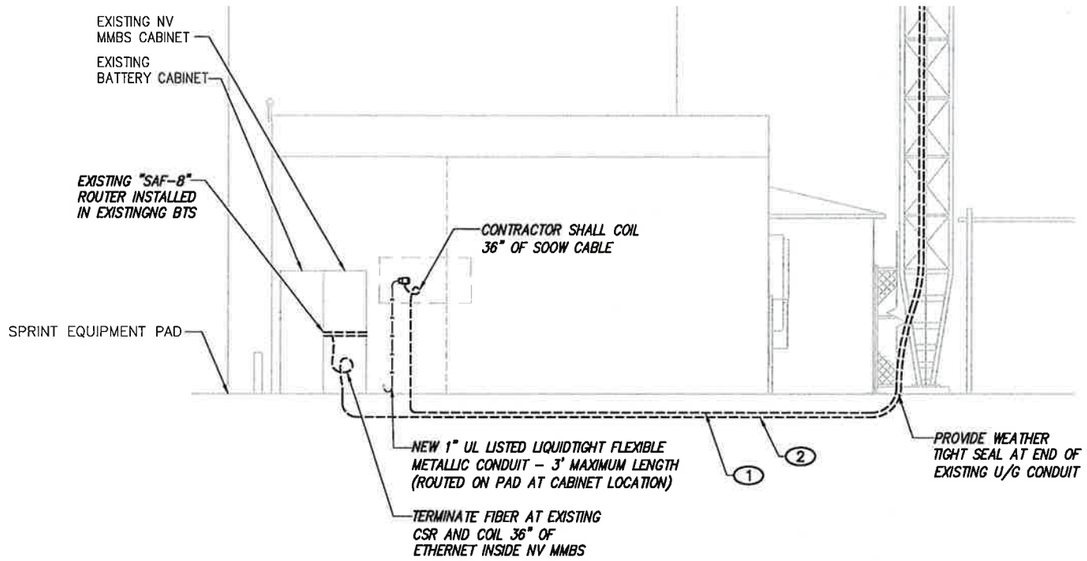
RAYCAP: RSTAC-4569-P-120	
OPERATING AC VOLTAGE:	120 1 PHASE 2 W+G
LOAD CENTER:	3 POSITION
OPERATING TEMPERATURE:	(°C) –40° C TO +75° C
DIMENSION (H×W×D):	10.44"x5.18"x2.71"
WEIGHT:	2.5 LBS.



DIN-RAIL W/ CORD WHIP & SPD DETAIL | NO SCALE | 2

NOTE:
1. SECURE CONDUITS TO EXISTING EQUIPMENT PAD WITH CONDUIT CLAMPS AS REQUIRED. CONTRACTOR SHALL INSTALL CONDUITS IN A MANNER TO REDUCE TRIPPING HAZARDS. PAINT ROUTED COMMON ACCESS PATHS YELLOW & BLACK AS REQUIRED.
2. CONDUIT FILL: (1) – 9/C #10 OR #12 AWG SOOW CABLE* (2) – (4) FIBER CABLES & (1) ETHERNET

* USE #12 AWG FOR RUNS LESS THAN 200 CABLE FEET; USE #10 AWG FOR RUNS GREATER THAN 200 CABLE FEET.



EQUIPMENT ELEVATION DETAIL | NO SCALE | 3

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 340-000

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
JAN 24 2017
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	0
ISSUED FOR REVIEW	12/9/16	JDL	A

SITE NAME:
PROSPECT - WATERBURY RD

SITE CASCADE:
CT81XC010

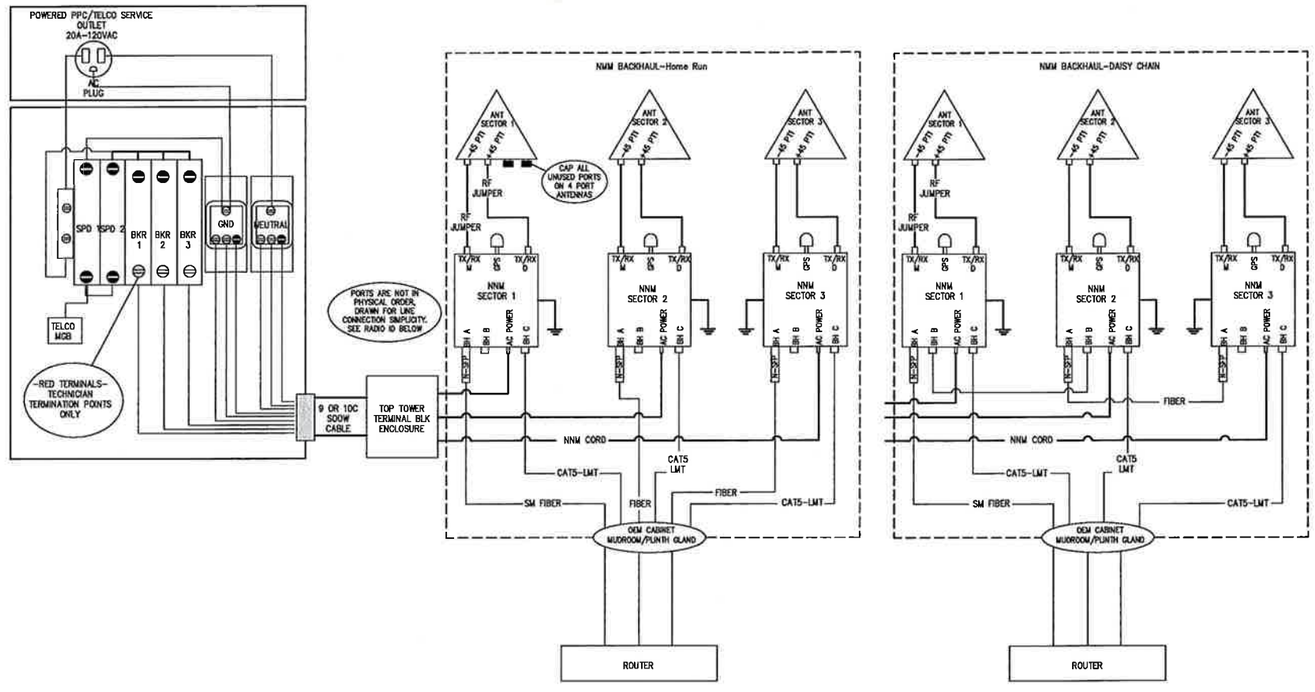
SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:
EQUIPMENT DETAILS

SHEET NUMBER:
A-5

AC POWER GROUND LEVEL:
POWER CIRCUITS/CABLES MUST BE 3 WIRE EQUIPMENT GROUNDING CONDUCTOR. SUPPLEMENTAL GROUNDING HARDWARE MUST BE UL STAMPED AS SUITABLE FOR GROUNDING HARDWARE.

1. THE PREFERRED AC POWER CONNECTION TO THE DIN RAIL ASSEMBLY IS HARD WIRED FROM A DEDICATED 20A PANEL BREAKER TO THE DIN RAIL (DIN RAIL MUST BE IN AN ENCLOSURE) HOWEVER IF THE PROVIDED POWER CORD IS CHOSEN THE DIN RAIL ASSEMBLY RECEPTACLE MUST NOT BE GFCI AS THEY WILL TRIP, REPLACE WITH STANDARD RECEPTACLE AS REQUIRED. WHEN USING THE SUPPLIED POWER PLUG, THE CORD AND OUTLET MUST BE LABELED "DO NOT DISCONNECT" AND "DO NOT UNPLUG"
2. IF PPC TELCO SECTION IS LESS THAN 50' FROM TOWER AND THE CONDUIT RUN IS 100% ABOVEGROUND INSTALL 9 OR 10/C SOOW IN 1.5" RGS (EXPOSED) ON ICE BRIDGE, SOOW EXPOSED UP THROUGH TOWER TO TERMINAL BOX AT THE RAD CENTER.
3. IF PPC TELCO SECTION IS MORE THAN 50' FROM TOWER, OR THE CONDUIT RUN AT ANY POINT IS UNDERGROUND ROUTE 1.5" RGS (EXPOSED) OR PVC (UNDERGROUND) WITH 9 EA. THHN/THWN CONDUCTORS. INSTALL A TERMINAL BOX WITH TERMINAL BLOCK ON ICE BRIDGE NEAREST TOWER AND TRANSITION TO SOOW. AT TELCO SECTION INDIVIDUAL CONDUCTORS ROUTE ACROSS PLYWOOD BACKBOARD TO THE DIN RAIL CIRCUIT BREAKER ASSEMBLY. SOME JURISDICTIONS MAY NOT ALLOW INDIVIDUAL CONDUCTORS TO ROUTE ACROSS BACKBOARD THEREFORE INSTALL ANOTHER TERMINAL BOX INSIDE OR OUTSIDE AND TRANSITION BACK TO SOOW.



NOTE:
1. AC POWER GROUND LEVEL NOTES AND NOKIA MM SYSTEM WIRING DIAGRAM REFERENCED FROM DOCUMENT ENTITLED "MINI-MACRO ON NV MACRO SITE INSTALLATION MOP" DATED NOVEMBER 2, 2016, PAGES 11-12 AND 14, RESPECTIVELY.

NOKIA MM SYSTEM WIRING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:
Sprint
3 Enterprise Drive
Albany, New York 12204

PLANS PREPARED BY:
INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 340-000

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
12/9/2017

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	1/12/17	JDL	0
ISSUED FOR REVIEW	12/9/16	JDL	A

SITE NAME:
PROSPECT - WATERBURY RD

SITE CASCADE:
CT81XC010

SITE ADDRESS:
54 WATERBURY ROAD
PROSPECT, CT 06712

SHEET DESCRIPTION:
EQUIPMENT DETAILS

SHEET NUMBER:
A-6

EXHIBIT C

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

Calculated Radio Frequency Emissions Report

CT81XC010 – Prospect Waterbury Road

54 Waterbury Road, Prospect, CT 06712

November 15, 2016

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing Sprint antenna arrays mounted on the guyed tower located at 54 Waterbury Road in Prospect, CT. The coordinates of the tower are 41° 30' 40.36" N, 72° 58' 57.08" W.

Sprint is proposing the following modifications:

1) Install three 2500 MHz LTE antennas (one per sector);
2) Install three 2500 MHz LTE mini macro radios (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

3. RF Exposure Prediction Methods

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

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \times OffBeamLoss$$

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna patterns

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final site configuration.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed Sprint antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed Sprint antenna.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Sprint	*146*	*2500*	*1*	*3112*	*0.0571*	*1.0000*	*0.57%*
Clearwire	*146*	*2496*	*2*	*153*	*0.0056*	*1.0000*	*0.06%*
Clearwire	*151*	*23000*	*1*	*211*	*0.0036*	*1.0000*	*0.04%*
F&S Oil	N/A	451	N/A	N/A	0.0031	0.3007	0.10%
New Haven Transit	N/A	451	N/A	N/A	0.0031	0.3007	0.10%
US Post Office	N/A	415	N/A	N/A	0.0031	0.2767	0.11%
Central Comm.	N/A	452	N/A	N/A	0.0031	0.3013	0.10%
CT Motor Club	N/A	150.92	N/A	N/A	0.0381	0.2000	1.91%
AT&T	126	880	2	1077	0.0538	0.5867	0.92%
AT&T	126	1900	2	1556	0.0778	1.0000	0.78%
AT&T	126	880	1	538	0.0134	0.5867	0.23%
AT&T	126	1900	4	934	0.0933	1.0000	0.93%
AT&T	126	734	1	1375	0.0344	0.4893	0.70%
Verizon	135	869	9	348	0.0677	0.5793	1.17%
Verizon	135	1970	7	407	0.0616	1.0000	0.62%
Verizon	135	746	1	1050	0.0227	0.4973	0.46%
Verizon	135	2145	1	2306	0.0499	1.0000	0.50%
Sprint	146	865	1	350	0.0064	0.5767	0.11%
Sprint	146	1900	5	622	0.0571	1.0000	0.57%
Sprint	146	865	1	875	0.0161	0.5767	0.28%
Sprint	146	1900	1	3112	0.0571	1.0000	0.57%
Sprint	*146*	*2500*	*2*	*1556*	*0.0571*	*1.0000*	*0.57%*
						Total:	**10.73%**

Table 1: Carrier Information[1] [2]

[1] The existing CSC filings for Sprint 2500MHz and Clearwire should be removed and replaced with the updated Sprint values provided in Table 1. The power density information for carriers other than Sprint was taken directly from the CSC database dated 10/11/2016. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

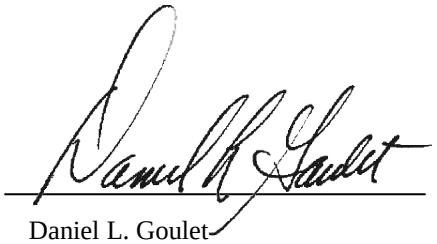
[2] Antenna heights listed for Sprint are in reference to the Infinigy Construction Drawings, dated 5/11/2015.

5. Conclusion

The above analysis verifies that emissions from the final site configuration will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. The highest, cumulative expected percent of Maximum Permissible Exposure at ground level is **10.73% of the FCC Uncontrolled/General Population limit.**

6. Statement of Certification

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



Daniel L. Goulet
C Squared Systems, LLC

November 15, 2016
Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[3]

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

(B) Limits for General Population/Uncontrolled Exposure[4]

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

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

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

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

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

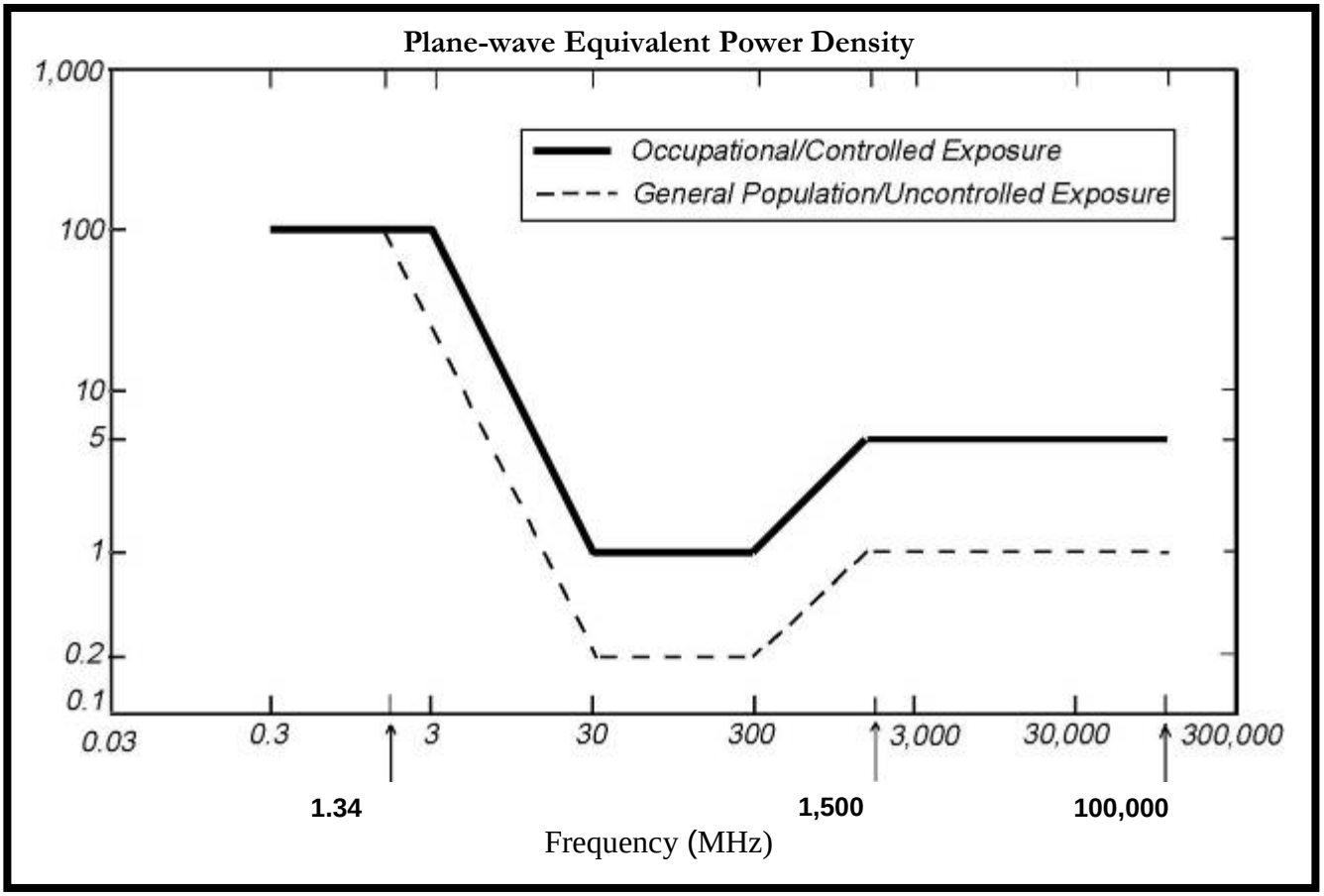


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Sprint's Antenna Model Data Sheet and Electrical Pattern

2500 MHz LTE

Manufacturer:	Commscope
Model #:	LLPX310R-V4
Frequency Band:	2300-2700 MHz
Gain:	15.9 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	42.1" x 11.8" x 4.5"

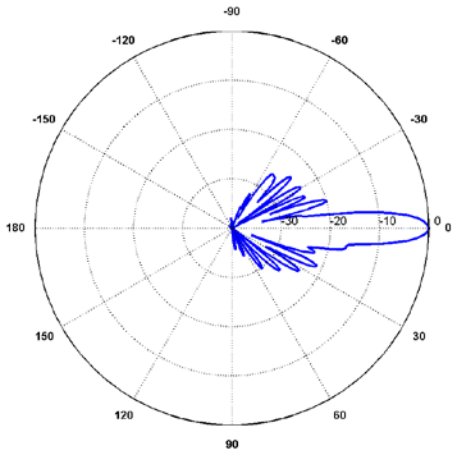


EXHIBIT D

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

1/12/2017

Joseph Papa
Site Acquisition Specialist for Sprint
3 Enterprise Drive
Albany, NY 12204

RE: SPRINT 2.5 Project – PE Opinion Letter

Sprint Site Number:	CT81XC010
Sprint Site Name:	PROSPECT-WATERBURY ROAD
Site Address:	54 Waterbury Road, Prospect, CT 06712
Building Code:	2003 IBC/ 2005 CT Building Code/ 2013 CT Amendment
Design Standard:	ANSI/TIA-222-G
Result:	**Pass**
Notes:	--

Dear Mr. Papa,

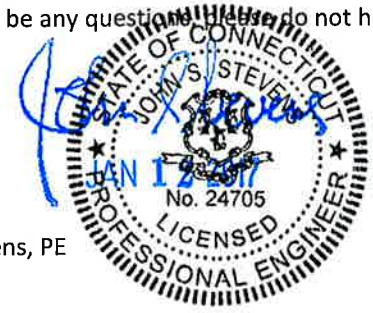
At your request, Infinigy Engineering has reviewed the existing and/or proposed tower mounted equipment supports at the above referenced site for adequacy to support the existing and proposed loads for the referenced project. This evaluation is based on a review of the information from the Structural Analysis Report (dated 12/02/14), Mount Analysis Report (dated 07/09/15) completed by Infinigy and Construction Drawings (dated 01/12/17) completed by Infinigy.

The new equipment as shown in the Construction Drawings dated 1/12/17 is smaller and lighter than was considered previously. Therefore, it is the opinion of Infinigy that the proposed tower and Sprint antenna mount can support the proposed equipment as shown in the Construction Drawings dated 01/12/17.

This evaluation assumes that all structural members are in good condition, have not been altered from the manufacturer's original design, and have been installed per the manufacturer's requirements. Prior to installation of any new antennas and/or RRHs, the contractor shall inspect the condition of all relevant members and connections and shall tighten all connections. The contractor is responsible for the means and methods of construction and shall notify Infinigy immediately if any field conditions differ from those listed above.

Should there be any questions, please do not hesitate to contact us.

Sincerely,



John S. Stevens, PE

AJD/JSS

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Road | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

Tower Analysis Report

December 2, 2014

Site Name	CT81XC010
Infinigy Job Number	333-365
Client	Sprint
Proposed Carrier	Sprint
Site Location	54 Waterbury Road, Prospect, CT 06712 New Haven County 41° 30' 39" N NAD83 72° 58' 57" W NAD83
Structure Type	160' Guyed Tower
Structural Usage Ratio	**69.2%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower is therefore deemed adequate to support the existing and proposed loading as listed in this report.

Charles T. Robertson III
Structural Engineer I

NJ Office: 479 Rte 17 North | Mahwah, NJ 07430
GA Office: 2255 Sewell Mill Road | Ste 130 | Marietta, GA 30062
CO Office: 7301 Federal Boulevard | Ste 301 | Westminster, CO 80030

Contents

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 160' Utility Tower Guyed Tower. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 6.1.3.1 tower analysis software.

Supporting Documentation

Construction Drawings	Bay State Design Job # 3012.001, dated January 25, 2011
Previous Analysis	Bay State Design Job # 3012.001, dated January 25, 2011
Previous Analysis	Armor Tower, dated May 30, 2012
Proposed Loading	RFDS, dated May 13, 2014

Analysis Code Requirements

Wind Speed	100 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 3/4" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2003 IBC w/ 2005 CT Supplement & 2013 CT Amendment
Structure Class	2
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower is therefore deemed adequate to support the existing and proposed loading as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Charles T. Robertson III
Structural Engineer I
2255 Sewell Mill Road | Marietta, GA 30062
M: 770.363.1290 | O: 678.444.4463
crobertson@infinigy.com | www.infinigy.com

Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
160.0	2	20’ Omni	Pipe	--	--
	2	15’ Omni	Pipe		--
146.0	2	Andrew VHLP2	Sector Frames	(2) 1/2" (1) 2” Conduit	ClearWire
135.0	3	Antel BXA-171063-12CF	Sector Frames	(3) 1/2" (3) 7/8” (18) 1-5/8”	Verizon
	3	Antel LPA-70063-4CF			
	4	Swedcom SC-E 6014 Rev2			
	2	Antel LPA-80080/6CF			
	2	Swedcom SLCP 2x6014			
126.0	3	AM-X-CD-16-65-00T-RET	Sector Frames	(12) 1-1/4” (3) 3” Conduit	AT&T
	6	SBNH-1D6565C			
	6	Ericsson RRUS-11			
	6	TMA			
52.0	1	20’ Dipole	Pipe	(1) 1/2"	--

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
146.0	3	RFS APXVSPP18-C-A20	Sector Frames	(4) 1-1/4” Hybriflex	Sprint
	3	RFS APXVTM14-ALUI20			
	3	TD-RRH8x20-25			
	3	ALU 800 RRH			
	3	ALU 1900 RRH			

***Stack lines as illustrated in the documents below**

Structure Usages

Leg (T11)	57.8	Pass
Diagonal (T4)	69.2	Pass
Horizontal (T1)	21.8	Pass
Top Girt (T11)	23.6	Pass
Bottom Girt (T10)	23.4	Pass
Guy A (T4)	62.3	Pass
Guy B (T4)	62.4	Pass
Guy C (T4)	62.4	Pass
Top Guy Pull-Off (T4)	28.2	Pass
Torque Arm Top (T1)	8.4	Pass
Torque Arm Bottom (T1)	22.2	Pass
Bolt Checks	27.7	Pass
RATING =	**69.2**	**Pass**

Foundation Reactions

Reaction Data	Design Reactions	Design Reactions x 1.35	Analysis Reactions	Result
Base Compression (kip)	--	--	104.4	--
Base Shear (kip)	--	--	0.9	--
Anchor Uplift (kip)	--	--	31.5	--
Anchor Shear (kip)	--	--	29.0	--

*** Design reactions are multiplied by 1.35 per ANSI/TIA-222-G 15.5.1**

The existing foundation was not evaluated because no information was made available at the time of this analysis.

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (^{o})	Sway (^{o})
146.0	1.61	0.14	0.02

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

Assumptions and Limitations

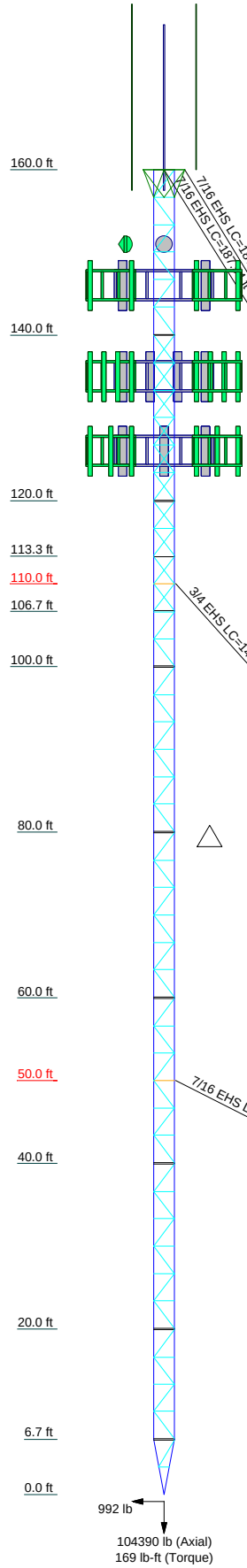
Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. If actual conditions differ from those described in this report we should be notified immediately to complete a revised evaluation.

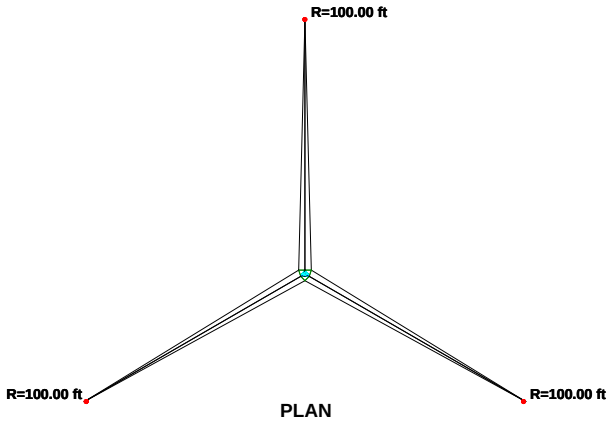
Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
Legs	ROHN 2.5 X-STR						ROHN 2.5 STD				
Leg Grade						A572-50					
Diagonals						P.75x.113					
Diagonal Grade						A36					
Top Girts		P.75x.113			N.A.		P.75x.113				
Bottom Girts		P.75x.113	N.A.				P.75x.113				N.A.
Horizontals		P.75x.113		N.A.			P.75x.113				
Top Guy Pull-Offs		N.A.		3x.226			N.A.	3x.226			
Face Width (ft)	2.5										
# Panels @ (ft)		12 @ 3.31944		6 @ 3.25			24 @ 3.30556			4 @ 3.29166	2 @ 3.25
Weight (lb)	890.9	688.9	188.6	205.9	169.3	491.8	491.8	500.6	491.8	330.5	144.1

4594.1





PLAN

DESIGNED APPURTENANCE LOADING

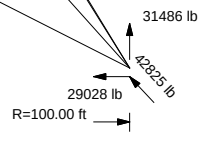
TYPE	ELEVATION	TYPE	ELEVATION
20' Omni	160	SLCP 2x6014	135
20' Omni	160	SLCP 2x6014	135
15' Omni	160	(2) LPA-80080/6CF	135
15' Omni	160	(2) SC-E 6014 rev2	135
6' Dipole	160	(2) SC-E 6014 rev2	135
TD-RRH8X20	146	Angle Sector Frame	135
APXVSPP18-C-A20	146	Angle Sector Frame	135
APXVSPP18-C-A20	146	Angle Sector Frame	135
APXVSPP18-C-A20	146	BXA-171063-12CF	135
800 MHz w/ Notch Filter	146	BXA-171063-12CF	135
800 MHz w/ Notch Filter	146	(2) RRUS-11	126
800 MHz w/ Notch Filter	146	(2) TTA	126
1900 MHz RRH	146	(2) TTA	126
1900 MHz RRH	146	(2) TTA	126
1900 MHz RRH	146	AM-X-CD-16-65-00T-RET	126
APXVTM14-C-120	146	AM-X-CD-16-65-00T-RET	126
APXVTM14-C-120	146	AM-X-CD-16-65-00T-RET	126
APXVTM14-C-120	146	(2) SBNH-1D6565C (60.8 lbs)	126
TD-RRH8X20	146	(2) SBNH-1D6565C (60.8 lbs)	126
TD-RRH8X20	146	(2) SBNH-1D6565C (60.8 lbs)	126
Angle Sector Frame	146	Pipe Sector Frame	126
Angle Sector Frame	146	Pipe Sector Frame	126
Angle Sector Frame	146	Pipe Sector Frame	126
VHLP2 (ClearWire)	146	(2) RRUS-11	126
VHLP2 (ClearWire)	146	(2) RRUS-11	126
BXA-171063-12CF	135	20' Dipole	52
LPA-70063-4CF	135		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 69.2%



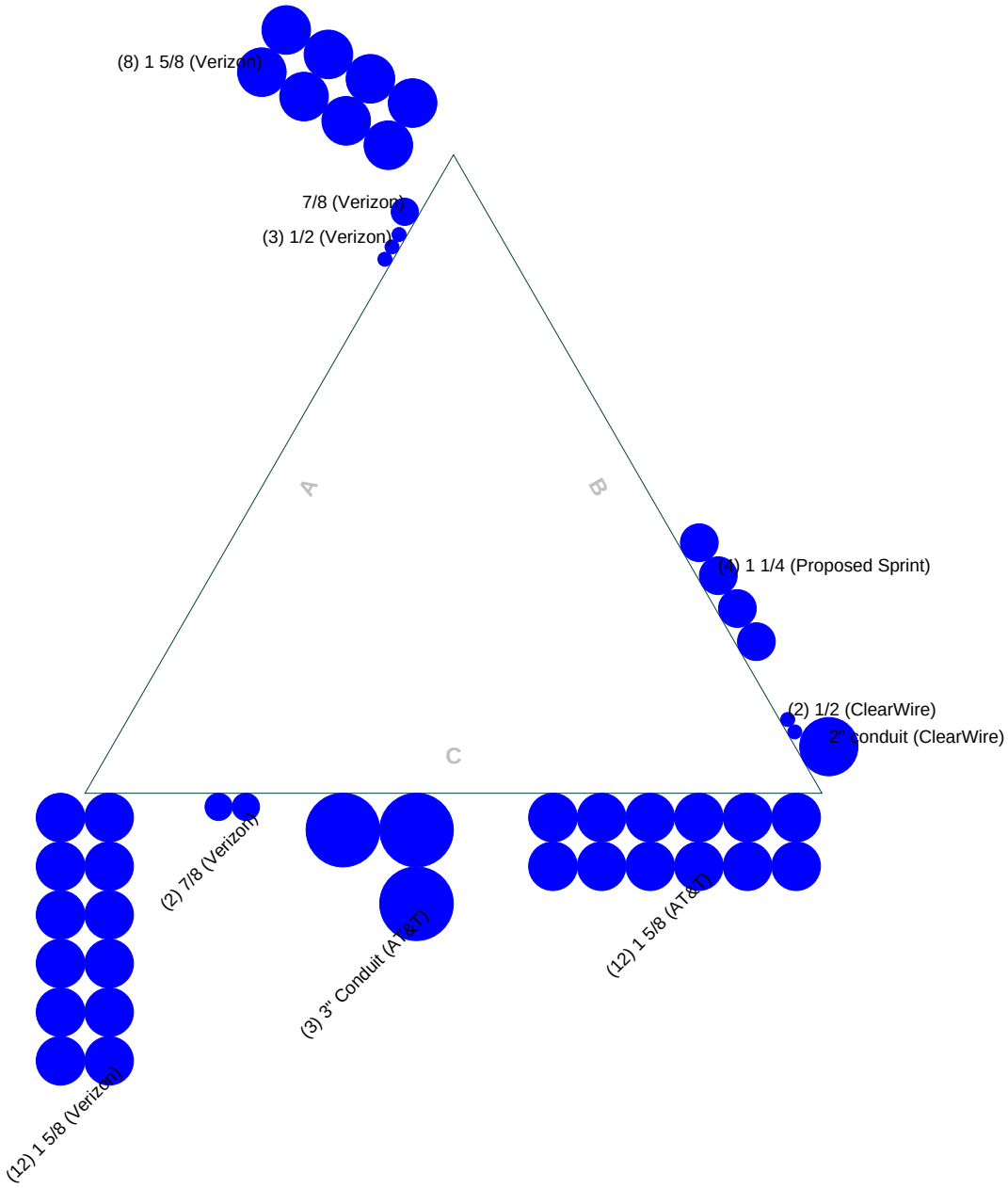
ALL REACTIONS ARE FACTORED

Infinigy Engineering, PLLC.
2255 Sewell Mill Rd
Marietta, GA 30062
Phone: (678) 444-4463
FAX:

Job: ***333-365***			
Project: ***CT81XC010***			
Client: Sprint	Drawn by: Charles T. Robertson III		App'd:
Code: TIA-222-G	Date: 12/02/14		Scale: NTS
Path: C:\Users\crobertson\Desktop\CT81XC010.eri			Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face



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Code: TIA-222-G	Date: 12/02/14	Scale: NTS	
Path: C:\Users\crobertson\Desktop\CT81XC010.eri		Dwg No. E-7	

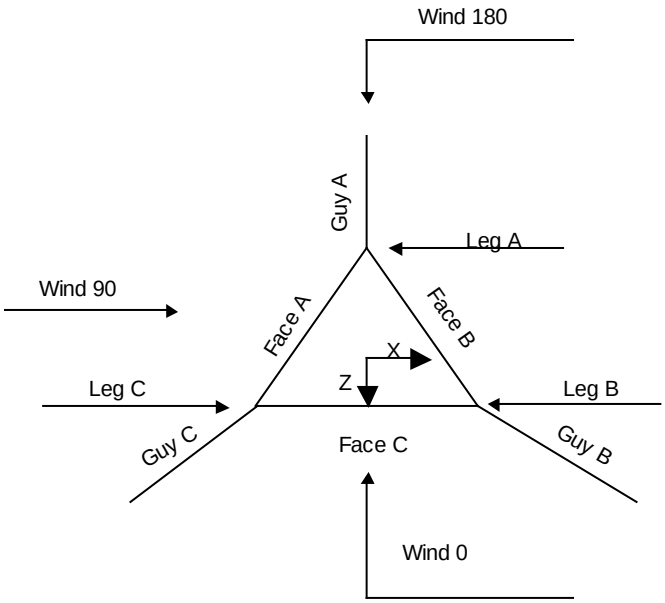
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 160.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 2.50 ft at the top and tapered at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

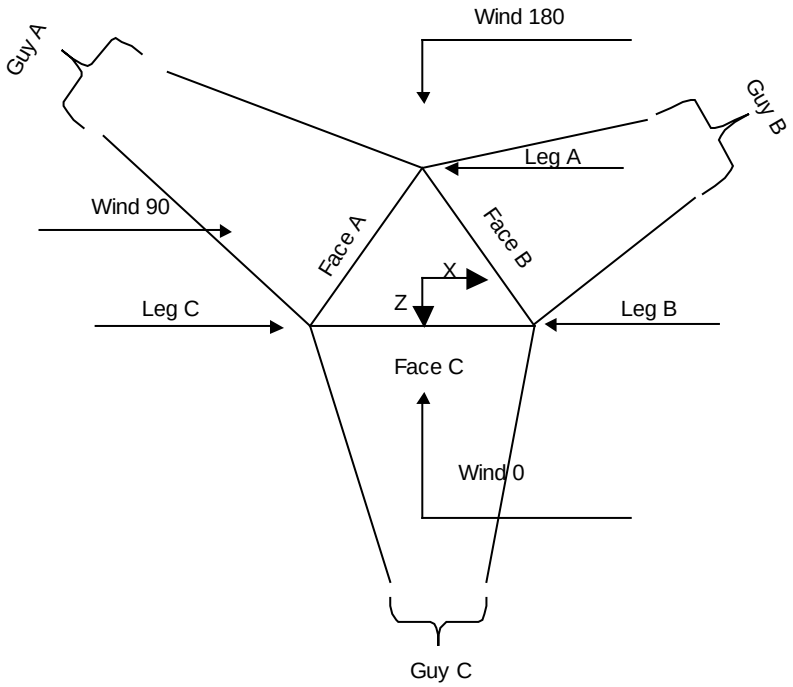
- Tower is located in New Haven County, Connecticut.
- Basic wind speed of 100 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A 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.
- Pressures are calculated at each section.
- Safety factor used in guy design is 1.
- 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		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
	Escalate Ice		Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.	√	Include Angle Block Shear Check
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends		Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	160.00-140.00			2.50	1	20.00
T2	140.00-120.00			2.50	1	20.00
T3	120.00-113.33			2.50	1	6.67
T4	113.33-106.67			2.50	1	6.67
T5	106.67-100.00			2.50	1	6.67
T6	100.00-80.00			2.50	1	20.00
T7	80.00-60.00			2.50	1	20.00
T8	60.00-40.00			2.50	1	20.00
T9	40.00-20.00			2.50	1	20.00
T10	20.00-6.67			2.50	1	13.33
T11	6.67-0.00			2.50	1	6.67

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	160.00-140.00	3.32	K Brace Right	No	Yes	0.0000	1.0000
T2	140.00-120.00	3.32	CX Brace	No	Yes	0.0000	1.0000
T3	120.00-113.33	3.25	CX Brace	No	Yes	1.0000	1.0000
T4	113.33-106.67	3.25	CX Brace	No	Yes	1.0000	1.0000
T5	106.67-100.00	3.25	K Brace Right	No	Yes	1.0000	1.0000
T6	100.00-80.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T7	80.00-60.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T8	60.00-40.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T9	40.00-20.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T10	20.00-6.67	3.29	K Brace Right	No	Yes	1.0000	1.0000
T11	6.67-0.00	3.25	K Brace Right	No	Yes	1.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-140.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T2 140.00-120.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T3 120.00-113.33	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T4 113.33-106.67	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T5 106.67-100.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T6 100.00-80.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T7 80.00-60.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T8 60.00-40.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T9 40.00-20.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T10 20.00-6.67	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T11 6.67-0.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P.75x.113	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 160.00-140.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T2 140.00-120.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T3 120.00-113.33	Pipe	P.75x.113	A36 (36 ksi)	Pipe		A36 (36 ksi)
T4 113.33-106.67	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T5 106.67-100.00	Pipe		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T6 100.00-80.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T7 80.00-60.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T8 60.00-40.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T9 40.00-20.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T10 20.00-6.67	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T11 6.67-0.00	Pipe	P.75x.113	A36 (36 ksi)	Pipe	P.75x.113	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
T1 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T2 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T3 120.00-113.33	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T4 113.33-106.67	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T5 106.67-100.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T10 20.00-6.67	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)
T11 6.67-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T3 120.00-113.33	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T4 113.33-106.67	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T5 106.67-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T10 20.00-6.67	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000
T11 6.67-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	Yes	1	1	0.5	1	1	1	1	1
160.00-140.00				1	0.5	1	1	1	1	1
T2	No	Yes	1	0.6	1	1	1	1	1	1
140.00-120.00				0.6	1	1	1	1	1	1
T3	No	Yes	1	0.6	1	1	1	1	1	1
120.00-113.33				0.6	1	1	1	1	1	1
T4	No	Yes	1	0.6	1	1	1	1	1	1
113.33-106.67				0.6	1	1	1	1	1	1
T5	No	Yes	1	1	0.5	1	1	1	1	1
106.67-100.00				1	0.5	1	1	1	1	1
T6	No	Yes	1	1	0.5	1	1	1	1	1
100.00-80.00				1	0.5	1	1	1	1	1
T7	No	Yes	1	1	0.85	1	1	1	1	1
80.00-60.00				1	0.85	1	1	1	1	1
T8	No	Yes	1	1	0.85	1	1	1	1	1
60.00-40.00				1	0.85	1	1	1	1	1
T9	No	Yes	1	1	0.85	1	1	1	1	1
40.00-20.00				1	0.85	1	1	1	1	1
T10	No	Yes	1	1	0.85	1	1	1	1	1
20.00-6.67				1	0.85	1	1	1	1	1
T11 6.67-0.00	No	Yes	1	1	0.85	1	1	1	1	1
				1	0.85	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 160.00-140.00	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 140.00-120.00	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 120.00-113.33	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 113.33-106.67	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 106.67-100.00	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 100.00-80.00	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 80.00-60.00	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 60.00-40.00	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 40.00-20.00	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 20.00-6.67	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 6.67-0.00	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 160.00-140.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 140.00-120.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 120.00-113.33	Flange	0.6250 A325N	0	0.5000 A325X	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 113.33-106.67	Flange	0.6250 A325N	0	0.5000 A325X	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 106.67-100.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	0.6250 A325N	4	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-6.67	Flange	0.6250 A325N	4	0.5000 A325X	0	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.
T11 6.67-0.00	Flange	0.6250 A325N	0	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160	EHS	A	7/16	2080.00	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
		B	7/16	2080.00	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
		C	7/16	2080.00	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
110	EHS	A	3/4	5830.00	10%	19000	1.155	147.56	100.00	0.0000	0.00	100%
		B	3/4	5830.00	10%	19000	1.155	147.56	100.00	0.0000	0.00	100%
		C	3/4	5830.00	10%	19000	1.155	147.56	100.00	0.0000	0.00	100%
50	EHS	A	7/16	2080.00	10%	21000	0.399	110.42	100.00	0.0000	0.00	100%
		B	7/16	2080.00	10%	21000	0.399	110.42	100.00	0.0000	0.00	100%
		C	7/16	2080.00	10%	21000	0.399	110.42	100.00	0.0000	0.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
160	Torque Arm	5.00	45.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L3x3x3/8
110	Corner						
50	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Flat Bar	
110.00	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Flat Bar	3x.226
50.00	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Flat Bar	3x.226

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160	74.92	74.92	74.92		3.33 3.2 sec/pulse	3.33 3.2 sec/pulse	3.33 3.2 sec/pulse	
110	170.43	170.43	170.43		2.14 2.5 sec/pulse	2.14 2.5 sec/pulse	2.14 2.5 sec/pulse	
50	44.06	44.06	44.06		1.16 1.9 sec/pulse	1.16 1.9 sec/pulse	1.16 1.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
160	No	No	1	1	1	1	1	1
110	No	No			1	1	1	1
50	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160	0.0000 A325N	0	0.0000	1	0.5000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
110	0.0000 A325N	0	0.0000	1	0.5000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
50	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160	A	80.00	20	5	1.6389
	B	80.00	20	5	1.6389
	C	80.00	20	5	1.6389
110	A	55.00	18	5	1.5786
	B	55.00	18	5	1.5786
	C	55.00	18	5	1.5786
50	A	25.00	15	4	1.4589
	B	25.00	15	4	1.4589
	C	25.00	15	4	1.4589

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
2" conduit (ClearWire)	B	No	Ar (CaAa)	146.00 - 6.00	0.0000	0.45	1	1	0.0000	2.3800		3.65
1/2 (ClearWire)	B	No	Ar (CaAa)	146.00 - 6.00	0.0000	0.4	2	2	0.0000	0.5800		0.25
1 1/4 (Proposed Sprint)	B	No	Ar (CaAa)	146.00 - 6.00	0.0000	0.2	4	4	0.0000	1.5500		0.66
1/2 (Verizon)	A	No	Ar (CaAa)	135.00 - 6.00	0.0000	0.35	3	3	0.0000	0.5800		0.25
7/8 (Verizon)	A	No	Ar (CaAa)	135.00 - 6.00	0.0000	0.4	1	1	0.0000	1.1100		0.54
1 5/8 (Verizon)	A	No	Ar (CaAa)	135.00 - 6.00	1.5000	0.5	8	2	0.0000	1.9800		1.04
1 5/8 (Verizon)	C	No	Ar (CaAa)	135.00 - 6.00	0.0000	0.5	12	2	0.0000	1.9800		1.04
7/8 (Verizon)	C	No	Ar (CaAa)	135.00 - 6.00	0.0000	0.3	2	2	0.0000	1.1100		0.54
3" Conduit (AT&T)	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.1	3	2	0.0000	3.0000		5.48
1 5/8 (AT&T)	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	-0.3	12	6	0.0000	1.9800		1.04

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 lb
T1	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	5.844	0.000	40.74
		C	0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	0.000	0.000	28.035	0.000	144.15
		B	0.000	0.000	19.480	0.000	135.80
		C	0.000	0.000	58.626	0.000	376.92
T3	120.00-113.33	A	0.000	0.000	12.460	0.000	64.07
		B	0.000	0.000	6.493	0.000	45.27
		C	0.000	0.000	39.160	0.000	283.20
T4	113.33-106.67	A	0.000	0.000	12.460	0.000	64.07
		B	0.000	0.000	6.493	0.000	45.27
		C	0.000	0.000	39.160	0.000	283.20
T5	106.67-100.00	A	0.000	0.000	12.460	0.000	64.07
		B	0.000	0.000	6.493	0.000	45.27
		C	0.000	0.000	39.160	0.000	283.20
T6	100.00-80.00	A	0.000	0.000	37.380	0.000	192.20
		B	0.000	0.000	19.480	0.000	135.80
		C	0.000	0.000	117.480	0.000	849.60
T7	80.00-60.00	A	0.000	0.000	37.380	0.000	192.20
		B	0.000	0.000	19.480	0.000	135.80
		C	0.000	0.000	117.480	0.000	849.60
T8	60.00-40.00	A	0.000	0.000	37.380	0.000	192.20
		B	0.000	0.000	19.480	0.000	135.80
		C	0.000	0.000	117.480	0.000	849.60

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 lb
T9	40.00-20.00	A	0.000	0.000	37.380	0.000	192.20
		B	0.000	0.000	19.480	0.000	135.80
		C	0.000	0.000	117.480	0.000	849.60
T10	20.00-6.67	A	0.000	0.000	24.920	0.000	128.13
		B	0.000	0.000	12.987	0.000	90.53
		C	0.000	0.000	78.320	0.000	566.40
T11	6.67-0.00	A	0.000	0.000	1.246	0.000	6.41
		B	0.000	0.000	0.649	0.000	4.53
		C	0.000	0.000	3.916	0.000	28.32

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 lb
T1	160.00-140.00	A	1.745	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	16.350	0.000	211.79
		C		0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	1.720	0.000	0.000	44.545	0.000	640.03
		B		0.000	0.000	54.057	0.000	694.92
		C		0.000	0.000	68.296	0.000	1174.25
T3	120.00-113.33	A	1.702	0.000	0.000	19.687	0.000	281.48
		B		0.000	0.000	17.909	0.000	228.91
		C		0.000	0.000	45.367	0.000	814.83
T4	113.33-106.67	A	1.692	0.000	0.000	19.628	0.000	279.89
		B		0.000	0.000	17.850	0.000	227.44
		C		0.000	0.000	45.276	0.000	811.51
T5	106.67-100.00	A	1.681	0.000	0.000	19.565	0.000	278.21
		B		0.000	0.000	17.788	0.000	225.90
		C		0.000	0.000	45.179	0.000	808.01
T6	100.00-80.00	A	1.658	0.000	0.000	58.280	0.000	823.65
		B		0.000	0.000	52.952	0.000	667.63
		C		0.000	0.000	134.905	0.000	2401.11
T7	80.00-60.00	A	1.617	0.000	0.000	57.542	0.000	804.26
		B		0.000	0.000	52.221	0.000	649.87
		C		0.000	0.000	133.776	0.000	2360.48
T8	60.00-40.00	A	1.564	0.000	0.000	56.584	0.000	779.43
		B		0.000	0.000	51.270	0.000	627.14
		C		0.000	0.000	132.309	0.000	2308.15
T9	40.00-20.00	A	1.486	0.000	0.000	55.189	0.000	744.04
		B		0.000	0.000	49.887	0.000	594.82
		C		0.000	0.000	130.176	0.000	2232.98
T10	20.00-6.67	A	1.370	0.000	0.000	35.412	0.000	462.06
		B		0.000	0.000	31.890	0.000	365.62
		C		0.000	0.000	84.673	0.000	1415.61
T11	6.67-0.00	A	1.193	0.000	0.000	1.665	0.000	20.63
		B		0.000	0.000	1.490	0.000	16.04
		C		0.000	0.000	4.072	0.000	65.35

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	160.00-140.00	0.8282	0.1767	0.3103	0.0882
T2	140.00-120.00	-0.3664	0.5145	0.0086	0.1313
T3	120.00-113.33	-0.2424	0.9716	0.0148	0.3018
T4	113.33-106.67	-0.2390	0.9578	0.0130	0.2719
T5	106.67-100.00	-0.2452	0.9830	0.0159	0.3440
T6	100.00-80.00	-0.2460	0.9861	0.0153	0.3563
T7	80.00-60.00	-0.2460	0.9861	0.0135	0.3628
T8	60.00-40.00	-0.2452	0.9830	0.0111	0.3694
T9	40.00-20.00	-0.2460	0.9861	0.0074	0.3841
T10	20.00-6.67	-0.2458	0.9853	0.0015	0.4022
T11	6.67-0.00	-0.1281	0.5081	-0.0034	0.1286

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	2" conduit	140.00 - 146.00	0.6000	0.4104
T1	2	1/2	140.00 - 146.00	0.6000	0.4104
T1	3	1 1/4	140.00 - 146.00	0.6000	0.4104
T2	1	2" conduit	120.00 - 140.00	0.6000	0.2756
T2	2	1/2	120.00 - 140.00	0.6000	0.2756
T2	3	1 1/4	120.00 - 140.00	0.6000	0.2756
T2	4	1/2	120.00 - 135.00	0.6000	0.2756
T2	5	7/8	120.00 - 135.00	0.6000	0.2756
T2	6	1 5/8	120.00 - 135.00	0.6000	0.2756
T2	7	1 5/8	120.00 - 135.00	0.6000	0.2756
T2	8	7/8	120.00 - 135.00	0.6000	0.2756
T2	9	3" Conduit	120.00 - 126.00	0.6000	0.2756
T2	10	1 5/8	120.00 - 126.00	0.6000	0.2756
T3	1	2" conduit	113.33 - 120.00	0.6000	0.2975
T3	2	1/2	113.33 - 120.00	0.6000	0.2975
T3	3	1 1/4	113.33 - 120.00	0.6000	0.2975
T3	4	1/2	113.33 - 120.00	0.6000	0.2975
T3	5	7/8	113.33 - 120.00	0.6000	0.2975
T3	6	1 5/8	113.33 - 120.00	0.6000	0.2975
T3	7	1 5/8	113.33 -	0.6000	0.2975

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T3	8	7/8	113.33 - 120.00	0.6000	0.2975
T3	9	3" Conduit	113.33 - 120.00	0.6000	0.2975
T3	10	1 5/8	113.33 - 120.00	0.6000	0.2975
T4	1	2" conduit	106.67 - 113.33	0.6000	0.2401
T4	2	1/2	106.67 - 113.33	0.6000	0.2401
T4	3	1 1/4	106.67 - 113.33	0.6000	0.2401
T4	4	1/2	106.67 - 113.33	0.6000	0.2401
T4	5	7/8	106.67 - 113.33	0.6000	0.2401
T4	6	1 5/8	106.67 - 113.33	0.6000	0.2401
T4	7	1 5/8	106.67 - 113.33	0.6000	0.2401
T4	8	7/8	106.67 - 113.33	0.6000	0.2401
T4	9	3" Conduit	106.67 - 113.33	0.6000	0.2401
T4	10	1 5/8	106.67 - 113.33	0.6000	0.2401
T5	1	2" conduit	100.00 - 106.67	0.6000	0.3964
T5	2	1/2	100.00 - 106.67	0.6000	0.3964
T5	3	1 1/4	100.00 - 106.67	0.6000	0.3964
T5	4	1/2	100.00 - 106.67	0.6000	0.3964
T5	5	7/8	100.00 - 106.67	0.6000	0.3964
T5	6	1 5/8	100.00 - 106.67	0.6000	0.3964
T5	7	1 5/8	100.00 - 106.67	0.6000	0.3964
T5	8	7/8	100.00 - 106.67	0.6000	0.3964
T5	9	3" Conduit	100.00 - 106.67	0.6000	0.3964
T5	10	1 5/8	100.00 - 106.67	0.6000	0.3964
T6	1	2" conduit	80.00 - 100.00	0.6000	0.4268
T6	2	1/2	80.00 - 100.00	0.6000	0.4268
T6	3	1 1/4	80.00 - 100.00	0.6000	0.4268
T6	4	1/2	80.00 - 100.00	0.6000	0.4268
T6	5	7/8	80.00 - 100.00	0.6000	0.4268
T6	6	1 5/8	80.00 - 100.00	0.6000	0.4268
T6	7	1 5/8	80.00 - 100.00	0.6000	0.4268
T6	8	7/8	80.00 - 100.00	0.6000	0.4268
T6	9	3" Conduit	80.00 - 100.00	0.6000	0.4268
T6	10	1 5/8	80.00 - 100.00	0.6000	0.4268
T7	1	2" conduit	60.00 - 80.00	0.6000	0.4344
T7	2	1/2	60.00 - 80.00	0.6000	0.4344
T7	3	1 1/4	60.00 - 80.00	0.6000	0.4344
T7	4	1/2	60.00 - 80.00	0.6000	0.4344
T7	5	7/8	60.00 - 80.00	0.6000	0.4344

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	6	1 5/8	60.00 - 80.00	0.6000	0.4344
T7	7	1 5/8	60.00 - 80.00	0.6000	0.4344
T7	8	7/8	60.00 - 80.00	0.6000	0.4344
T7	9	3" Conduit	60.00 - 80.00	0.6000	0.4344
T7	10	1 5/8	60.00 - 80.00	0.6000	0.4344
T8	1	2" conduit	40.00 - 60.00	0.6000	0.4382
T8	2	1/2	40.00 - 60.00	0.6000	0.4382
T8	3	1 1/4	40.00 - 60.00	0.6000	0.4382
T8	4	1/2	40.00 - 60.00	0.6000	0.4382
T8	5	7/8	40.00 - 60.00	0.6000	0.4382
T8	6	1 5/8	40.00 - 60.00	0.6000	0.4382
T8	7	1 5/8	40.00 - 60.00	0.6000	0.4382
T8	8	7/8	40.00 - 60.00	0.6000	0.4382
T8	9	3" Conduit	40.00 - 60.00	0.6000	0.4382
T8	10	1 5/8	40.00 - 60.00	0.6000	0.4382
T9	1	2" conduit	20.00 - 40.00	0.6000	0.4589
T9	2	1/2	20.00 - 40.00	0.6000	0.4589
T9	3	1 1/4	20.00 - 40.00	0.6000	0.4589
T9	4	1/2	20.00 - 40.00	0.6000	0.4589
T9	5	7/8	20.00 - 40.00	0.6000	0.4589
T9	6	1 5/8	20.00 - 40.00	0.6000	0.4589
T9	7	1 5/8	20.00 - 40.00	0.6000	0.4589
T9	8	7/8	20.00 - 40.00	0.6000	0.4589
T9	9	3" Conduit	20.00 - 40.00	0.6000	0.4589
T9	10	1 5/8	20.00 - 40.00	0.6000	0.4589
T10	1	2" conduit	6.67 - 20.00	0.6000	0.4752
T10	2	1/2	6.67 - 20.00	0.6000	0.4752
T10	3	1 1/4	6.67 - 20.00	0.6000	0.4752
T10	4	1/2	6.67 - 20.00	0.6000	0.4752
T10	5	7/8	6.67 - 20.00	0.6000	0.4752
T10	6	1 5/8	6.67 - 20.00	0.6000	0.4752
T10	7	1 5/8	6.67 - 20.00	0.6000	0.4752
T10	8	7/8	6.67 - 20.00	0.6000	0.4752
T10	9	3" Conduit	6.67 - 20.00	0.6000	0.4752
T10	10	1 5/8	6.67 - 20.00	0.6000	0.4752
T11	1	2" conduit	6.00 - 6.67	0.6000	0.3059
T11	2	1/2	6.00 - 6.67	0.6000	0.3059
T11	3	1 1/4	6.00 - 6.67	0.6000	0.3059
T11	4	1/2	6.00 - 6.67	0.6000	0.3059
T11	5	7/8	6.00 - 6.67	0.6000	0.3059
T11	6	1 5/8	6.00 - 6.67	0.6000	0.3059
T11	7	1 5/8	6.00 - 6.67	0.6000	0.3059
T11	8	7/8	6.00 - 6.67	0.6000	0.3059
T11	9	3" Conduit	6.00 - 6.67	0.6000	0.3059
T11	10	1 5/8	6.00 - 6.67	0.6000	0.3059

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft	ft^2	ft^2	lb

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 lb
*** Proposed ***									
APXVTM14-C-120	A	From Leg	3.00	0.0000	146.00	No Ice	6.53	3.38	52.90
			0.00			1/2" Ice	6.96	3.72	90.49
			2.00			1" Ice	7.40	4.07	132.96
APXVTM14-C-120	B	From Leg	3.00	0.0000	146.00	No Ice	6.53	3.38	52.90
			0.00			1/2" Ice	6.96	3.72	90.49
			2.00			1" Ice	7.40	4.07	132.96
APXVTM14-C-120	C	From Leg	3.00	0.0000	146.00	No Ice	6.53	3.38	52.90
			0.00			1/2" Ice	6.96	3.72	90.49
			2.00			1" Ice	7.40	4.07	132.96
TD-RRH8X20	A	From Leg	3.00	0.0000	146.00	No Ice	4.32	1.41	66.14
			0.00			1/2" Ice	4.60	1.61	90.08
			0.00			1" Ice	4.89	1.83	117.36
TD-RRH8X20	B	From Leg	3.00	0.0000	146.00	No Ice	4.32	1.41	66.14
			0.00			1/2" Ice	4.60	1.61	90.08
			0.00			1" Ice	4.89	1.83	117.36
TD-RRH8X20	C	From Leg	3.00	0.0000	146.00	No Ice	4.32	1.41	66.14
			0.00			1/2" Ice	4.60	1.61	90.08
			0.00			1" Ice	4.89	1.83	117.36
APXVSPP18-C-A20	A	From Leg	3.00	0.0000	146.00	No Ice	8.26	5.28	57.00
			0.00			1/2" Ice	8.81	5.74	106.52
			2.00			1" Ice	9.36	6.20	162.12
APXVSPP18-C-A20	B	From Leg	3.00	0.0000	146.00	No Ice	8.26	5.28	57.00
			0.00			1/2" Ice	8.81	5.74	106.52
			2.00			1" Ice	9.36	6.20	162.12
APXVSPP18-C-A20	C	From Leg	3.00	0.0000	146.00	No Ice	8.26	5.28	57.00
			0.00			1/2" Ice	8.81	5.74	106.52
			2.00			1" Ice	9.36	6.20	162.12
800 MHz w/ Notch Filter	A	From Leg	3.00	0.0000	146.00	No Ice	2.49	2.91	61.80
			0.00			1/2" Ice	2.71	3.14	87.79
			0.00			1" Ice	2.93	3.38	117.08
800 MHz w/ Notch Filter	B	From Leg	3.00	0.0000	146.00	No Ice	2.49	2.91	61.80
			0.00			1/2" Ice	2.71	3.14	87.79
			0.00			1" Ice	2.93	3.38	117.08
800 MHz w/ Notch Filter	C	From Leg	3.00	0.0000	146.00	No Ice	2.49	2.91	61.80
			0.00			1/2" Ice	2.71	3.14	87.79
			0.00			1" Ice	2.93	3.38	117.08
1900 MHz RRH	A	From Leg	3.00	0.0000	146.00	No Ice	2.73	1.45	44.09
			0.00			1/2" Ice	2.96	1.64	62.32
			0.00			1" Ice	3.20	1.84	83.43
1900 MHz RRH	B	From Leg	3.00	0.0000	146.00	No Ice	2.73	1.45	44.09
			0.00			1/2" Ice	2.96	1.64	62.32
			0.00			1" Ice	3.20	1.84	83.43
1900 MHz RRH	C	From Leg	3.00	0.0000	146.00	No Ice	2.73	1.45	44.09
			0.00			1/2" Ice	2.96	1.64	62.32
			0.00			1" Ice	3.20	1.84	83.43
*** Existing ***									
20' Omni	C	From Leg	3.00	0.0000	160.00	No Ice	6.00	6.00	55.00
			0.00			1/2" Ice	8.03	8.03	98.17
			10.00			1" Ice	10.08	10.08	154.01
20' Omni	B	From Leg	3.00	0.0000	160.00	No Ice	6.00	6.00	55.00
			0.00			1/2" Ice	8.03	8.03	98.17
			10.00			1" Ice	10.08	10.08	154.01
15' Omni	A	From Leg	3.00	0.0000	160.00	No Ice	4.50	4.50	15.00
			0.00			1/2" Ice	6.03	6.03	47.48
			7.50			1" Ice	7.58	7.58	89.58
15' Omni	C	From Leg	3.00	0.0000	160.00	No Ice	4.50	4.50	15.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00					1/2" Ice	6.03	6.03	47.48
			7.50					1" Ice	7.58	7.58	89.58
6' Dipole	A	From Leg	3.00			0.0000	160.00	No Ice	1.77	1.77	15.00
			0.00					1/2" Ice	2.13	2.13	28.24
			0.00					1" Ice	2.50	2.50	45.59
(2) LPA-80080/6CF	A	From Leg	3.00			0.0000	135.00	No Ice	4.32	9.10	21.00
			0.00					1/2" Ice	4.76	9.65	69.26
			0.00					1" Ice	5.21	10.21	123.51
(2) SC-E 6014 rev2	B	From Leg	3.00			0.0000	135.00	No Ice	3.55	3.34	15.00
			0.00					1/2" Ice	3.89	3.68	42.16
			0.00					1" Ice	4.24	4.02	73.37
(2) SC-E 6014 rev2	C	From Leg	3.00			0.0000	135.00	No Ice	3.55	3.34	15.00
			0.00					1/2" Ice	3.89	3.68	42.16
			0.00					1" Ice	4.24	4.02	73.37
BXA-171063-12CF	A	From Leg	3.00			0.0000	135.00	No Ice	4.79	3.62	15.00
			0.00					1/2" Ice	5.24	4.06	42.45
			0.00					1" Ice	5.70	4.50	75.45
BXA-171063-12CF	B	From Leg	3.00			0.0000	135.00	No Ice	4.79	3.62	15.00
			0.00					1/2" Ice	5.24	4.06	42.45
			0.00					1" Ice	5.70	4.50	75.45
BXA-171063-12CF	C	From Leg	3.00			0.0000	135.00	No Ice	4.79	3.62	15.00
			0.00					1/2" Ice	5.24	4.06	42.45
			0.00					1" Ice	5.70	4.50	75.45
LPA-70063-4CF	A	From Leg	3.00			0.0000	135.00	No Ice	7.00	6.04	25.00
			0.00					1/2" Ice	7.41	6.43	77.41
			0.00					1" Ice	7.83	6.84	134.92
SLCP 2x6014	B	From Leg	3.00			0.0000	135.00	No Ice	7.21	5.67	25.00
			0.00					1/2" Ice	7.65	6.09	75.49
			0.00					1" Ice	8.10	6.51	131.23
SLCP 2x6014	C	From Leg	3.00			0.0000	135.00	No Ice	7.21	5.67	25.00
			0.00					1/2" Ice	7.65	6.09	75.49
			0.00					1" Ice	8.10	6.51	131.23
AM-X-CD-16-65-00T-RET	A	From Leg	3.00			0.0000	126.00	No Ice	8.26	4.64	48.50
			0.00					1/2" Ice	8.81	5.09	95.00
			0.00					1" Ice	9.36	5.54	147.50
AM-X-CD-16-65-00T-RET	B	From Leg	3.00			0.0000	126.00	No Ice	8.26	4.64	48.50
			0.00					1/2" Ice	8.81	5.09	95.00
			0.00					1" Ice	9.36	5.54	147.50
AM-X-CD-16-65-00T-RET	C	From Leg	3.00			0.0000	126.00	No Ice	8.26	4.64	48.50
			0.00					1/2" Ice	8.81	5.09	95.00
			0.00					1" Ice	9.36	5.54	147.50
(2) SBNH-1D6565C (60.8 lbs)	A	From Leg	3.00			0.0000	126.00	No Ice	11.45	7.70	60.80
			0.00					1/2" Ice	12.06	8.29	126.67
			0.00					1" Ice	12.69	8.89	200.21
(2) SBNH-1D6565C (60.8 lbs)	B	From Leg	3.00			0.0000	126.00	No Ice	11.45	7.70	60.80
			0.00					1/2" Ice	12.06	8.29	126.67
			0.00					1" Ice	12.69	8.89	200.21
(2) SBNH-1D6565C (60.8 lbs)	C	From Leg	3.00			0.0000	126.00	No Ice	11.45	7.70	60.80
			0.00					1/2" Ice	12.06	8.29	126.67
			0.00					1" Ice	12.69	8.89	200.21
(2) RRUS-11	A	From Leg	3.00			0.0000	126.00	No Ice	4.42	1.63	55.00
			0.00					1/2" Ice	4.71	1.84	80.77
			0.00					1" Ice	5.00	2.06	109.98
(2) RRUS-11	B	From Leg	3.00			0.0000	126.00	No Ice	4.42	1.63	55.00
			0.00					1/2" Ice	4.71	1.84	80.77
			0.00					1" Ice	5.00	2.06	109.98
(2) RRUS-11	C	From Leg	3.00			0.0000	126.00	No Ice	4.42	1.63	55.00

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft²	C_AA_A *Side* ft²	*Weight* lb
			0.00			1/2" Ice	4.71	1.84	80.77
			0.00			1" Ice	5.00	2.06	109.98
(2) TTA	A	From Leg	3.00	0.0000	126.00	No Ice	1.40	0.70	10.00
			0.00			1/2" Ice	1.56	0.82	20.34
			0.00			1" Ice	1.73	0.95	32.81
(2) TTA	A	From Leg	3.00	0.0000	126.00	No Ice	1.40	0.70	10.00
			0.00			1/2" Ice	1.56	0.82	20.34
			0.00			1" Ice	1.73	0.95	32.81
(2) TTA	A	From Leg	3.00	0.0000	126.00	No Ice	1.40	0.70	10.00
			0.00			1/2" Ice	1.56	0.82	20.34
			0.00			1" Ice	1.73	0.95	32.81
20' Dipole	A	From Leg	1.00	0.0000	52.00	No Ice	6.00	6.00	60.00
			0.00			1/2" Ice	8.03	8.03	103.17
			10.00			1" Ice	10.08	10.08	159.01
*** Mounts ***									
Angle Sector Frame	A	From Leg	1.50	0.0000	146.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Angle Sector Frame	B	From Leg	1.50	0.0000	146.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Angle Sector Frame	C	From Leg	1.50	0.0000	146.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Angle Sector Frame	A	From Leg	1.50	0.0000	135.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Angle Sector Frame	B	From Leg	1.50	0.0000	135.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Angle Sector Frame	C	From Leg	1.50	0.0000	135.00	No Ice	17.90	8.95	400.00
			0.00			1/2" Ice	22.20	13.00	510.00
			0.00			1" Ice	26.50	17.05	620.00
Pipe Sector Frame	A	From Leg	1.50	0.0000	126.00	No Ice	14.40	7.20	300.00
			0.00			1/2" Ice	19.50	10.50	415.00
			0.00			1" Ice	24.60	13.80	530.00
Pipe Sector Frame	B	From Leg	1.50	0.0000	126.00	No Ice	14.40	7.20	300.00
			0.00			1/2" Ice	19.50	10.50	415.00
			0.00			1" Ice	24.60	13.80	530.00
Pipe Sector Frame	C	From Leg	1.50	0.0000	126.00	No Ice	14.40	7.20	300.00
			0.00			1/2" Ice	19.50	10.50	415.00
			0.00			1" Ice	24.60	13.80	530.00

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* ft²	*Weight* lb
VHLP2	A	Paraboloid	From	3.00	0.0000		146.00	2.00	No Ice	3.14	25.00

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 lb
(ClearWire)		w/Radome	Leg	0.00					1/2" Ice	3.41	25.02
				5.00					1" Ice	3.68	25.04
VHLP2	C	Paraboloid	From	3.00	0.0000		146.00	2.00	No Ice	3.14	25.00
(ClearWire)		w/Radome	Leg	0.00					1/2" Ice	3.41	25.02
				5.00					1" Ice	3.68	25.04

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	1.532	37	0.0370	0.0927
T2	140 - 120	1.605	33	0.0250	0.1549
T3	120 - 113.333	1.329	33	0.0881	0.1508
T4	113.333 - 106.667	1.199	34	0.0786	0.1435
T5	106.667 - 100	1.109	34	0.0530	0.1337
T6	100 - 80	1.064	34	0.0386	0.1190
T7	80 - 60	0.941	32	0.0420	0.0979
T8	60 - 40	0.715	32	0.0588	0.0866
T9	40 - 20	0.509	28	0.0417	0.0833
T10	20 - 6.66667	0.317	28	0.0612	0.0782
T11	6.66667 - 0	0.116	28	0.0772	0.0662

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	Guy	37	1.532	0.0370	0.0927	38371
151.00	VHLP2	37	1.593	0.0167	0.1267	21317
146.00	APXVTM14-C-120	37	1.611	0.0162	0.1422	13704
135.00	(2) LPA-80080/6CF	33	1.568	0.0415	0.1594	11513
126.00	AM-X-CD-16-65-00T-RET	33	1.443	0.0763	0.1566	17997
110.00	Guy	34	1.147	0.0659	0.1392	10160
52.00	20' Dipole	28	0.626	0.0524	0.0847	82994
50.00	Guy	28	0.605	0.0501	0.0844	83804

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	15.099	10	0.1125	0.5616
T2	140 - 120	14.490	10	0.3389	0.6987
T3	120 - 113.333	12.259	10	0.6314	0.6529
T4	113.333 - 106.667	11.320	10	0.5928	0.6145
T5	106.667 - 100	10.556	10	0.4799	0.5885
T6	100 - 80	9.996	10	0.4160	0.5442
T7	80 - 60	8.384	6	0.4354	0.4147
T8	60 - 40	6.326	6	0.5105	0.3493
T9	40 - 20	4.366	2	0.4320	0.3229
T10	20 - 6.66667	2.465	2	0.5224	0.2855
T11	6.66667 - 0	0.867	2	0.5963	0.2404

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	Guy	10	15.099	0.1125	0.5616	8522

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
151.00	VHLP2	10	14.959	0.1901	0.6383	4734
146.00	APXVTM14-C-120	10	14.807	0.2493	0.6724	3044
135.00	(2) LPA-80080/6CF	10	14.084	0.4306	0.7047	2566
126.00	AM-X-CD-16-65-00T-RET	10	13.074	0.5838	0.6838	4062
110.00	Guy	10	10.909	0.5375	0.6018	2149
52.00	20' Dipole	6	5.508	0.4809	0.3381	17975
50.00	Guy	2	5.311	0.4702	0.3355	18249

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	160	Leg	A325N	0.6250	4	5739.78	20708.70	0.277 ✔	1	Bolt Tension
T2	140	Leg	A325N	0.6250	4	1468.81	20708.70	0.071 ✔	1	Bolt Tension
T5	106.667	Leg	A325N	0.6250	4	2329.66	20708.70	0.112 ✔	1	Bolt Tension
T6	100	Leg	A325N	0.6250	4	2282.64	20708.70	0.110 ✔	1	Bolt Tension
T7	80	Leg	A325N	0.6250	4	2361.55	20708.70	0.114 ✔	1	Bolt Tension
T8	60	Leg	A325N	0.6250	4	2695.98	20708.70	0.130 ✔	1	Bolt Tension
T9	40	Leg	A325N	0.6250	4	3000.04	20708.70	0.145 ✔	1	Bolt Tension
T10	20	Leg	A325N	0.6250	4	2996.50	20708.70	0.145 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	160.00 (A) (388)	7/16 EHS	2080.00	20800.02	7268.97	12480.00	1.000	1.717 ✔
	160.00 (A) (389)	7/16 EHS	2080.00	20800.02	7457.63	12480.00	1.000	1.673 ✔
	160.00 (B) (382)	7/16 EHS	2080.00	20800.02	7254.68	12480.00	1.000	1.720 ✔
	160.00 (B) (383)	7/16 EHS	2080.00	20800.02	7240.94	12480.00	1.000	1.724 ✔
	160.00 (C) (376)	7/16 EHS	2080.00	20800.02	7440.63	12480.00	1.000	1.677 ✔
	160.00 (C) (377)	7/16 EHS	2080.00	20800.02	7265.39	12480.00	1.000	1.718 ✔
T4	110.00 (A) (396)	3/4 EHS	5830.00	58299.91	21788.00	34980.00	1.000	1.605 ✔
	110.00 (B) (395)	3/4 EHS	5830.00	58299.91	21827.90	34980.00	1.000	1.603 ✔
	110.00 (C) (394)	3/4 EHS	5830.00	58299.91	21834.70	34980.00	1.000	1.602 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T8	50.00 (A) (399)	7/16 EHS	2080.00	20800.02	7457.77	12480.00	1.000	1.673 ✔
	50.00 (B) (398)	7/16 EHS	2080.00	20800.02	7458.20	12480.00	1.000	1.673 ✔
	50.00 (C) (397)	7/16 EHS	2080.00	20800.02	7455.18	12480.00	1.000	1.674 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	ROHN 2.5 X-STR	20.00	3.32	43.1 K=1.00	2.2535	0.99	-37378.70	87874.20	0.425 [1] ✔
T2	140 - 120	ROHN 2.5 X-STR	20.00	3.32	43.1 K=1.00	2.2535	0.99	-37273.00	87855.30	0.424 [1] ✔
T3	120 - 113.333	ROHN 2.5 STD	6.67	3.25	41.2 K=1.00	1.7040	0.98	-29634.30	66678.50	0.444 [1] ✔
T4	113.333 - 106.667	ROHN 2.5 STD	6.67	3.25	41.2 K=1.00	1.7040	0.95	-36899.90	64244.90	0.574 [1] ✔
T5	106.667 - 100	ROHN 2.5 STD	6.67	3.25	41.2 K=1.00	1.7040	0.95	-36901.40	64244.60	0.574 [1] ✔
T6	100 - 80	ROHN 2.5 STD	20.00	3.31	41.9 K=1.00	1.7040	0.88	-27391.60	59392.60	0.461 [1] ✔
T7	80 - 60	ROHN 2.5 STD	20.00	3.31	41.9 K=1.00	1.7040	0.88	-28338.60	59089.80	0.480 [1] ✔
T8	60 - 40	ROHN 2.5 STD	20.00	3.31	41.9 K=1.00	1.7040	0.95	-32351.80	63936.60	0.506 [1] ✔
T9	40 - 20	ROHN 2.5 STD	20.00	3.31	41.9 K=1.00	1.7040	0.95	-36000.50	64093.90	0.562 [1] ✔
T10	20 - 6.66667	ROHN 2.5 STD	13.33	3.29	41.7 K=1.00	1.7040	0.95	-35958.00	63979.60	0.562 [1] ✔
T11	6.66667 - 0	ROHN 2.5 STD	6.82	3.41	43.2 K=1.00	1.7040	0.96	-36939.00	63951.00	0.578 [1] ✔

[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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	4.16	3.76	67.6 K=0.50	0.3326	-4963.55	8475.25	0.586 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120	P.75x.113	4.16	3.76	81.1 K=0.60	0.3326	-4845.28	7624.89	0.635 [1]
T3	120 - 113.333	P.75x.113	4.10	3.71	80.0 K=0.60	0.3326	-5232.21	7694.92	0.680 [1]
T4	113.333 - 106.667	P.75x.113	4.10	3.71	80.0 K=0.60	0.3326	-5321.73	7694.92	0.692 [1]
T5	106.667 - 100	P.75x.113	4.10	3.71	66.7 K=0.50	0.3326	-4433.77	8529.22	0.520 [1]
T6	100 - 80	P.75x.113	4.14	3.75	67.4 K=0.50	0.3326	-3865.59	8486.11	0.456 [1]
T7	80 - 60	P.75x.113	4.14	3.75	114.5 K=0.85	0.3326	-2719.92	5401.55	0.504 [1]
T8	60 - 40	P.75x.113	4.14	3.75	114.5 K=0.85	0.3326	-3730.39	5401.55	0.691 [1]
T9	40 - 20	P.75x.113	4.14	3.75	114.5 K=0.85	0.3326	-2802.25	5401.55	0.519 [1]
T10	20 - 6.66667	P.75x.113	4.13	3.74	114.2 K=0.85	0.3326	-2042.46	5421.49	0.377 [1]
T11	6.66667 - 0	P.75x.113	3.76	3.28	100.4 K=0.85	0.3326	-1807.69	6338.99	0.285 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-1656.87	7610.79	0.218 [1]
T2	140 - 120	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-993.56	7610.79	0.131 [1]
T5	106.667 - 100	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-438.09	7610.79	0.058 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-1608.59	7610.79	0.211 [1]
T2	140 - 120	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-264.84	7610.79	0.035 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	113.333 - 106.667	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-223.24	7610.79	0.029 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-266.18	7610.79	0.035 [1]
T4	113.333 - 106.667	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-85.77	7610.79	0.011 [1]
T5	106.667 - 100	P.75x.113	2.50	2.26	81.3 K=1.00	0.3326	-12.62	7610.79	0.002 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140 (380)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10691.50	48446.40	0.221 [1]
T1	160 - 140 (381)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10749.10	48446.40	0.222 [1]
T1	160 - 140 (386)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10365.10	48446.40	0.214 [1]
T1	160 - 140 (387)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10316.00	48446.40	0.213 [1]
T1	160 - 140 (392)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10526.30	48446.40	0.217 [1]
T1	160 - 140 (393)	L3x3x3/8	4.16	3.96	80.9 K=1.00	2.1100	-10541.60	48446.40	0.218 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	ROHN 2.5 X-STR	20.00	3.32	43.1	2.2535	22959.10	101409.00	0.226 [1] ✔
T2	140 - 120	ROHN 2.5 X-STR	20.00	3.32	43.1	2.2535	23824.20	101409.00	0.235 [1] ✔
T3	120 - 113.333	ROHN 2.5 STD	6.67	3.25	41.2	1.7040	12254.40	76682.30	0.160 [1] ✔
T4	113.333 - 106.667	ROHN 2.5 STD	6.67	3.25	41.2	1.7040	17958.90	76682.30	0.234 [1] ✔
T5	106.667 - 100	ROHN 2.5 STD	6.67	3.25	41.2	1.7040	3504.12	76682.30	0.046 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	4.16	3.76	135.1	0.3326	4581.91	10777.40	0.425 [1] ✔
T2	140 - 120	P.75x.113	4.16	3.76	135.1	0.3326	3644.60	10777.40	0.338 [1] ✔
T3	120 - 113.333	P.75x.113	4.10	3.71	133.3	0.3326	3805.50	10777.40	0.353 [1] ✔
T4	113.333 - 106.667	P.75x.113	4.10	3.71	133.3	0.3326	4429.06	10777.40	0.411 [1] ✔
T5	106.667 - 100	P.75x.113	4.10	3.71	133.3	0.3326	3542.82	10777.40	0.329 [1] ✔
T6	100 - 80	P.75x.113	4.14	3.75	134.8	0.3326	2583.22	10777.40	0.240 [1] ✔
T7	80 - 60	P.75x.113	4.14	3.75	134.8	0.3326	1443.34	10777.40	0.134 [1] ✔
T8	60 - 40	P.75x.113	4.14	3.75	134.8	0.3326	2207.91	10777.40	0.205 [1] ✔
T9	40 - 20	P.75x.113	4.14	3.75	134.8	0.3326	1261.81	10777.40	0.117 [1] ✔
T10	20 - 6.66667	P.75x.113	4.13	3.74	134.4	0.3326	720.00	10777.40	0.067 [1] ✔

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3	0.3326	1754.24	10777.40	0.163 [1] ✔
T2	140 - 120	P.75x.113	2.50	2.26	81.3	0.3326	2274.78	10777.40	0.211 [1] ✔
T3	120 - 113.333	P.75x.113	2.50	2.26	81.3	0.3326	1697.54	10777.40	0.158 [1] ✔
T5	106.667 - 100	P.75x.113	2.50	2.26	81.3	0.3326	1166.94	10777.40	0.108 [1] ✔
T6	100 - 80	P.75x.113	2.50	2.26	81.3	0.3326	601.46	10777.40	0.056 [1] ✔
T7	80 - 60	P.75x.113	2.50	2.26	81.3	0.3326	611.35	10777.40	0.057 [1] ✔
T8	60 - 40	P.75x.113	2.50	2.26	81.3	0.3326	664.03	10777.40	0.062 [1] ✔
T9	40 - 20	P.75x.113	2.50	2.26	81.3	0.3326	720.35	10777.40	0.067 [1] ✔
T10	20 - 6.66667	P.75x.113	2.50	2.26	81.3	0.3326	726.02	10777.40	0.067 [1] ✔
T11	6.66667 - 0	P.75x.113	1.25	1.01	36.3	0.3326	603.99	10777.40	0.056 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3	0.3326	1608.32	10777.40	0.149 [1] ✔
T2	140 - 120	P.75x.113	2.50	2.26	81.3	0.3326	670.67	10777.40	0.062 [1] ✔
T3	120 - 113.333	P.75x.113	2.50	2.26	81.3	0.3326	793.75	10777.40	0.074 [1] ✔
T4	113.333 - 106.667	P.75x.113	2.50	2.26	81.3	0.3326	1871.66	10777.40	0.174 [1] ✔
T6	100 - 80	P.75x.113	2.50	2.26	81.3	0.3326	273.90	10777.40	0.025 [1] ✔
T7	80 - 60	P.75x.113	2.50	2.26	81.3	0.3326	285.61	10777.40	0.027 [1] ✔
T8	60 - 40	P.75x.113	2.50	2.26	81.3	0.3326	344.38	10777.40	0.032 [1] ✔
T9	40 - 20	P.75x.113	2.50	2.26	81.3	0.3326	330.56	10777.40	0.031 [1] ✔
T10	20 - 6.66667	P.75x.113	2.50	2.26	81.3	0.3326	362.96	10777.40	0.034 [1] ✔
T11	6.66667 - 0	P.75x.113	2.47	2.23	80.2	0.3326	2543.68	10777.40	0.236 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	160 - 140	P.75x.113	2.50	2.26	81.3	0.3326	629.95	10777.40	0.058 [1] ✔
T2	140 - 120	P.75x.113	2.50	2.26	81.3	0.3326	737.94	10777.40	0.068 [1] ✔
T4	113.333 - 106.667	P.75x.113	2.50	2.26	81.3	0.3326	1228.10	10777.40	0.114 [1] ✔
T5	106.667 - 100	P.75x.113	2.50	2.26	81.3	0.3326	402.74	10777.40	0.037 [1] ✔
T6	100 - 80	P.75x.113	2.50	2.26	81.3	0.3326	307.06	10777.40	0.028 [1] ✔
T7	80 - 60	P.75x.113	2.50	2.26	81.3	0.3326	287.09	10777.40	0.027 [1] ✔
T8	60 - 40	P.75x.113	2.50	2.26	81.3	0.3326	365.55	10777.40	0.034 [1] ✔
T9	40 - 20	P.75x.113	2.50	2.26	81.3	0.3326	357.21	10777.40	0.033 [1] ✔
T10	20 - 6.66667	P.75x.113	2.50	2.26	81.3	0.3326	2527.20	10777.40	0.234 [1] ✔

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T4	113.333 - 106.667	3x.226	2.50	2.26	415.8	0.5085	6988.26	24789.40	0.282 [1] ✔
T8	60 - 40	3x.226	2.50	2.26	415.8	0.6780	4233.58	30510.00	0.139 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

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	lb	lb	
T1	160 - 140 (378)	L3x3x3/8	2.50	2.38	31.3	2.1100	5616.51	68364.00	0.082 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140 (379)	L3x3x3/8	2.50	2.38	31.3	2.1100	5606.54	68364.00	0.082 [1] ✔
T1	160 - 140 (384)	L3x3x3/8	2.50	2.38	31.3	2.1100	5734.99	68364.00	0.084 [1] ✔
T1	160 - 140 (385)	L3x3x3/8	2.50	2.38	31.3	2.1100	5377.08	68364.00	0.079 [1] ✔
T1	160 - 140 (390)	L3x3x3/8	2.50	2.38	31.3	2.1100	5594.70	68364.00	0.082 [1] ✔
T1	160 - 140 (391)	L3x3x3/8	2.50	2.38	31.3	2.1100	5650.38	68364.00	0.083 [1] ✔

[1] $P_u / \phi P_n$ controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	160 - 140 (380)	L3x3x3/8	4.16	3.96	52.0	2.1100	2054.55	68364.00	0.030 [1] ✔
T1	160 - 140 (381)	L3x3x3/8	4.16	3.96	52.0	2.1100	2009.00	68364.00	0.029 [1] ✔
T1	160 - 140 (386)	L3x3x3/8	4.16	3.96	52.0	2.1100	1824.15	68364.00	0.027 [1] ✔
T1	160 - 140 (387)	L3x3x3/8	4.16	3.96	52.0	2.1100	1862.93	68364.00	0.027 [1] ✔
T1	160 - 140 (392)	L3x3x3/8	4.16	3.96	52.0	2.1100	2035.08	68364.00	0.030 [1] ✔
T1	160 - 140 (393)	L3x3x3/8	4.16	3.96	52.0	2.1100	2044.89	68364.00	0.030 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	160 - 140	Leg	ROHN 2.5 X-STR	1	-37378.70	87874.20	42.5	Pass
		Diagonal	P.75x.113	30	-4963.55	8475.25	58.6	Pass
		Horizontal	P.75x.113	38	-1656.87	7610.79	21.8	Pass
		Top Girt	P.75x.113	6	-1608.59	7610.79	21.1	Pass
		Bottom Girt	P.75x.113	9	629.95	10777.40	5.8	Pass
		Guy A@160	7/16	389	7457.63	12480.00	59.8	Pass
		Guy B@160	7/16	382	7254.68	12480.00	58.1	Pass
		Guy C@160	7/16	376	7440.63	12480.00	59.6	Pass
		Torque Arm Top@160	L3x3x3/8	384	5734.99	68364.00	8.4	Pass
		Torque Arm	L3x3x3/8	381	-10749.10	48446.40	22.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bottom@160						
T2	140 - 120	Leg	ROHN 2.5 X-STR	43	-37273.00	87855.30	42.4	Pass
		Diagonal	P.75x.113	56	-4845.28	7624.89	63.5	Pass
		Horizontal	P.75x.113	95	2274.78	10777.40	21.1	Pass
		Top Girt	P.75x.113	48	670.67	10777.40	6.2	Pass
		Bottom Girt	P.75x.113	51	737.94	10777.40	6.8	Pass
T3	120 - 113.333	Leg	ROHN 2.5 STD	103	-29634.30	66678.50	44.4	Pass
		Diagonal	P.75x.113	114	-5232.21	7694.92	68.0	Pass
		Horizontal	P.75x.113	117	1697.54	10777.40	15.8	Pass
		Top Girt	P.75x.113	108	793.75	10777.40	7.4	Pass
T4	113.333 - 106.667	Leg	ROHN 2.5 STD	124	-36899.90	64244.90	57.4	Pass
		Diagonal	P.75x.113	147	-5321.73	7694.92	69.2	Pass
		Top Girt	P.75x.113	128	1871.66	10777.40	17.4	Pass
		Bottom Girt	P.75x.113	130	1228.10	10777.40	11.4	Pass
		Guy A@110	3/4	396	21788.00	34980.00	62.3	Pass
		Guy B@110	3/4	395	21827.90	34980.00	62.4	Pass
		Guy C@110	3/4	394	21834.70	34980.00	62.4	Pass
		Top Guy Pull-Off@110	3x.226	140	6988.26	24789.40	28.2	Pass
T5	106.667 - 100	Leg	ROHN 2.5 STD	148	-36901.40	64244.60	57.4	Pass
		Diagonal	P.75x.113	163	-4433.77	8529.22	52.0	Pass
		Horizontal	P.75x.113	151	1166.94	10777.40	10.8	Pass
		Bottom Girt	P.75x.113	154	402.74	10777.40	3.7	Pass
T6	100 - 80	Leg	ROHN 2.5 STD	168	-27391.60	59392.60	46.1	Pass
		Diagonal	P.75x.113	205	-3865.59	8486.11	45.6	Pass
		Horizontal	P.75x.113	202	601.46	10777.40	5.6	Pass
		Top Girt	P.75x.113	169	273.90	10777.40	2.5	Pass
		Bottom Girt	P.75x.113	173	307.06	10777.40	2.8	Pass
T7	80 - 60	Leg	ROHN 2.5 STD	208	-28338.60	59089.80	48.0	Pass
		Diagonal	P.75x.113	219	-2719.92	5401.55	50.4	Pass
		Horizontal	P.75x.113	226	611.35	10777.40	5.7	Pass
		Top Girt	P.75x.113	213	285.61	10777.40	2.7	Pass
		Bottom Girt	P.75x.113	216	287.09	10777.40	2.7	Pass
T8	60 - 40	Leg	ROHN 2.5 STD	250	-32351.80	63936.60	50.6	Pass
		Diagonal	P.75x.113	279	-3730.39	5401.55	69.1	Pass
		Horizontal	P.75x.113	263	664.03	10777.40	6.2	Pass
		Top Girt	P.75x.113	255	344.38	10777.40	3.2	Pass
		Bottom Girt	P.75x.113	256	365.55	10777.40	3.4	Pass
		Guy A@50	7/16	399	7457.77	12480.00	59.8	Pass
		Guy B@50	7/16	398	7458.20	12480.00	59.8	Pass
		Guy C@50	7/16	397	7455.18	12480.00	59.7	Pass
		Top Guy Pull-Off@50	3x.226	274	4233.58	30510.00	13.9	Pass
T9	40 - 20	Leg	ROHN 2.5 STD	292	-36000.50	64093.90	56.2	Pass
		Diagonal	P.75x.113	331	-2802.25	5401.55	51.9	Pass
		Horizontal	P.75x.113	310	720.35	10777.40	6.7	Pass
		Top Girt	P.75x.113	295	330.56	10777.40	3.1	Pass
		Bottom Girt	P.75x.113	299	357.21	10777.40	3.3	Pass
T10	20 - 6.66667	Leg	ROHN 2.5 STD	334	-35958.00	63979.60	56.2	Pass
		Diagonal	P.75x.113	345	-2042.46	5421.49	37.7	Pass
		Horizontal	P.75x.113	360	726.02	10777.40	6.7	Pass
		Top Girt	P.75x.113	339	362.96	10777.40	3.4	Pass
		Bottom Girt	P.75x.113	341	2527.20	10777.40	23.4	Pass
T11	6.66667 - 0	Leg	ROHN 2.5 STD	364	-36939.00	63951.00	57.8	Pass
		Diagonal	P.75x.113	375	-1807.69	6338.99	28.5	Pass
		Horizontal	P.75x.113	372	603.99	10777.40	5.6	Pass
		Top Girt	P.75x.113	367	2543.68	10777.40	23.6	Pass
							Summary	
						Leg (T11)	57.8	Pass
						Diagonal	69.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						(T4)		
						Horizontal (T1)	21.8	Pass
						Top Girt (T11)	23.6	Pass
						Bottom Girt (T10)	23.4	Pass
						Guy A (T4)	62.3	Pass
						Guy B (T4)	62.4	Pass
						Guy C (T4)	62.4	Pass
						Top Guy Pull-Off (T4)	28.2	Pass
						Torque Arm Top (T1)	8.4	Pass
						Torque Arm Bottom (T1)	22.2	Pass
						Bolt Checks	27.7	Pass
						RATING =	**69.2**	**Pass**