



Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

June 16, 2014

Melanie A. Bachman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Sprint PCS-Exempt Modification - Crown Site BU: 842875
Sprint PCS Site ID: CT54XC787
Located at: 99 Day Hill Road, Windsor, CT 06095

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of Sprint PCS (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Donald S. Trinks, Mayor for the Town of Windsor.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **99 Day Hill Road, Windsor, CT 06095**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint’s operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint’s additional antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

Melanie A. Bachman

June 16, 2014

Page 2

4. A Structural Modification Report confirming that the tower and foundation can support Sprint's proposed modifications is included as Exhibit-2.
5. The operation of the additional antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for Sprint's modified facility is included as Exhibit-3.

For the foregoing reasons, Sprint respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Donna Neal.

Sincerely,



Jeff Barbadora
Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Donald S. Trinks, Mayor
Town of Windsor
275 Broad Street
Windsor, CT 06095

Sprint



PROJECT: 2.5 EQUIPMENT DEPLOYMENT
SITE NAME: WINDOSR LOCKS / AT&T
SITE CASCADE: CT54XC787
SITE ADDRESS: 99 DAY HILL ROAD
 WINDSOR, CT 06095
SITE TYPE: MONOPOLE
MARKET: NORTHERN CONNECTICUT



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 OVERLAND PARK, KANSAS 66251
 (517) 436-7466



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 TOMS RIVER, NJ 08755
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ENGINEER'S LICENSE

MICHAEL L. BOHLINGER



PROFESSIONAL ENGINEER
 CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE
 COVER SHEET

MICHAEL L. BOHLINGER
 CT LICENSE No. 20405
 DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK. BY:
 DWG No: T-1

24"x36" SHEETS - SIGN & SEAL AREA

SITE INFORMATION

PROPERTY OWNER:
 AT&T WIRELESS SERVICES, INC.
 866-593-1383

LATITUDE:
 41.8711093°

LONGITUDE:
 -72.6711093°

COUNTY:
 HARTFORD

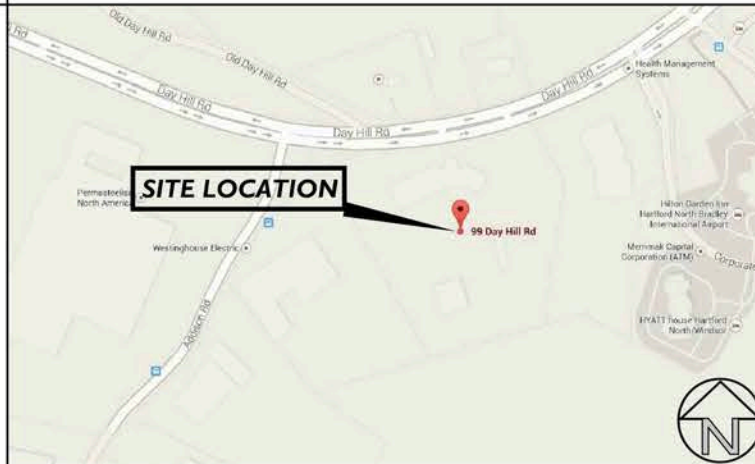
ZONING DISTRICT:
 TOWN OF WINDSOR
 MUNICIPAL MDL-96

AAV PROVIDER:
 AT&T

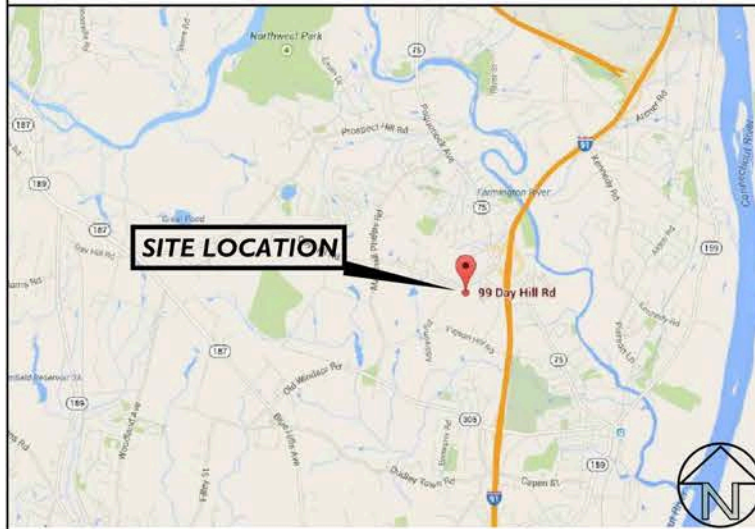
POWER COMPANY:
 CONNECTICUT LIGHT AND POWER
 PHONE# 800-922-4455

SPRINT CONSTRUCTION MANAGER:
 MICHAEL DELIA
 781-316-6348
 MICHAEL.DELIA@SPRINT.COM

AREA MAP



LOCATION MAP



PROJECT DISCIPTION

SPRINT PROPOSED TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (4) NEW BATTERIES IN EXISTING BBU CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S NEAR ANTENNA
- INSTALL (27) JUMPER CABLES
- INSTALL (1) FIBER CABLE

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED 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

SHEET INDEX

DWG.	DESCRIPTION	REV.
T-1	COVER SHEET	00
SP-1	SPRINT SPECIFICATIONS (SHEET 1 OF 3)	00
SP-2	SPRINT SPECIFICATIONS (SHEET 2 OF 3)	00
SP-3	SPRINT SPECIFICATIONS (SHEET 3 OF 3)	00
A-1	SITE PLAN	00
A-2	BUILDING ELEVATION AND CABLE PLAN	00
A-3	ANTENNA PLAN AND MOUNTING DETAILS	00
A-4	RF DATA SHEET AND EQUIPMENT INFORMATION	00
A-5	WIRING DIAGRAMS	00
A-6	RF DATA SHEET	00
A-7	EQUIPMENT SPECIFICATIONS	00
E-1	ONE-LINE DIAGRAM	00
G-1	GROUNDING DETAILS	00

APPROVED

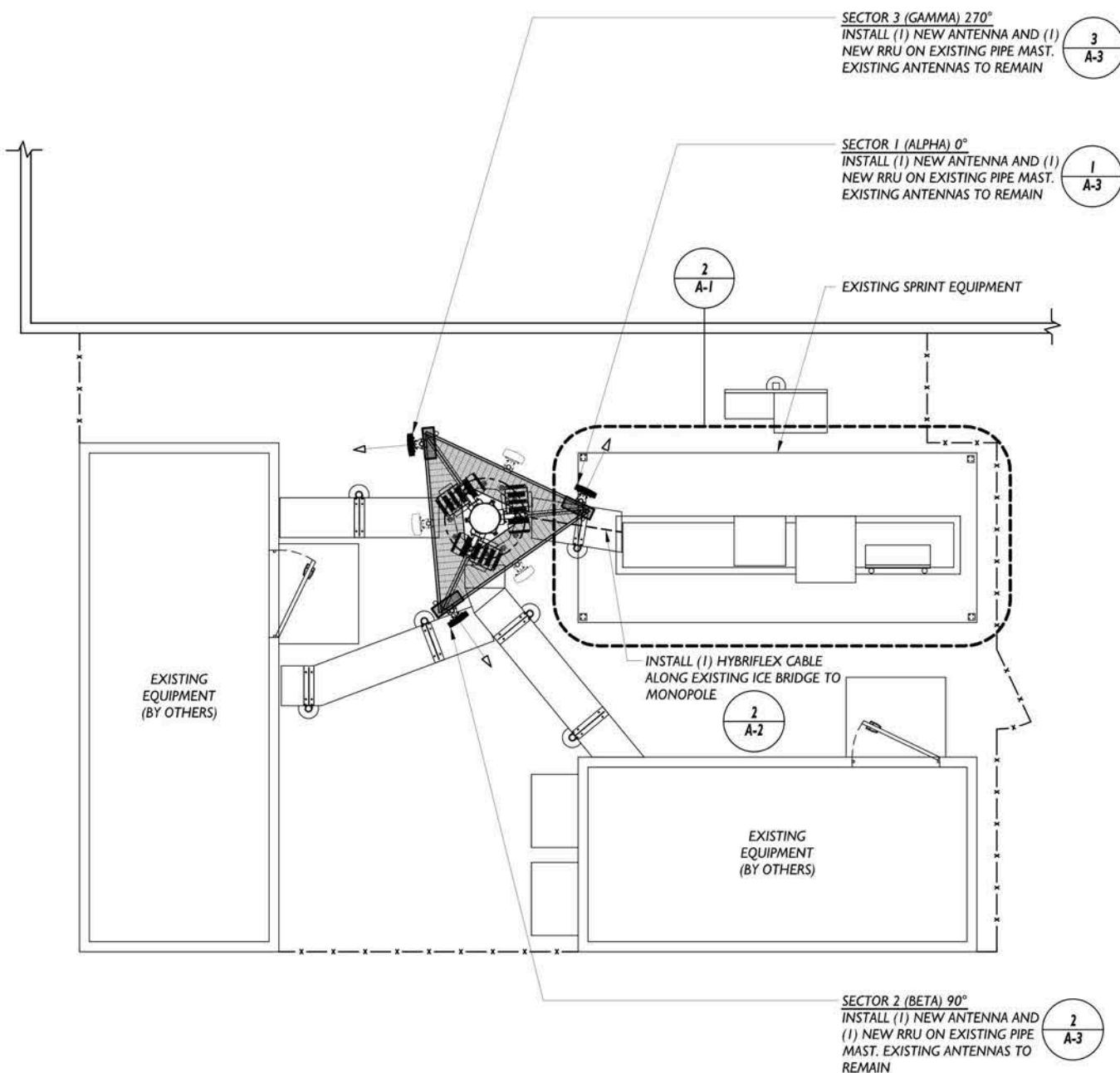
By Jeff Barbadora at 9:47 am, Jun 16, 2014

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DAY HILL ROAD

NOTES:
 1. SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT.
 2. STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.



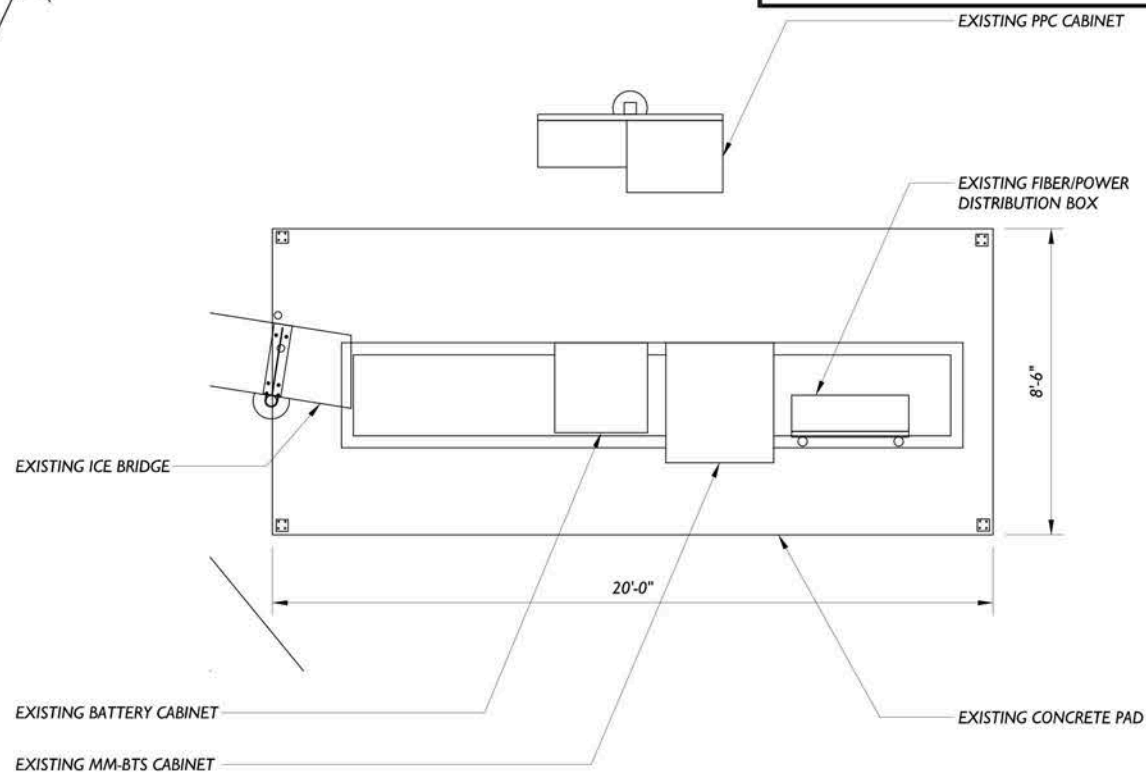
OVERALL SITE PLAN

SCALE 11"x17" : 1/8" = 1'-0"
 24"x36" : 1/4" = 1'-0"

1



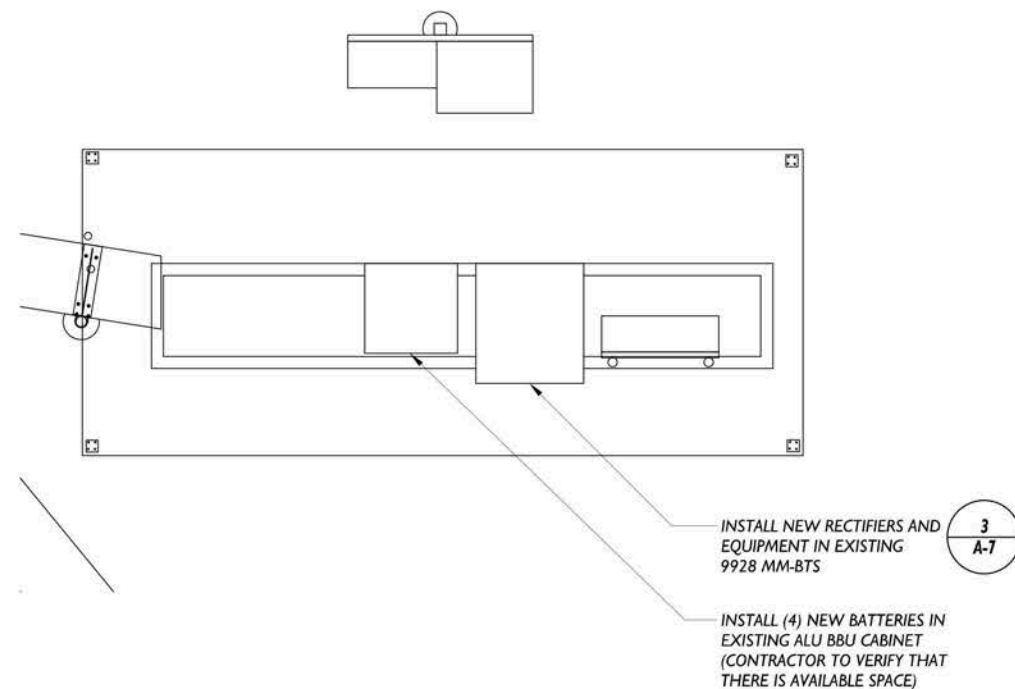
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EXISTING SPRINT EQUIPMENT PLAN

SCALE 11"x17" : 3/16" = 1'-0"
 24"x36" : 3/8" = 1'-0"

2



PROPOSED SPRINT EQUIPMENT PLAN

SCALE 11"x17" : 3/16" = 1'-0"
 24"x36" : 3/8" = 1'-0"

3



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ENGINEER'S LICENSE

MICHAEL L. BOHLINGER



PROFESSIONAL ENGINEER
 CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

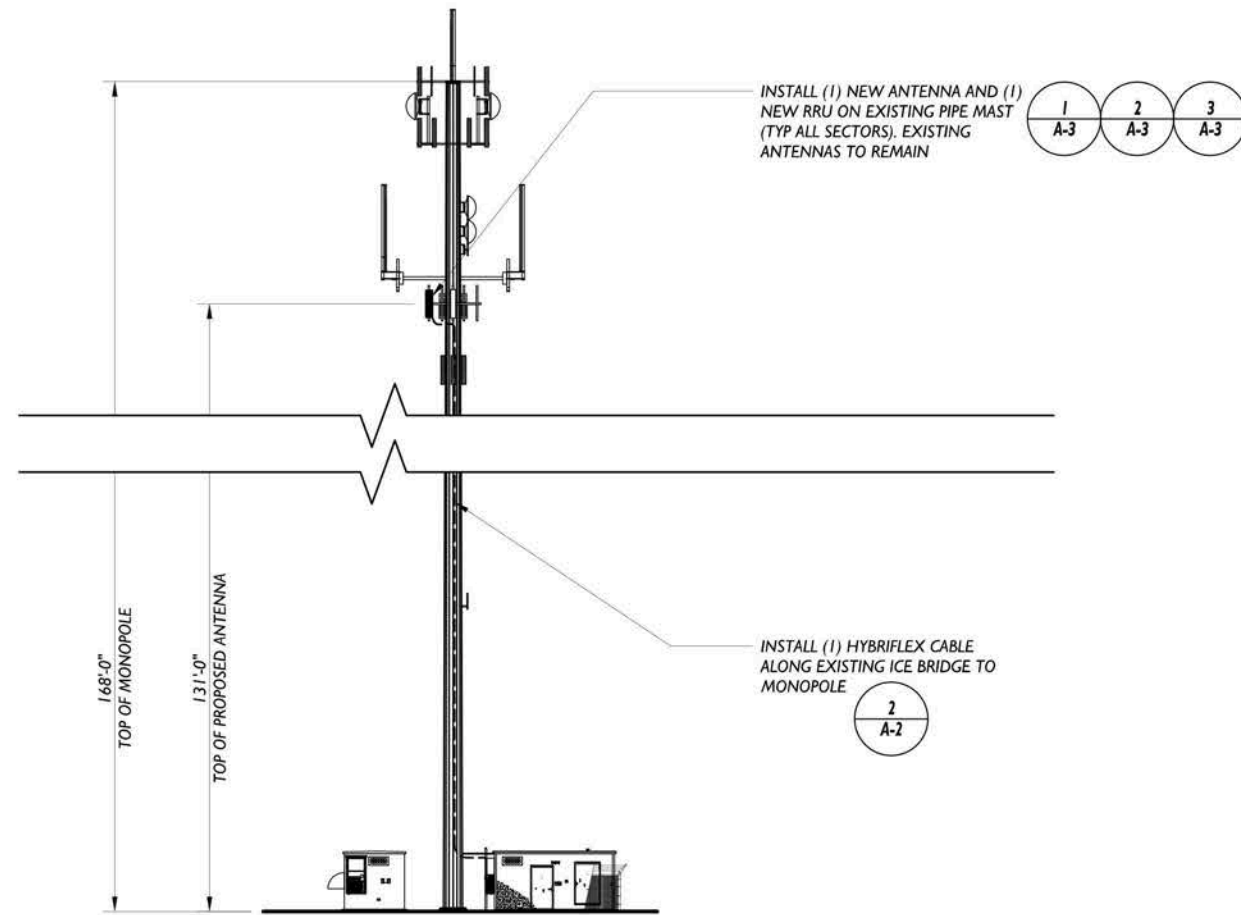
DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE
 SITE PLAN

MICHAEL L. BOHLINGER
 CT LICENSE No. 20405

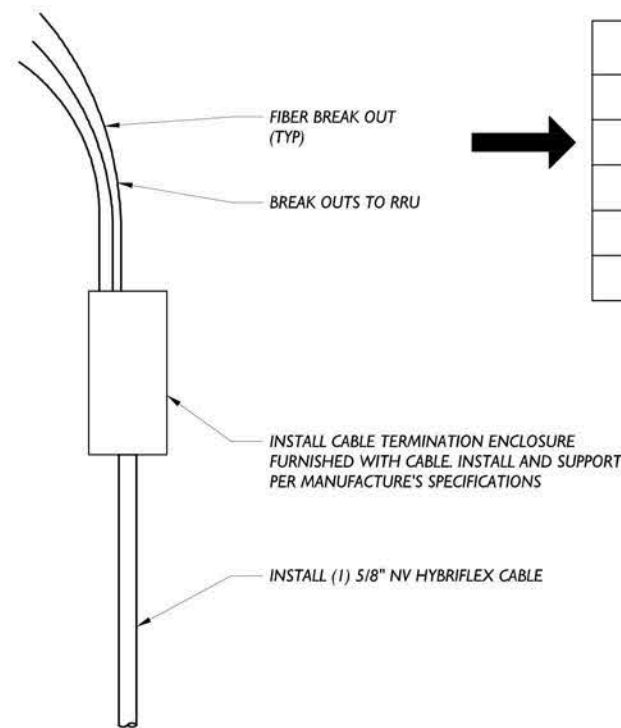
DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK BY:
 DWG No: A-1



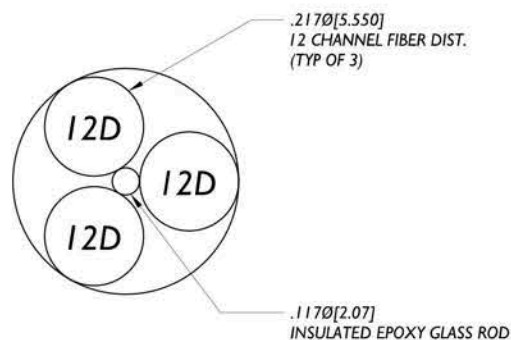
NOTES:
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ELEVATION

SCALE	11"x17" : 1/32" = 1'-0"	1
	24"x36" : 1/16" = 1'-0"	



CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
HYBRIFLEX	OVER 200'	8 AWG	1 1/4"
HYBRIFLEX	225'-300'	6 AWG	1 1/4"
HYBRIFLEX	325'-375'	4 AWG	1 1/4"



HYBRID BREAK OUT DETAIL

SCALE	11"x17" : NTS	2
	24"x36" : NTS	

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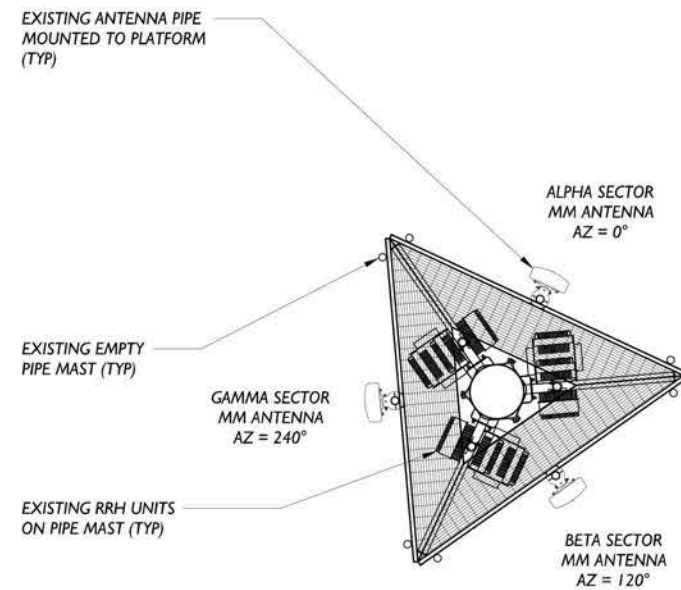
DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

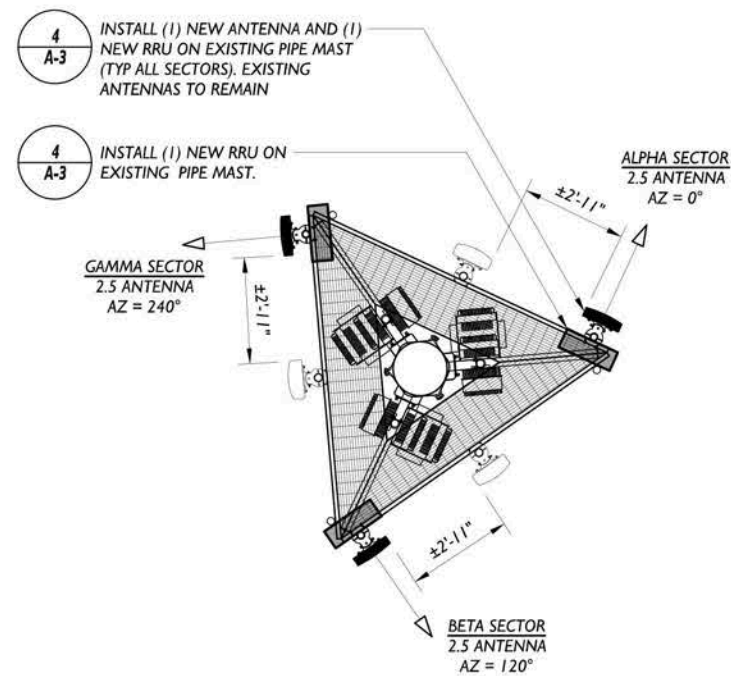
DRAWING TITLE
 BUILDING ELEVATION
 AND CABLE PLAN

MICHAEL L. BOHLINGER CT LICENSE No. 20405	DATE: 3-3-14
	PROJECT No: ASDGSP25
	DRAWING BY: CD
	CHK BY:
	DWG No: A-2

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EXISTING LAYOUT



PROPOSED LAYOUT

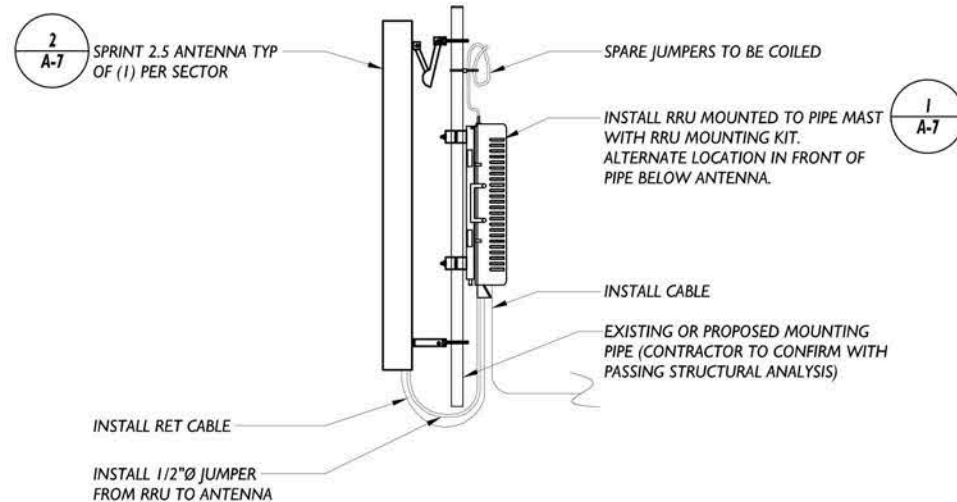
NOTES:
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EXISTING AND PROPOSED LAYOUTS

SCALE	11"x17" : 3/16" = 1'-0"	1
	24"x36" : 3/8" = 1'-0"	

NOTE:
 1. CUT DC CONDUCTORS TO LENGTH.
 2. COIL FIBER CABLE AND SECURE TO SIDE OF RRU.
 3. DO NOT EXCEED BEND RADIUS.
 4. JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.

NOTES:
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ANTENNA AND RRU MOUNTING DETAIL

SCALE	11"x17" : NTS	4
	24"x36" : NTS	



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CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
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 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE
 ANTENNA PLAN
 AND MOUNTING DETAILS

MICHAEL L. BOHLINGER CT LICENSE No. 20405	DATE: 3-3-14
	PROJECT No: ASDGSP25
	DRAWING BY: CD
	CHK BY:
	DWG No: A-3



NOTE:
GENERAL CONTRACTOR TO VERIFY CURRENT
RFDS PRIOR TO CONSTRUCTION START.

RFDS Sheet

General Site Information

Site ID	CT54XC787	Equipment Vendor	ALU	Incremental Power Draw needed by added Equipment	0
Market	Northern Connecticut	Latitude	41.8711093		
Region	EAST	Longitude	-72.6711093		
MLA	N/A	LL SITE ID	N/A		
Structure Type	MONOPOLE				
BTS Type	N/A				
Solution ID		Siterra SR Equipment type	N/A		
		Equipment Vendor	ALU		

Base Equipment

BBU Kit	ALU BBU KIT	Top Hat	NONE
BBU Kit Qty	1	Top Hat Qty	N/A
Growth Cabinet		Top Hat Dimensions	N/A
	NONE	Top Hat Weight (lbs)	N/A
Growth Cabinet Qty	N/A		
Growth Cabinet Dimensions	N/A		
Growth Cabinet Weight	N/A		

RF Path Information

RRH	TD-RRH8x20-25	
RRH Qty	3	
RRH Dimensions	26.1in x 18.6 x 6.7 in	
RRH Weight. lbs.	70	
RRH Mount Weight. Lbs.	TBD	
Power and Fiber Cable	ALU Fiber only	
Cable Qty	1	
Weight per foot. Lbs.	0.12	
Diameter. Inches.	0.7	
Length Ft.	165.6	(calculated as antenna height plus 20%)
Coax Jumper	Coax Jumper. Mfg TBD.	
Coax Jumper Qty	27	
Coax Jumper Length. Feet.	8	
Coax Jumper Weight	TBD	
Coax Jumper Diameter. Inches	0.5	
AISG Cable	Commscope ATCB-B01-006	
AISG Cable Qty	3	
AISG Diameter. Inches.	0.315	
AISG Cable length.	8	
Weight of entire AISG cable. Lbs.	1.3	

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna make/model	RFS APXVTM14-C-I20	RFS APXVTM14-C-I20	RFS APXVTM14-C-I20
Antenna qty	1	1	1
Antenna Dimensions. Inches	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3
Antenna Weight. Lbs	56	56	56
Antenna Mounting Kit Weight. Lbs.	11 (estimate)	11 (estimate)	11 (estimate)
CL Height	131	131	131
Antenna Azimuth	0	120	240
Antenna Mechanical Downtilt	0	0	0
Antenna etilt	-2	-2	-2

Sprint RFDS Sheet 3/5/2014 Confidential

- NOTES:
- SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT.
 - STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.



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CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
WINDSOR LOCKS / AT&T
99 DAY HILL ROAD
WINDSOR, CT 06095

DRAWING TITLE
RF DATA SHEET AND
EQUIPMENT INFORMATION

MICHAEL L. BOHLINGER CT LICENSE No. 20405	DATE: 3-3-14
	PROJECT No: ASDGSP25
	DRAWING BY: CD
	CHK BY:
	DWG No: A-4

RF DATA SHEET AND EQUIPMENT INFORMATION

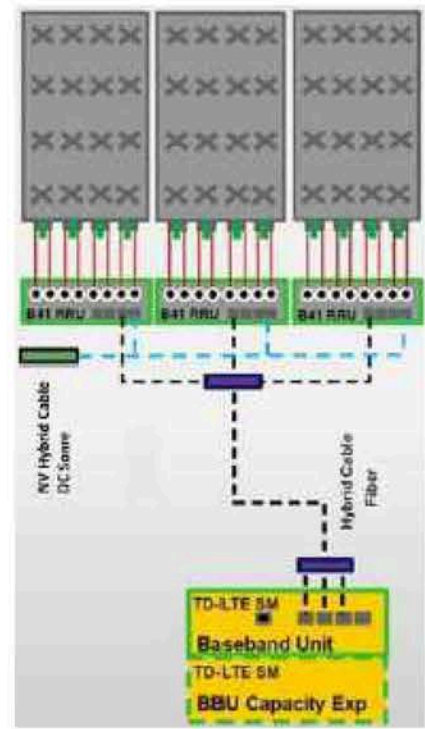
SCALE

11"x17" : NTS
24"x36" : NTS

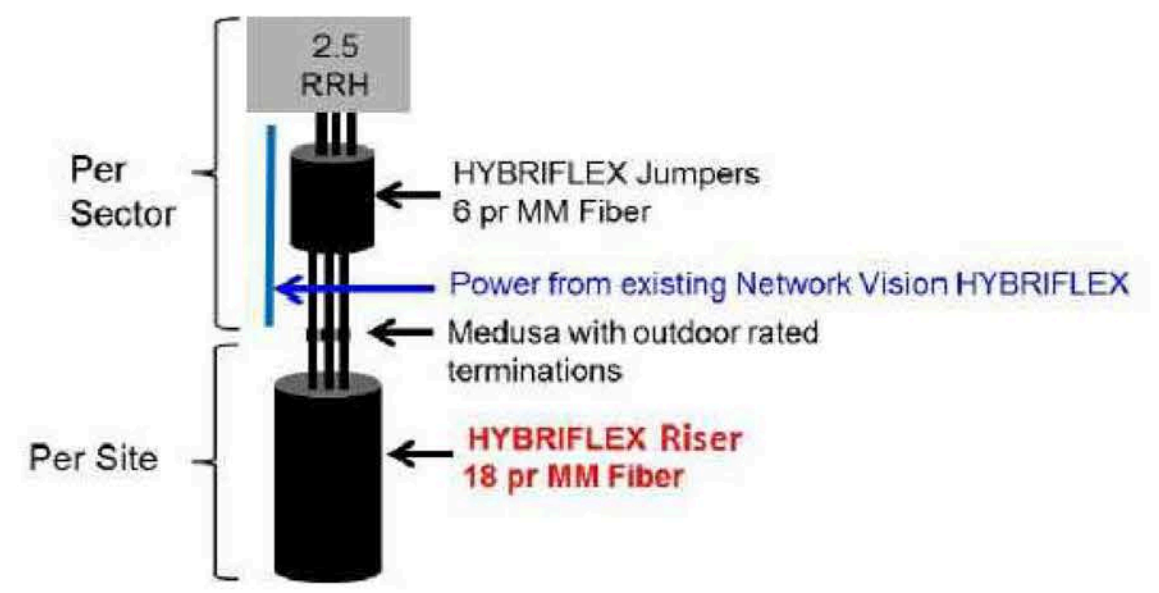
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24"x36" SHEETS - SIGN & SEAL AREA

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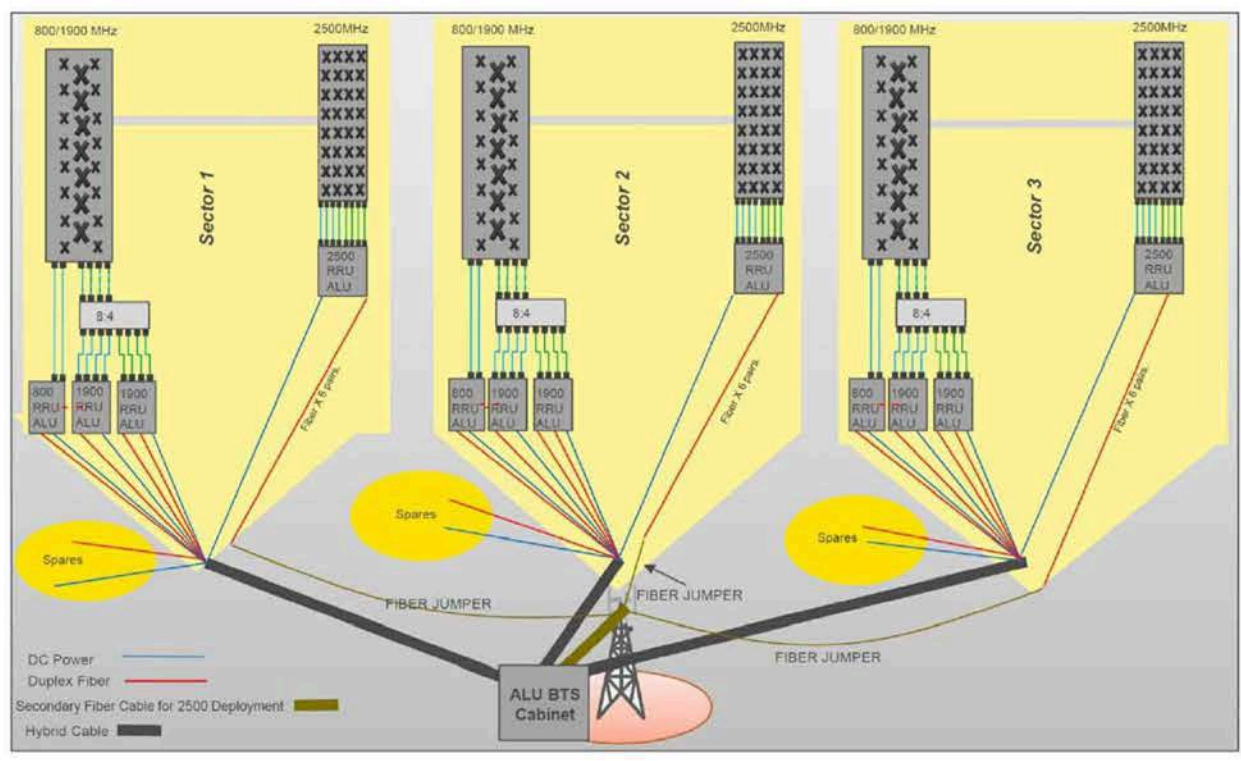


ALU 2500MHz ALU SCENARIO 1

SCALE 11"x17" : NTS
 24"x36" : NTS 1

RFS 2500MHz ALU SCENARIO 1

SCALE 11"x17" : NTS
 24"x36" : NTS 2



RAN WIRING DIAGRAM: ALU EQUIPMENT

SCALE 11"x17" : NTS
 24"x36" : NTS 3



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DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
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 WINDSOR, CT 06095

DRAWING TITLE
 WIRING DIAGRAMS

MICHAEL L. BOHLINGER
 CT LICENSE No. 20405
 DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK BY:
 DWG No: A-5

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NOTES:
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NV CABLES			
BAND	INDICATOR	PORT	COLOR
800-1	YEL GRN	NV-1	GRN
1900-1	YEL RED	NV-2	BLU
1900-2	YEL BRN	NV-3	BRN
1900-3	YEL BLU	NV-4	WHT
1900-4	YEL SLT	NV-5	RED
800-2	YEL ORG	NV-6	SLT
SPARE	YEL WHT	NV-7	PPL
2500	YEL PPL	NV-8	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band	
2500 Radio 1	COLOR
YEL WHT	GRN
YEL WHT	BLU
YEL WHT	BRN
YEL WHT	WHT
YEL WHT	RED
YEL WHT	SLT
YEL WHT	PPL
YEL WHT	ORG

FIGURE 19.1 CABLE COLOR CODE

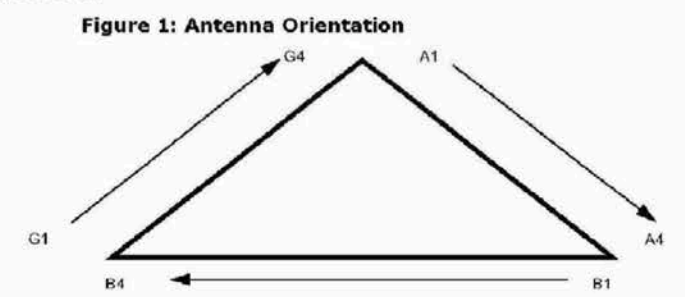
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
	2	Blue	No Tape	No Tape
	3	Brown	No Tape	No Tape
	4	White	No Tape	No Tape
	5	Red	No Tape	No Tape
	6	Grey	No Tape	No Tape
	7	Purple	No Tape	No Tape
	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
	2	Blue	Blue	No Tape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

- NOTES
- All cables shall be marked at the top and bottom with 2" colored tape, stencil tag colored tape, or colored heat shrink tubing
 - Colored tape may be obtained from Graybar Electronic. UV stabilized tape or heat shrink are preferred.
 - The first ring shall be closest to the end of the cable, and there shall be a 1" space between each ring.
 - The cable color code shall be applied in accordance to Table 19-1.
 - A. Table 19-1 only shows 3 sectors, but additional sectors are easily supported by adding the appropriate number of colored rings to the cable color code.
 - After the cable color code is applied, the frequency color code, Table 19-2, must be applied for the specific frequency band in use on a given line.
 - A. 2" gap shall separate the cable color code from the frequency color code.
 - B. The 2" color rings for the frequency code shall be placed next to each other with no spaces.
 - Wrap 2" colored tape a minimum of 3 times around the coax, and keep the tape in the same area as much as possible. This will allow removal of tape that fades or discolors due to weather.
 - Examples of the cable and frequency color codes are shown in Figure 19-1 and Figure 19-2.

FIGURE 19.2 COLOR CODE

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

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



REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
01	3-5-14	REVISED PER CLIENT COMMENTS	CM	KLR
00	3-3-14	INITIAL SUBMISSION	CM	KLR

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ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

PROFESSIONAL ENGINEER
 CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

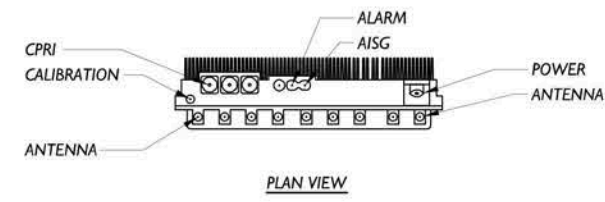
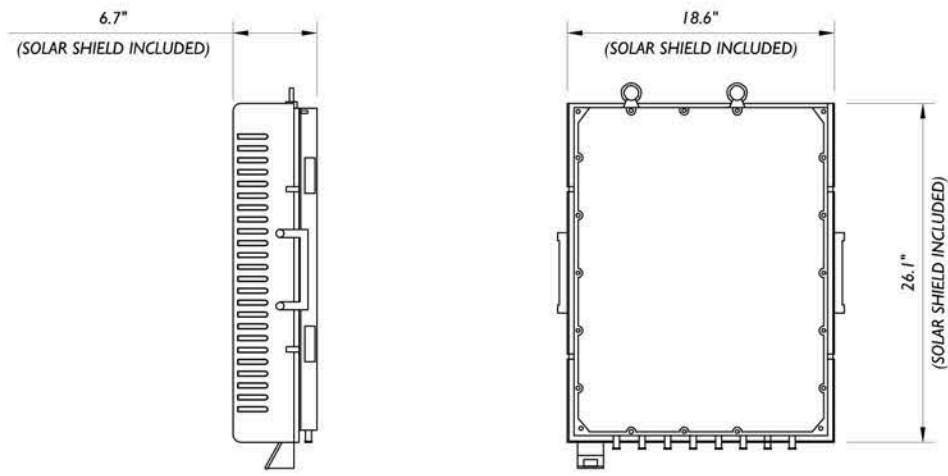
SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE: RF DATA SHEET

MICHAEL L. BOHLINGER
 CT LICENSE No. 20405

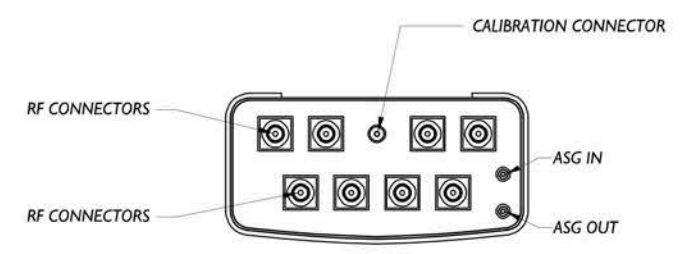
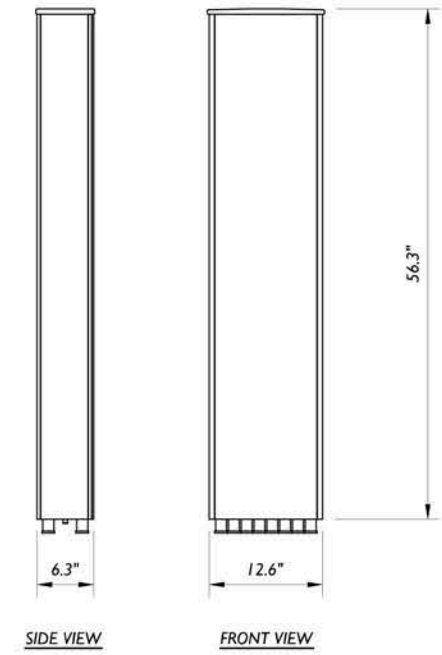
DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK. BY:
 DWG No: A-6

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TD-RRHx20-25 REMOTE RADIO HEAD
 DIMENSIONS: 26.1"x18.6"x6.7"
 WEIGHT: 60 LBS (WITH HARDWARE)

NOTES:
 1. SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT.
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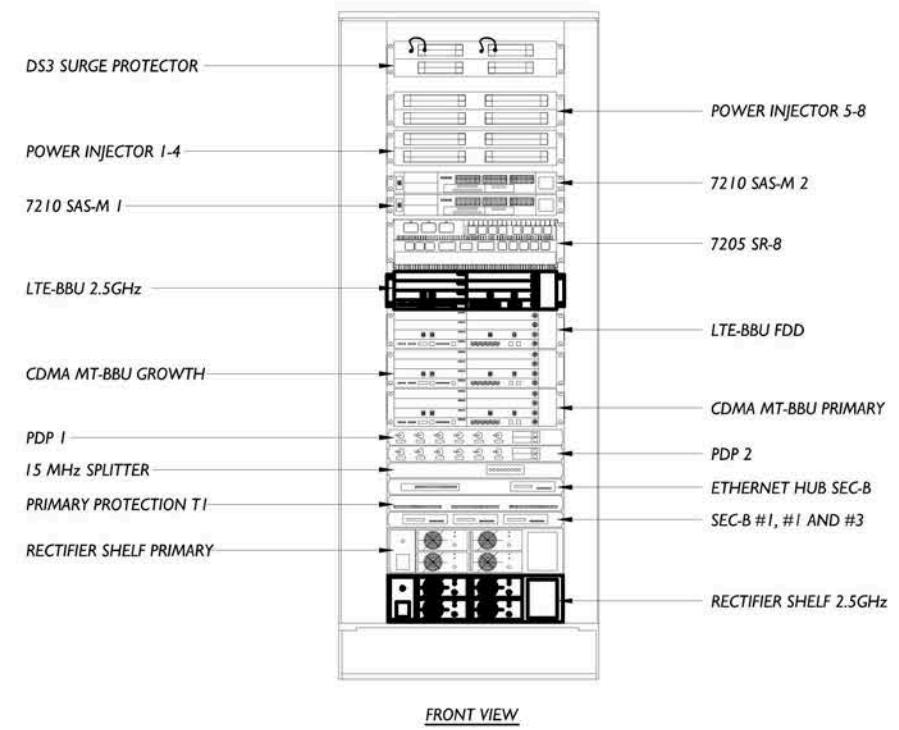
RFS APXVTM14-C-120 PANEL ANTENNA
 DIMENSIONS: 53.3"x12.6"x6.3"
 WEIGHT: 56 LBS (WITH HARDWARE)
 FREQUENCY RANGE: 806-869 MHz, 1850-1995 MHz

2.5 RRUS DETAIL

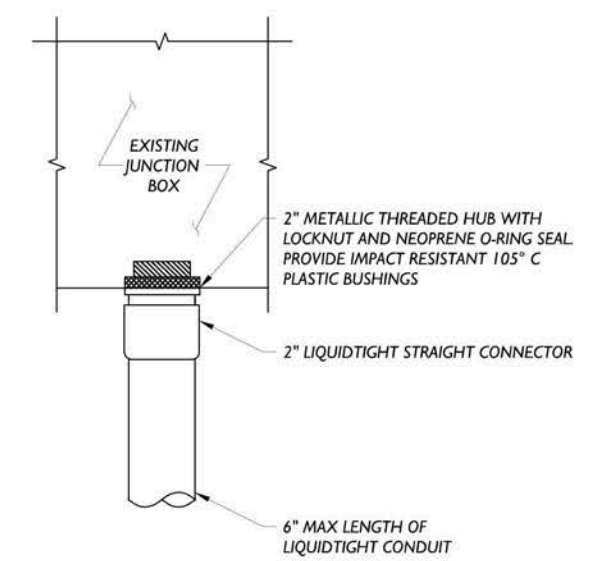
SCALE	11"x17" : NTS	1
	24"x36" : NTS	

2.5 ANTENNA DETAIL

SCALE	11"x17" : NTS	2
	24"x36" : NTS	



INSTALL (1) NEW BATTERY STRING IN EXISTING BBU IN EMPTY BAY



2.5 EQUIP. IN EXISTING CABINET

SCALE	11"x17" : NTS	3
	24"x36" : NTS	

EXISTING BBU CABINET

SCALE	11"x17" : NTS	4
	24"x36" : NTS	

JUNCTION BOX PENETRATION

SCALE	11"x17" : NTS	5
	24"x36" : NTS	



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ENGINEER'S LICENSE

MICHAEL L. BOHLINGER



ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE: EQUIPMENT SPECIFICATIONS

MICHAEL L. BOHLINGER CT LICENSE No. 20405	DATE: 3-3-14
	PROJECT No: ASDGSP25
	DRAWING BY: CD
	CHK. BY:
	DWG No: A-7

24"x36" SHEETS - SIGN & SEAL AREA

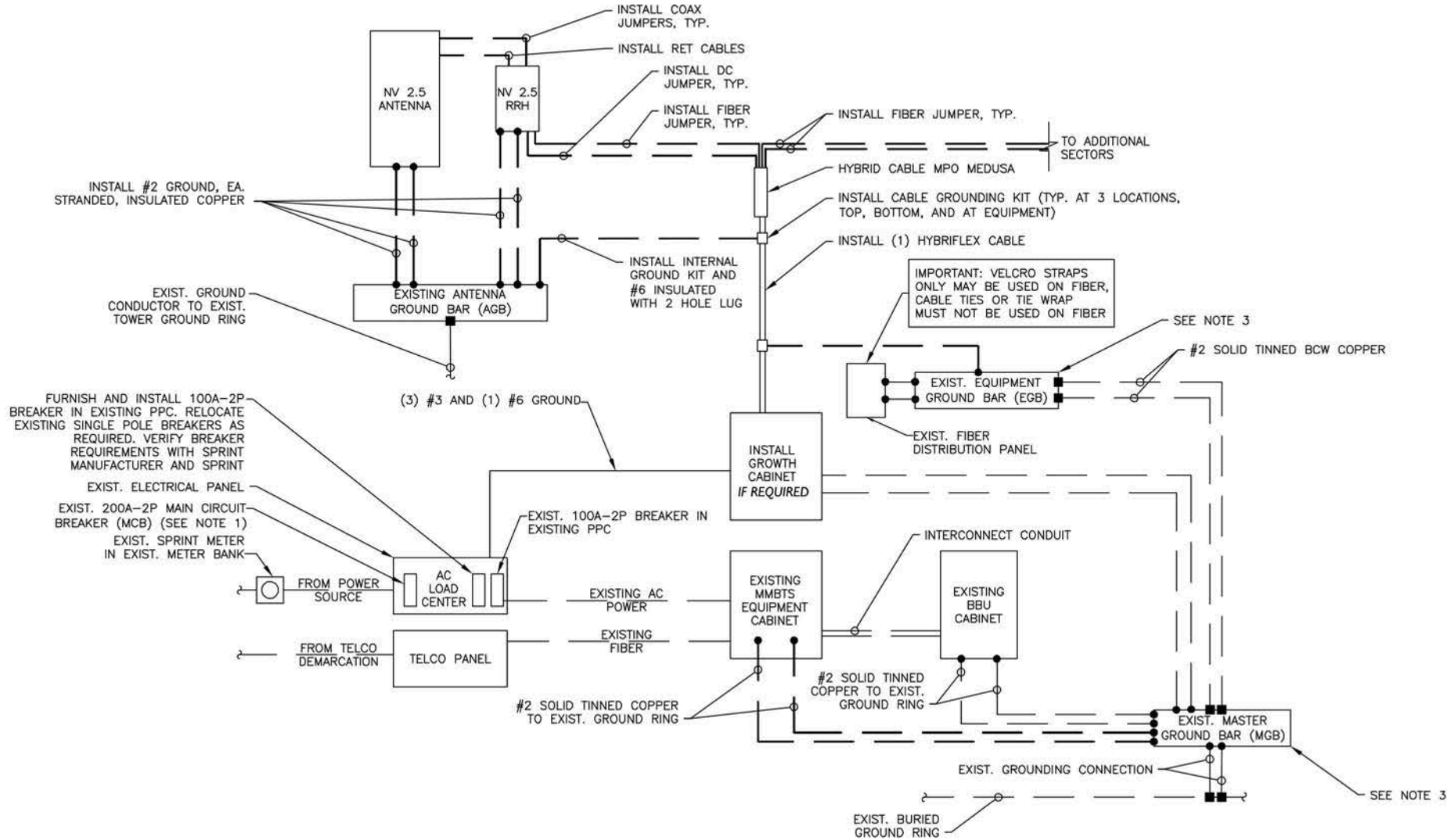
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- SPECIAL WORK NOTE:**
- G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0"
 - G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMETS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING FOR A 100-AMP, 240V CIRCUIT.
 - FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
-ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12
-SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12

NOTE:
MAXIMUM LENGTH OF LIQUID TIGHT CONDUIT IS TO BE 6 FEET

SYMBOL LEGEND

- (X) SPECIAL WORK NOTE
- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- CABLE GROUNDING KIT



ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
- ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
- ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARICATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
- RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARICATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
- FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
- COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

- NOTES:**
- SITE INFORMATION AND PLANS ARE BASED UPON 2.5 AUDIT DOCUMENTATION PROVIDED BY THE SPRINT.
 - STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.



ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

PROFESSIONAL ENGINEER
CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25
 CLIENT ID No: CT54XC787
 DESIGN TYPE: 2.5 GHz
 SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE

ONE-LINE DIAGRAM

MICHAEL L. BOHLINGER
CT LICENSE No. 20405

DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK BY:
 DWG No: E-1

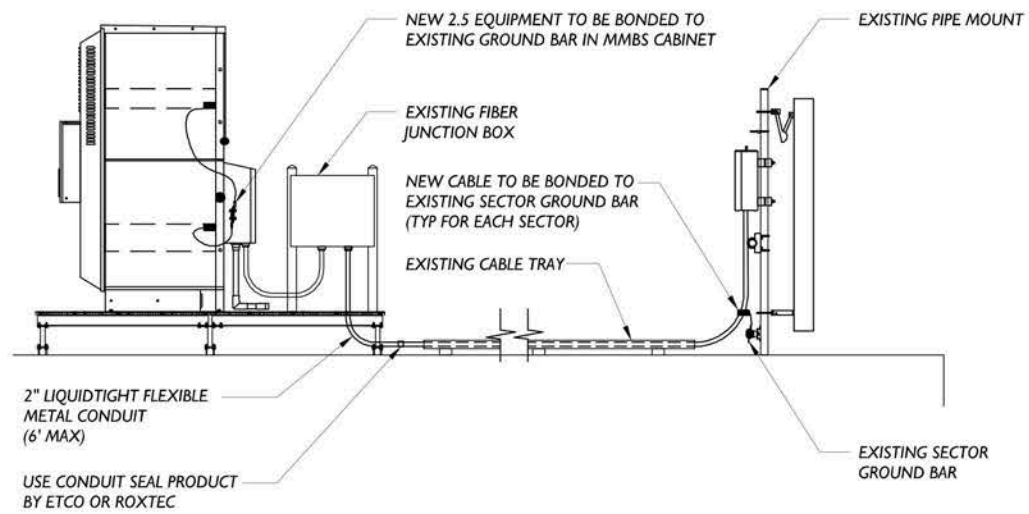
ELECTRICAL ONE-LINE DIAGRAM

SCALE 11"x17" : NTS 1
 24"x36" : NTS

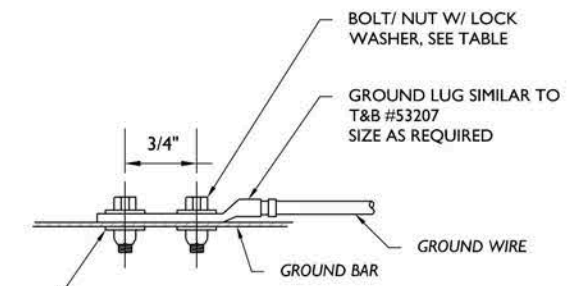
ELECTRICAL NOTES

SCALE 11"x17" : NTS 2
 24"x36" : NTS

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STANDARD LOCK WASHERS SHALL BE USED ON GROUND BARS. SSERRATED "DRAGON TOOTH" LOCK WASHERS SHALL BE USED ON CONNECTIONS TO BUILDING STEEL AND MISCELLANEOUS METALS.

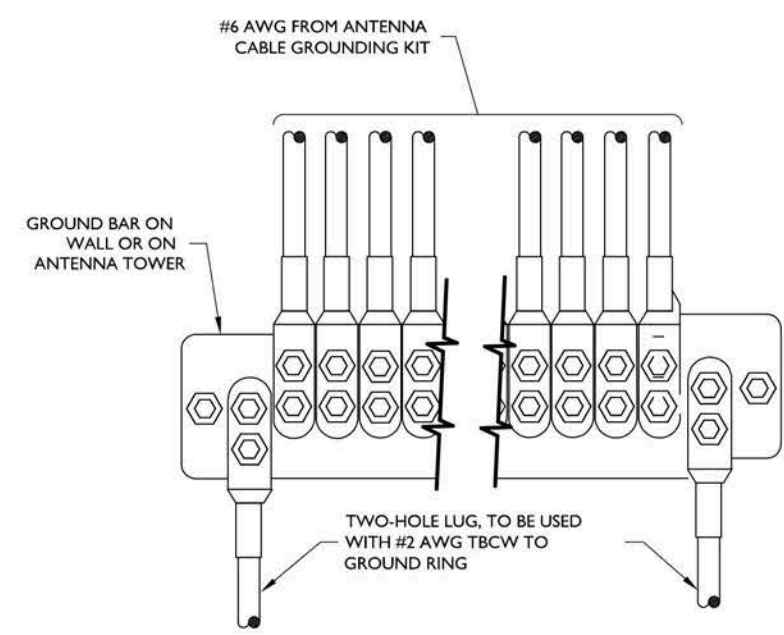
TABLE		
WIRE SIZE	LUG #	BOLT SIZE
#4/0	53212	1/2" - 20 NC x 1/2" S.S. BOLT & NUT W/ LOCK WASHERS
#2	53207	1/4" - 20 NC x 1/2" S.S. BOLT & NUT W/ LOCK WASHERS
#6	53205	

TYPICAL EQUIPMENT GROUNDING SCHEMATIC

SCALE 11"x17" : NTS
24"x36" : NTS

GROUND LUG CONNECTION

SCALE 11"x17" : NTS
24"x36" : NTS



NOTE CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) ON ALL LUG CONNECTIONS

GROUND LUG CONNECTION TO GROUND BAR

SCALE 11"x17" : NTS
24"x36" : NTS

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ENGINEER'S LICENSE

MICHAEL L. BOHLINGER

PROFESSIONAL ENGINEER
 CONNECTICUT LICENSE No. 20405

ASDG PROJECT No: ASDGSP25

CLIENT ID No: CT54XC787

DESIGN TYPE: 2.5 GHz

SITE INFORMATION:
 WINDSOR LOCKS / AT&T
 99 DAY HILL ROAD
 WINDSOR, CT 06095

DRAWING TITLE: GROUNDING DETAILS

MICHAEL L. BOHLINGER
 CT LICENSE No. 20405

DATE: 3-3-14
 PROJECT No: ASDGSP25
 DRAWING BY: CD
 CHK BY:
 DWG No: G-1

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May 09, 2014

Darcy Tarr
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6589



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject: Structural Analysis Report

Carrier Designation: **Sprint PCS Co-Locate** **Scenario 2.5A**
Carrier Site Number: CT54XC787
Carrier Site Name: Windsor Locks/ATT

Crown Castle Designation: **Crown Castle BU Number:** 842875
Crown Castle Site Name: WINDSORDAY HILL
Crown Castle JDE Job Number: 281125
Crown Castle Work Order Number: 739993
Crown Castle Application Number: 218798 Rev. 5

Engineering Firm Designation: **B+T Group Project Number:** 92492.001.01

Site Data: **99 Day Hill Road, Windsor, Hartford County, CT**
Latitude 42° 52' 17.2", Longitude -72° 40' 14.2"
168 Foot - Monopole Tower

Dear Darcy Tarr,

B+T Group is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 644454, in accordance with application 218798, revision 5.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment

Sufficient Capacity

Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.

John Landon
Project Engineer

Chad E. Tuttle, P.E.
President

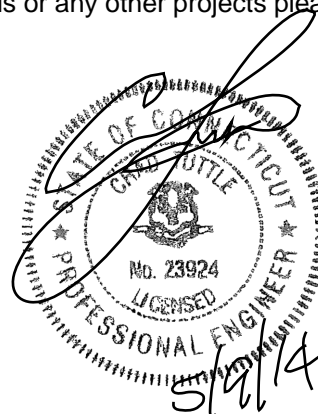


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Additional Calculations

1) INTRODUCTION

This tower is a 168 ft. Monopole tower designed by Summit Manufacturing in November of 2000. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	131.0	3	Alcatel Lucent	TD-RRH8x20-25	3	5/16	--
		3	Rfs Celwave	APXVTM14-C-120	1	1/2	

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note		
168.0	169.0	6	Ericsson	RBS 6601	12	1 5/8	1		
		2	Kmw Com	AM-X-CD-16-65-00T-RET					
		1	Powerwave Tech	P65-17-XLH-RR					
	168.0	6	Kathrein	800 10121				3	1/2
		6	Powerwave Tech	LGP21401				1	7/8
		1	--	Platform Mount [LP 1201-1]					
167.0	1	Raycap	DC6-48-60-18-8F						
159.0	164.0	3	Andrew	VHLP2.5	4 15 6	1/2 1 1/4 5/16	1		
		3	Dragonwave	Horizon Compact					
	160.0	9	Andrew	DB844H90E-XY					
		3	Kathrein	840 10054					
		3	Samsung	URAS-FLEXIBLE					
	159.0	1	--	Platform Mount [LP 1201-1]					
	156.0	1	Andrew	VHLP2.5					
1		Dragonwave	Horizon Compact						
147.0	147.0	1	Radiowaves	HP3-10	1	3/8	1		
		1	--	Pipe Mount [PM 601-1]					
143.0	143.0	1	Radiowaves	HP3-11	1	3/8	1		
		1	--	Pipe Mount [PM 601-1]					
140.0	140.0	1	--	18" Standoff	1	1/4	1		
		1	Motorola	PTP 400					
135.0	144.0	2	Decibel	ASP 705K	2	7/8	1		
	135.0	2	--	Side Arm Mount [SO 702-1]					

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	131.0	6	Decibel	DB980H90T2E-M	7	1 1/4	2
		3	Alcatel Lucent	1900MHz RRH	2	1 1/4	1
		3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER			
		3	Rfs Celwave	APXV9ERR18-C-A20			
	130.0	1	--	Platform Mount [LP 1201-1]			
120.0	120.0	3	Kathrein	742 213	6	1 5/8	1
79.0	79.0	2	GPS	GPS_A	2	1/2	1
		2	--	Side Arm Mount [SO 202-1]			
52.0	52.0	1	Pctel	GPS-TMG-HR-26NCM	1	1/2	1
		1	--	Side Arm Mount [SO 202-1]			

Notes:

- 1) Existing Equipment
- 2) Equipment to be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
168	168	1	Generic	14' Low Profile Platform	--	--
		12	Allgon	7184.14		
163	163	1	Generic	14' Low Profile Platform	--	--
		12	Swedcom	ALP-9212-N		
148	148	1	Generic	14' Low Profile Platform	--	--
		12	Swedcom	ALP-9212-N		
133	133	1	Generic	14' Low Profile Platform	--	--
		12	Swedcom	ALP-9212-N		
118	118	1	Generic	14' Low Profile Platform	--	--
		12	Swedcom	ALP-9212-N		
103	103	1	Generic	14' Low Profile Platform	--	--
		12	Swedcom	ALP-9212-N		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint Co-Locate Rev: 5	218798	CCI Sites
Tower Manufacturer Drawings	Summit Manufacturing LLC, Job No:29200-1654	4589719	CCI Sites
Tower Foundation Drawings	Summit Manufacturing LLC, Job No:29200-1654	4529456	CCI Sites
Geotechnical Reports	Tectonic Date:10/03/2000	4529457	CCI Sites
Antenna Configuration	Crown CAD Package	Date:05/05/2014	CCI Sites

3.1) Analysis Method

TnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) Mount areas and weights are assumed based on photographs provided.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	168 - 119.25	Pole	TP34.288x24x0.25	1	-12.418	1367.125	56.4	Pass
L2	119.25 - 78.5	Pole	TP42.387x32.891x0.281	2	-18.883	1902.977	83.7	Pass
L3	78.5 - 38.75	Pole	TP50.213x40.717x0.375	3	-28.449	3002.236	76.0	Pass
L4	38.75 - 0	Pole	TP57.64x48.144x0.375	4	-41.301	3516.640	84.7	Pass
							Summary	
						Pole (L4)	84.7	Pass
						RATING =	84.7	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	80.7	Pass
1	Base Plate	Base	62.6	Pass
1	Base Foundation	Base	68.8	Pass
Structure Rating (max from all components) =				84.7%

Notes:

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

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

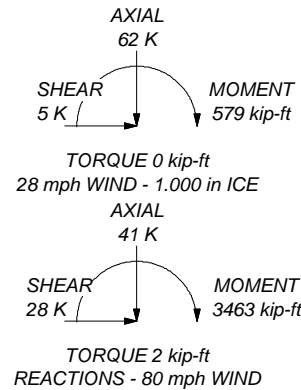
TYPE	ELEVATION	TYPE	ELEVATION
12' Omni (Unknown-E)	168	Pipe Mount [PM 601-1] (E)	147
(2) 800 10121 w/ Mount Pipe (E)	168	HP3-10 (E)	147
(2) 800 10121 w/ Mount Pipe (E)	168	Pipe Mount [PM 601-1] (E)	143
(2) 800 10121 w/ Mount Pipe (E)	168	HP3-11 (E)	143
(2) LGP21401 (E)	168	PTP400 w/ Mount Pipe (E)	140
(2) LGP21401 (E)	168	18" Standoff (E)	140
(2) LGP21401 (E)	168	Side Arm Mount [SO 702-1] (E)	135
P65-17-XLH-RR w/ Mount Pipe (E)	168	3' x 2" Pipe Mount (E)	135
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	168	ASP 705K (E)	135
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	168	ASP 705K (E)	135
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	168	Side Arm Mount [SO 702-1] (E)	135
(2) RBS 6601 (E)	168	3' x 2" Pipe Mount (E)	135
(2) RBS 6601 (E)	168	APXVTM14-C-120 w/ Mount Pipe (P)	130
(2) RBS 6601 (E)	168	APXVTM14-C-120 w/ Mount Pipe (P)	130
DC6-48-60-18-8F (E)	168	APXVTM14-C-120 w/ Mount Pipe (P)	130
4' x 2" Pipe Mount (E)	168	TD-RRH8x20-25 (P)	130
4' x 2" Pipe Mount (E)	168	TD-RRH8x20-25 (P)	130
4' x 2" Pipe Mount (E)	168	TD-RRH8x20-25 (P)	130
Platform Mount [LP 1201-1] (E)	168	1900MHz RRH (E)	130
6' x 2" Mount Pipe (E)	168	1900MHz RRH (E)	130
6' x 2" Mount Pipe (E)	168	APXV9ERR18-C-A20 w/ Mount Pipe (E)	130
840 10054 w/ Mount Pipe (E)	159	APXV9ERR18-C-A20 w/ Mount Pipe (E)	130
840 10054 w/ Mount Pipe (E)	159	1900MHz RRH (E)	130
840 10054 w/ Mount Pipe (E)	159	800MHz 2X50W RRH W/FILTER (E)	130
Horizon Compact (E)	159	800MHz 2X50W RRH W/FILTER (E)	130
Horizon Compact (E)	159	800MHz 2X50W RRH W/FILTER (E)	130
Horizon Compact (E)	159	800MHz 2X50W RRH W/FILTER (E)	130
Horizon Compact (E)	159	APXV9ERR18-C-A20 w/ Mount Pipe (E)	130
URAS-FLEXIBLE (E)	159	742 213 w/ Mount Pipe (E)	120
URAS-FLEXIBLE (E)	159	742 213 w/ Mount Pipe (E)	120
URAS-FLEXIBLE (E)	159	742 213 w/ Mount Pipe (E)	120
Platform Mount [LP 1201-1] (E)	159	742 213 w/ Mount Pipe (E)	120
(3) DB844H90E-XY w/ Mount Pipe (E)	159	Side Arm Mount [SO 202-1] (E)	79
(3) DB844H90E-XY w/ Mount Pipe (E)	159	GPS_A (E)	79
(3) DB844H90E-XY w/ Mount Pipe (E)	159	GPS_A (E)	79
VHLP2.5 (E)	159	Side Arm Mount [SO 202-1] (E)	79
VHLP2.5 (E)	159	Side Arm Mount [SO 202-1] (E)	52
VHLP2.5 (E)	159	GPS-TMG-HR-26NCM (E)	52
VHLP2.5 (E)	159		

MATERIAL STRENGTH

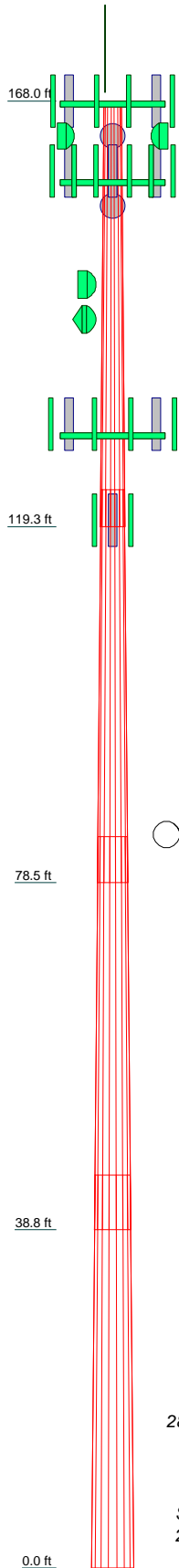
GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			


TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 84.7%



Section	1	2	3	4	
Length (ft)	48.750	45.000	45.000	45.000	
Number of Sides	18	18	18	18	
Thickness (in)	0.250	0.281	0.375	0.375	
Socket Length (ft)	4.250	5.250	6.250	6.250	
Top Dia (in)	24.000	32.891	40.717	48.144	
Bot Dia (in)	34.288	42.387	50.213	57.640	
Grade		A607-65			
Weight (K)	3.8	5.1	8.2	9.6	26.7




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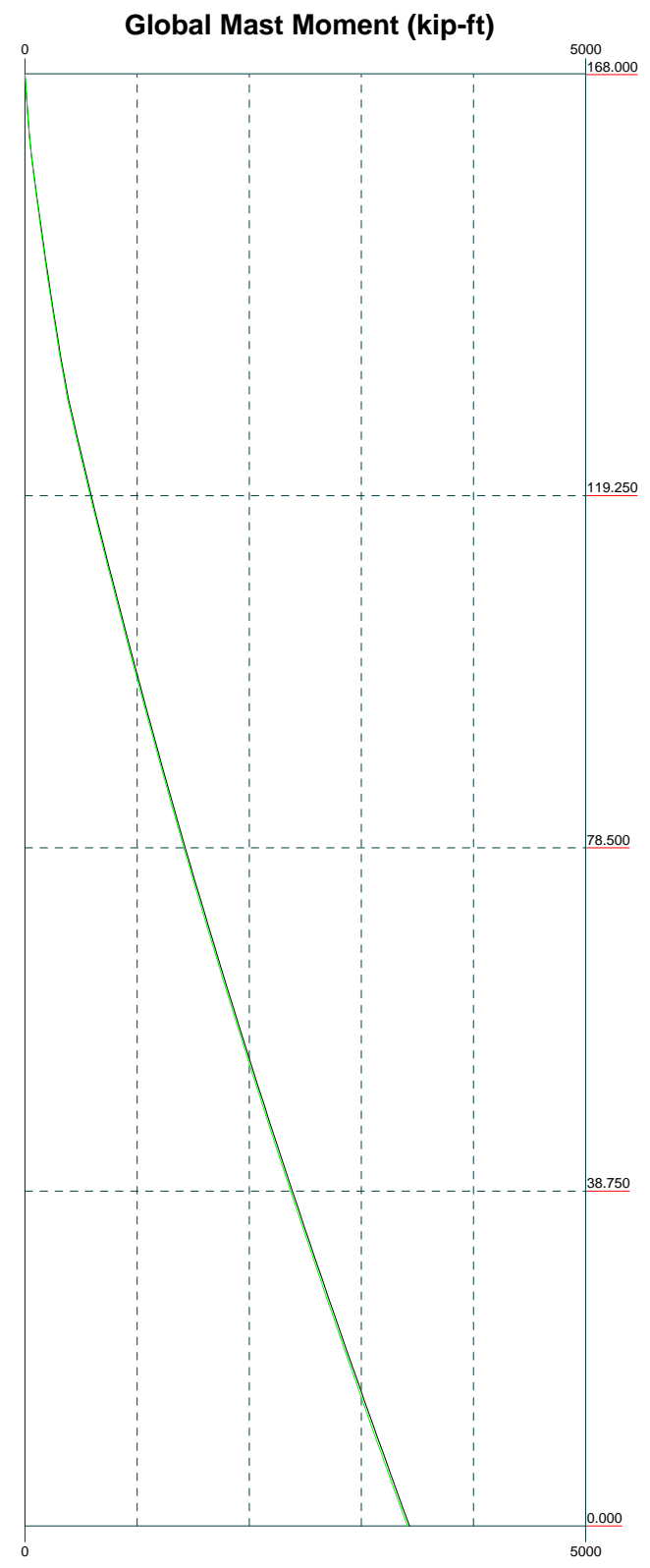
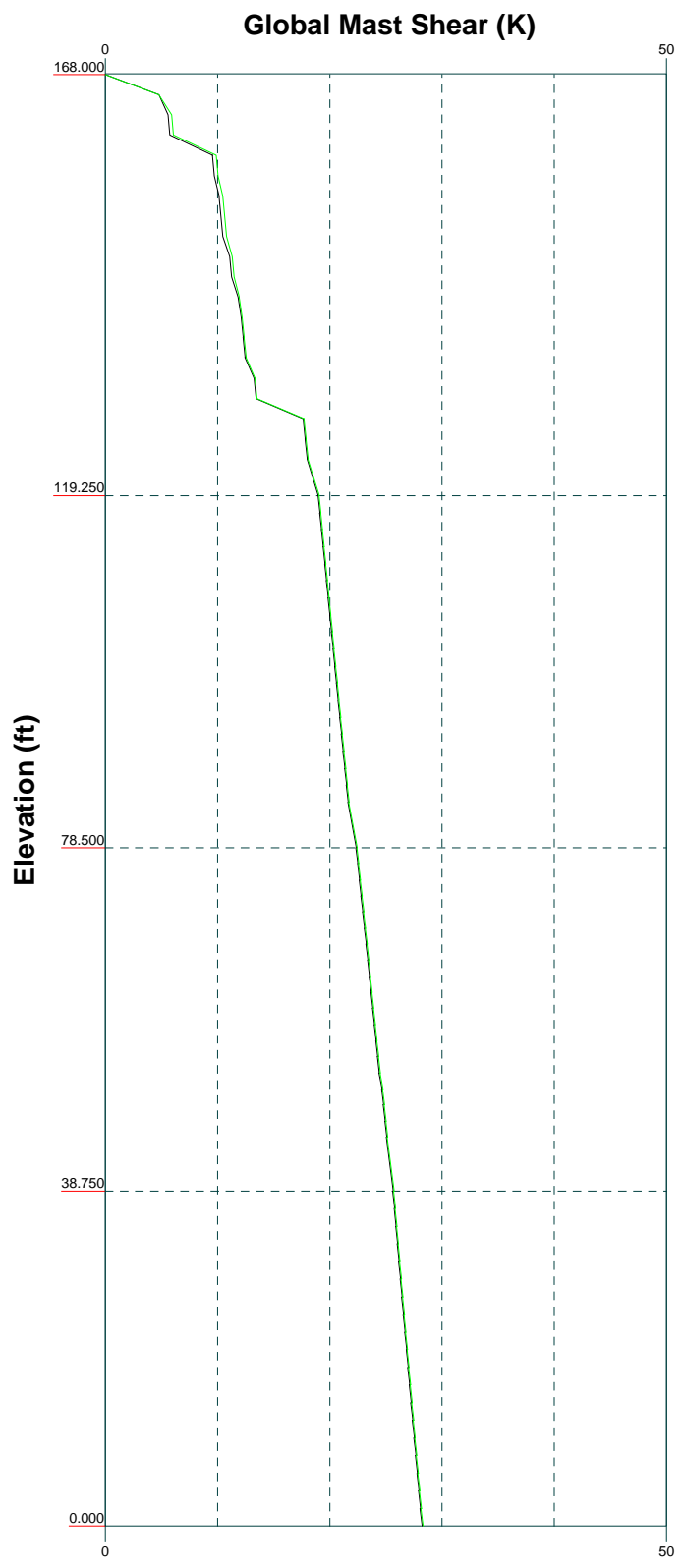
Job: 92492.001.01- Windsorday Hill, CT(BU# 842875)		
Project:		
Client: Crown Castle	Drawn by: J. Landon	App'd:
Code: TIA/EIA-222-F	Date: 05/09/14	Scale: NTS
Path:	Dwg No. E-1	

Vx

Vz

Mx

Mz



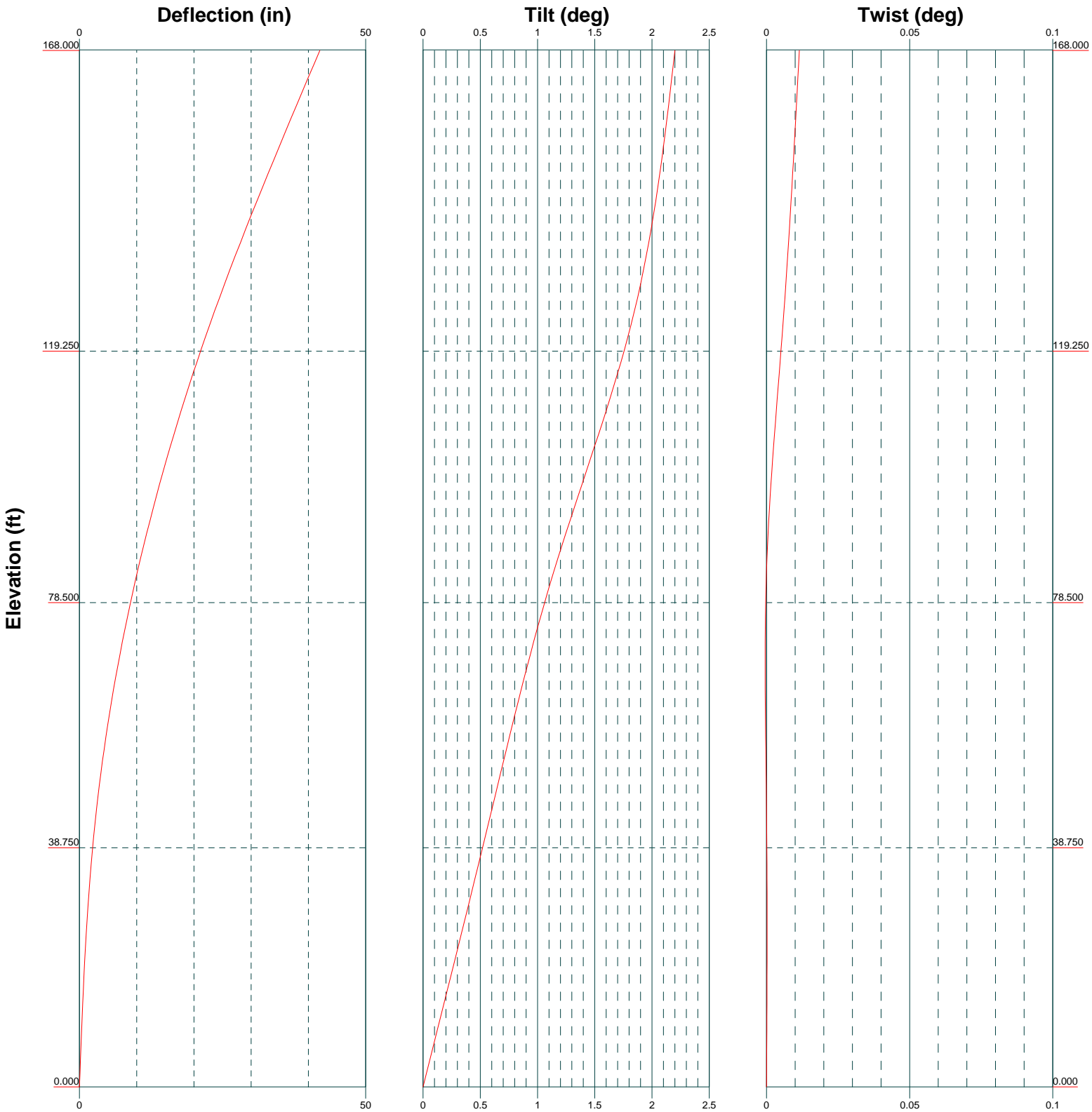
Elevation (ft)




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Job: 92492.001.01- Windsorday Hill, CT(BU# 842875)		
Project:		
Client: Crown Castle	Drawn by: J. Landon	App'd:
Code: TIA/EIA-222-F	Date: 05/09/14	Scale: NTS
Path:	Dwg No. E-4	

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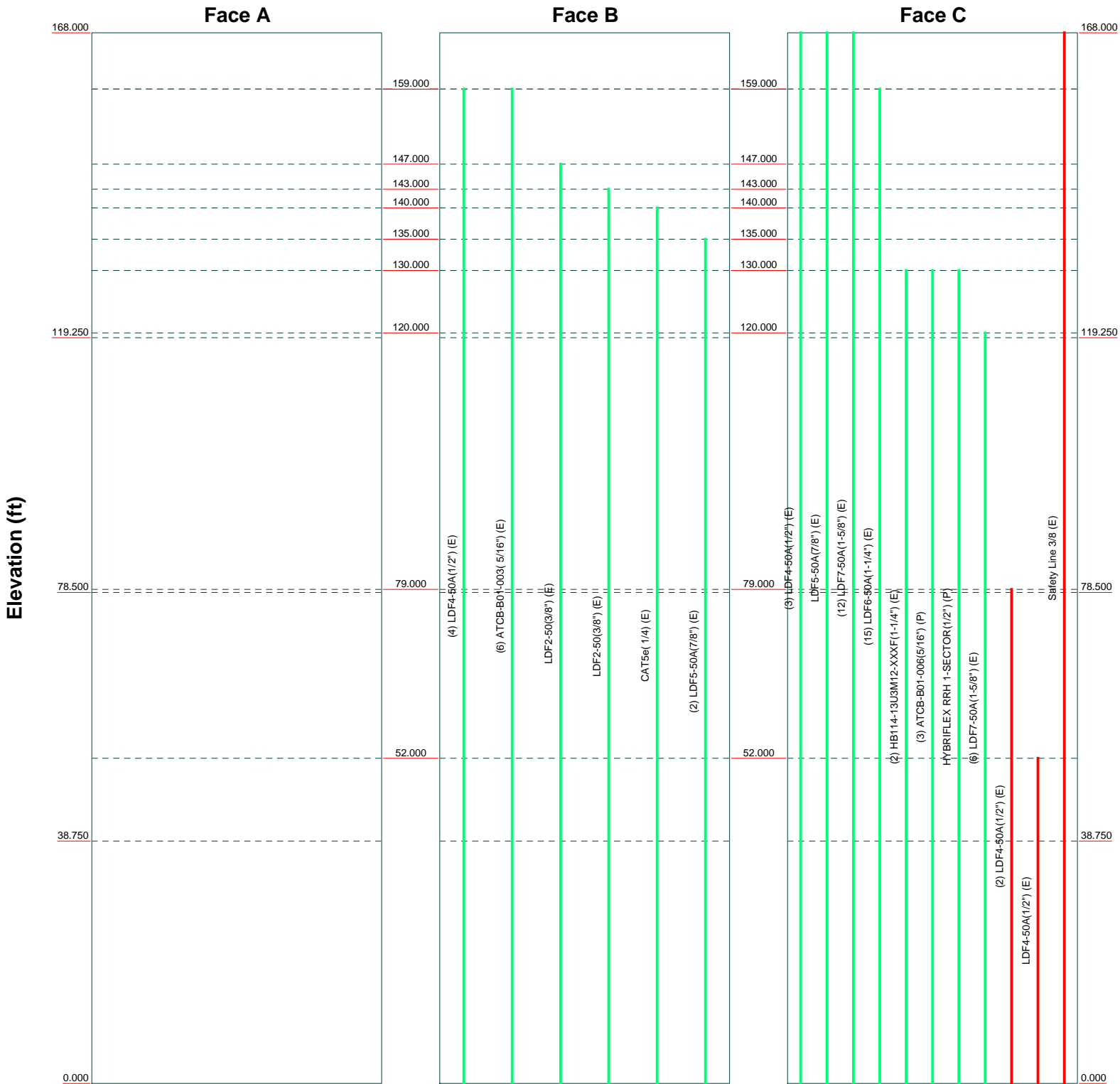
 <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job: 92492.001.01- Windsorday Hill, CT(BU# 842875)		
	Project:		
	Client: Crown Castle	Drawn by: J. Landon	App'd:
	Code: TIA/EIA-222-F	Date: 05/09/14	Scale: NTS
	Path:	Dwg No. E-5	

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Feed Line Distribution Chart

0' - 168'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



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Job: 92492.001.01- Windsorday Hill, CT(BU# 842873)		
Project:		
Client: Crown Castle	Drawn by: J. Landon	App'd:
Code: TIA/EIA-222-F	Date: 05/09/14	Scale: NTS
Path:	Dwg No. E-7	

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Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 28 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	168.000-119.250	48.750	4.250	18	24.000	34.288	0.250	1.000	A607-65 (65 ksi)
L2	119.250-78.500	45.000	5.250	18	32.891	42.387	0.281	1.125	A607-65 (65 ksi)
L3	78.500-38.750	45.000	6.250	18	40.717	50.213	0.375	1.500	A607-65 (65 ksi)
L4	38.750-0.000	45.000		18	48.144	57.640	0.375	1.500	A607-65 (65 ksi)

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Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	24.370	18.846	1342.998	8.431	12.192	110.154	2687.762	9.425	3.784	15.136
	34.817	27.009	3953.452	12.083	17.418	226.971	7912.106	13.507	5.595	22.379
L2	34.309	29.116	3911.636	11.576	16.709	234.108	7828.418	14.561	5.294	18.819
	43.041	37.594	8420.479	14.948	21.533	391.057	16852.037	18.801	6.965	24.76
L3	42.470	48.017	9872.638	14.321	20.684	477.308	19758.267	24.013	6.506	17.35
	50.988	59.320	18614.761	17.692	25.508	729.756	37254.015	29.665	8.177	21.807
L4	50.226	56.857	16391.375	16.958	24.457	670.207	32804.319	28.434	7.813	20.836
	58.529	68.160	28238.618	20.329	29.281	964.397	56514.393	34.086	9.485	25.292

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
ft	ft ²	in						
L1 168.000-119.2 50				1	1	1		
L2 119.250-78.50 0				1	1	1		
L3 78.500-38.750				1	1	1		
L4 38.750-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
*/**// LDF4-50A(1/2") (E)	C	Surface Ar (CaAa)	79.000 - 0.000	2	2	-0.100 -0.050	0.630		0.000
*/**// LDF4-50A(1/2") (E)	C	Surface Ar (CaAa)	52.000 - 0.000	1	1	0.000 0.030	0.630		0.000
*/**// Safety Line 3/8 (E)	C	Surface Ar (CaAa)	168.000 - 0.000	1	1	0.000 0.000	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A	Weight klf
						ft ² /ft	
LDF4-50A(1/2") (E)	C	No	Inside Pole	168.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight klf
						ft ² /ft		
LDF5-50A(7/8") (E)	C	No	Inside Pole	168.000 - 0.000	1	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	168.000 - 0.000	12	4" Ice	0.000	0.000
						No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
/// LDF4-50A(1/2") (E)	B	No	Inside Pole	159.000 - 0.000	4	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
LDF6-50A(1-1/4") (E)	C	No	Inside Pole	159.000 - 0.000	15	4" Ice	0.000	0.000
						No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
ATCB-B01-003(5/16") (E)	B	No	Inside Pole	159.000 - 0.000	6	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
/// LDF2-50(3/8") (E)	B	No	Inside Pole	147.000 - 0.000	1	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
/// LDF2-50(3/8") (E)	B	No	Inside Pole	143.000 - 0.000	1	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
/// CAT5e(1/4) (E)	B	No	Inside Pole	140.000 - 0.000	1	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
/// LDF5-50A(7/8") (E)	B	No	Inside Pole	135.000 - 0.000	2	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
/// HB114-13U3M12-XXX F(1-1/4") (E)	C	No	Inside Pole	130.000 - 0.000	2	4" Ice	0.000	0.001
						No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
ATCB-B01-006(5/16") (P)	C	No	Inside Pole	130.000 - 0.000	3	4" Ice	0.000	0.001
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight klf
						ft ² /ft		
HYBRIFLEX RRH 1-SECTOR(1/2") (P)	C	No	Inside Pole	130.000 - 0.000	1	4" Ice	0.000	0.000
						No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
/// LDF7-50A(1-5/8") (E)	C	No	Inside Pole	120.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight K
			ft ²	ft ²	ft ²	ft ²	
L1	168.000-119.250	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.057
		C	0.000	0.000	1.828	0.000	0.951
L2	119.250-78.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.078
		C	0.000	0.000	1.591	0.000	1.141
L3	78.500-38.750	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.076
		C	0.000	0.000	7.334	0.000	1.127
L4	38.750-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.074
		C	0.000	0.000	8.777	0.000	1.102

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight K
				ft ²	ft ²	ft ²	ft ²	
L1	168.000-119.250	A	1.192	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.057
		C		0.000	0.000	13.449	0.000	1.062
L2	119.250-78.500	A	1.140	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.078
		C		0.000	0.000	11.696	0.000	1.236
L3	78.500-38.750	A	1.071	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.076
		C		0.000	0.000	49.432	0.000	1.365
L4	38.750-0.000	A	1.000	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.074
		C		0.000	0.000	53.212	0.000	1.370

Feed Line Center of Pressure

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L1	168.000-119.250	0.000	0.056	0.000	0.351
L2	119.250-78.500	0.000	0.059	0.002	0.373
L3	78.500-38.750	0.028	0.267	0.099	1.051
L4	38.750-0.000	0.026	0.325	0.090	1.225

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
12' Omni (Unknown-E)	C	From Leg	0.000	0.000	168.000	No Ice	3.000	3.000	0.020
			0.000			1/2" Ice	4.230	4.230	0.040
			6.000			1" Ice	5.460	5.460	0.060
						2" Ice	7.920	7.920	0.100
						4" Ice	12.840	12.840	0.180
/									
(2) 800 10121 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	168.000	No Ice	5.685	4.600	0.066
			0.000			1/2" Ice	6.182	5.351	0.114
			0.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
(2) 800 10121 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	168.000	No Ice	5.685	4.600	0.066
			0.000			1/2" Ice	6.182	5.351	0.114
			0.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
(2) 800 10121 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	168.000	No Ice	5.685	4.600	0.066
			0.000			1/2" Ice	6.182	5.351	0.114
			0.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
(2) LGP21401 (E)	C	From Leg	4.000	0.000	168.000	No Ice	1.288	0.233	0.014
			0.000			1/2" Ice	1.445	0.313	0.021
			0.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401 (E)	B	From Leg	4.000	0.000	168.000	No Ice	1.288	0.233	0.014
			0.000			1/2" Ice	1.445	0.313	0.021
			0.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401 (E)	A	From Leg	4.000	0.000	168.000	No Ice	1.288	0.233	0.014
			0.000			1/2" Ice	1.445	0.313	0.021
			0.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
P65-17-XLH-RR w/ Mount Pipe (E)	C	From Leg	4.000	0.000	168.000	No Ice	11.704	8.938	0.092
			0.000			1/2" Ice	12.424	10.450	0.178
			1.000			1" Ice	13.153	11.986	0.273
						2" Ice	14.639	14.313	0.498
						4" Ice	17.906	19.144	1.126
AM-X-CD-16-65-00T-RET	B	From Leg	4.000	0.000	168.000	No Ice	8.498	6.304	0.074

<p>tnxTower</p> <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job		92492.001.01- Windsorday Hill, CT(BU# 842875)		Page		6 of 15	
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	Client		Crown Castle		Designed by		J. Landon	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
w/ Mount Pipe (E)			0.000			1/2" Ice	9.149	7.479	0.139
			1.000			1" Ice	9.767	8.368	0.212
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	A	From Leg	4.000	0.000	168.000	No Ice	8.498	6.304	0.074
			0.000			1/2" Ice	9.149	7.479	0.139
			1.000			1" Ice	9.767	8.368	0.212
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2) RBS 6601 (E)	C	From Leg	4.000	0.000	168.000	No Ice	0.480	0.348	0.022
			0.000			1/2" Ice	0.625	0.459	0.034
			1.000			1" Ice	0.778	0.578	0.049
						2" Ice	1.110	0.842	0.087
						4" Ice	1.878	1.474	0.202
(2) RBS 6601 (E)	B	From Leg	4.000	0.000	168.000	No Ice	0.480	0.348	0.022
			0.000			1/2" Ice	0.625	0.459	0.034
			1.000			1" Ice	0.778	0.578	0.049
						2" Ice	1.110	0.842	0.087
						4" Ice	1.878	1.474	0.202
(2) RBS 6601 (E)	A	From Leg	4.000	0.000	168.000	No Ice	0.480	0.348	0.022
			0.000			1/2" Ice	0.625	0.459	0.034
			1.000			1" Ice	0.778	0.578	0.049
						2" Ice	1.110	0.842	0.087
						4" Ice	1.878	1.474	0.202
DC6-48-60-18-8F (E)	C	From Leg	4.000	0.000	168.000	No Ice	2.567	2.567	0.019
			0.000			1/2" Ice	2.798	2.798	0.041
			-1.000			1" Ice	3.038	3.038	0.067
						2" Ice	3.543	3.543	0.129
						4" Ice	4.658	4.658	0.299
4' x 2" Pipe Mount (E)	C	From Leg	4.000	0.000	168.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
						4" Ice	3.111	3.111	0.167
4' x 2" Pipe Mount (E)	B	From Leg	4.000	0.000	168.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
						4" Ice	3.111	3.111	0.167
4' x 2" Pipe Mount (E)	A	From Leg	4.000	0.000	168.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
						4" Ice	3.111	3.111	0.167
Platform Mount [LP 1201-1] (E)	C	None		0.000	168.000	No Ice	23.100	23.100	2.100
						1/2" Ice	26.800	26.800	2.500
						1" Ice	30.500	30.500	2.900
						2" Ice	37.900	37.900	3.700
						4" Ice	52.700	52.700	5.300
*/**//									
(3) DB844H90E-XY w/ Mount Pipe (E)	C	From Leg	4.000	0.000	159.000	No Ice	3.299	4.921	0.032
			0.000			1/2" Ice	3.690	5.596	0.072
			1.000			1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
(3) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.000	0.000	159.000	No Ice	3.299	4.921	0.032
			0.000			1/2" Ice	3.690	5.596	0.072

tnxTower

B+T Group
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 Phone: (918) 587-4630
 FAX: (918) 295-0265

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Client	Crown Castle	Designed by	J. Landon

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
(E)				1.000					
						1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
(3) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.000	0.000	159.000	No Ice	3.299	4.921	0.032
(E)			0.000			1/2" Ice	3.690	5.596	0.072
			1.000			1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
840 10054 w/ Mount Pipe	C	From Leg	4.000	0.000	159.000	No Ice	5.413	2.385	0.051
(E)			0.000			1/2" Ice	5.833	2.917	0.088
			1.000			1" Ice	6.263	3.466	0.129
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
840 10054 w/ Mount Pipe	B	From Leg	4.000	0.000	159.000	No Ice	5.413	2.385	0.051
(E)			0.000			1/2" Ice	5.833	2.917	0.088
			1.000			1" Ice	6.263	3.466	0.129
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
840 10054 w/ Mount Pipe	A	From Leg	4.000	0.000	159.000	No Ice	5.413	2.385	0.051
(E)			0.000			1/2" Ice	5.833	2.917	0.088
			1.000			1" Ice	6.263	3.466	0.129
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
Horizon Compact	C	From Leg	4.000	0.000	159.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			5.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
Horizon Compact	B	From Leg	4.000	0.000	159.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			5.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
Horizon Compact	A	From Leg	4.000	0.000	159.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			5.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
Horizon Compact	A	From Leg	4.000	0.000	159.000	No Ice	0.841	0.429	0.012
(E)			0.000			1/2" Ice	0.966	0.525	0.018
			-3.000			1" Ice	1.099	0.629	0.026
						2" Ice	1.392	0.863	0.048
						4" Ice	2.082	1.435	0.122
URAS-FLEXIBLE	C	From Leg	4.000	0.000	159.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			1.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
URAS-FLEXIBLE	B	From Leg	4.000	0.000	159.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			1.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
URAS-FLEXIBLE	A	From Leg	4.000	0.000	159.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			1.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job		92492.001.01- Windsorday Hill, CT(BU# 842875)		Page		8 of 15	
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	Client		Crown Castle		Designed by		J. Landon	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
			ft	ft	ft					
Platform Mount [LP 1201-1] (E)	C	None			0.000	159.000	4" Ice	3.512	2.143	0.201
							No Ice	23.100	23.100	2.100
							1/2" Ice	26.800	26.800	2.500
							1" Ice	30.500	30.500	2.900
							2" Ice	37.900	37.900	3.700
							4" Ice	52.700	52.700	5.300
***//										
Pipe Mount [PM 601-1] (E)	C	From Leg	0.500	0.000	0.000	147.000	No Ice	3.000	0.900	0.065
							1/2" Ice	3.740	1.120	0.079
							1" Ice	4.480	1.340	0.093
							2" Ice	5.960	1.780	0.122
							4" Ice	8.920	2.660	0.178
							***//			
Pipe Mount [PM 601-1] (E)	C	From Leg	0.500	0.000	0.000	143.000	No Ice	3.000	0.900	0.065
							1/2" Ice	3.740	1.120	0.079
							1" Ice	4.480	1.340	0.093
							2" Ice	5.960	1.780	0.122
							4" Ice	8.920	2.660	0.178
							***//			
PTP400 w/ Mount Pipe (E)	B	From Leg	1.500	0.000	0.000	140.000	No Ice	2.221	0.919	0.020
							1/2" Ice	2.477	1.183	0.038
							1" Ice	2.751	1.475	0.058
							2" Ice	3.354	2.151	0.111
							4" Ice	4.725	3.740	0.281
							***//			
18" Standoff (E)	B	From Leg	1.000	0.000	0.000	140.000	No Ice	0.380	0.950	0.010
							1/2" Ice	0.480	1.210	0.020
							1" Ice	0.580	1.470	0.030
							2" Ice	0.780	1.990	0.050
							4" Ice	1.180	3.030	0.090
							***//			
ASP 705K (E)	A	From Leg	4.000	0.000	0.000	135.000	No Ice	5.500	5.500	0.022
							1/2" Ice	7.367	7.367	0.062
							1" Ice	9.250	9.250	0.113
							2" Ice	13.067	13.067	0.251
							4" Ice	19.246	19.246	0.674
							***//			
ASP 705K (E)	B	From Leg	4.000	0.000	0.000	135.000	No Ice	5.500	5.500	0.022
							1/2" Ice	7.367	7.367	0.062
							1" Ice	9.250	9.250	0.113
							2" Ice	13.067	13.067	0.251
							4" Ice	19.246	19.246	0.674
							***//			
Side Arm Mount [SO 702-1] (E)	A	From Leg	2.000	0.000	0.000	135.000	No Ice	1.000	1.430	0.027
							1/2" Ice	1.000	2.050	0.038
							1" Ice	1.000	2.670	0.049
							2" Ice	1.000	3.910	0.071
							4" Ice	1.000	6.390	0.115
							***//			
Side Arm Mount [SO 702-1] (E)	B	From Leg	2.000	0.000	0.000	135.000	No Ice	1.000	1.430	0.027
							1/2" Ice	1.000	2.050	0.038
							1" Ice	1.000	2.670	0.049
							2" Ice	1.000	3.910	0.071
							4" Ice	1.000	6.390	0.115
							***//			
3' x 2" Pipe Mount (E)	A	From Leg	4.000	0.000	0.000	135.000	No Ice	0.583	0.583	0.011
							1/2" Ice	0.770	0.770	0.017
							1" Ice	0.967	0.967	0.024
							2" Ice	1.417	1.417	0.047
							4" Ice	2.536	2.536	0.126
							***//			
3' x 2" Pipe Mount (E)	B	From Leg	4.000	0.000	0.000	135.000	No Ice	0.583	0.583	0.011
							1/2" Ice	0.770	0.770	0.017

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft						
			ft							
			0.000							
						1" Ice	0.967	0.967	0.024	
						2" Ice	1.417	1.417	0.047	
						4" Ice	2.536	2.536	0.126	
/										
APXV9ERR18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	130.000	No Ice	8.498	7.471	0.088	
			0.000			1/2" Ice	9.149	8.656	0.158	
			1.000			1" Ice	9.767	9.556	0.237	
						2" Ice	11.031	11.388	0.421	
						4" Ice	13.679	15.527	0.935	
APXV9ERR18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	130.000	No Ice	8.498	7.471	0.088	
			0.000			1/2" Ice	9.149	8.656	0.158	
			1.000			1" Ice	9.767	9.556	0.237	
						2" Ice	11.031	11.388	0.421	
						4" Ice	13.679	15.527	0.935	
APXV9ERR18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	130.000	No Ice	8.498	7.471	0.088	
			0.000			1/2" Ice	9.149	8.656	0.158	
			1.000			1" Ice	9.767	9.556	0.237	
						2" Ice	11.031	11.388	0.421	
						4" Ice	13.679	15.527	0.935	
1900MHz RRH (E)	A	From Leg	4.000	0.000	130.000	No Ice	2.907	3.801	0.044	
			0.000			1/2" Ice	3.145	4.065	0.075	
			1.000			1" Ice	3.391	4.337	0.110	
						2" Ice	3.909	4.908	0.192	
						4" Ice	5.050	6.152	0.407	
1900MHz RRH (E)	B	From Leg	4.000	0.000	130.000	No Ice	2.907	3.801	0.044	
			0.000			1/2" Ice	3.145	4.065	0.075	
			1.000			1" Ice	3.391	4.337	0.110	
						2" Ice	3.909	4.908	0.192	
						4" Ice	5.050	6.152	0.407	
1900MHz RRH (E)	C	From Leg	4.000	0.000	130.000	No Ice	2.907	3.801	0.044	
			0.000			1/2" Ice	3.145	4.065	0.075	
			1.000			1" Ice	3.391	4.337	0.110	
						2" Ice	3.909	4.908	0.192	
						4" Ice	5.050	6.152	0.407	
800MHz 2X50W RRH W/FILTER (E)	B	From Leg	4.000	0.000	130.000	No Ice	2.401	2.254	0.064	
			0.000			1/2" Ice	2.613	2.460	0.086	
			1.000			1" Ice	2.833	2.675	0.111	
						2" Ice	3.300	3.132	0.172	
						4" Ice	4.337	4.148	0.338	
800MHz 2X50W RRH W/FILTER (E)	C	From Leg	4.000	0.000	130.000	No Ice	2.401	2.254	0.064	
			0.000			1/2" Ice	2.613	2.460	0.086	
			1.000			1" Ice	2.833	2.675	0.111	
						2" Ice	3.300	3.132	0.172	
						4" Ice	4.337	4.148	0.338	
800MHz 2X50W RRH W/FILTER (E)	A	From Leg	4.000	0.000	130.000	No Ice	2.401	2.254	0.064	
			0.000			1/2" Ice	2.613	2.460	0.086	
			1.000			1" Ice	2.833	2.675	0.111	
						2" Ice	3.300	3.132	0.172	
						4" Ice	4.337	4.148	0.338	
APXVTM14-C-120 w/ Mount Pipe (P)	A	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077	
			0.000			1/2" Ice	7.662	5.754	0.131	
			1.000			1" Ice	8.183	6.472	0.193	
						2" Ice	9.256	8.010	0.338	
						4" Ice	11.526	11.412	0.752	
APXVTM14-C-120 w/ Mount Pipe (P)	B	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077	
			0.000			1/2" Ice	7.662	5.754	0.131	
			1.000			1" Ice	8.183	6.472	0.193	

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	Client		Crown Castle		Designed by		J. Landon	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
APXVTM14-C-120 w/ Mount Pipe (P)	C	From Leg	4.000	0.000	130.000	No Ice	7.134	4.959	0.077
			0.000			1/2" Ice	7.662	5.754	0.131
			1.000			1" Ice	8.183	6.472	0.193
						2" Ice	9.256	8.010	0.338
						4" Ice	11.526	11.412	0.752
TD-RRH8x20-25 (P)	A	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
			0.000			1/2" Ice	5.014	1.920	0.097
			1.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25 (P)	B	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
			0.000			1/2" Ice	5.014	1.920	0.097
			1.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25 (P)	C	From Leg	4.000	0.000	130.000	No Ice	4.720	1.703	0.070
			0.000			1/2" Ice	5.014	1.920	0.097
			1.000			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
6' x 2" Mount Pipe (E)	A	From Leg	4.000	0.000	168.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (E)	B	From Leg	4.000	0.000	168.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (E)	C	From Leg	4.000	0.000	168.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Platform Mount [LP 1201-1] (E)	C	None		0.000	130.000	No Ice	23.100	23.100	2.100
						1/2" Ice	26.800	26.800	2.500
						1" Ice	30.500	30.500	2.900
						2" Ice	37.900	37.900	3.700
						4" Ice	52.700	52.700	5.300
***//									
742 213 w/ Mount Pipe (E)	C	From Leg	1.000	0.000	120.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			0.000			1" Ice	6.501	6.982	0.146
						2" Ice	7.611	8.852	0.277
						4" Ice	9.933	12.794	0.683
742 213 w/ Mount Pipe (E)	B	From Leg	1.000	0.000	120.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			0.000			1" Ice	6.501	6.982	0.146
						2" Ice	7.611	8.852	0.277
						4" Ice	9.933	12.794	0.683
742 213 w/ Mount Pipe (E)	A	From Leg	1.000	0.000	120.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			0.000			1" Ice	6.501	6.982	0.146
						2" Ice	7.611	8.852	0.277

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
						4" Ice	9.933	12.794	0.683

GPS_A (E)	A	From Leg	2.000	0.000	79.000	No Ice	0.297	0.297	0.001
			0.000			1/2" Ice	0.374	0.374	0.005
			0.000			1" Ice	0.459	0.459	0.010
						2" Ice	0.655	0.655	0.025
						4" Ice	1.151	1.151	0.079
GPS_A (E)	B	From Leg	2.000	0.000	79.000	No Ice	0.297	0.297	0.001
			0.000			1/2" Ice	0.374	0.374	0.005
			0.000			1" Ice	0.459	0.459	0.010
						2" Ice	0.655	0.655	0.025
						4" Ice	1.151	1.151	0.079
Side Arm Mount [SO 202-1] (E)	A	From Leg	1.000	0.000	79.000	No Ice	2.960	2.530	0.110
			0.000			1/2" Ice	4.100	3.510	0.134
			0.000			1" Ice	5.240	4.490	0.157
						2" Ice	7.520	6.450	0.204
						4" Ice	12.080	10.370	0.298
Side Arm Mount [SO 202-1] (E)	B	From Leg	1.000	0.000	79.000	No Ice	2.960	2.530	0.110
			0.000			1/2" Ice	4.100	3.510	0.134
			0.000			1" Ice	5.240	4.490	0.157
						2" Ice	7.520	6.450	0.204
						4" Ice	12.080	10.370	0.298

GPS-TMG-HR-26NCM (E)	A	From Leg	2.000	0.000	52.000	No Ice	0.156	0.156	0.001
			0.000			1/2" Ice	0.213	0.213	0.002
			0.000			1" Ice	0.279	0.279	0.005
						2" Ice	0.437	0.437	0.014
						4" Ice	0.857	0.857	0.052
Side Arm Mount [SO 202-1] (E)	B	From Leg	1.000	0.000	52.000	No Ice	2.960	2.530	0.110
			0.000			1/2" Ice	4.100	3.510	0.134
			0.000			1" Ice	5.240	4.490	0.157
						2" Ice	7.520	6.450	0.204
						4" Ice	12.080	10.370	0.298

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral	Vert							°
VHLP2.5 (E)	C	Paraboloid w/Shroud (HP)	From Leg	4.000	0.000	-40.000		159.000	2.917	No Ice	6.681	0.048
				0.000						1/2" Ice	7.069	0.077
				5.000						1" Ice	7.456	0.106
										2" Ice	8.230	0.164
										4" Ice	9.779	0.280
VHLP2.5 (E)	B	Paraboloid w/Shroud (HP)	From Leg	4.000	0.000	24.000		159.000	2.917	No Ice	6.681	0.048
				0.000						1/2" Ice	7.069	0.077
				5.000						1" Ice	7.456	0.106
										2" Ice	8.230	0.164

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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
VHLP2.5 (E)	A	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 5.000	17.000		159.000	2.917	4" Ice 9.779 No Ice 6.681 1/2" Ice 7.069 1" Ice 7.456 2" Ice 8.230 4" Ice 9.779	0.280 0.048 0.077 0.106 0.164 0.280
VHLP2.5 (E)	A	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 -3.000	38.000		159.000	2.917	No Ice 6.681 1/2" Ice 7.069 1" Ice 7.456 2" Ice 8.230 4" Ice 9.779	0.048 0.077 0.106 0.164 0.280
*/**// HP3-10 (E)	C	Paraboloid w/Shroud (HP)	From Leg	1.000 0.000 0.000	0.000		147.000	3.167	No Ice 7.880 1/2" Ice 8.300 1" Ice 8.720 2" Ice 9.560 4" Ice 11.240	0.050 0.090 0.140 0.220 0.390
*/**// HP3-11 (E)	C	Paraboloid w/Radome	From Leg	1.000 0.000 0.000	0.000		143.000	3.167	No Ice 7.880 1/2" Ice 8.300 1" Ice 8.720 2" Ice 9.560 4" Ice 11.240	0.050 0.050 0.063 0.103 0.274
*/**//										

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service

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Comb. No.	Description
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 119.25	41.988	28	2.199	0.009
L2	123.5 - 78.5	22.745	28	1.814	0.003
L3	83.75 - 38.75	10.194	28	1.146	0.001
L4	45 - 0	2.983	28	0.603	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.000	12' Omni	28	41.988	2.199	0.009	31534
164.000	VHLP2.5	28	40.159	2.174	0.009	31534
159.000	(3) DB844H90E-XY w/ Mount Pipe	28	37.879	2.142	0.008	17519
156.000	VHLP2.5	28	36.519	2.123	0.007	13139
147.000	HP3-10	28	32.496	2.058	0.006	7507
143.000	HP3-11	28	30.747	2.026	0.005	6306
140.000	PTP400 w/ Mount Pipe	28	29.455	1.999	0.005	5630
135.000	ASP 705K	28	27.344	1.951	0.004	4776
130.000	APXV9ERR18-C-A20 w/ Mount Pipe	28	25.297	1.896	0.004	4147
120.000	742 213 w/ Mount Pipe	28	21.429	1.765	0.003	3558
79.000	GPS_A	28	9.040	1.070	0.001	3682
52.000	GPS-TMG-HR-26NCM	28	3.906	0.694	0.001	3442

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 119.25	107.117	3	5.615	0.024
L2	123.5 - 78.5	58.073	3	4.634	0.008
L3	83.75 - 38.75	26.045	3	2.929	0.003
L4	45 - 0	7.626	3	1.543	0.001

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
-------------	-----------------	------------------------	-----------------	-----------	------------

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.000	12' Omni	3	107.117	5.615	0.024	12568
164.000	VHLP2.5	3	102.455	5.552	0.022	12568
159.000	(3) DB844H90E-XY w/ Mount Pipe	3	96.646	5.472	0.020	6982
156.000	VHLP2.5	3	93.180	5.422	0.018	5235
147.000	HP3-10	3	82.929	5.257	0.015	2990
143.000	HP3-11	3	78.470	5.174	0.013	2510
140.000	PTP400 w/ Mount Pipe	3	75.176	5.106	0.012	2241
135.000	ASP 705K	3	69.798	4.983	0.010	1900
130.000	APXV9ERR18-C-A20 w/ Mount Pipe	3	64.579	4.843	0.009	1649
120.000	742 213 w/ Mount Pipe	3	54.715	4.507	0.008	1412
79.000	GPS_A	3	23.099	2.735	0.003	1449
52.000	GPS-TMG-HR-26NCM	3	9.984	1.775	0.002	1350

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	168 - 119.25 (1)	TP34.288x24x0.25	48.750	0.000	0.0	39.000	26.298	-12.418	1025.600	0.012
L2	119.25 - 78.5 (2)	TP42.387x32.891x0.281	45.000	0.000	0.0	39.000	36.605	-18.883	1427.590	0.013
L3	78.5 - 38.75 (3)	TP50.213x40.717x0.375	45.000	0.000	0.0	39.000	57.750	-28.449	2252.240	0.013
L4	38.75 - 0 (4)	TP57.64x48.144x0.375	45.000	0.000	0.0	38.705	68.160	-41.301	2638.140	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} F _{by}
L1	168 - 119.25 (1)	TP34.288x24x0.25	516.343	28.802	39.000	0.739	0.000	0.000	39.000	0.000
L2	119.25 - 78.5 (2)	TP42.387x32.891x0.281	1327.250	42.967	39.000	1.102	0.000	0.000	39.000	0.000
L3	78.5 - 38.75 (3)	TP50.213x40.717x0.375	2248.233	39.015	39.000	1.000	0.000	0.000	39.000	0.000
L4	38.75 - 0 (4)	TP57.64x48.144x0.375	3462.600	43.085	38.705	1.113	0.000	0.000	38.705	0.000

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Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	168 - 119.25 (1)	TP34.288x24x0.25	18.312	0.696	26.000	0.054	1.537	0.042	26.000	0.002
L2	119.25 - 78.5 (2)	TP42.387x32.891x0.281	21.966	0.600	26.000	0.046	1.526	0.024	26.000	0.001
L3	78.5 - 38.75 (3)	TP50.213x40.717x0.375	25.387	0.440	26.000	0.034	1.112	0.009	26.000	0.000
L4	38.75 - 0 (4)	TP57.64x48.144x0.375	28.526	0.419	26.000	0.032	1.053	0.006	26.000	0.000

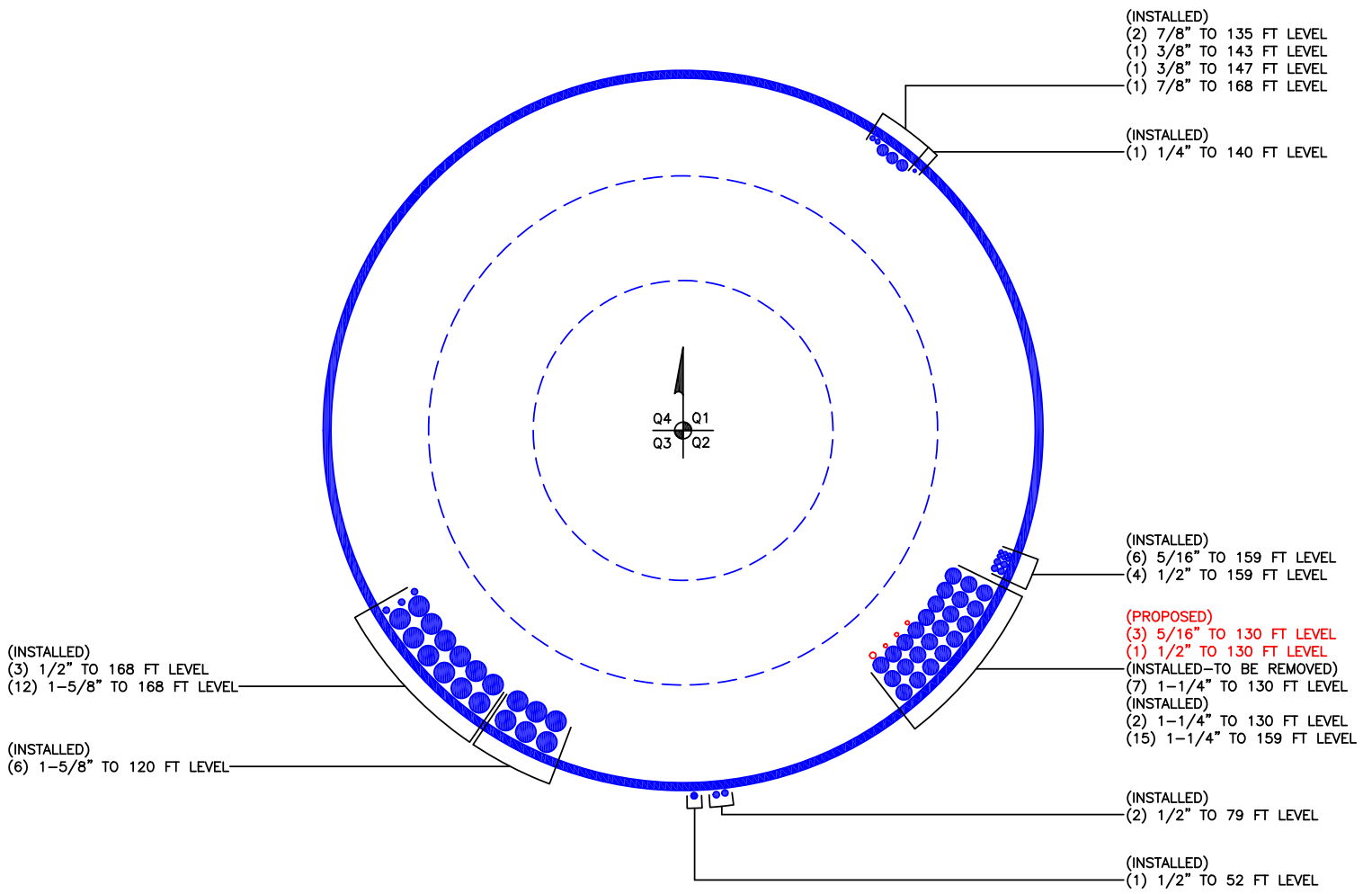
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	168 - 119.25 (1)	0.012	0.739	0.000	0.054	0.002	0.751	1.333	H1-3+VT ✓
L2	119.25 - 78.5 (2)	0.013	1.102	0.000	0.046	0.001	1.116	1.333	H1-3+VT ✓
L3	78.5 - 38.75 (3)	0.013	1.000	0.000	0.034	0.000	1.013	1.333	H1-3+VT ✓
L4	38.75 - 0 (4)	0.016	1.113	0.000	0.032	0.000	1.129	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail	
L1	168 - 119.25	Pole	TP34.288x24x0.25	1	-12.418	1367.125	56.4	Pass	
L2	119.25 - 78.5	Pole	TP42.387x32.891x0.281	2	-18.883	1902.977	83.7	Pass	
L3	78.5 - 38.75	Pole	TP50.213x40.717x0.375	3	-28.449	3002.236	76.0	Pass	
L4	38.75 - 0	Pole	TP57.64x48.144x0.375	4	-41.301	3516.640	84.7	Pass	
							Summary		
							Pole (L4)	84.7	Pass
							RATING =	84.7	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 842875

APPENDIX C
ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:** 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding $(1) \times (\text{Rod Diameter})$

Site Data

BU#: 842875
 Site Name: WINDSORDAY HILL, CT
 Application ID: 218798 Revision # 5

Anchor Rod Data

Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	65	in
Anchor Spacing:	6	in

Plate Data

W=Side:	63	in
Thick:	3.25	in
Grade:	55	ksi
Clip Distance:	16	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	57.64	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor

ASD ASIF:	1.333	
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** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	3463	ft-kips
Unfactored Axial, P:	41	kips
Unfactored Shear, V:	28	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension: 157.3 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 80.7% **Pass**

Base Plate Results

Base Plate Stress: 34.4 ksi
 Allowable PL Bending Stress: 55.0 ksi
 Base Plate Stress Ratio: 62.6% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	31.46
Max PL Length:	31.46

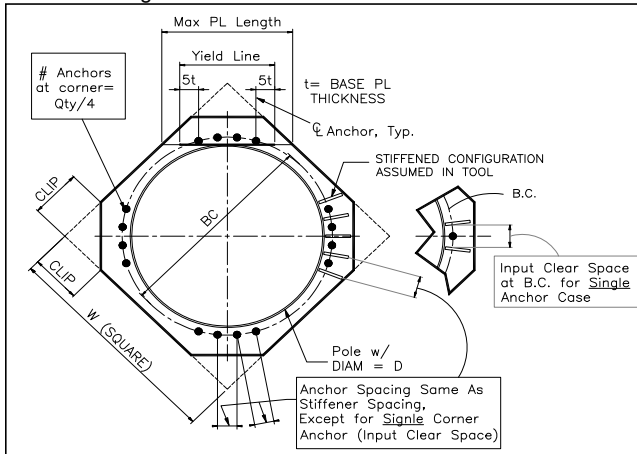
N/A - Unstiffened

Stiffener Results

Horizontal Weld: N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



BU: 842875
 Site Name: WINDSORDAY HILL, CT
 App Number: 218798 Rev # 5
 Work Order: 739993



Monopole Drilled Pier

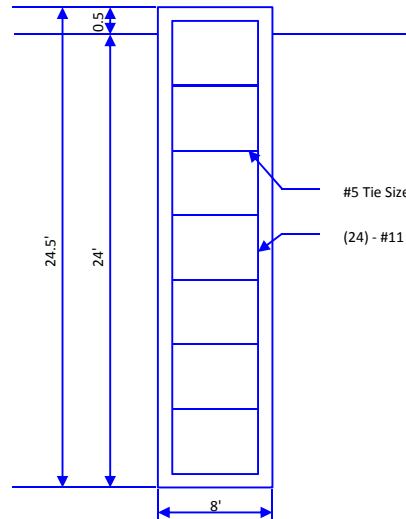
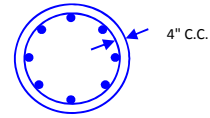
Input

Criteria
 TIA Revision: F
 ACI 318 Revision: 2002
 Seismic Category: B

Forces
 Compression: 53.3 kips
 Shear: 36.4 kips
 Moment: 4501.9 k-ft
 Swelling Force: 0 kips

Foundation Dimensions
 Pier Diameter: 8 ft
 Ext. above grade: 0.5 ft
 Depth below grade: 24 ft

Material Properties
 Number of Rebar: 24
 Rebar Size: 11
 Tie Size: 5
 Rebar tensile strength: 60 ksi
 Concrete Strength: 3000 psi
 Ultimate Concrete Strain: 0.003 in/in
 Clear Cover to Ties: 4 in



Soil Profile: Soil

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	2	0	2	110	0	0	0	0	0	
2	3	2	5	120					0	
3	5	5	10	60		35	0.54	0.54	0	
4	5	10	15	55		33	0.68	0.68	0	
5	2	15	17	80		40	0.75	0.75	0	
6	7	17	24	95	10000		12	12	80	

Analysis Results

Soil Lateral Capacity
 Depth to Zero Shear: 6.90 ft
 Max Moment, Mu: 3638.64 k-ft
 Soil Safety Factor: 3.99
 Safety Factor Req'd: 2
RATING: 50.1%

Soil Axial Capacity
 Skin Friction (k): 1151.08 kips
 End Bearing (k): 2010.62 kips
 Comp. Capacity (k), φCn: 3161.70 kips
 Comp. (k), Cu: 53.30 kips
RATING: 1.7%

Concrete/Steel Check

Mu (from soil analysis) 4730.23 k-ft
 φMn 6876.58 k-ft
RATING: 68.8%

rho provided 0.52
 rho required 0.33 OK

Rebar Spacing 9.76
 Spacing required 22.56 OK

Dev. Length required 16.77
 Dev. Length provided 61.78 OK

Overall Foundation Rating: 68.8%

RADIO FREQUENCY FCC REGULATORY COMPLIANCE
MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT54XC787

Windsor Locks AT&T

99 Day Hill Road
Windsor, CT 06095

June 9, 2014

EBI Project Number: 62143277

June 9, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT54XC787 - Windsor Locks AT&T

Site Total: 29.94% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 99 Day Hill Road, Windsor, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 99 Day Hill Road, Windsor, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

- 1) 4 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
- 2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
- 3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline for the proposed antennas is **131 feet** above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT54XC787 - Windsor Locks AT&T
Site Address	99 Day Hill Road, Windsor, CT, 06095
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	131	125	1/2 "	0.5	3	139.02	0.32%
1a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	131	125	1/2 "	0.5	3	19.54	0.08%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	131	125	1/2 "	0.5	3	69.51	0.28%
Sector total Power Density Value:																0.68%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	131	125	1/2 "	0.5	3	139.02	0.32%
2a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	131	125	1/2 "	0.5	3	19.54	0.08%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	131	125	1/2 "	0.5	3	69.51	0.28%
Sector total Power Density Value:																0.68%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	5.9	131	125	1/2 "	0.5	3	139.02	0.32%
3a	RFS	APXVSP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	131	125	1/2 "	0.5	3	19.54	0.08%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	131	125	1/2 "	0.5	3	69.51	0.28%
Sector total Power Density Value:																0.68%

Site Composite MPE %	
Carrier	MPE %
Sprint	2.04%
Nextel	2.23%
Clearwire	0.71%
MetroPCS	8.44%
Bloomfield PD	0.06%
Municipal Antennas	3.20%
AT&T	13.26%
Total Site MPE %	29.94%

Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **2.04% (0.68% from sector 1, 0.68% from sector 2 and 0.68% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **29.94%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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