



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

July 25, 2018

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

RE: Notice of Exempt Modification for Sprint DO Macro: 876398
Sprint Site ID: CT33XC611
2189-2215 Black Rock Turnpike, Fairfield, CT 06432
Latitude: 41° 10' 52.33"/ Longitude: -73° 15' 14.69"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 87-foot level of the existing 90-foot stealth pole tower at 2189-2215 Black Rock Turnpike in Fairfield, CT. The tower is owned by Crown Castle. The property is owned by R-K Black Rock I LLC. Sprint now intends to replace three (3) antennas with three (3) new antennas. These antennas would be installed at the 87-foot level of the tower. Sprint also intends to install six (6) Diplexers, twelve (12) 7/8" coax, remove and replace antenna concealment, remove six (6) 1-1/4" coax.

On July 23, 2018, we inquired with the Town of Fairfield Plan & Zoning Department on the original zoning document. We do have a copy of the original building permit dated October 27, 2000.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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.S.C.A. § 16-50j-73, a copy of this letter is being sent to First-Selectman Michael C. Tetreau, Town of Fairfield, Planning Director Mr. Jim Wendt Town of Fairfield, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

Melanie A. Bachman

July 25, 2018

Page 2

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed 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: Jeffrey Barbadora.

Sincerely,



Jeffrey Barbadora

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

Jeff.Barbadora@crowncastle.com

Attachments:

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: First-Selectman Michael C. Tetreau
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

R-K Black Rock I LLC
C/O Scott B Retzliff & Associates
PO Box 790830
San Antonio, TX 78279-0830

Town Plan & Zoning Department Mr. Jim Wendt
Town of Fairfield
725 Old Post Road
Fairfield, CT 06824

Barbadora, Jeff

From: Hanlon, Dashanna
Sent: Monday, July 23, 2018 1:00 PM
To: jwendt@fairfieldct.org
Cc: Barbadora, Jeff
Subject: Original Zoning: 2189-2215 Black Rock Turnpike, Fairfield, CT

Good Afternoon,

I have an inquiry regarding original zoning documents for a tower and I am hoping you can provide more information.

We are applying for CSC Zoning Approval for tower modifications and new requirements ask that we procure original zoning documents from the jurisdiction, if possible. However, if these documents are not available, please let me know.

The tower is located at 2189-2215 Black Rock Turnpike and according to lease documents this was have been approved around 2005– Global Signal owns the property and signed the lease at that time.

If you have any questions, please don't hesitate to call or e-mail me.

Thank you,
Dashanna

DASHANNA HANLON
Real Estate Project Coordinator
T: (781) 970-0067 | M: (571) 241-0984



12 Gill Street, Suite 5800, Woburn, MA 01801
CrownCastle.com

BUILDING PERMIT
TOWN OF FAIRFIELD
BUILDING DEPARTMENT
(203) 256-3036

POST
INSPICUOUSLY

Permit No. 32065 BUI
Issued Date 27-OCT-00

Map: 076 Lot: 350

Location: 2215 BLACK ROCK TURNPIKE

Owner's Name & Address: SUN REALTY ASSOCIATES LLC
1877 BLACK ROCK TPK
FAIRFIELD CT 06430

Class of Work - Addition
Type of Occupancy - MISCELLANEOUS
Instruction Type -

Description: FLAGPOLE ONLY/ NO EXTERIOR ANTENNA

Contractor: SPRINT PCS
41 SEGUIN DRIVE

WORK TO BE DONE ACCORDING TO PLANS AND SPECIFICATIONS FILED WITH THE BUILDING DEPT. ALL TOWN ORDINANCES AND BUILDING REGULATIONS AND STATE LAWS SHALL BE IMPLIED WITH.

Estimated value of work by Building Official	\$110,000.00	Fee	\$929.60
		Pen	\$.00
		Total	\$929.60

RECORD OF PERMITS AND INSPECTIONS

Grading/Foundation Inspection..	Date.	Approved	Yes	No
Structural Framing Inspection.....	Date.....	Approved	Yes	No
Electrical Inspection.....	Date.....	Approved	Yes	No
Plumbing Inspection.....	Date.....	Approved	Yes	No
Roofing Inspection.....	Date.....	Approved	Yes	No
Insulation Inspection.....	Date.....	Approved	Yes	No
Approved for Covering.....	Date.....	Approved	Yes	No

FINAL INSPECTION MUST BE CALLED FOR AND A CERTIFICATE OF OCCUPANCY OBTAINED BEFORE THIS BUILDING IS OCCUPIED.

PER SEC. 29-265 STATE BUILDING CODE

JAMES GILLERAN
BUILDING OFFICIAL

RECORD OF APPROVALS

- HISTORICAL
- HEALTH
- SEPTIC TANK #
- SEWER
- ENGINEERING
- CONSERVATION

**FAIRFIELD FIRE DEPARTMENT
FIRE MARSHAL**

PLANS CHECKED 10/20/00

SIGNED _____

DO NOT BELIEVE THE
OF THEIR
WITH ALL

FOR OFFICE USE ONLY

RECORD OF FINAL INSPECTIONS

- Asbestos Date
- Footings Date
- Foundation Date
- Framing Date
- Plumbing Date
- Sprinkler Date
- Electrical Date
- Smoke Detector Date
- Insulation Date
- Mechanical Date
- Certificate of Occupancy Date

TAX COLLECTOR

**Town of Fairfield
Real Estate Taxes Paid**

Tax Office Date

C/M 10/20/00

PLANNING & ZONING

**APPROVED
FOR ZONING COMPLIANCE**

FOR Flag Pole only No other
antenna

10/20/00

[Signature]
Zoning Enforcement Officer

FAIRFIELD FIRE-RESCUE

140 REEF ROAD
FAIRFIELD, CONNECTICUT 06430

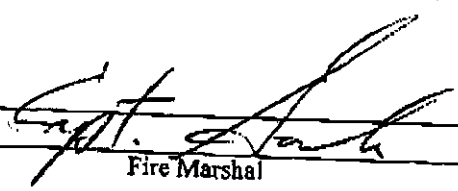
OFFICE OF THE FIRE MARSHAL

PHONE: (203) 254-4720

PLAN REVIEW REMARKS

Prop. Name:	Behind Old Navy	Address:	2189 Black Rock Tpke
Owner:	Sun Realty	Architect:	URS Corp.
Contact	Andrew Sabetta	Phone:	203-641-4005
PLAN #	00-10-20-01	DATE REVIEWED:	10/20/00
		BY:	George Gomola

Installing stealth flagpole cell antenna behind Einestien Bagel. Installation will not impied FD access to rear of building - 20' access corridor will be maintained. - Contractor will call 254-4700 when construction compromises FD access - will call again when access is restored.



 Fire Marshal 10/20/00

Created on 10/20/00 9:33 AM

Date

2181 BLACK ROCK TURNPIKE

Location 2181 BLACK ROCK TURNPIKE

Mblu 76/ 349/ //

Acct# 09518

Owner R-K BLACK ROCK I LLC

Assessment \$13,322,470

Appraisal \$19,032,100

PID 6727

Building Count 3

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$13,894,100	\$5,138,000	\$19,032,100

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$9,725,870	\$3,596,600	\$13,322,470

Owner of Record

Owner R-K BLACK ROCK I LLC
Co-Owner C/O SCOTT B RETZLOFF & ASSOCIATES
Address P O BOX 790830
SAN ANTONIO, TX 78279-0830

Sale Price \$24,487,732
Certificate
Book & Page 5112/244-
Sale Date 03/14/2014
Instrument 25

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
R-K BLACK ROCK I LLC	\$24,487,732		5112/244-	25	03/14/2014
SUN REALTY ASSOCIATES LLC	\$0		1999/ 117		06/11/1999
JERUSS J & S 1/3 KLEBAN A J &	\$0		952/ 222		12/29/1990

Building Information

Building 1 : Section 1

Year Built: 1964
Living Area: 59,089
Replacement Cost: \$10,603,676
Building Percent Good: 74
Replacement Cost Less Depreciation: \$7,846,700

Building Attributes

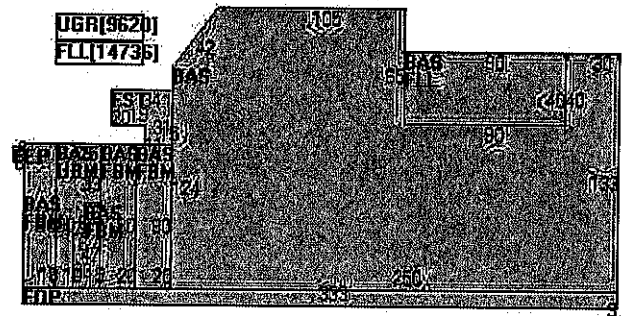
Field	Description
STYLE	Strip Stores
MODEL	Comm/Ind
Stories:	1
Occupancy	9
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Acrylic Stucco
Roof Structure	Flat
Roof Cover	Rubber
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Neighborhood Center C
Total Rooms	
Total Bedrms	00
Total Baths	0
Liv Area	
Effect Area	
1st Floor Use:	3235
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average

Building Photo



(<http://images.vgsi.com/photos2/FairfieldCTPhotos//\02\04\69\9>)

Building Layout



(<http://images.vgsi.com/photos2/FairfieldCTPhotos//Sketches/67>)

Building Sub-Areas (sq ft)

Code	Description	Gross Area	Living Area
BAS	First Floor	42,715	42,715
FLL	Finished Lower Level	18,336	13,752
FBM	Basement, Finished	5,243	2,622
FEP	Porch, Enclosed, Finished	48	0
FOP	Porch, Open, Finished	2,997	0
FST	Utility Storage, Finished	845	0
UBM	Basement, Unfinished	1,397	0
UGR	Garage, Under	9,620	0
		81,201	59,089

Building 2 : Section 1

Year Built: 2001
Living Area: 21,005
Replacement Cost: \$4,923,079

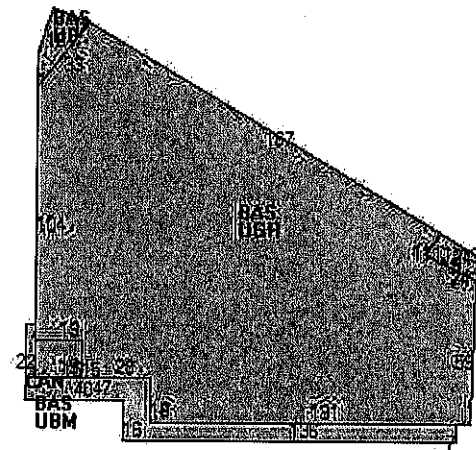
Building Percent 91
Good:
Replacement Cost
Less Depreciation: \$4,480,000

Building Photo



(<http://images.vgsi.com/photos2/FairfieldCTPhotos/\02\02\98/6>)

Building Layout



(<http://images.vgsi.com/photos2/FairfieldCTPhotos//Sketches/67>)

Building Attributes : Bldg 2 of 3	
Field	Description
STYLE	Strip Stores
MODEL	Comm/Ind
Stories:	1
Occupancy	5
Exterior Wall 1	Acrylic Stucco
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rubber
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Neighborhood Center C
Total Rooms	
Total Bedrms	00
Total Baths	0
Liv Area	
Effect Area	
1st Floor Use:	3235
Heat/AC	Heat/AC Pkgs
Frame Type	Fireprf Steel
Baths/Plumbing	Average

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	21,005	21,005
CAN	Canopy	1,598	0
UBM	Basement, Unfinished	794	0
UGR	Garage, Under	20,211	0
		43,608	21,005

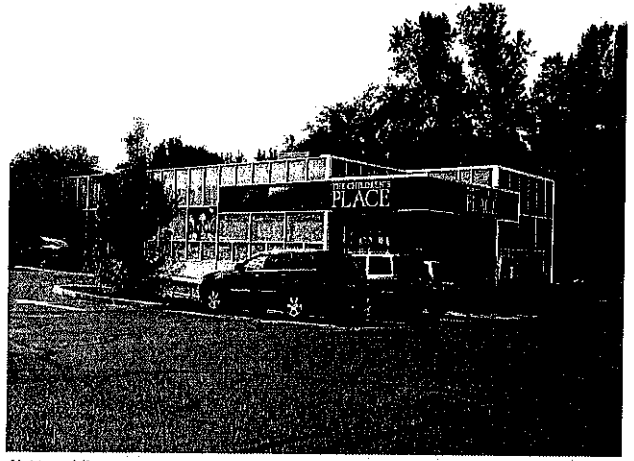
Building 3 : Section 1

Year Built: 2004
Living Area: 5,999
Replacement Cost: \$624,633
Building Percent 93
Good:
Replacement Cost
Less Depreciation: \$580,900

Building Attributes : Bldg 3 of 3	
Field	Description

STYLE	Store
MODEL	Comm/Ind
Stories:	1
Occupancy	2
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Brick/Masonry
Roof Structure	Flat
Roof Cover	Rubber
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Neighborhood Center C
Total Rooms	
Total Bedrms	00
Total Baths	3
Liv Area	
Effect Area	
1st Floor Use:	323L
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average

Building Photo



(<http://images.vgsi.com/photos2/FairfieldCTPhotos//\02\02\98\6>)

Building Layout



(<http://images.vgsi.com/photos2/FairfieldCTPhotos//Sketches/67>)

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	4,599	4,599
FBM	Basement, Finished	2,800	1,400
CAN	Canopy	361	0
FEP	Porch, Enclosed, Finished	156	0
UBM	Basement, Unfinished	730	0
		8,646	5,999

Extra Features

Extra Features				
Code	Description	Size	Value	Bldg #
ELV1	PASS ELEV	2 STOPS	\$65,100	3
SPR3	DRY	20974 S.F.	\$41,000	2
SPR1	SPRINKLERS-WET	20974 S.F.	\$43,900	2

SPR1	SPRINKLERS-WET	85430 S.F.	\$145,400	1
SPR2	WET/CONCEALED	7399 S.F.	\$17,900	3
ELV1	PASS ELEV	2 STOPS	\$63,700	2
ELV1	PASS ELEV	2 STOPS	\$51,800	1

Land

Land Use

Use Code 3235
Description Neighborhood Center C
Zone DCD
Neighborhood C3
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 5.84
Depth 0
Assessed Value \$3,596,600
Appraised Value \$5,138,000

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
LT4	W/FOUR LIGHTS			3 UNITS	\$5,900	1
LT1	LIGHTS-IN W/PL			2 UNITS	\$1,400	1
PAV1	PAVING-ASPHALT			150000 S.F.	\$472,500	1
SPL5	IGPOOL GUNITE			1500 S.F.	\$50,000	1
	UTIL BLDG - TELECOMM EQUIP			1	\$27,900	1

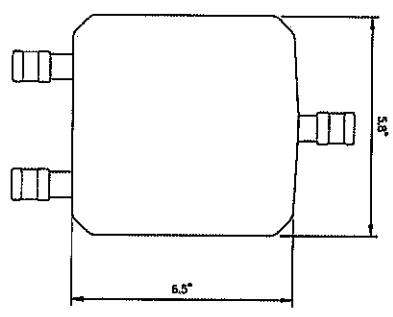
Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$13,894,100	\$5,138,000	\$19,032,100
2016	\$13,894,100	\$5,138,000	\$19,032,100
2015	\$13,894,100	\$5,138,000	\$19,032,100

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$9,725,870	\$3,596,600	\$13,322,470
2016	\$9,725,870	\$3,596,600	\$13,322,470
2015	\$9,725,870	\$3,596,600	\$13,322,470

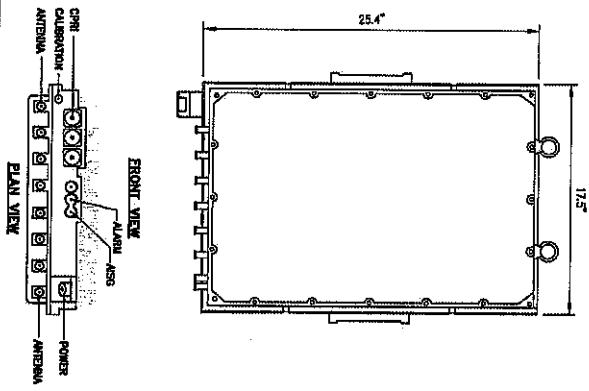
(c) 2016 Vision Government Solutions, Inc. All rights reserved.

RF-S-KIT-FDR96904/A/C-DL DIPLEXER
 RADIO COLOR GRAY
 DIMENSIONS: 17.5" H x 25.4" W x 5.7" D
 WEIGHT: 7.0 LBS
 CONNECTOR: 7/16 DIN FEMALE

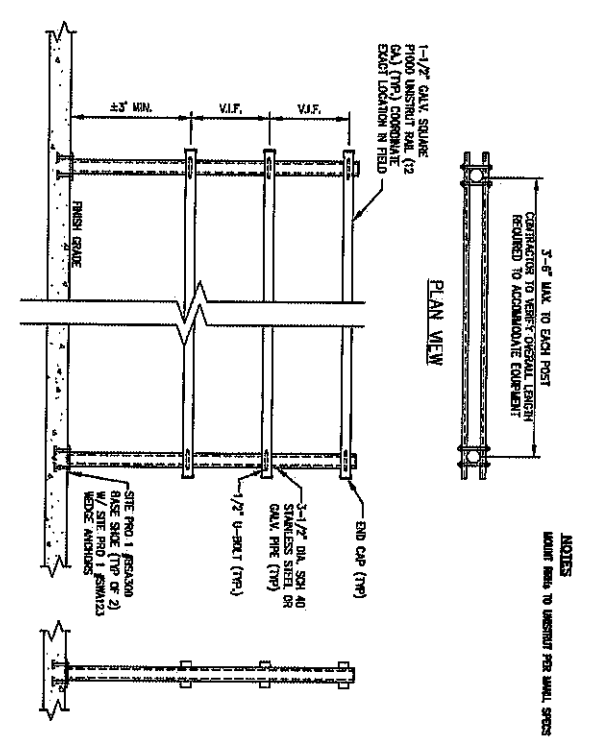


DIPLEXER DETAIL
 NO SCALE 1

RF-S-KIT-FDR96904/A/C-DL DIPLEXER
 RADIO COLOR GRAY
 DIMENSIONS: 17.5" H x 25.4" W x 5.7" D
 WEIGHT: 7.0 LBS
 CONNECTOR: 7/16 DIN FEMALE



FRONT VIEW
 SIDE VIEW
 NO SCALE 3



ANTENNA/CABLE SCHEDULE
 NO SCALE 2

FINAL EQUIPMENT CONFIGURATION					
SECTION	ANTENNA MANUFACTURER	ANTENNA MODEL	SIZE CENTER	HEIGHT	INSTALLER NAME AND ADDRESS (INCLUDE LOCATION)
1	COMSCOPE	DH175S-50T	6"	30'	2700 BROADWAY (2700B) 2700 BROADWAY (2700B) RR-2150-800 (800MKT)
2	COMSCOPE	DH175S-50T	6"	150'	2700 BROADWAY (2700B) 2700 BROADWAY (2700B) RR-2150-800 (800MKT)
3	COMSCOPE	DH175S-50T	6"	200'	2700 BROADWAY (2700B) 2700 BROADWAY (2700B) RR-2150-800 (800MKT)

FEEDER CABLES					
MANUFACTURER	MODEL	LENGTH	QTY	QTY	QTY
COMSCOPE	ALVS-50T COAX	150'	1	1	1

FRONT VIEW
 SIDE VIEW
 NO SCALE 4

PLANS PROVIDED BY:
Sprint
 8300 Sprint Parkway
 Overland Park, Kansas 66201

PLANS REVIEWED BY:
INFINIGY
 FROM ZERO TO INFINIGY
 The solutions are endless
 1011 South 111th Street, Suite 111
 Overland Park, KS 66209
 www.infinigy.com
 816-351-1111
 03/18/2018 09:28:00

EXHIBITING LICENSE
CROWN CASTLE

STATE OF KANSAS
 PROFESSIONAL ENGINEER
 JOHN S. STREIBER
 License No. 11111
 Expires 03/31/2018

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REVISION	DESCRIPTION	DATE	BY	REB
1	ISSUE FOR CONSTRUCTION	03/18/2018	JSS	1
2	REVISION	03/18/2018	JSS	1
3	REVISION	03/18/2018	JSS	1

SHEET NUMBER:
**FAIRFIELD 2/
 SUN REALTY**
 SITE ADDRESS:
CT33XC611

SHEET ADDRESS:
**2189-2215 BLACK ROCK TRKZ
 FAIRFIELD, CT 06432**
 SHEET DESCRIPTION:
**EQUIPMENT &
 MOUNTING DETAILS**

SHEET NUMBER:
A-4

PLANS PREPARED BY:



8500 South Parkway
Overland Park, Kansas 66201

PLANS PREPARED BY:



FROM ZERO TO INFINIGY

This professional seal certifies
that I, the undersigned, am a duly
licensed Professional Engineer in
the State of Kansas. I am not
prohibited from practicing my
profession in this State.
www.infinigy.com
www.kan.state.gov
Exp. Date: 05-27-20

P.L.A. NUMBER:



ENGINEERING LICENSE:



DRAWING NUMBER:

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SPRINT.

REVISION:	DATE	BY	REASON
ISSUED FOR CONSTRUCTION	05/27/20	S. J.	
CLIENT COMMENTS	05/27/20	SPJ	
ISSUED FOR PERMITS	05/27/20	SPJ	

SITE NAME:
**FAIRFIELD 2/
SUN REALTY**

WITH CHANGE:

CT33XC611

RTV ADDRESS:

**2169-2215 BLACK ROCK TPKE
FAIRFIELD, CT 06432**

DISTRICT IDENTIFICATION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-6

DETAIL, NOT USED

NO SCALE

1



1500 Sprint Parkway
Overland Park, Kansas 66261

15000 PROPOSED BY:
INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

1024 Westport Plaza #1, Albany, NY 12208

Phone: 518-486-1100 Fax: 518-486-1101

www.infinigy.com

2008 INFINIGY 08-00



PROPOSED BY:
CROWN CASTLE



DESIGNED BY:
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REVISIONS	DATE	BY	HOW
1			
2			
3			
4			
5			

SITE NAME:
**FARFIELD 2/
SUN REALTY**

SITE ADDRESS:
CT13XC611

SITE ADDRESS:
**2189-2215 BLACK ROCK TOWER
FARFIELD, CT 06432**

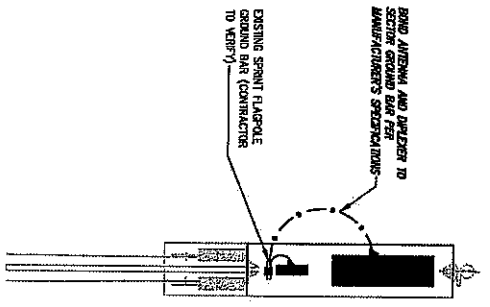
SHEET DESCRIPTION:
**ELECTRICAL &
GROUNDING DETAILS**

SHEET NUMBER:
E-1

PLAN NOT USED

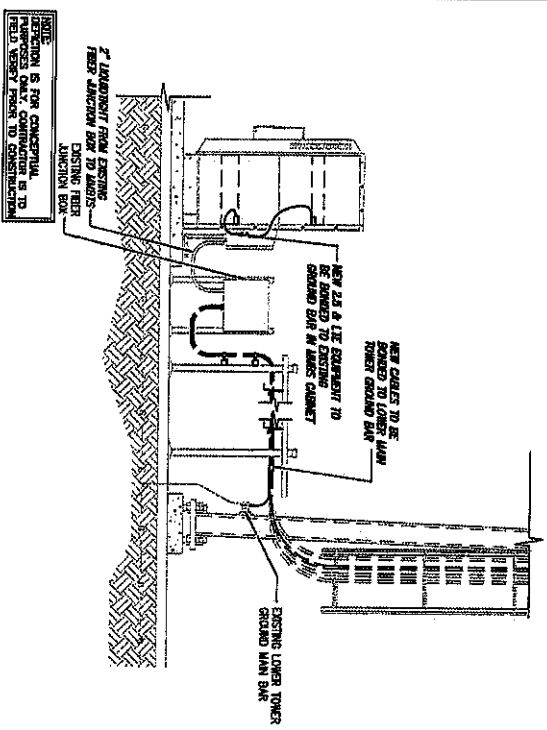
NO SCALE 1

- LEGEND:
- EXISTING GROUND BARS
 - CAPPED CONNECTION (GROUNDED WELD)
 - ▲ MECHANICAL CONNECTION
 - GROUND ROD
 - CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

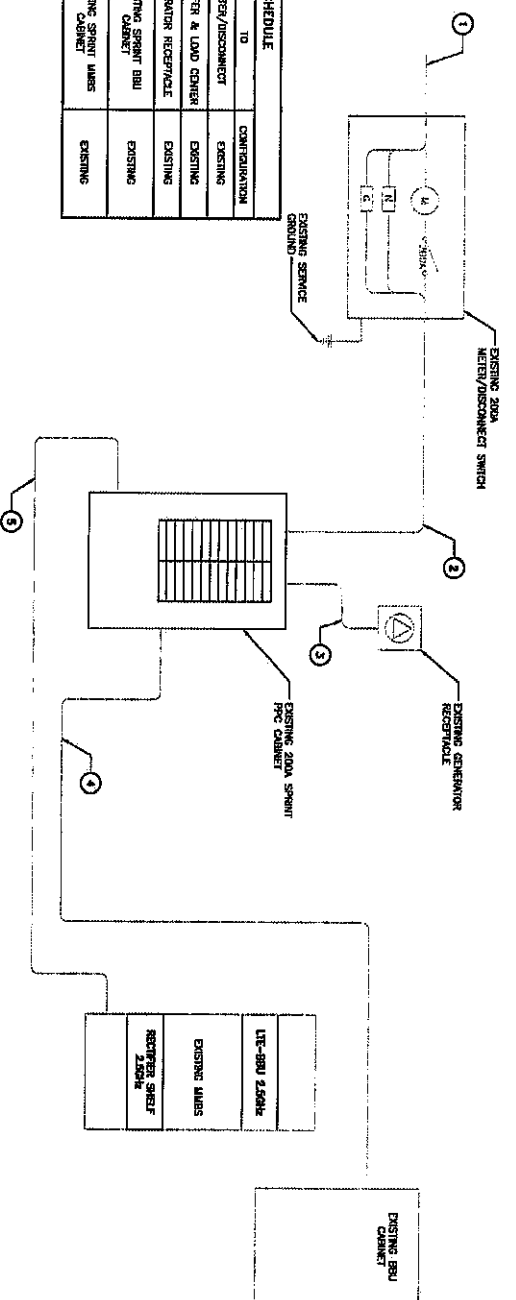


TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

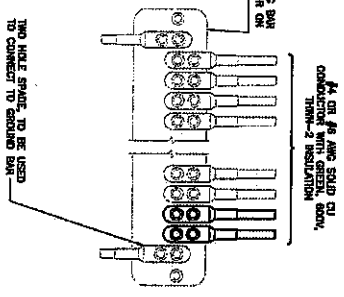
NO SCALE 3

NOTES
 DO NOT REFERENCE ALL SPECS FOR
 CONNECTIONS TO THE POWER SUPPLY
 FROM ALL COMMERCIAL BUILDINGS
 FROM ALL COMMERCIAL BUILDINGS

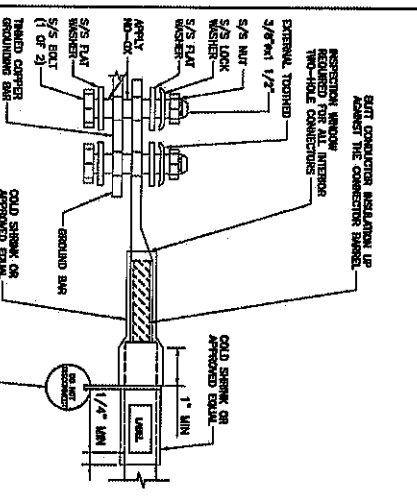
NO	FROM	TO	CONTINUATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT RIB	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT LINES	EXISTING



ELECTRICAL ONE-LINE DIAGRAM



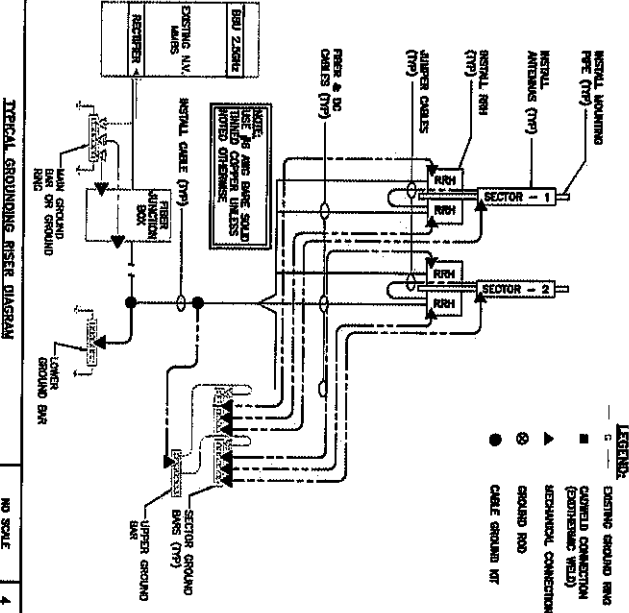
NOTES
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INSIDE LUG.
 2. IF STAINLESS STEEL BARS ARE ENCOUNTERED, CONTACT SPRINT OR FOR REPLACEMENT THROUGH ROD KIT.



INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

TWO-HOLE LUG

TYPICAL GROUNDING RISER DIAGRAM



LEGEND
 □ EXISTING GROUND RING
 ■ GROUND CONNECTION (EXTERIOR WELD)
 ▲ MECHANICAL CONNECTION
 ⊙ GROUND ROD
 ● GROUND KIT

Sprint
 6500 Sprint Parkway
 Overland Park, Kansas 66201

INFINIGY
 FROM ZERO TO INFINIGY
 The solutions you employ
 10321 Westwood Street #1, Liberty, MO 64068
 Phone: 816-432-1111
 Fax: 816-432-1112
 Web: www.infigny.com

CROWN CASTLE

PROFESSIONAL ENGINEER
 STATE OF MISSOURI
 LICENSE NO. 264708
 DATE: MAY 2, 2008

FAIRFIELD 2/ SUN REALTY
 CT135XC611

DATE: 02/21/13
 TIME: 10:00 AM
 DRAWN BY: J. B. BROWN
 CHECKED BY: J. B. BROWN
 DATE: 02/21/13
 TIME: 10:00 AM

DATE: 02/21/13
 TIME: 10:00 AM

DATE: 02/21/13
 TIME: 10:00 AM

DATE: 02/21/13
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DATE: 02/21/13
 TIME: 10:00 AM

Date: June 27, 2018

Rebecca Klein
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Modification Report

Carrier Designation: *Sprint PCS Co-Locate*
Carrier Site Number: CT33XC611
Carrier Site Name: CT33XC611

Crown Castle Designation:
Crown Castle BU Number: 876398
Crown Castle Site Name: FAIRFIELD 2 / SUN REALITY
Crown Castle JDE Job Number: 461705
Crown Castle Work Order Number: 1569599
Crown Castle Order Number: 407632 Rev. 1

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37518-1588.002.7700

Site Data: 2189-2215 Black Rock Tpke., FAIRFIELD, Fairfield County, CT
Latitude 41° 10' 52.33", Longitude -73° 15' 14.69"
90 Foot - Monopole

Dear Ms. Klein,

Paul J. Ford and Company is pleased to submit this "Structural Modification 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 1198942, in accordance with order 407632, revision 1.

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:

LC4.5: Modified Structure w/ Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1 were used in this analysis.

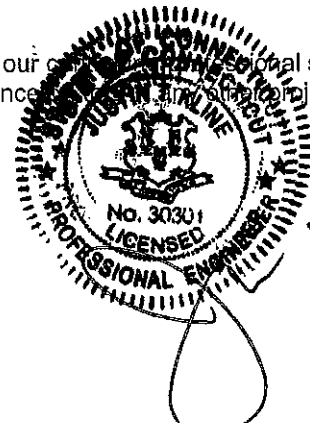
All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at Paul J. Ford and Company appreciate the opportunity of providing our professional services to you and Crown Castle. If you have any questions or need further assistance on any of our projects please give us a call.

Respectfully submitted by:


Shardul Kadam, P.E.
Project Engineer I

BKK



6-27-18

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1) INTRODUCTION

This tower is a 92 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in October of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1 were used in this analysis.

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
87.0	87.0	3	commscope	DHHTT65B-3XR	12	7/8	-
	86.0	3	rfs celwave	KIT-FD9R6004/1C-DL			
		1	misc	44"Ø x 8' Concealment			
85.0	3	rfs celwave	KIT-FD9R6004/1C-DL				
78.0	78.0	1	misc	44"Ø x 8' Concealment	-	-	-

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
87.0	86.0	3	ems wireless	RR90-17-00DP	6	1-1/4	2
		1	misc	20.25"Ø x 8' Concealment			
79.0	80.0	3	kathrein	AP9-850/090	12	7/8	3
	76.0	3	kathrein	AP9-850/090			
78.0	78.0	1	misc	20.25"Ø x 8' Concealment	--	--	2
72.0	73.0	3	samsung telecommunications	FDD_R6_RRH	3	1/4 5/16	1
	72.0	1	misc	48.75"Ø x 6.2' Concealment	3		

Notes:

- 1) Existing Equipment
- 2) Equipment To Be Removed
- 3) Abandoned 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)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 10/10/2000	1531968	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 8027, 10/13/2000	2069482	CCISITES
4-TOWER MAPPING	TEP, 81227.135272, 10/20/2017	2069490	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	PJF, 37518-1588.001.7805, 04/23/2018	7521318	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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) For proposed modifications: monopole will be modified in conformance with the attached proposed modification drawings.
- 5) As per reference analysis by PJF, the flange has adequate capacity for the current loading.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	90 - 82	Pole	TP4.5x4.5x0.674	1	-0.638	255.191	30.7	Pass
L2	82 - 74	Pole	TP4.5x4.5x0.674	2	-2.335	255.191	84.5	Pass
L3	74 - 67.83	Pole	TP20.3223x19.5x0.188	3	-4.139	876.861	10.5	Pass
L4	67.83 - 36.17	Pole	TP24.87x20.3223x0.188	4	-5.887	994.531	26.1	Pass
L5	36.17 - 0	Pole	TP29.5x23.9668x0.25	5	-9.803	1651.140	31.4	Pass
							Summary	
						Pole (L2)	84.5	Pass
						Rating =	84.5	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC4.5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
2	Flange Connection	74	Sufficient	Pass
1	Anchor Rods	0	40.1	Pass
1	Base Plate	0	56.2	Pass
1	Base Foundation Structural Steel	0	28.7	Pass
1	Base Foundation Soil Interaction	0	32.2	Pass

Structure Rating (max from all components) =	84.5%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) See assumption # 5

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the proposed modifications per the attached drawings.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 97.00 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.0000 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50.00 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60.00 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- 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 | <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. | <ul style="list-style-type: none"> 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 Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption |
| <ul style="list-style-type: none"> Include Bolts In Member Capacity | <ul style="list-style-type: none"> Autocalc Torque Arm Areas | <ul style="list-style-type: none"> <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
| <ul style="list-style-type: none"> Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | |

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	90.0000-82.0000	8.0000	0.000	Round	4.5000	4.5000	0.6740		A53-B-35 (35 ksi)
L2	82.0000-74.0000	8.0000	0.000	Round	4.5000	4.5000	0.6740		A53-B-35 (35 ksi)
L3	74.0000-67.8300	6.1700	0.000	18	19.5000	20.3223	0.1880	0.7520	A572-65 (65 ksi)
L4	67.8300-36.1700	31.6600	3.670	18	20.3223	24.8700	0.1880	0.7520	A572-65 (65 ksi)
L5	36.1700-0.0000	39.8400		18	23.9668	29.5000	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	4.5000	8.1013	15.2837	1.3735	2.2500	6.7927	30.5673	4.0482	0.0000	0
	4.5000	8.1013	15.2837	1.3735	2.2500	6.7927	30.5673	4.0482	0.0000	0
L2	4.5000	8.1013	15.2837	1.3735	2.2500	6.7927	30.5673	4.0482	0.0000	0
	4.5000	8.1013	15.2837	1.3735	2.2500	6.7927	30.5673	4.0482	0.0000	0
L3	19.8008	11.5237	542.9802	6.8558	9.9060	54.8133	1086.6748	5.7629	3.1011	16.495
	20.6358	12.0144	615.3353	7.1477	10.3237	59.6040	1231.4803	6.0083	3.2458	17.265
L4	20.6358	12.0144	615.3353	7.1477	10.3237	59.6040	1231.4803	6.0083	3.2458	17.265
	25.2537	14.7280	1133.5567	8.7621	12.6340	89.7230	2268.6051	7.3654	4.0462	21.523
L5	24.8541	18.8193	1337.3792	8.4195	12.1752	109.8450	2676.5182	9.4114	3.7782	15.113
	29.9551	23.2099	2508.7766	10.3837	14.9860	167.4080	5020.8543	11.6071	4.7520	19.008

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 90.0000-82.0000				1	0	1			
L2 82.0000-74.0000				1	0	1			
L3 74.0000-67.8300				1	0	1			
L4 67.8300-36.1700				1	1	1			
L5 36.1700-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _{AA}	Weight
				ft		ft ² /ft	plf
LDF5-50A(7/8)	D	No	Inside Pole	87.0000 - 0.0000	12	No Ice	0.0000
						1/2" Ice	0.0000
						1" Ice	0.0000

1420A(1/4)	D	No	Inside Pole	72.0000 - 0.0000	3	No Ice	0.0000
						1/2" Ice	0.0000
						1" Ice	0.0000
9207(5/16)	D	No	Inside Pole	72.0000 - 0.0000	3	No Ice	0.0000
						1/2" Ice	0.0000
						1" Ice	0.0000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L1	90.0000-82.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	82.0000-74.0000	D	0.000	0.000	0.000	0.000	0.020
		A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
L3	74.0000-67.8300	C	0.000	0.000	0.000	0.000	0.000
		D	0.000	0.000	0.000	0.000	0.032
		A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L4	67.8300-36.1700	D	0.000	0.000	0.000	0.000	0.026
		A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L5	36.1700-0.0000	D	0.000	0.000	0.000	0.000	0.134
		A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
D	0.000	0.000	0.000	0.000	0.153		

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	90.0000-82.0000	A	1.651	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.020
L2	82.0000-74.0000	A	1.635	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.032
L3	74.0000-67.8300	A	1.619	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.026
L4	67.8300-36.1700	A	1.569	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.134
L5	36.1700-0.0000	A	1.408	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.153

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	90.0000-82.0000	0.0000	0.0000	0.0000	0.0000
L2	82.0000-74.0000	0.0000	0.0000	0.0000	0.0000
L3	74.0000-67.8300	0.0000	0.0000	0.0000	0.0000
L4	67.8300-36.1700	0.0000	0.0000	0.0000	0.0000
L5	36.1700-0.0000	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	Weight K	F _x	F _z	Wind Force	C _A A _C	
					K	K	K	ft ²	
Flag	90.0000	0.000	0.000	No Ice	0.039	0.000	0.000	0.360	14.9134
				Ice	0.620	0.000	0.000	0.097	15.1331
				Service	0.039	0.000	0.000	0.138	16.6680

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustmen t °	Placement ft	C _A A _A Front	C _A A _A Side	Weight	
			Horz Lateral ft	Vert ft			ft ²	ft ²	K	

DHHTT65B-3XR	B	From Leg	0.5000	0.000	0.000	87.0000	No Ice	0.0000	0.0000	0.045
							1/2" Ice	0.0000	0.0000	0.096
							1" Ice	0.0000	0.0000	0.152
DHHTT65B-3XR	C	From Leg	0.5000	0.000	0.000	87.0000	No Ice	0.0000	0.0000	0.045
							1/2" Ice	0.0000	0.0000	0.096
							1" Ice	0.0000	0.0000	0.152
DHHTT65B-3XR	D	From Leg	0.5000	0.000	0.000	87.0000	No Ice	0.0000	0.0000	0.045
							1/2" Ice	0.0000	0.0000	0.096
							1" Ice	0.0000	0.0000	0.152
(2) KIT-FD9R6004/1C-DL	B	From Leg	0.5000	0.000	-1.000	87.0000	No Ice	0.0000	0.0000	0.006
							1/2" Ice	0.0000	0.0000	0.010
							1" Ice	0.0000	0.0000	0.015
KIT-FD9R6004/1C-DL	C	From Leg	0.5000	0.000	-1.000	87.0000	No Ice	0.0000	0.0000	0.006
							1/2" Ice	0.0000	0.0000	0.010
							1" Ice	0.0000	0.0000	0.015
KIT-FD9R6004/1C-DL	C	From Leg	0.5000	0.000	-2.000	87.0000	No Ice	0.0000	0.0000	0.006
							1/2" Ice	0.0000	0.0000	0.010
							1" Ice	0.0000	0.0000	0.015
(2) KIT-FD9R6004/1C-DL	D	From Leg	0.5000	0.000	-2.000	87.0000	No Ice	0.0000	0.0000	0.006
							1/2" Ice	0.0000	0.0000	0.010
							1" Ice	0.0000	0.0000	0.015

FDD_R6_RRH	B	From Leg	0.5000	0.000	1.000	72.0000	No Ice	0.0000	0.0000	0.033
							1/2" Ice	0.0000	0.0000	0.045
							1" Ice	0.0000	0.0000	0.058
FDD_R6_RRH	C	From Leg	0.5000	0.000	1.000	72.0000	No Ice	0.0000	0.0000	0.033
							1/2" Ice	0.0000	0.0000	0.045
							1" Ice	0.0000	0.0000	0.058

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} A Front	C _{AA} A Side	Weight	
			Horz	Lateral						ft
FDD_R6_RRH	D	From Leg	0.5000		0.000	72.0000	No Ice	0.0000	0.0000	0.033
			0.000				1/2"	0.0000	0.0000	0.045
			1.000				Ice	0.0000	0.0000	0.058
						1" Ice				

Canister Load1	D	None			0.000	90.0000	No Ice	8.8000	8.8000	0.092
							1/2"	18.0000	18.0000	0.201
							Ice	18.4000	18.4000	0.312
						1" Ice				
Canister Load2	D	None			0.000	82.0000	No Ice	17.6000	17.6000	1.154
							1/2"	36.0000	36.0000	1.372
							Ice	36.8000	36.8000	1.594
						1" Ice				
Canister Load3	D	None			0.000	74.0000	No Ice	16.5147	16.5147	1.143
							1/2"	33.7459	33.7459	1.347
							Ice	34.4624	34.4624	1.555
						1" Ice				
Canister Load4	D	None			0.000	67.6700	No Ice	7.7147	7.7147	0.081
							1/2"	15.7459	15.7459	0.176
							Ice	16.0624	16.0624	0.273
						1" Ice				
Truck Ball	D	None			0.000	90.7500	No Ice	0.8836	0.8836	0.050
							1/2"	1.3783	1.3783	0.067
							Ice	1.5272	1.5272	0.087
						1" Ice				

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _Z	A _G	Face	A _F	A _R	A _{leg}	Leg %	C _{AA} A In Face	C _{AA} A Out Face
ft	ft		ksf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 90.0000-82.0000	86.0000	0.947	0.022	3.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
					D	0.000	0.000	0.00	0.000	0.000	
L2 82.0000-74.0000	78.0000	0.921	0.021	3.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
					D	0.000	0.000	0.00	0.000	0.000	
L3 74.0000-67.8300	70.8938	0.896	0.020	10.396	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
					D	0.000	0.000	0.00	0.000	0.000	
L4 67.8300-36.1700	51.8159	0.819	0.019	60.536	A	0.000	60.536	60.536	100.00	0.000	0.000
					B	0.000	60.536	60.536	100.00	0.000	0.000
					C	0.000	60.536	60.536	100.00	0.000	0.000
					D	0.000	60.536	60.536	100.00	0.000	0.000
L5 36.1700-0.0000	17.5240	0.7	0.016	82.602	A	0.000	82.602	82.602	100.00	0.000	0.000
					B	0.000	82.602	82.602	100.00	0.000	0.000
					C	0.000	82.602	82.602	100.00	0.000	0.000
					D	0.000	82.602	82.602	100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z ksf	t_z in	A_G ft ²	Face	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 90.0000-82.0000	86.0000	0.947	0.006	1.6508	5.201	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
						D	0.000	0.000	0.00	0.000	0.000	
L2 82.0000-74.0000	78.0000	0.921	0.006	1.6347	5.180	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
L3 74.0000-67.8300	70.8938	0.896	0.005	1.6192	12.061	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
						D	0.000	0.000	0.00	0.000	0.000	
L4 67.8300-36.1700	51.8159	0.819	0.005	1.5692	68.816	A	0.000	68.816	68.816	100.00	0.000	0.000
						B	0.000	68.816	100.00	0.000	0.000	
						C	0.000	68.816	100.00	0.000	0.000	
						D	0.000	68.816	100.00	0.000	0.000	
L5 36.1700-0.0000	17.5240	0.7	0.004	1.4080	92.062	A	0.000	92.062	92.062	100.00	0.000	0.000
						B	0.000	92.062	100.00	0.000	0.000	
						C	0.000	92.062	100.00	0.000	0.000	
						D	0.000	92.062	100.00	0.000	0.000	

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z ksf	A_G ft ²	Face	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 90.0000-82.0000	86.0000	0.947	0.007	3.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
					D	0.000	0.000	0.00	0.000	0.000	
L2 82.0000-74.0000	78.0000	0.921	0.007	3.000	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L3 74.0000-67.8300	70.8938	0.896	0.007	10.396	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
					D	0.000	0.000	0.00	0.000	0.000	
L4 67.8300-36.1700	51.8159	0.819	0.006	60.536	A	0.000	60.536	60.536	100.00	0.000	0.000
					B	0.000	60.536	100.00	0.000	0.000	
					C	0.000	60.536	100.00	0.000	0.000	
					D	0.000	60.536	100.00	0.000	0.000	
L5 36.1700-0.0000	17.5240	0.7	0.005	82.602	A	0.000	82.602	82.602	100.00	0.000	0.000
					B	0.000	82.602	100.00	0.000	0.000	
					C	0.000	82.602	100.00	0.000	0.000	
					D	0.000	82.602	100.00	0.000	0.000	

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	1.2 Dead+1.6 Wind 135 deg - No Ice
9	0.9 Dead+1.6 Wind 135 deg - No Ice
10	1.2 Dead+1.6 Wind 180 deg - No Ice
11	0.9 Dead+1.6 Wind 180 deg - No Ice
12	1.2 Dead+1.6 Wind 225 deg - No Ice
13	0.9 Dead+1.6 Wind 225 deg - No Ice
14	1.2 Dead+1.6 Wind 270 deg - No Ice
15	0.9 Dead+1.6 Wind 270 deg - No Ice
16	1.2 Dead+1.6 Wind 315 deg - No Ice
17	0.9 Dead+1.6 Wind 315 deg - No Ice
18	1.2 Dead+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
21	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
22	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
23	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
24	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
25	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
26	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 45 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 135 deg - Service
31	Dead+Wind 180 deg - Service
32	Dead+Wind 225 deg - Service
33	Dead+Wind 270 deg - Service
34	Dead+Wind 315 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	90 - 82	Pole	Max Tension	18	0.000	0.000	0.000
			Max. Compression	18	-2.517	-0.153	-0.153
			Max. Mx	6	-0.638	-7.947	-0.034
			Max. My	10	-0.638	-0.034	-7.947
			Max. Vy	6	1.001	-7.947	-0.034
			Max. Vx	10	1.001	-0.034	-7.947
			Max. Torque	24			
L2	82 - 74	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-5.038	-0.161	-0.161
			Max. Mx	6	-2.335	-21.850	-0.035
			Max. My	10	-2.335	-0.035	-21.850
			Max. Vy	6	1.763	-9.708	-0.034
			Max. Vx	10	1.763	-0.034	-9.708
			Max. Torque	24			
L3	74 - 67.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-7.944	-0.241	-0.241
			Max. Mx	6	-4.139	-36.402	-0.073
			Max. My	10	-4.139	-0.073	-36.402
			Max. Vy	6	2.357	-36.402	-0.073
			Max. Vx	10	2.357	-0.073	-36.402
			Max. Torque	20			
L4	67.83 - 36.17	Pole	Max Tension	1	0.000	0.000	0.000

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	36.17 - 0	Pole	Max. Compression	18	-11.319	-0.227	-0.227
			Max. Mx	6	-5.887	-125.736	-0.074
			Max. My	10	-5.887	-0.074	-125.736
			Max. Vy	6	3.754	-125.736	-0.074
			Max. Vx	10	3.754	-0.074	-125.736
			Max. Torque	24			0.006
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-17.297	-0.207	-0.207
			Max. Mx	6	-9.803	-305.920	-0.076
			Max. My	10	-9.803	-0.076	-305.920
			Max. Vy	6	5.300	-305.920	-0.076
			Max. Vx	10	5.300	-0.076	-305.920
			Max. Torque	24			0.006

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	17.297	0.001	0.001
	Max. H _x	14	9.806	5.295	0.000
	Max. H _z	2	9.806	0.000	5.295
	Max. M _x	2	305.769	0.000	5.295
	Max. M _z	6	305.920	-5.295	0.000
	Max. Torsion	24	0.006	1.234	-1.234
	Min. Vert	7	7.355	-5.294	0.000
	Min. H _x	6	9.806	-5.295	0.000
	Min. H _z	10	9.806	0.000	-5.295
	Min. M _x	10	-305.920	0.000	-5.295
	Min. M _z	14	-305.769	5.295	0.000
	Min. Torsion	20	-0.006	-1.234	1.234

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	8.172	-0.000	-0.000	0.058	-0.058	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	9.806	-0.000	-5.295	-305.769	-0.076	0.004
0.9 Dead+1.6 Wind 0 deg - No Ice	7.355	-0.000	-5.294	-303.316	-0.056	0.003
1.2 Dead+1.6 Wind 45 deg - No Ice	9.806	3.744	-3.744	-216.210	-216.361	0.005
0.9 Dead+1.6 Wind 45 deg - No Ice	7.355	3.744	-3.744	-214.502	-214.613	0.004
1.2 Dead+1.6 Wind 90 deg - No Ice	9.806	5.295	-0.000	0.076	-305.920	0.004
0.9 Dead+1.6 Wind 90 deg - No Ice	7.355	5.294	-0.000	0.056	-303.427	0.003
1.2 Dead+1.6 Wind 135 deg - No Ice	9.806	3.744	3.744	216.361	-216.361	0.000
0.9 Dead+1.6 Wind 135 deg - No Ice	7.355	3.744	3.744	214.613	-214.613	0.000
1.2 Dead+1.6 Wind 180 deg - No Ice	9.806	-0.000	5.295	305.920	-0.076	-0.004
0.9 Dead+1.6 Wind 180 deg - No Ice	7.355	-0.000	5.294	303.427	-0.056	-0.003
1.2 Dead+1.6 Wind 225 deg - No Ice	9.806	-3.744	3.744	216.361	216.210	-0.005
0.9 Dead+1.6 Wind 225 deg	7.355	-3.744	3.744	214.613	214.502	-0.004

Load Combination	Vertical	Shear _x	Shear _z	Overturing Moment, M _x	Overturing Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
- No Ice						
1.2 Dead+1.6 Wind 270 deg	9.806	-5.295	-0.000	0.076	305.769	-0.004
- No Ice						
0.9 Dead+1.6 Wind 270 deg	7.355	-5.294	-0.000	0.056	303.316	-0.003
- No Ice						
1.2 Dead+1.6 Wind 315 deg	9.806	-3.744	-3.744	-216.210	216.210	0.000
- No Ice						
0.9 Dead+1.6 Wind 315 deg	7.355	-3.744	-3.744	-214.502	214.502	0.000
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	17.297	-0.001	-0.001	0.207	-0.207	0.000
1.2 Dead+1.0 Wind 0	17.297	-0.000	-1.745	-100.757	-0.271	0.004
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 45	17.297	1.234	-1.234	-71.166	-71.708	0.006
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90	17.297	1.745	-0.000	0.271	-101.299	0.004
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 135	17.297	1.234	1.234	71.708	-71.708	0.000
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	17.297	-0.000	1.745	101.299	-0.271	-0.004
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 225	17.297	-1.234	1.234	71.708	71.166	-0.006
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	17.297	-1.745	-0.000	0.271	100.757	-0.004
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 315	17.297	-1.234	-1.234	-71.166	71.166	0.000
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	8.172	-0.000	-1.147	-66.372	-0.062	0.001
Dead+Wind 45 deg - Service	8.172	0.811	-0.811	-46.914	-47.038	0.001
Dead+Wind 90 deg - Service	8.172	1.147	-0.000	0.062	-66.496	0.001
Dead+Wind 135 deg - Service	8.172	0.811	0.811	47.038	-47.038	0.000
Dead+Wind 180 deg - Service	8.172	-0.000	1.147	66.496	-0.062	-0.001
Dead+Wind 225 deg - Service	8.172	-0.811	0.811	47.038	46.914	-0.001
Dead+Wind 270 deg - Service	8.172	-1.147	-0.000	0.062	66.372	-0.001
Dead+Wind 315 deg - Service	8.172	-0.811	-0.811	-46.914	46.914	0.000

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-8.172	0.000	0.000	8.172	0.000	0.000%
2	0.000	-9.806	-5.295	0.000	9.806	5.295	0.007%
3	0.000	-7.355	-5.295	0.000	7.355	5.294	0.012%
4	3.744	-9.806	-3.744	-3.744	9.806	3.744	0.004%
5	3.744	-7.355	-3.744	-3.744	7.355	3.744	0.003%
6	5.295	-9.806	0.000	-5.295	9.806	0.000	0.007%
7	5.295	-7.355	0.000	-5.294	7.355	0.000	0.012%
8	3.744	-9.806	3.744	-3.744	9.806	-3.744	0.004%
9	3.744	-7.355	3.744	-3.744	7.355	-3.744	0.003%
10	0.000	-9.806	5.295	0.000	9.806	-5.295	0.007%
11	0.000	-7.355	5.295	0.000	7.355	-5.294	0.012%
12	-3.744	-9.806	3.744	3.744	9.806	-3.744	0.004%
13	-3.744	-7.355	3.744	3.744	7.355	-3.744	0.003%
14	-5.295	-9.806	0.000	5.295	9.806	0.000	0.007%
15	-5.295	-7.355	0.000	5.294	7.355	0.000	0.012%
16	-3.744	-9.806	-3.744	3.744	9.806	3.744	0.004%
17	-3.744	-7.355	-3.744	3.744	7.355	3.744	0.003%
18	0.000	-17.297	0.000	0.001	17.297	0.001	0.004%
19	0.000	-17.297	-1.745	0.000	17.297	1.745	0.002%
20	1.234	-17.297	-1.234	-1.234	17.297	1.234	0.002%
21	1.745	-17.297	0.000	-1.745	17.297	0.000	0.002%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
22	1.234	-17.297	1.234	-1.234	17.297	-1.234	0.002%
23	0.000	-17.297	1.745	0.000	17.297	-1.745	0.002%
24	-1.234	-17.297	1.234	1.234	17.297	-1.234	0.002%
25	-1.745	-17.297	0.000	1.745	17.297	0.000	0.002%
26	-1.234	-17.297	-1.234	1.234	17.297	1.234	0.002%
27	0.000	-8.172	-1.148	0.000	8.172	1.147	0.006%
28	0.811	-8.172	-0.811	-0.811	8.172	0.811	0.006%
29	1.148	-8.172	0.000	-1.147	8.172	0.000	0.006%
30	0.811	-8.172	0.811	-0.811	8.172	-0.811	0.006%
31	0.000	-8.172	1.148	0.000	8.172	-1.147	0.006%
32	-0.811	-8.172	0.811	0.811	8.172	-0.811	0.006%
33	-1.148	-8.172	0.000	1.147	8.172	0.000	0.006%
34	-0.811	-8.172	-0.811	0.811	8.172	0.811	0.006%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	16	0.00009926	0.00008503
3	Yes	15	0.00013169	0.00013811
4	Yes	17	0.00000001	0.00013214
5	Yes	17	0.00000001	0.00011044
6	Yes	16	0.00009928	0.00008515
7	Yes	15	0.00013170	0.00013825
8	Yes	17	0.00000001	0.00013258
9	Yes	17	0.00000001	0.00011072
10	Yes	16	0.00009928	0.00008515
11	Yes	15	0.00013170	0.00013825
12	Yes	17	0.00000001	0.00013214
13	Yes	17	0.00000001	0.00011044
14	Yes	16	0.00009926	0.00008503
15	Yes	15	0.00013169	0.00013811
16	Yes	17	0.00000001	0.00013171
17	Yes	17	0.00000001	0.00011017
18	Yes	6	0.00000001	0.00002862
19	Yes	17	0.00000001	0.00003564
20	Yes	17	0.00000001	0.00004396
21	Yes	17	0.00000001	0.00003642
22	Yes	17	0.00000001	0.00004478
23	Yes	17	0.00000001	0.00003642
24	Yes	17	0.00000001	0.00004396
25	Yes	17	0.00000001	0.00003564
26	Yes	17	0.00000001	0.00004314
27	Yes	14	0.00000001	0.00007085
28	Yes	14	0.00000001	0.00006594
29	Yes	14	0.00000001	0.00007125
30	Yes	14	0.00000001	0.00006617
31	Yes	14	0.00000001	0.00007125
32	Yes	14	0.00000001	0.00006594
33	Yes	14	0.00000001	0.00007085
34	Yes	14	0.00000001	0.00006571

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 82	6.790	30	1.087	0.000
L2	82 - 74	5.046	30	0.949	0.000
L3	74 - 67.83	3.814	30	0.445	0.000
L4	67.83 - 36.17	3.250	30	0.425	0.000
L5	39.84 - 0	1.182	30	0.263	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
90.7500	Truck Ball	30	6.790	1.087	0.000	2076
90.0000	Canister Load1	30	6.790	1.087	0.000	2076
87.0000	DHHTT65B-3XR	30	6.104	1.079	0.000	2076
82.0000	Canister Load2	30	5.046	0.949	0.000	1411
74.0000	Canister Load3	30	3.814	0.445	0.000	1323
72.0000	FDD_R6_RRH	30	3.607	0.403	0.000	1765
67.6700	Canister Load4	30	3.238	0.427	0.000	10385

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 82	30.813	10	4.852	0.001
L2	82 - 74	23.029	8	4.261	0.001
L3	74 - 67.83	17.474	8	2.033	0.000
L4	67.83 - 36.17	14.901	8	1.945	0.000
L5	39.84 - 0	5.429	8	1.209	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
90.7500	Truck Ball	10	30.813	4.852	0.001	485
90.0000	Canister Load1	10	30.813	4.852	0.001	485
87.0000	DHHTT65B-3XR	8	27.755	4.826	0.001	485
82.0000	Canister Load2	8	23.029	4.261	0.001	328
74.0000	Canister Load3	8	17.474	2.033	0.000	299
72.0000	FDD_R6_RRH	8	16.531	1.848	0.000	398
67.6700	Canister Load4	8	14.841	1.952	0.000	2329

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _c ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	90 - 82 (1)	TP4.5x4.5x0.674	8.0000	0.0000	0.0	8.1013	-0.638	255.191	0.002
L2	82 - 74 (2)	TP4.5x4.5x0.674	8.0000	0.0000	0.0	8.1013	-2.335	255.191	0.009
L3	74 - 67.83 (3)	TP20.3223x19.5x0.188	6.1700	0.0000	0.0	12.014	-4.139	876.861	0.005
L4	67.83 - 36.17 (4)	TP24.87x20.3223x0.188	31.660	0.0000	0.0	14.413	-5.887	994.531	0.006
L5	36.17 - 0 (5)	TP29.5x23.9668x0.25	39.840	0.0000	0.0	23.209	-9.803	1651.140	0.006

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	90 - 82 (1)	TP4.5x4.5x0.674	7.962	26.167	0.304	0.000	26.167	0.000
L2	82 - 74 (2)	TP4.5x4.5x0.674	21.866	26.167	0.836	0.000	26.167	0.000
L3	74 - 67.83 (3)	TP20.3223x19.5x0.188	36.437	362.512	0.101	0.000	362.512	0.000
L4	67.83 - 36.17 (4)	TP24.87x20.3223x0.188	125.781	494.024	0.255	0.000	494.024	0.000
L5	36.17 - 0 (5)	TP29.5x23.9668x0.25	305.980	992.442	0.308	0.000	992.442	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	90 - 82 (1)	TP4.5x4.5x0.674	1.002	127.595	0.008	0.000	35.662	0.000
L2	82 - 74 (2)	TP4.5x4.5x0.674	1.704	127.595	0.013	0.000	35.662	0.000
L3	74 - 67.83 (3)	TP20.3223x19.5x0.188	2.360	438.430	0.005	0.000	725.913	0.000
L4	67.83 - 36.17 (4)	TP24.87x20.3223x0.188	3.755	497.266	0.008	0.000	989.258	0.000
L5	36.17 - 0 (5)	TP29.5x23.9668x0.25	5.301	825.568	0.006	0.000	1987.308	0.000

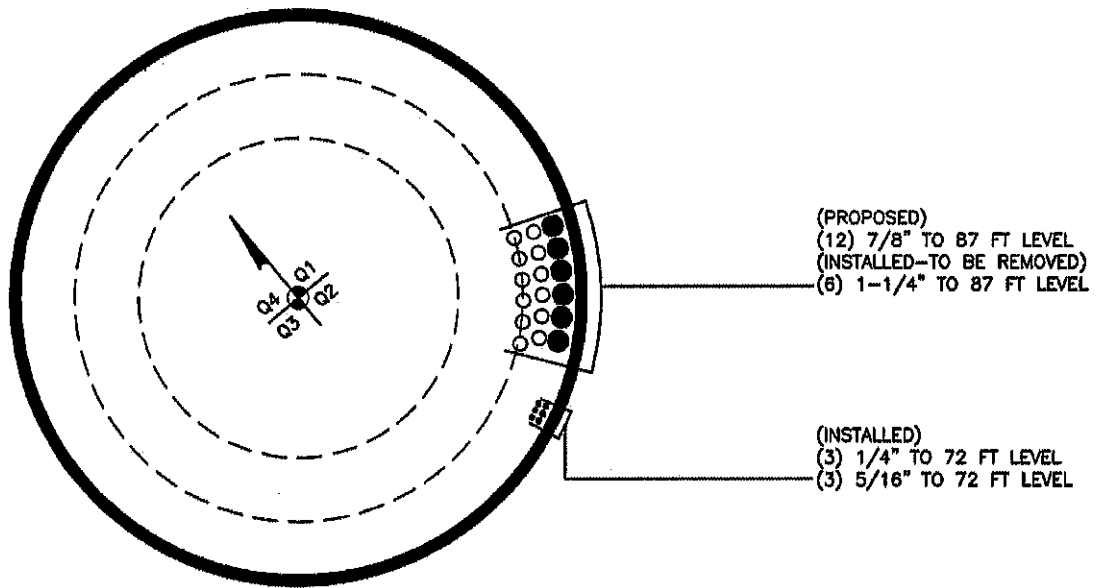
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	90 - 82 (1)	0.002	0.304	0.000	0.008	0.000	0.307	1.000	4.8.2 ✓
L2	82 - 74 (2)	0.009	0.836	0.000	0.013	0.000	0.845	1.000	4.8.2 ✓
L3	74 - 67.83 (3)	0.005	0.101	0.000	0.005	0.000	0.105	1.000	4.8.2 ✓
L4	67.83 - 36.17 (4)	0.006	0.255	0.000	0.008	0.000	0.261	1.000	4.8.2 ✓
L5	36.17 - 0 (5)	0.006	0.308	0.000	0.006	0.000	0.314	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	90 - 82	Pole	TP4.5x4.5x0.674	1	-0.638	255.191	30.7	Pass
L2	82 - 74	Pole	TP4.5x4.5x0.674	2	-2.335	255.191	84.5	Pass
L3	74 - 67.83	Pole	TP20.3223x19.5x0.188	3	-4.139	876.861	10.5	Pass
L4	67.83 - 36.17	Pole	TP24.87x20.3223x0.188	4	-5.887	994.531	26.1	Pass
L5	36.17 - 0	Pole	TP29.5x23.9668x0.25	5	-9.803	1651.140	31.4	Pass
Summary								
Pole (L2)							84.5	Pass
RATING =							84.5	Pass

APPENDIX B BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	5	4	3	2	1
Length (ft)	39.8400	31.6600	6.1700	8.0000	8.0000
Number of Sides	18	18	18	0	0
Thickness (in)	0.2500	0.1880	0.1880	0.6740	0.6740
Socket Length (ft)	23.9668	3.6700	19.5000	4.5000	4.5000
Top Dia (in)	29.5000	20.3223	20.3223	4.5000	4.5000
Bot Dia (in)		24.8700			
Grade		A572-85		A53-B-35	
Weight (K)	2.8	1.4	0.2	0.2	0.2

90.0 ft
82.0 ft
74.0 ft
67.8 ft
36.2 ft
0.0 ft

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Truck Ball	90.75	DHHTT65B-3XR	87
Canister Load1	90	DHHTT65B-3XR	87
Flag	90	Canister Load2	82
(2) KIT-FD9R6004/1C-DL	87	Canister Load3	74
KIT-FD9R6004/1C-DL	87	FDD_R6_RRH	72
KIT-FD9R6004/1C-DL	87	FDD_R6_RRH	72
(2) KIT-FD9R6004/1C-DL	87	FDD_R6_RRH	72
DHHTT65B-3XR	87	Canister Load4	67.67

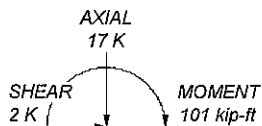
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 ksi

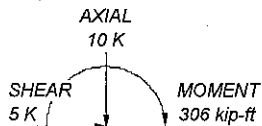
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 84.5%

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50.00 mph WIND - 0.7500 in ICE



TORQUE 0 kip-ft
REACTIONS - 97.00 mph WIND

	Paul J. Ford and Company		Job: 90-Ft Monopole / Fairfield 2 / Sun Realit		
	250 East Broad st., Suite 600		Project: PJF 37518-1588.001.7805 / BU# 876398		
	Columbus, OH 43215		Client: Crown Castle	Drawn by: skadam	App'd:
	Phone: (614) 221-6679		Code: TIA-222-G	Date: 06/26/18	Scale: NTS
	FAX:		Path:	Dwg No. E-1	

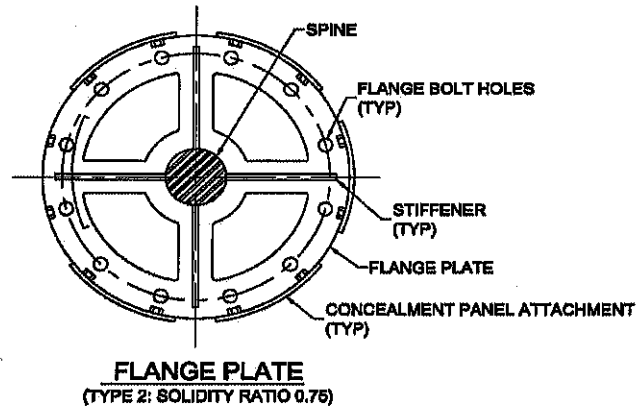
CCI Flagpole Tool



Site Data	
BU#:	876398
Site Name:	Fairfield 2 / Sun Reality
App #:	

Code	
Code:	TIA-222-G
Ice Thickness:	0.75 in
Windspeed (V):	97 mph
Ice Wind Speed (V):	50 mph
Exposure Category:	B
Topographic Feature:	N/A
Structure Class:	II

Tower Information	
Total Tower Height:	90 ft
Base Tower Height:	67.67 ft
Total Canister Length:	22.33 ft
Number of Canister Assembly Sections:	3



Canister Section Number *:	Canister Assembly Length (ft):	Canister Assembly Diameter (in):	Number of Sides Canister Section	Plate Type:	Mating Flange Plate Thickness (in)**:	Mating Flange Plate Diameter (in):	Solidity Ratio	Plate Weight (Kip):	Canister Weight (Kip)
1	8	44	Round	2	1.50	44	0.75	0.970	0.184
2	8	44	Round	2	1.50	44	0.75	0.970	0.184
3	6.33	48.75	Round	2		48.75	0.75	0.000	0.162

* Sections are numbered from the top of the tower down

** Mating Flange Plate Thickness at the bottom of canister section

Flag on Tower:	Yes
Flag Width:	25 ft
Flag Height:	15 ft
Flag Elevation(z):	90 ft

Truck Ball on Tower:	Yes
Diameter of Ball:	18 in

Geometry : Base Tower + Spine				37518-1588.002.7700.eri (last saved 06/15 9:49 am)					
Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
90	8	0	0	4.5	4.5	0.674	n/a	A53-B-35	[x]
82	8	0	0	4.5	4.5	0.674	n/a	A53-B-35	[x]
74	6.17	0	18	19.5	20.3223	0.188	0.752	A572-65	[x]
67.83	31.66	3.67	18	20.3223	24.87	0.188	0.752	A572-65	[x]
39.84	39.84	0	18	23.966835	29.5	0.25	1	A572-65	[x]

Discrete Loads: Truck Ball	Apply $C_a A_A$ at Elevation(z) (ft)	$C_a A_A$ No Ice (ft ²)	$C_a A_A$ 1/2" Ice (ft ²)	$C_a A_A$ 1" Ice (ft ²)	$C_a A_A$ 2" Ice (ft ²)	$C_a A_A$ 4" Ice (ft ²)	Weight No Ice (Kip)	Weight 1/2" Ice (Kip)
		90.75	0.884	1.378	1.527	1.848	2.581	0.05

Discrete Loads : $C_F A_F$ for Canister Assembly								
Canister Loading	Apply $C_F A_F$ at Elevation(z) (ft)	$C_F A_F$ No Ice (ft ²)	$C_F A_F$ 1/2" Ice (ft ²)	$C_F A_F$ 1" Ice (ft ²)	$C_F A_F$ 2" Ice (ft ²)	$C_F A_F$ 4" Ice (ft ²)	Canister Assembly Weight No Ice (Kip)	Canister Assembly Weight 1/2" Ice (Kip)
	Canister Load 1	90	8.800	18.000	18.400	19.200	20.800	0.092
Canister Load 2	82	17.600	36.000	36.800	38.400	41.600	1.154	1.372
Canister Load 3	74	16.515	33.746	34.462	35.895	38.761	1.143	1.347
Canister Load 4	67.67	7.715	15.746	16.062	16.695	17.961	0.081	0.176

User Forces: Flag Force Calculation Per ANSI/NAAMM FP 1001-07	
Wind _{FORCE} =	0.360 Kip
Weight=	0.039 Kip
Wind _{FORCE, ICE} =	0.097 Kip
Weight _{ICE} =	0.620 Kip
W _{FORCE, SERVICE WIND} =	0.138 Kip
Weight=	0.039 Kip

← Flag force should be included at the top of the flag attachment elevation. If the attachment of the flag to the halyard distributes forces equally to the pole, apply flag forces accordingly in tnx file.

Deflection Check Required:	Yes	<u>Import Deflection Results</u>
3% Spine Deflection Check		
Allowable (3%) Horizontal Spine Deflection (inches)	Actual Deflection ***(inches)	Sufficient/ Insufficient
8.039	4.361	Sufficient

*** Relative deflection under service level wind speed

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(Rod Diameter)

Site Data	
BU#:	876398
Site Name:	Fairfield 2 / Sun Reality
App #:	
Pole Manufacturer:	Other

Reactions		
Mu:	306	ft-kips
Axial, Pu:	10	kips
Shear, Vu:	5	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	4	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	37	in

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/η): 104.2 Kips
 Allowable Axial, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 40.1% **Pass**

Non-Rigid
AISC LRFD
$\phi * T_n$

Plate Data		
Diam:	43	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	17.25	in

Base Plate Results

Base Plate Stress: 30.4 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 56.2% **Pass**

Flexural Check

Non-Rigid
AISC LRFD
$\phi * F_y$
Y.L. Length: 22.33

Stiffener Data (Welding at both sides)		
Config:	0	*
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

n/a

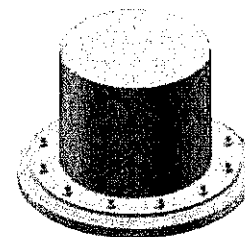
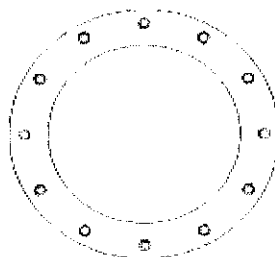
Stiffener Results

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

Pole Data		
Diam:	29.5	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

MODIFIED 90'-0" MONOPOLE

BU #876398; FAIRFIELD2 / SUN REALITY

2189-2215 BLACK ROCK TPKE
 FAIRFIELD, CONNECTICUT 06432
 FAIRFIELD COUNTY
 LAT: 41° 10' 52.33"; LONG: -73° 15' 14.69"
 ORDER: 407632 REV. 1; WO: 1569599

PROJECT CONTACTS
 STRUCTURE OWNER:
 CROWN CASTLE
 MOD PM: DAN VADNEY AT DANVADNEY@CROWNCastle.COM
 PH: (518) 373-9510
 MOD CM: MICHAEL RULLEY AT MICHAEL.RULLEY@CROWNCastle.COM
 PH: (508) 788-7023
 ENGINEER OF RECORD:
 P.J.FORD@PAULJ.FORD.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
 REMOVAL OF EXISTING CONCEALMENT SHROUDS
 REMOVING AND REPLACING TRUCK BALL AND TRUCK ARM
 REMOVE EXISTING MOUNT, EQUIPMENT AND COAX
 TRIM AND REMOVE EXISTING RING PLATE AS REQUIRED
 INSTALLATION OF NEW CONCEALMENT BULKHEADS AND SHROUDS
 PAINT MODIFICATIONS TO MATCH EXISTING POLE
 INSTALL CONCEALMENT REINFORCING SOLUTION PER CROWN CASTLE
 DDC.OPS-PRC-10127

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CSBC
ULTIMATE WIND SPEED (3-SECOND GUST)	125 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	97 MPH
ICE THICKNESS	0.75 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	B
K _z	1.0

TOWER MANUFACTURER: EEI
 TOWER MANUFACTURER #: G582767

THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1566739
 QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD & COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS, FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT RIGGING@PAULJ.FORD.COM



SAFETY CLIMB: "LOOK UP"
 THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
M-1	M CHECKLIST
N-1	GENERAL NOTES
S-1	MONOPOLE PROFILE
S-2	CONCEALMENT ELEVATION DETAILS
S-3	CONCEALMENT SECTIONS
S-4	BULKHEAD DETAILS

BU #876398; FAIRFIELD2 / SUN REALITY
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

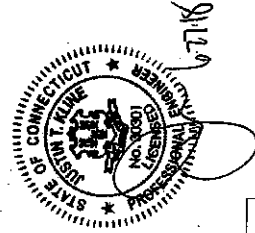
PJF PAUL J. FORD & COMPANY
 250 E Broad St, Ste 600, Columbus, OH 43215
 Phone 614.221.6679
 www.pauljford.com
 P350 TOWNSEND WAY SUITE 300 CHARLOTTE, NC 28277
 PH: (704) 455-6255

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PROJECT NO: 37618-1881002-700
 DRAWN BY: DC
 DESIGNED BY: SK
 CHECKED BY: PJK
 DATE: 08-27-2018

TITLE SHEET

T-1



REV | DATE | DESCRIPTION

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
X	MI CHECKLIST DRAWINGS	CEB-SOW-1007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOC APPROVED SHOP DRAWINGS	CEB-SOW-1007	ONCE THE PRE-FABRICATION DRAWINGS ARE COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, JOINTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER DETAILS THAT WILL BE NECESSARY FOR THE INSTALLATION. APPROVED ASSEMBLY SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CEB-SOW-1007	A LETTER FROM THE FABRICATOR STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CEB-SOW-1007	A COWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (INTR)	CEB-SOW-1007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 133 OF CEB-SOW-1007. WIRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR WELD INSPECTION REPORT	CEB-SOW-1006	THE MI INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NOTE OF MONOPOLE BASE PLATE	ENG-SOW-1003	A NOTE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CEB-SOW-1007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			

CONSTRUCTION

NA	FOUNDATION INSPECTIONS	CEB-SOW-1014	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL LETTER FROM THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. A SIGNED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TEST	CEB-SOW-1014	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CEB-SOW-1014	FOUNDATION SUB-GRANDES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPIER/ROCK ANCHOR	CEB-SOW-1014	THE CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE FOUNDATION INSPECTION REPORT AND SHALL BE INCLUDED AS PART OF THE FOUNDATION REPORT. ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	CEB-SOW-1007	POST-INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	BASE PLATE GROUT VERIFICATION	ENG-STD-1023	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
NA	FIELD CERTIFIED WELD INSPECTION	CEB-SOW-1006	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST WELD JOINTS FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NOTE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE MI REPORT SHALL BE INCLUDED IN THE MI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-1016	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	ENG-RLI-1019	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CEB-SOW-1007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING INSTALLED AS DESIGNED OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOCRF FORMS APPROVED AS CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS, DISCREPANCY AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			

POST-CONSTRUCTION

X	CONSTRUCTION COMPLIANCE LETTER	CEB-SOW-1007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	CEB-PRC-1019	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CEB-SOW-1007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT INSTALLATION VERIFICATION REPORT	CEB-SOW-1007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE BOLT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CEB-PRC-1023	FINAL PUNCHLIST INDICATING ALL NON-COMPLIANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR RESOLVE OR RECORD DRAWING(S)	CEB-SOW-1007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS RESOLVE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
X	FACT TRAIL INSPECTION	OPS-SOW-1017	PERFORM FACT TRAIL INSPECTION PER CROWN CASTLE DOC OPS-SOW-1017
X	CONCEALMENT REINFORCING SOLUTION	OPS-PRC-1017	INSTALL CONCEALMENT REINFORCING SOLUTION PER CROWN CASTLE DOC OPS-SOW-1017 & OPS-PRC-1017

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDSON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO DISURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, MODIFICATION DRAWINGS, IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS AND AS DESCRIBED BY THE NUMBER OF RECORD (RC).

NO CORRECTIVE ACTION OR POLICY CANTANTICATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFER INSTALLATION COOPERATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY REMAINS WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE PERFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL WRS SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CEAS-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR SHALL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR MI INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).

REFER TO CROWN CEB-SOW-1007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 3 BUSINESS DAYS NOTICE, PREFERABLY 16, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- THE GC AND MI INSPECTOR SHALL COORDINATE TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR ELECTRICAL WORKING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MAJOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON-SITE.

REQUIRED PHOTOS

- BEFORE THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
 - PRE-CONSTRUCTION GENERAL SITE CONDITION
 - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION, RESECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - WELDING OPERATIONS
 - WELD PREPARATION
 - BOLT INSTALLATION
 - FINAL INSTALLED CONDITION
 - PHOTOS OF ALL MODIFICATIONS
 - POST-CONSTRUCTION GENERAL SITE CONDITION

PHOTOS OF ELATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CEB-SOW-1007.

MODIFICATION INSPECTION NOTES

BU #876398; FAIRFIELD, CONNECTICUT
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

BU #876398; FAIRFIELD, CONNECTICUT
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

PROJECT NO.: 37516-18A-002-7700
 DRAWN BY: DC
 DESIGNED BY: BKZ
 CHECKED BY: BKZ
 DATE: 06/27/2018

MI CHECKLIST

MI-1

DESCRIPTION

9/12/18

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 2530 TOMMINGTON WAY SUITE 300 CHARLOTTE, NC 28277
 PH: (704) 485-8555

BU #876398, FAIRFIELD / SUN REALTY
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

PROJECT NO: 37518-15882-000
 DRAWN BY: DC
 DESIGNED BY: SK
 CHECKED BY: PJK
 DATE: 05/27/10

MONOPOLE
 PROFILE

S-1

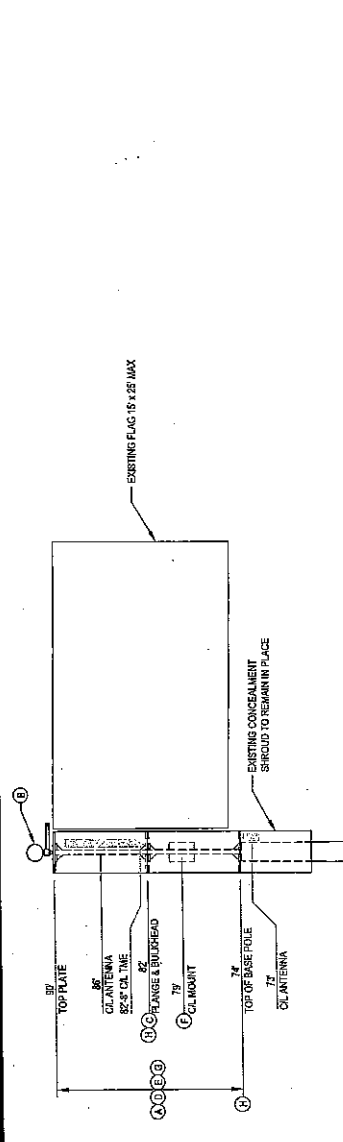
MANUFACTURER POLE SPECIFICATIONS	
TAPER	CL8885 INFIT
BASE PLATE STEEL	ASTM A572 GRADE 50 (60 KSI)
ANCHOR RODS	2 1/4" ASTM A193 GRADE 7B
FLANGE PLATE STEEL	ASTM A572 GRADE 50 (60 KSI)
FLANGE BOLTS	A325

SHAFT SECTION DATA						
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPIRE (FT)	DIAMETER ACROSS FLATS (IN)		POLE SHAPE
				@ TOP	@ BOTTOM	
1	8.00	0.6740	4.500	4.500	4.500	35
2	8.00	0.6740	4.500	4.500	4.500	35
3	37.63	0.1850	19.250	24.870	24.870	65
4	39.84	0.2500	23.567	25.900	25.900	65

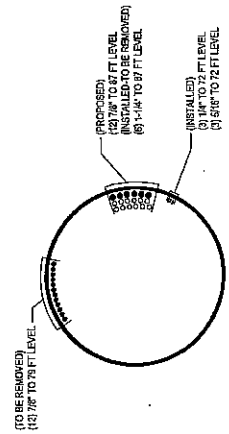
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PRIOR TO FABRICATION AND INSTALLATION CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

- NEW CONCEALMENT BULKHEAD AT 90' IS TO BE BOLTED TO EXISTING FLANGE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION AND INSTALLATION.
- NEW CONCEALMENT BULKHEADS AT 74'-0" AND 90'-0" ARE TO BE BOLTED TO EXISTING CONCEALMENT FLANGES. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION AND INSTALLATION.
- CONTRACTOR SHALL SEND PAUL J. FORD & COMPANY THE FABRICATION DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURING.

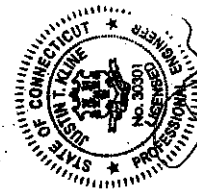


TOWER MODIFICATION SCHEDULE		
ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEET TO
A	REMOVE EXISTING CONCEALMENT SHROUDS	S-1
B	REMOVE AND REPLACE TRUCK BALL AND TRUCK ARM	S-1 & S-2
C	REMAIN HOLES IN EXISTING BULKHEAD PLATE FOR NEW FLANGE BOLTS	S-3
D	INSTALL NEW CONCEALMENT SHROUDS	S-1 TO S-4
E	PAINT MODIFICATIONS TO MATCH EXISTING POLE	S-1
F	REMOVE EXISTING MOUNT, EQUIPMENT AND COAX. COORDINATE WITH CROWN CASTLE	S-1
G	INSTALL CONCEALMENT REINFORCING SOLUTION PER CROWN CASTLE DOC 018-0192?	S-1
H	TRIM AND REMOVE EXISTING RING PLATE AS REQUIRED FOR INSTALLATION OF NEW BULKHEAD	S-3



COAX LAYOUT 2 S-1

POLE ELEVATION 1 S-1



REV DATE DESCRIPTION

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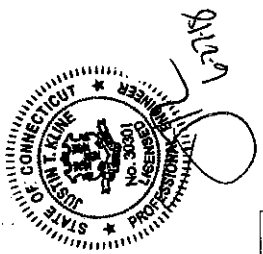
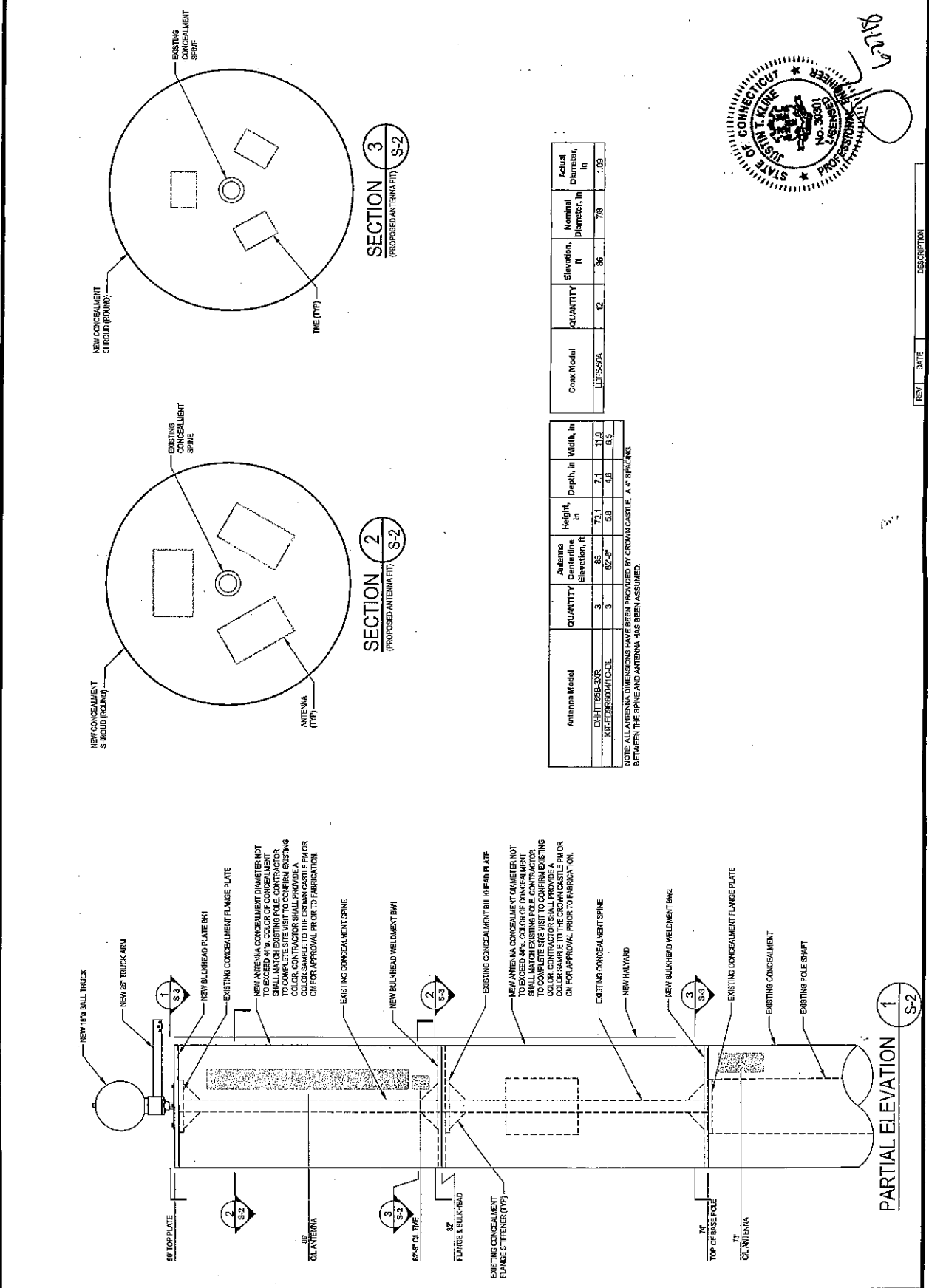
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 PH: (704) 403-6524

BU #876398: FAIRFIELD / SUN REALTY
FAIRFIELD, CONNECTICUT
MODIFIED 90'-0" MONOPOLE

PROJECT No: 876398-002-DWG
 DRAWN BY: SK
 DESIGNED BY: BKC
 CHECKED BY: BKC
 DATE: 05-22-2018

CONCEALMENT
 ELEVATION
 DETAILS

S-2



Justin L. Kline
 Professional Engineer
 State of Connecticut
 No. 36601

REV	DATE	DESCRIPTION

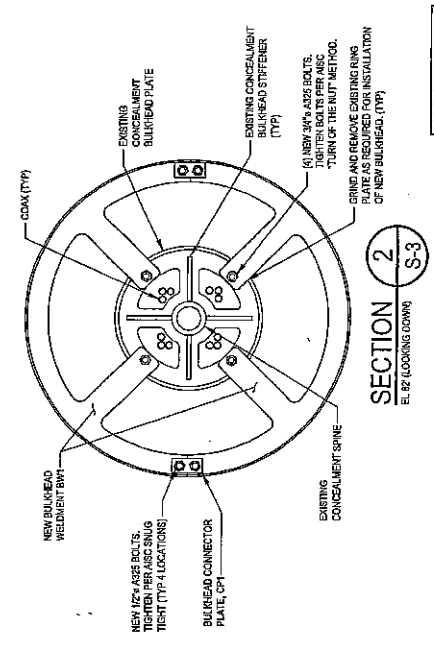
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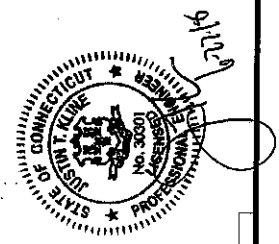
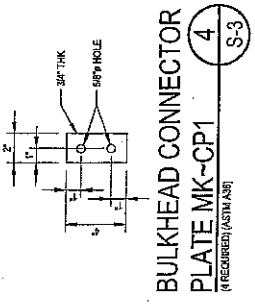
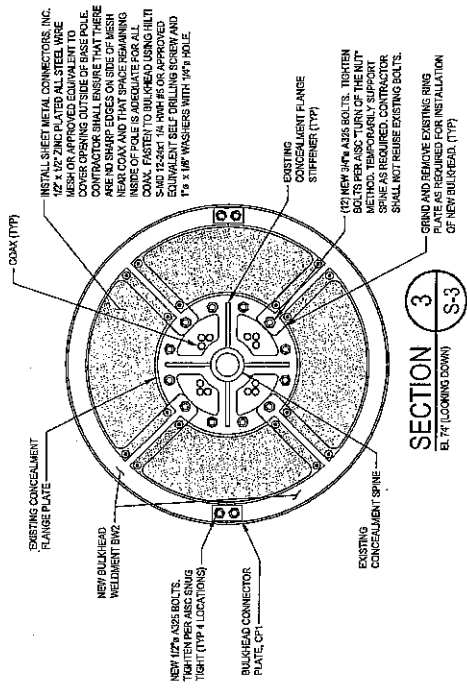
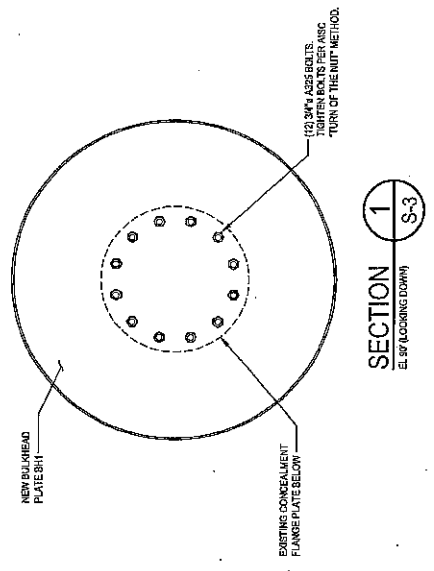
BU #876398: FAIRFIELD / SUN REALTY
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

PROJECT NO: 37518 (S&M&I) 2018
 DRAWN BY: SK
 DESIGNED BY: BSK
 CHECKED BY: BSK
 DATE: 05/22/2018

CONCEALMENT SECTIONS
 S-3



CONTRACTOR SHALL FIELD DRILL 1/4\"/>



REV	DATE	DESCRIPTION
4		

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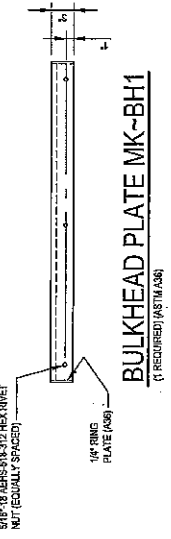
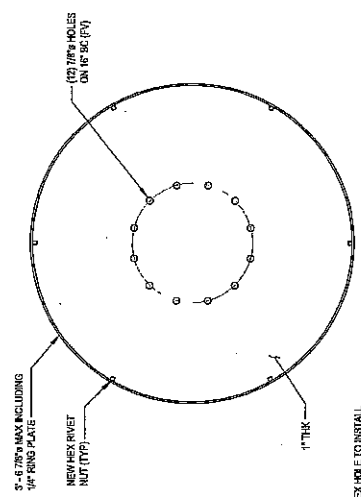
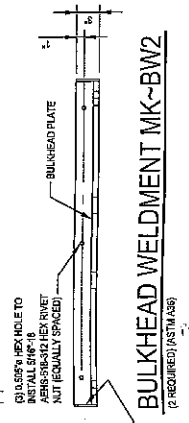
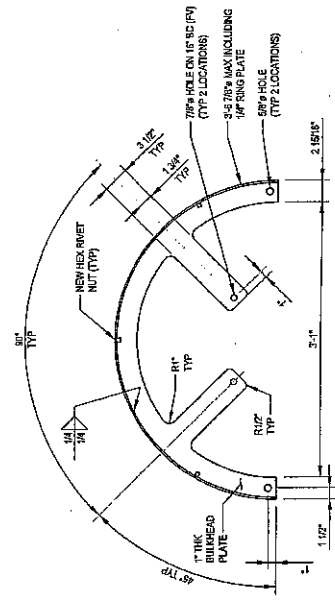
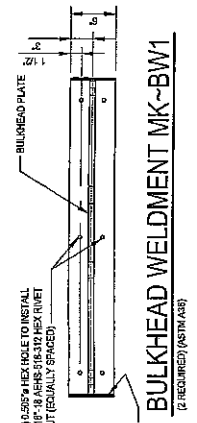
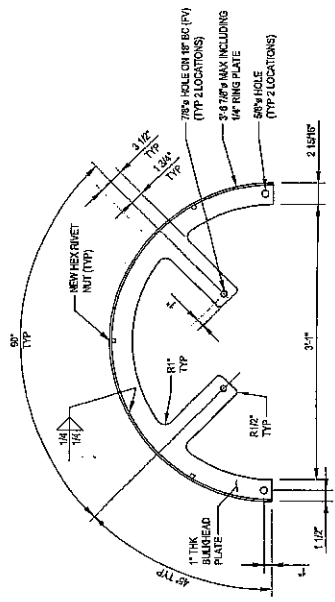
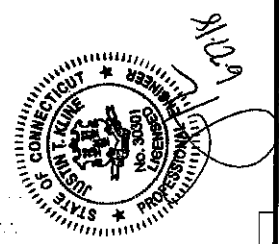
CROWN CASTLE
 3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
 PH: (704) 406-6232

BU #876398: FAIRFIELD / SUN REALTY
 FAIRFIELD, CONNECTICUT
 MODIFIED 90'-0" MONOPOLE

PROJECT No: 3769-158-002700
 DRAWN BY: DC
 DESIGNED BY: SK
 CHECKED BY: BKK
 DATE: 08-27-2018

**BULKHEAD
 DETAILS**

S-4



REV. DATE DESCRIPTION

Drilled Pier Foundation

BU #: 876398
 Site Name: Fairfield 2/Sun Reality
 App. Number:

TIA-222 Revision: G
 Tower Type: Monopole



Analysis Results		
Soil Lateral Capacity	Compression	Uplift
D ₉₀ (ft from TOC)	5.24	-
Soil Safety Factor	4.14	-
Max Moment (kip-ft)	330.46	-
Rating	32.2%	-
Soil Vertical Capacity	Compression	Uplift
Skin Friction (kips)	37.11	-
End Bearing (kips)	1178.10	-
Weight of Concrete (kips)	45.66	-
Total Capacity (kips)	1215.21	-
Axial (kips)	55.66	-
Rating	4.6%	-
Reinforced Concrete Capacity	Compression	Uplift
Critical Depth (ft from TOC)	5.06	-
Critical Moment (kip-ft)	330.34	-
Critical Moment Capacity	1149.31	-
Rating	28.7%	-
Soil Interaction Rating	32.2%	
Structural Foundation Rating	28.7%	

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	306	
Axial Force (kips)	10	
Shear Force (kips)	5	

Material Properties	
Concrete Strength, f _c :	4 ksi
Rebar Strength, F _y :	60 ksi

Pier Design Data	
Depth	14 ft
Ext. Above Grade	1 ft
Pier Section 1	
From 1' above grade to 14' below grade	
Pier Diameter	5 ft
Rebar Quantity	12
Rebar Size	8
Clear Cover to Ties	4 in
Tie Size	5

Soil Profile		
Groundwater Depth	9	ft
# of Layers	3	

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	125	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	9	5.5	125	150	0	36	0.000	0.000	0.30	0.30			Cohesionless
3	9	14	5	65	87.6	0	36	0.000	0.000	0.30	0.30	80		Cohesionless



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

SPRINT Existing Facility

Site ID: CT33XC611

Fairfield 2/ Sun Reality
2189-2215 Black Rock Turnpike
Fairfield, CT 06432

July 20, 2018

EBI Project Number: 6218005164

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.73 %



July 20, 2018

SPRINT

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

Emissions Analysis for Site: **CT33XC611 – Fairfield 2/ Sun Reality**

EBC Consulting was directed to analyze the proposed SPRINT facility located at **2189-2215 Black Rock Turnpike, Fairfield, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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 population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 SPRINT Wireless antenna facility located at **2189-2215 Black Rock Turnpike, Fairfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



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- 6) 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.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.
- 8) The antennas used in this modeling are the **Commscope DHHTT65B-3XR** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.
- 9) The antenna mounting height centerlines of the proposed antennas are **87 feet** above ground level (AGL) for **Sector A**, **87 feet** above ground level (AGL) for **Sector B** and **87 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



EBI Consulting

environmental | engineering | due diligence

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope DHHTT65B-3XR	Make / Model:	Commscope DHHTT65B-3XR	Make / Model:	Commscope DHHTT65B-3XR
Gain:	13.35 / 15.25/15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	87 feet	Height (AGL):	87 feet	Height (AGL):	87 feet
Frequency Bands:	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands:	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands:	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count:	18	Channel Count:	18	Channel Count:	18
Total TX Power(W):	440 Watts	Total TX Power(W):	440 Watts	Total TX Power(W):	440 Watts
ERP (W):	13,072.94	ERP (W):	13,072.94	ERP (W):	13,072.94
Antenna A1 MPE%:	8.25 %	Antenna B1 MPE%:	8.25 %	Antenna C1 MPE%:	8.25 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	8.25 %
Nextel	1.20 %
Clearwire	0.28 %
Site Total MPE %:	9.73 %

SPRINT Sector A Total:	8.25 %
SPRINT Sector B Total:	8.25 %
SPRINT Sector C Total:	8.25 %
Site Total:	9.73 %

SPRINT Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	87	2.37	850 MHz	567	0.42%
Sprint 850 MHz LTE	2	1,081.36	87	11.85	850 MHz	567	2.09%
Sprint 1900 MHz (PCS) CDMA	5	535.94	87	14.68	1900 MHz (PCS)	1000	1.47%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	87	14.68	1900 MHz (PCS)	1000	1.47%
Sprint 2500 MHz (BRS) LTE	8	639.78	87	28.05	2500 MHz (BRS)	1000	2.80%
						Total:	8.25%



Summary

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

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

SPRINT Sector	Power Density Value (%)
Sector A:	8.25 %
Sector B:	8.25 %
Sector C:	8.25 %
SPRINT Maximum Total (per sector):	8.25 %
Site Total:	9.73 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.73 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Extremely Urgent

Page 1 of 1

ORIGIN ID: BEDA (781) 970-0053
JEFF BARBADORA
CROWN CASTLE
12 GILL STREET
SUITE 5800
WOBURN, MA 01801
UNITED STATES US

SHIP DATE: 25 JUL 18
ACTWGT: 0.50 LB
CAD: 104924191/INET4040

BILL SENDER

TO PLAN & ZONING DEPT JIM WENDT
TOWN OF FAIRFIELD
725 OLD POST ROAD

FAIRFIELD CT 06824

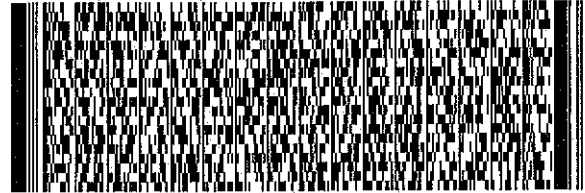
(203) 256-3000

REF: 1766.6680

INV:

PO:

DEPT:



FedEx Express



1122918072211111

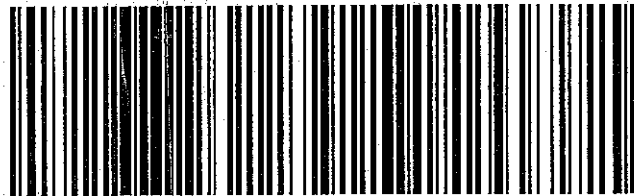
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THU - 26 JUL 10:30A
PRIORITY OVERNIGHT

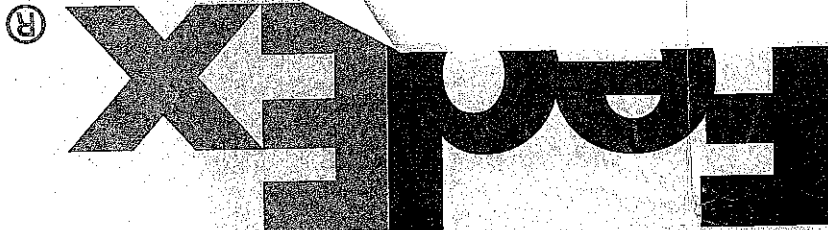
TRK# 7728 1750 7368
0201

EB OXCA

06824
CT-US BDL



press



Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, July 26, 2018 9:59 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772817507368 Delivered

Your package has been delivered

Tracking # 772817507368

Ship date:
Wed, 7/25/2018

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US

Delivery date:
Thu, 7/26/2018 9:54 am


Plan & Zoning Dept Jim
Wendt
Town of Fairfield
725 Old Post Road
FAIRFIELD, CT 06824
US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: [772817507368](#)
Status: Delivered: 07/26/2018 09:54 AM
Signed for By: E.RIVERA
Reference: 1766.6680
Signed for by: E.RIVERA
Delivery location: FAIRFIELD, CT
Delivered to: Receptionist/Front Desk
Service type: FedEx Priority Overnight®
Packaging type: FedEx® Envelope
Number of pieces: 1
Weight: 0.50 lb.
Special handling/Services: Deliver Weekday
Standard transit: 7/26/2018 by 10:30 am

 Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:59 AM CDT on 07/26/2018.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.



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Jeff

772817507368

Delivered
Thursday 7/26/2018 at 9:54 am

DELIVERED

Signed for by: E.RIVERA

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FROM

Crown Castle
Jeff Barbadora
Suite 5800
12 Gill Street
WOBURN, MA US 01801
781 970-0053

TO

Town of Fairfield
Plan & Zoning Dept Jim Wendt
725 Old Post Road
FAIRFIELD, CT US 06824
203 256-3000

Travel History

Shipment Facts

7/26/2018 - Thursday

9:54 am

Delivered

FAIRFIELD, CT

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7/25/2018 - Wednesday

2:19 pm

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JEFF BARBADORA
CROWN CASTLE
12 GILL STREET
SUITE 5800
WOBURN, MA 01801
UNITED STATES US

SHIP DATE: 25JUL18
ACTWGT: 0.50 LB
CAD: 104924191/INET4040

BILL SENDER

TO FIRST SELECTMAN-MICHAEL TETREAU
TOWN OF FAIRFIELD
725 OLD POST ROAD

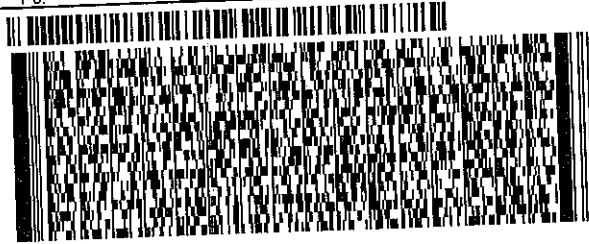
FAIRFIELD CT 06824

(203) 256-3000

REF: 1766.6680

INV:
PO:

DEPT:



FedEx
Express



552.12/653210/CA5

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PRIORITY OVERNIGHT

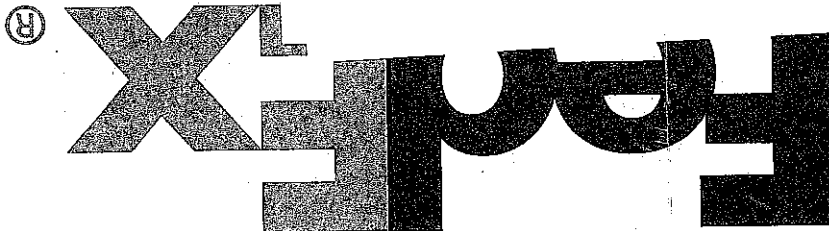
TRK# 7728 1748 4363
0201

EB OXCA

06824
CT-US BDL



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Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, July 26, 2018 9:59 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772817484363 Delivered

Your package has been delivered

Tracking # 772817484363

Ship date:
Wed, 7/25/2018

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US

Delivery date:
Thu, 7/26/2018 9:53 am

First Selectman-Michael
Tetreau
Town of Fairfield
725 Old Post Road
FAIRFIELD, CT 06824
US



Delivered



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	<u>772817484363</u>
Status:	Delivered: 07/26/2018 09:53 AM Signed for By: L.SUGAARA
Reference:	1766.6680
Signed for by:	L.SUGAARA
Delivery location:	FAIRFIELD, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	7/26/2018 by 10:30 am

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:59 AM CDT on 07/26/2018.

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Jeff

772817484363

Delivered
Thursday 7/26/2018 at 9:53 am

DELIVERED

Signed for by: L.SUGAARA



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FROM
Crown Castle
Jeff Barbadora
Suite 5800
12 Gill Street
WOBURN, MA US 01801
781 970-0053

TO
Town of Fairfield
First Selectman-Michael Tetreau
725 Old Post Road
FAIRFIELD, CT US 06824
203 256-3000

Travel History

Shipment Facts

7/26/2018 - Thursday

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Delivered

FAIRFIELD, CT

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2:18 pm

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FROM: (PLEASE PRINT) PHONE (781) 970-0053
 Crown Castle
 12 Gill St. Ste 500
 Woburn, MA 01801



EE 221662291 US



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 Sunday/Holiday Delivery Required (additional fee, where available)
 10:30 AM Delivery Required (additional fee, where available)
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PO ZIP Code	Scheduled Delivery Date (MM/DD/YY) 7-27-18	Postage \$ 24.70
Date Accepted (MM/DD/YY) DL 25 2018	Scheduled Delivery Time <input type="checkbox"/> 10:30 AM <input type="checkbox"/> 3:00 PM <input checked="" type="checkbox"/> 12 NOON	Insurance Fee \$
Time Accepted 9:30 AM	10:30 AM Delivery Fee \$ 5.00	Return Receipt Fee \$ 2.75
Special Handling/Region	Sunday/Holiday Premium Fee \$	Live Animal Transportation Fee \$
Weight 7.60 lbs	Acceptance Employee Initials [Signature]	Total Postage & Fees \$ 32.45

TO: (PLEASE PRINT)

R-K Black Rock I LLC
 c/o Scott B. Retzlaff S. Assoc
 PO Box 790830
 San Antonio, TX
 78279-0830

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Delivery Attempt (MM/DD/YY)	Time <input type="checkbox"/> AM <input type="checkbox"/> PM	Employee Signature
Delivery Attempt (MM/DD/YY)	Time <input type="checkbox"/> AM <input type="checkbox"/> PM	Employee Signature

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