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

April 3, 2020

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

RE: **Notice of Exempt Modification for AT&T - 842879**
50 Woodfield Road, Woodbridge, CT 06525
Latitude: 41° 19′ 39.50″ / Longitude: -72° 59′ 36.84″

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 98-foot mount on the existing 102-foot Monopole Tower, located at 50 Woodfield Road, Woodbridge, CT. The tower is owned by Crown Castle and the property is owned by the Town of Woodbridge. AT&T now intends to add three (3) antennas and remove and replace three (3) antennas to their existing configuration. The new antennas will be installed at the 98-ft level of the tower.

The facility was approved by the Town of Woodbridge Town Plan and Zoning Commission on July 3, 2000. Said approval given with conditions which this exempt modification complies with.

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.C.S.A. § 16-50j-73, a copy of this letter is being sent to Beth Heller, Town of Woodbridge First Selectman, as the municipality and property owner, Kristine Sullivan, Zoning Enforcement Officer, 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.
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, AT&T 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: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Network Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments
cc:

Beth Heller, First Selectman *(via email only to bheller@woodbridgect.org)*
The Town of Woodbridge
11 Meetinghouse Lane
Woodbridge, CT 06525

Kristine Sullivan, Land Use Analyst & Zoning Enforcement Officer
(via email only to ksullivan@woodbridgect.org)
The Town of Woodbridge
11 Meetinghouse Lane
Woodbridge, CT 06525

Crown Castle, Tower Owner

From: Zsamba, Anne Marie
To: "bheller@woodbridgect.org"
Subject: Notice of Exempt Modification - 50 Woodfield Road
Date: Friday, April 3, 2020 1:14:00 PM
Attachments: EM-AT&T-842879-50 WOODFIELD ROAD_WOODBRIDGE_try2.pdf

---

Good afternoon Ms. Heller,

Attached please find AT&T's exempt modification application that is being submitted to the Connecticut Siting Council, today April 3, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Network Real Estate Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

From: Zsamba, Anne Marie
To: ksullivan@woodbridgect.org
Subject: Notice of Exempt Modification - 50 Woodfield Road
Date: Friday, April 3, 2020 1:15:00 PM
Attachments: EM-AT&T-842879-50 WOODFIELD ROAD_WOODBRIDGE_try2.pdf

---

Good afternoon Ms. Sullivan,

Attached please find AT&T's exempt modification application that is being submitted to the Connecticut Siting Council, today April 3, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Network Real Estate Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

Exhibit A

Original Facility Approval

TOWN PLAN AND ZONING COMMISSION
TOWN OF WOODBRIDGE
WOODBRIDGE, CONNECTICUT

TEL. (203) 389-3405

July 12, 2000

Christopher B. Fisher, Esq.
Cuddy & Feder & Worby LLP
733 Summor St.,
Stamford, CT. 06901

Re: Special Permit/Site Plan Application
Telecommunication Facility
Woodbridge Country Club,
50 Woodfield Road, Woodbridge, CT.

Dear Mr. Fisher:

The Commission at its meeting on July 3, 2000 reviewed your application for AT&T of a Special Permit/Site Plan approval for an unmanned telecommunication facility consisting of a one hundrod foot monopole, equipment shelter and other related improvements on a portion of lot owned by the Woodbridge Country Club, 50 Woodfield Road, Woodbridge, CT.

After discussion the Commission voted to approve the application subject to the following stipulations:

1. As offered at the Public Hearing the lower base will be designed to provide for future co-location transmission equipment which could be added upon an enlargement of the pole.

2. Any such enlargement would be subject to an application to and approval by the Town Plan & Zoning Commission.

3. AT&T will submit an estimate, based on unit cost, for the completion bond of the site improvements for the installation of the facility as shown on site plans T-1 and Z-1 prepared by URS Greiner Woodward Clyde revised to January 13, 2000.

4. This approval is conditioned upon compliance with all applicable provisions of the Woodbridge Zoning Regulations for telecommunication facilities.

Upon receipt of a completion bond satisfactory to the Commission the Enforcement Officer will be authorized to issue the necessary permits.

Sincerely yours,

Charles B. Swanson
Chairman

cc: Terry Gilbertson, Enforcement Officer

CERTIFIED MAIL RETURN RECEIPT NO. Z 720 381 193

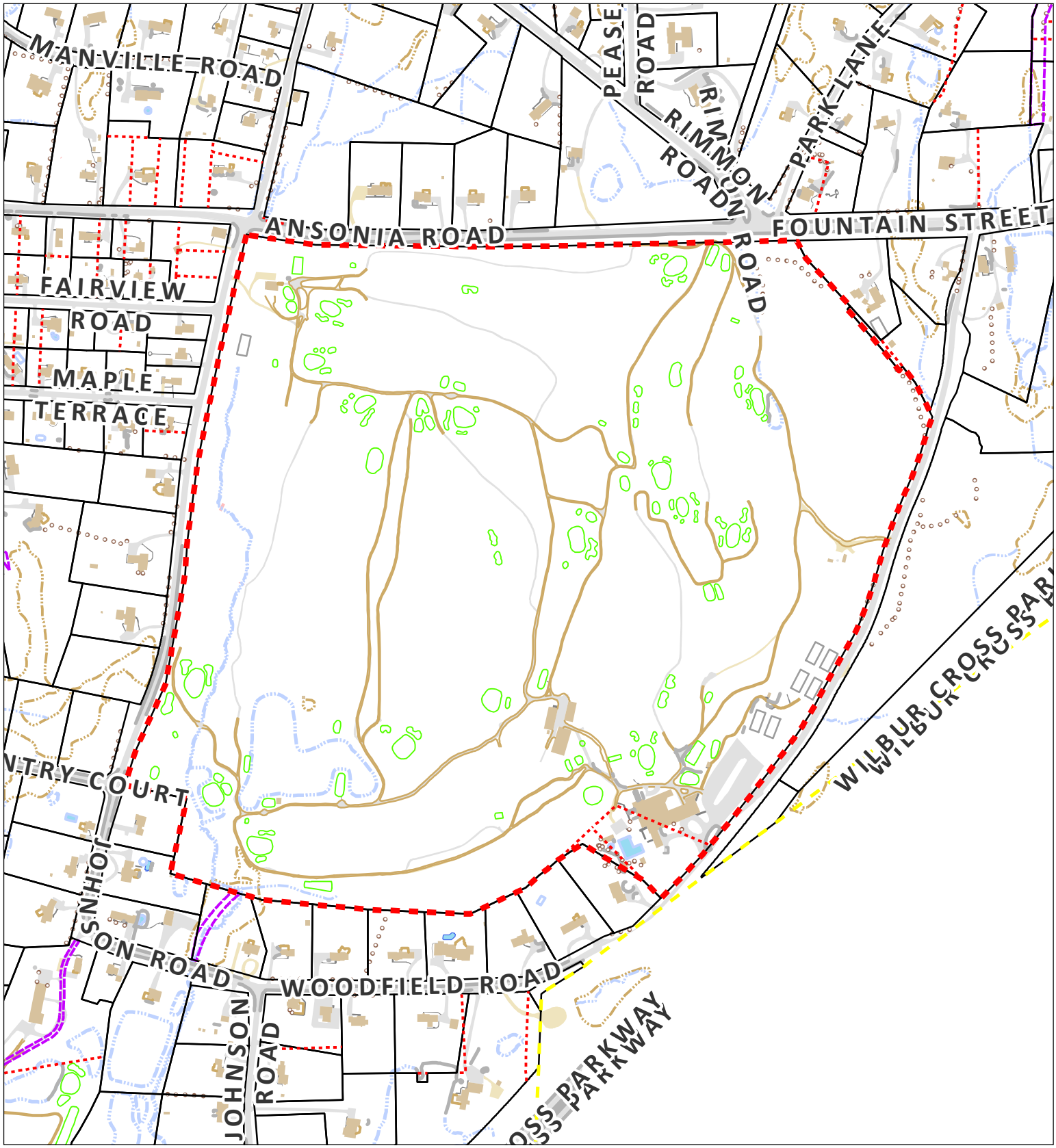
WOOD1(WP)81

Exhibit B

Property Card

Town of Woodbridge, Connecticut - Assessment Parcel Map

GIS ID: 924 **Address:**



Approximate Scale:

1:6,000

Map Produced July 2019

Town of Woodbridge, CT

Property Listing Report

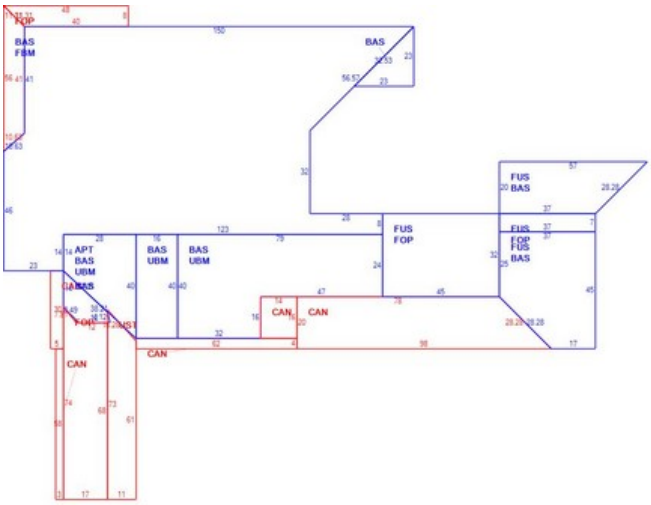
Map Block Lot	3002/2040/50//	Building #	1	PID	924	Account	103400

Property Information

Property Location	50 WOODFIELD RD
Owner	TOWN OF WOODBRIDGE
Co-Owner	
Mailing Address	11 MEETINGHOUSE LN WOODBRIDGE CT 06525
Land Use	903C Municipal 94
Land Class	E
Zoning Code	A
Census Tract	

Neighborhood	
Acreage	140.41
Utilities	Public Water,Public Sewer
Lot Setting/Desc	Rural Above
Book / Page	0628/0294
Additional Info	

Photo



Primary Construction Details

Year Built	1970
Building Desc.	Golf Course
Building Style	Country Club
Building Grade	B
Stories	2
Occupancy	1.00
Exterior Walls	Wood on Sheath
Exterior Walls 2	NA
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Walls	Drywall/Sheet
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Oil
Heating Type	Hot Water
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Commercial
Building Condition	F
Sprinkler %	NA
Heat / AC	HEAT/AC SPLIT
Frame Type	WOOD FRAME
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEIL & WALLS
Rooms / Prtns	AVERAGE
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Report Created On 4/3/2020

Town of Woodbridge, CT

Property Listing Report | Map Block Lot **3002/2040/50//** | Building # **1** | PID **924** | Account **103400**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	2571000	1799700
Extras	45900	32130
Improvements		
Outbuildings	1766200	1236340
Land	1118100	782670
Total	5501200	3850840

Outbuilding and Extra Features

Type	Description
Sprinklers Wet	36185 S.F.
Fireplace	1 UNITS
Shed	112 S.F.
Bath House Gd	65 S.F.
Shed Good	171 S.F.
Tennis Court	4 UNIT
Paving Asphalt	55000 S.F.
Pool IG Concrt	3158 S.F.
Pool IG Concrt	314 S.F.
Gazebo	484 S.F

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Apartment	756	756
First Floor	17092	17092
Canopy	2556	0
Basement, Finished	10430	0
Open Porch	3610	0
Upper Story, Finished	4104	4104
Basement, Unfinished	3804	0
Utility, Storage, Unfinished	737	0
Total Area	43089	21952

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
TOWN OF WOODBRIDGE	0628/0294	2009-08-28	6900000
WOODBRIDGE COUNTRY CLUB	0087/0003	1967-10-25	0

Report Created On **4/3/2020**

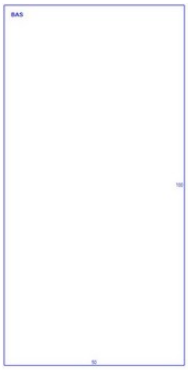
Town of Woodbridge, CT

Property Listing Report

Map Block Lot	3002/2040/50//	Building #	2	PID	924	Account	103400

Photo

Sketch



Primary Construction Details

Year Built	1980
Building Desc.	Industrial
Building Style	Warehouse
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Pre-finsh Metl
Exterior Walls 2	NA
Roof Style	Gable/Hip
Roof Cover	Metal/Tin
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	

Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Golf Course
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	STEEL
Baths / Plumbing	NONE
Ceiling / Wall	CEILING ONLY
Rooms / Prtns	AVERAGE
Wall Height	14.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	5000	5000

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	5000	5000

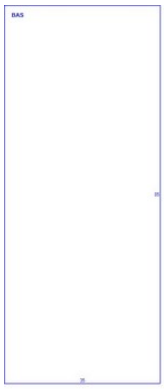
Report Created On 4/3/2020

Town of Woodbridge, CT

Property Listing Report | Map Block Lot 3002/2040/50// | Building # 3 | PID 924 | Account 103400

Photo

Sketch



Primary Construction Details

Year Built	1960
Building Desc.	Industrial
Building Style	Service Shop
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Concr/Cinder
Exterior Walls 2	NA
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	

Heating Fuel	Coal or Wood
Heating Type	Forced Air-Duc
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Golf Course
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	MASONRY
Baths / Plumbing	NONE
Ceiling / Wall	CEILING ONLY
Rooms / Prtns	AVERAGE
Wall Height	8.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	2975	2975

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	2975	2975

Report Created On 4/3/2020

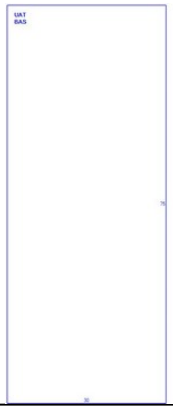
Town of Woodbridge, CT

Property Listing Report

Map Block Lot	3002/2040/50//	Building #	4	PID	924	Account	103400

Photo

Sketch



Primary Construction Details

Year Built	1960
Building Desc.	Industrial
Building Style	Service Shop
Building Grade	C-
Stories	1
Occupancy	1.00
Exterior Walls	Concr/Cinder
Exterior Walls 2	NA
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	

Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Golf Course
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	MASONRY
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEILING ONLY
Rooms / Prtns	AVERAGE
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	2250	2250
Attic, Unfinished	2250	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	4500	2250

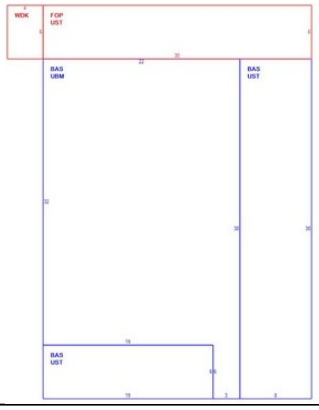
Report Created On 4/3/2020

Town of Woodbridge, CT

Property Listing Report | Map Block Lot: 3002/2040/50// | Building #: 5 | PID: 924 | Account: 103400

Photo

Sketch



Primary Construction Details

Year Built	1950
Building Desc.	Commercial
Building Style	Restaurant
Building Grade	C-
Stories	1
Occupancy	1.00
Exterior Walls	Concr/Cinder
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	Rolled Compos
Interior Walls	Knotty Pine
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Coal or Wood
Heating Type	None
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	Golf Course
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	WOOD FRAME
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEIL & MIN WL
Rooms / Prtns	AVERAGE
Wall Height	9.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	1140	1140
Open Porch	180	0
Basement, Unfinished	722	0
Utility, Storage, Unfinished	598	0
Wood Deck	24	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	2664	1140

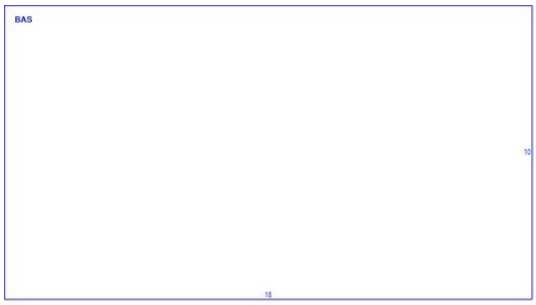
Report Created On 4/3/2020

Town of Woodbridge, CT

Property Listing Report | Map Block Lot 3002/2040/50// | Building # 6 | PID 924 | Account 103400

Photo

Sketch



Primary Construction Details

Year Built	1970
Building Desc.	Industrial
Building Style	Store
Building Grade	C-
Stories	1
Occupancy	1.00
Exterior Walls	Pre-Fab Wood
Exterior Walls 2	NA
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Walls	Drywall/Sheet
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	

Heating Fuel	Coal or Wood
Heating Type	None
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	NA
Fin Bsmt Quality	NA
Bsmt Gar	NA
Fireplaces	NA

(*Industrial / Commercial Details)

Building Use	SFR OPEN MDL-96
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	WOOD FRAME
Baths / Plumbing	NONE
Ceiling / Wall	CEIL & MIN WL
Rooms / Prtns	AVERAGE
Wall Height	8.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	180	180

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	180	180

Report Created On 4/3/2020

Exhibit C

Construction Drawings

AT&T SITE ID: CT5163
AT&T SITE NUMBER: 14243
AT&T SITE NAME: WOODBRIDGE COUNTRY CLUB
AT&T FA CODE: 10071344
AT&T PACE NUMBER: MRCTB045052/MRCTB045024/ MRCTB045138/MRCTB045054/ MRCTB045013
SITE TYPE: MONOPOLE

BUSINESS UNIT #: 842879
SITE ADDRESS: 50 WOODFIELD RD WOODBRIDGE, CT 06525
COUNTY: NEW HAVEN
TOWER HEIGHT: 102'-0"

PROJECT: AT&T LTE 3C/ 4C/ RETROFIT

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WOODBRIDGE COUNTRY CLUB
SITE ADDRESS:	50 WOODFIELD RD WOODBRIDGE, CT 06525
COUNTY:	NEW HAVEN
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.3277919
LONGITUDE:	-72.9938989
LAT/LONG TYPE:	NAD83
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	AT&T MOBILITY ONE AT&T WAY BEDMINSTER, NJ 07921
CROWN CASTLE USA INC. APPLICATION ID:	509321

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 SOUTH BOULDER, SUITE 300 TULSA, OK 74119 MIKE OAKES (918) 217-8574
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3200 HORIZON SRIVE, SUITE 150 KING OF PRUSSIA, PA 19406

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN
C-2	EQUIPMENT PLAN
C-3	TOWER ELEVATIONS
C-4	ANTENNA ORIENTATION
C-5	ANTENNA SCHEDULE
C-6	ANTENNA AND RRH SPECS.
C-7	ANTENNA AND RRH DETAIL
C-8	PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO PROPOSE AN ANTENNA MODIFICATION ON AN EXISTING WIRELESS SITE.

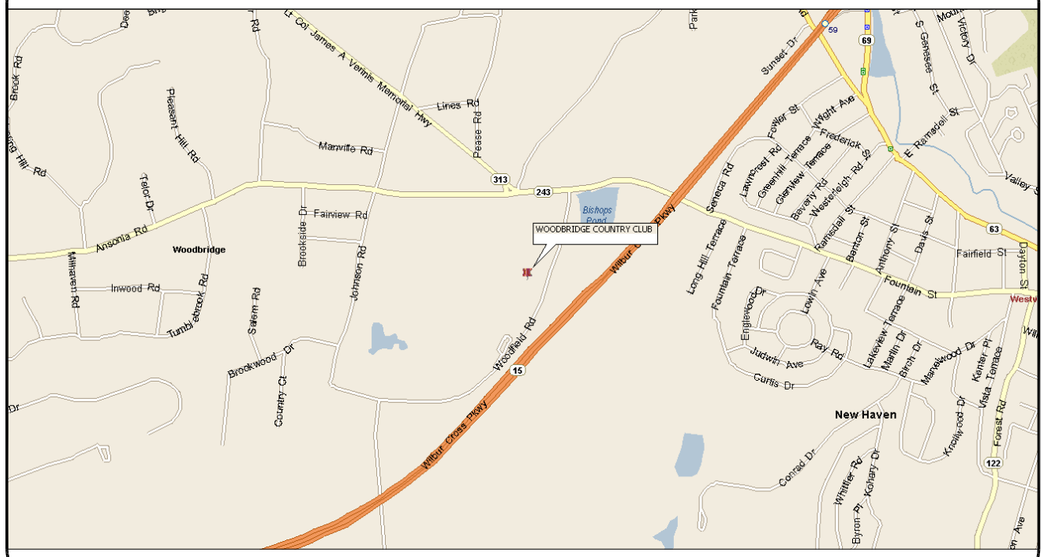
TOWER SCOPE OF WORK
- REMOVE (3) KMW AM-X-CD-16-65-00T-RET ANTENNAS
- REMOVE (3) ERICSSON RRUS12 B2 RRHS
- REMOVE (3) ERICSSON RRUS11 B12 RRHS
- INSTALL (3) CCI DMP65R-BU6DA ANTENNAS
- INSTALL (3) CCI OPA65R-BU6DA-K ANTENNAS
- INSTALL (3) ERICSSON 4449 B5/B12 RRHS
- INSTALL (3) ERICSSON 4478 B14 RRHS
- INSTALL (3) ERICSSON 8843 B2/B66A RRHS
- INSTALL (1) RAYCAP DC9-48-60-24-8C-EV SURGE UNIT
- INSTALL (3) DC CABLES
- INSTALL (1) FIBER CABLE

GROUND SCOPE OF WORK
- INSTALL (1) BBU 6630

DESIGN PACKAGE BASED ON THE RFDS
REVISION: PRELIMINARY
DATE: 2/24/20

DESIGN PACKAGE BASED ON THE APPLICATION
ID: 509321
REVISION: 0

LOCATION MAP



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:
STRUCTURAL ANALYSIS:

MOUNT ANALYSIS: B+T GROUP FEBRUARY 28, 2020

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS BEFORE YOU DIG!

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
KING OF PRUSSIA, PA 19406

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
WOODBRIDGE, CT 06525

EXISTING 102'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/6/20	GEH	CONSTRUCTION	FWP
1	3/18/20	GEH	CONSTRUCTION	FWP

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
3/18/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER: T-1
REVISION: 1

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED– NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8"ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALLS.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET A.S.T.M. SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F'm) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF A.S.T.M. C270 TYP. "S" MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET A.S.T.M. SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR–	
SUBCONTRACTOR–	GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER–	AT&T
TOWER OWNER–	CROWN CASTLE USA INC.
OEM–	ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND CROWN CASTLE USA INC.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
EXISTING	EXISTING
MIN.	MINIMUM
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

S/G	SOLID GROUND BUS BAR
S/N	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2–POLE THERMAL–MAGNETIC CIRCUIT BREAKER
	SINGLE–POLE THERMAL–MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
M	METER
	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
	MECHANICAL CONNECTION
	GROUNDING WIRE

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY CROWN CASTLE USA INC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
21. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL; SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "AT&T".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

NEC INSULATOR COLOR CODE

DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1Ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	+	*RED–POLARITY MARK AT TERMINATION
VDC NEG	–	*BLACK–POLARITY MARK AT TERMINATION
240V OR 208V, 3Ø	PHASE A	BLACK
	PHASE B	RED(ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3Ø	PHASE A	BROWN
	PHASE B	ORANGE OR PURPLE
	PHASE C	YELLOW

* SEE NEC 210.5(C)(1) AND (2)

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
KING OF PRUSSIA, PA 19406

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
WOODBRIDGE, CT 06525

EXISTING 102'-0"
MONOPOLE

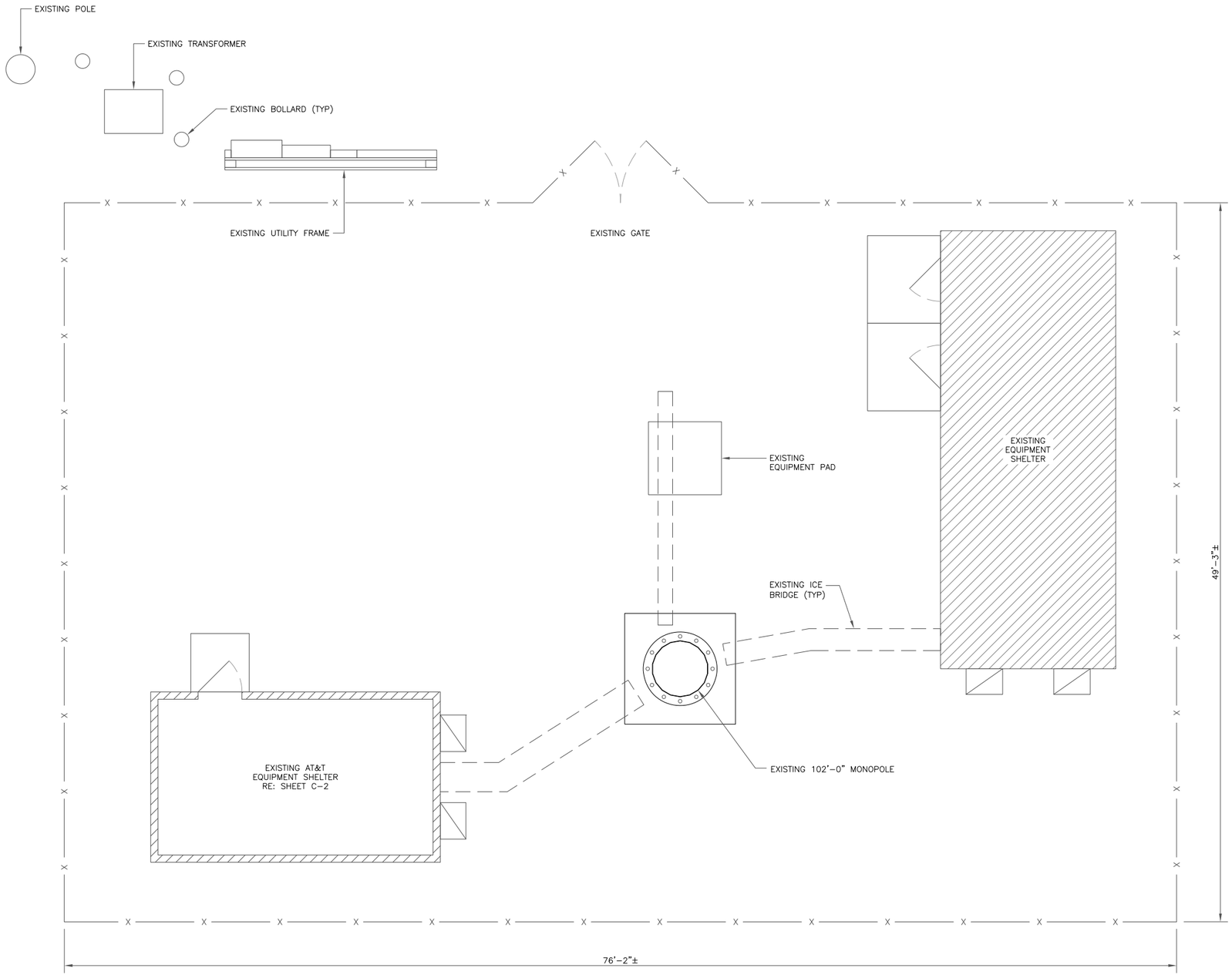
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/6/20	GEH	CONSTRUCTION	FWP
1	3/18/20	GEH	CONSTRUCTION	FWP

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
3/18/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER: T-2
REVISION: 1



1 SITE PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
KING OF PRUSSIA, PA 19406

B+T GRP
1717 S. BOULDER
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14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
WOODBRIDGE, CT 06525

EXISTING 102'-0"
MONOPOLE

ISSUED FOR:

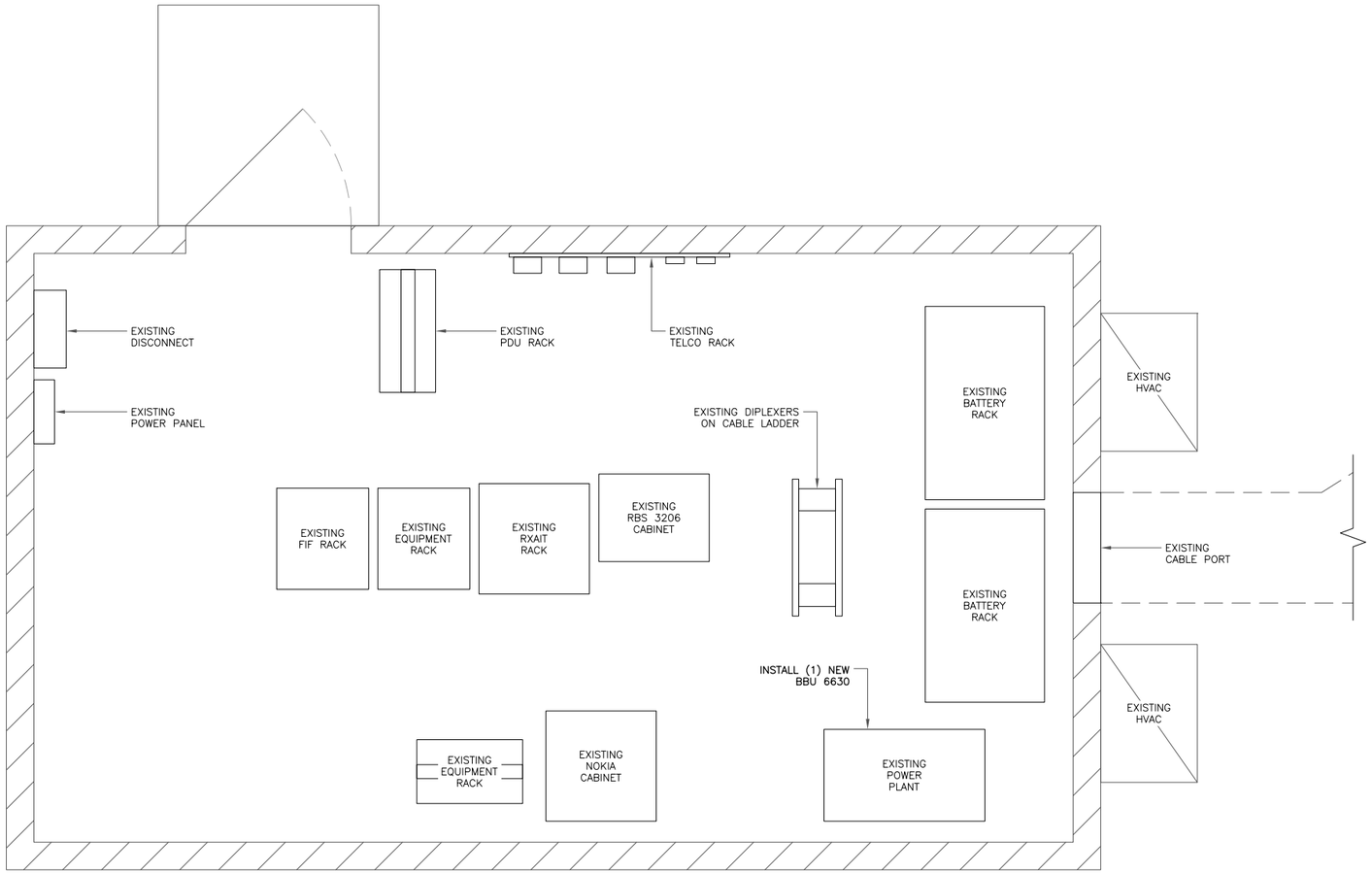
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/6/20	GEH	CONSTRUCTION	FWP
1	3/18/20	GEH	CONSTRUCTION	FWP

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
3/18/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER: C-1

REVISION: 1



1 EXISTING EQUIPMENT PLAN

SCALE: 0 6" 1' 1-1/2"=1'-0" (FULL SIZE) 3/4"=1'-0" (11x17)

N

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
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AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
WOODBRIDGE, CT 06525

EXISTING 102'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/6/20	GEH	CONSTRUCTION	FWP
1	3/18/20	GEH	CONSTRUCTION	FWP

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
3/18/20

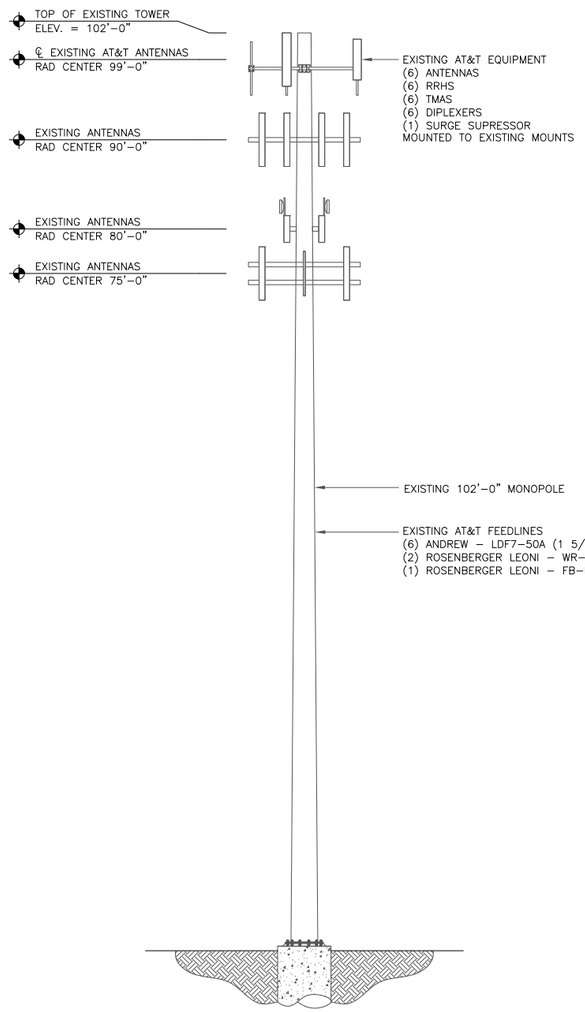
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER: C-2

REVISION: 1

AT&T EQUIPMENT

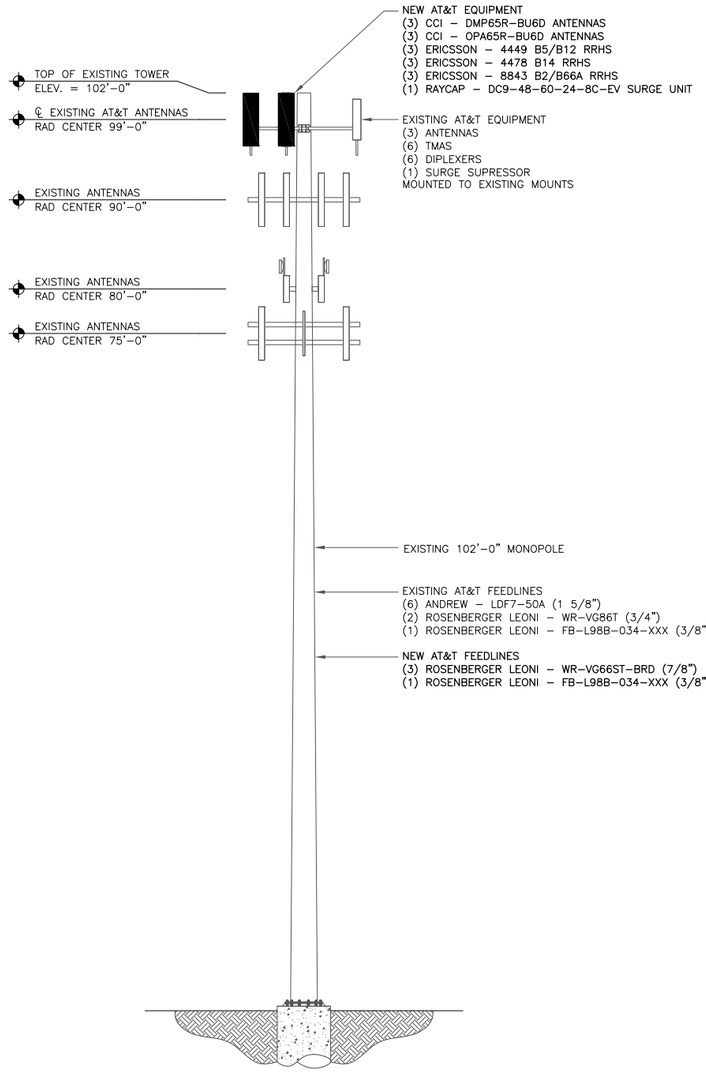
ANTENNA CL: 99'-0"
MOUNT CL: 98'-0"



1 EXISTING ELEVATION
SCALE: NOT TO SCALE

AT&T EQUIPMENT

ANTENNA CL: 99'-0"
MOUNT CL: 98'-0"



2 FINAL ELEVATION
SCALE: NOT TO SCALE

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
KING OF PRUSSIA, PA 19406

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
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www.btgrp.com

AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
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EXISTING 102'-0"
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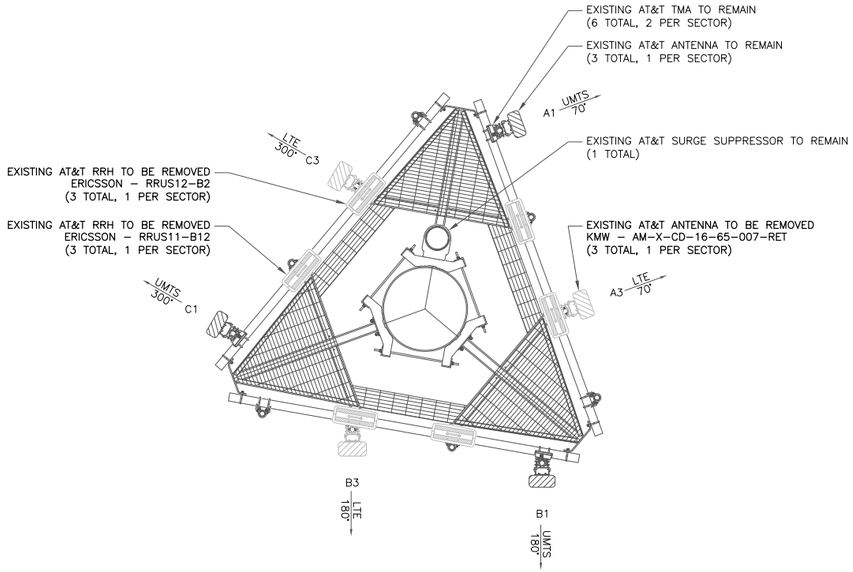
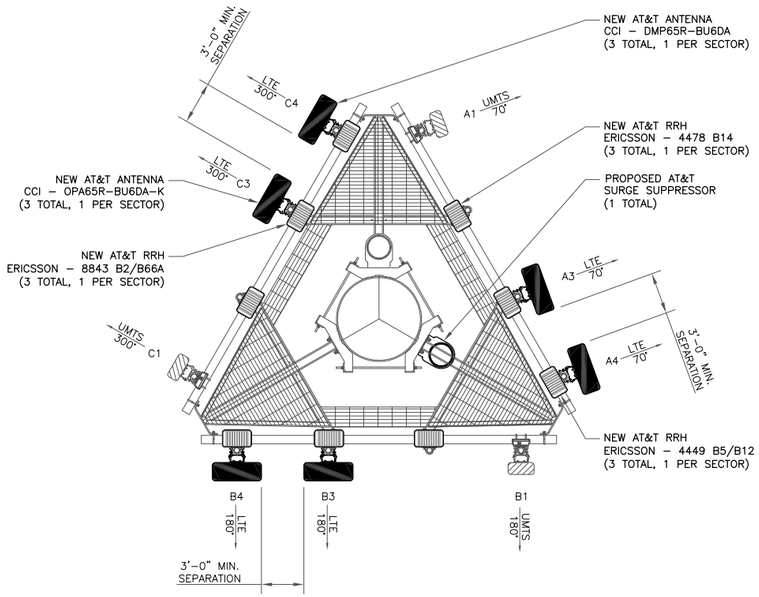
SHEET NUMBER: C-3

REVISION: 1



1 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE

N



2 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

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SHEET NUMBER: C-4

REVISION: 1

FINAL ANTENNA AND COAXIAL CABLE SCHEDULE

POS.	TECH	STATUS	AZIMUTH	ANTENNA TYPE	ANTENNA RAD CENTER	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	MAIN COAX SIZE	MAIN COAX LENGTH	COAX QTY	TMA QTY AND MODEL	RAYCAP	DC (WR-VG86ST-BRD) FIBER CABLES (FB-L98B-034-XXXXXX)	RRHs QTY ON TOWER	RRHs ON GROUND	DIPLEXER ON TOWER	DIPLEXER ON GROUND	RET CABLE
ALPHA SECTOR																		
A1	UMTS	EXISTING	70°	POWERWAVE 7770	99'-0"	2°	10°	1 5/8"	120'-0"	2	(2) LGP21401	DC6-48-60-18-8F	(1) FIBER (2) DC LINES	–	–	2	–	Y
A2	–	–	–	–	–	–	–	–	–	–	–			(1) 4478 B14	–	–	–	–
A3	LTE	NEW	70°	CCI OPA65R-BU6DA-K	99'-0"	0°	4°/6°	–	–	–	–			(1) 8843 B2/B66A	–	–	–	Y
A4	LTE	NEW	70°	CCI DMP65R-BU6DA	99'-0"	0°	4°/4°/6°/4°	–	–	–	–			(1) 4449 B5/B12	–	–	–	Y
BETA SECTOR																		
B1	UMTS	EXISTING	180°	POWERWAVE 7770	99'-0"	2°	7°	1 5/8"	120'-0"	2	(2) LGP21401	DC9-48-60-24-8C-EV	(1) FIBER (3) DC LINES	–	–	2	–	Y
B2	–	–	–	–	–	–	–	–	–	–	–			(1) 4478 B14	–	–	–	–
B3	LTE	NEW	180°	CCI OPA65R-BU6DA-K	99'-0"	0°	8°/2°	–	–	–	–			(1) 8843 B2/B66A	–	–	–	Y
B4	LTE	NEW	180°	CCI DMP65R-BU6DA	99'-0"	0°	8°/8°/2°/8°	–	–	–	–			(1) 4449 B5/B12	–	–	–	Y
GAMMA SECTOR																		
C1	UMTS	EXISTING	300°	POWERWAVE 7770	99'-0"	2°	7°	1 5/8"	120'-0"	2	(2) LGP21401	–	–	–	–	2	–	Y
C2	–	–	–	–	–	–	–	–	–	–	–			(1) 4478 B14	–	–	–	–
C3	LTE	NEW	300°	CCI OPA65R-BU6DA-K	99'-0"	0°	9°/6°	–	–	–	–			(1) 8843 B2/B66A	–	–	–	Y
C4	LTE	NEW	300°	CCI DMP65R-BU6DA	99'-0"	0°	9°/9°/6°/9°	–	–	–	–			(1) 4449 B5/B12	–	–	–	Y

NOTE: BOLD DENOTES NEW EQUIPMENT

1 FINAL ANTENNA AND COAXIAL CABLE SCHEDULE
SCALE: NOT TO SCALE

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AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

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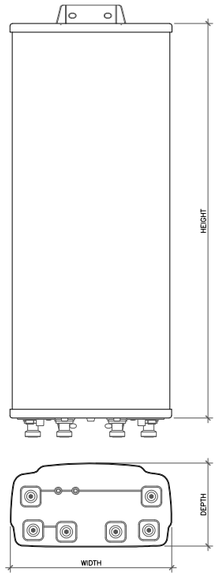
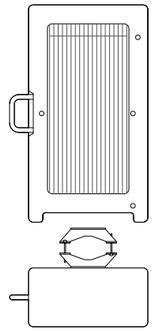
SHEET NUMBER: C-5
REVISION: 1



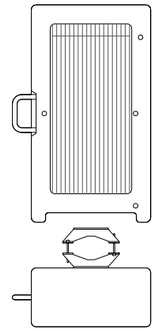
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
DMP65R-BU6DA	71.2"	20.7"	7.7"	79.4 lbs
OPA65R-BU6DA-K	71.2"	21.0"	7.8"	60.2 lbs

1 ANTENNA DETAIL
SCALE: NOT TO SCALE



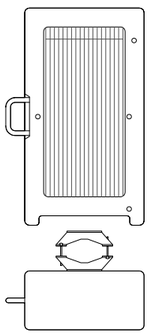
ERICSSON – 4449 B5/B12
WEIGHT (FULLY EQUIPPED): 71.0 LBS
SIZE (HxWxD): 17.9x13.19x9.44 IN.

2 RRH DETAIL
SCALE: NOT TO SCALE



ERICSSON – 8843 B2/B66A
WEIGHT (FULLY EQUIPPED): 72.0 LBS
SIZE (HxWxD): 14.9x13.2x10.9 IN.

3 RRH DETAIL
SCALE: NOT TO SCALE



ERICSSON – 4478 B14
WEIGHT (FULLY EQUIPPED): 59.4 LBS
SIZE (HxWxD): 18.1x13.4x8.26 IN.

4 RRH DETAIL
SCALE: NOT TO SCALE

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PEC.0001564
Expires 2/10/20

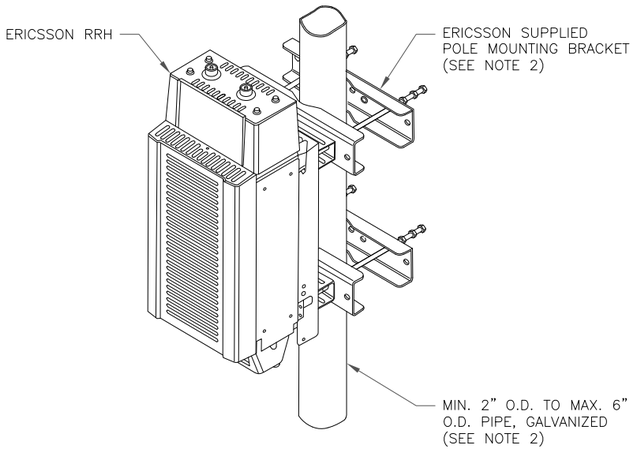
SHEET NUMBER: C-6
REVISION: 1

NOTES:

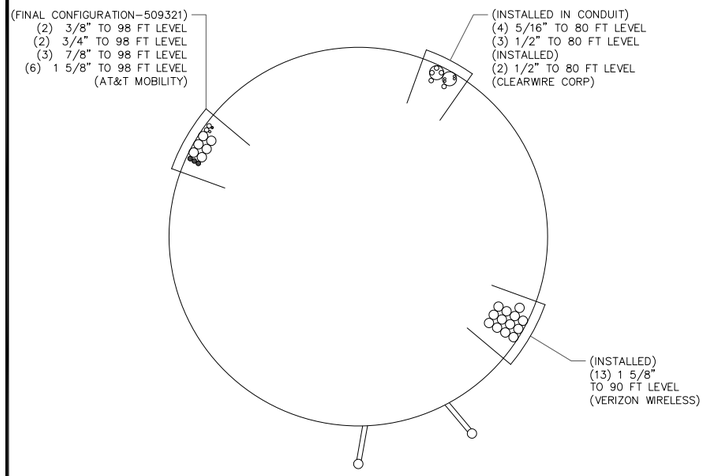
1. ERICSSON VIA AT&T SUPPLIES RRH, RRH POLE–MOUNTING BRACKET. SUBCONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRH POLE–MOUNTING BRACKET. ERICSSON INSTALLS RRH AND MAKES CABLE TERMINATIONS.

2. FOR POLE DIAMETERS FROM 6" TO 15", ERICSSON CAN SUPPLY A PAIR OF POLE MOUNTING METAL BANDS WITH BOLTING WELDMENT.

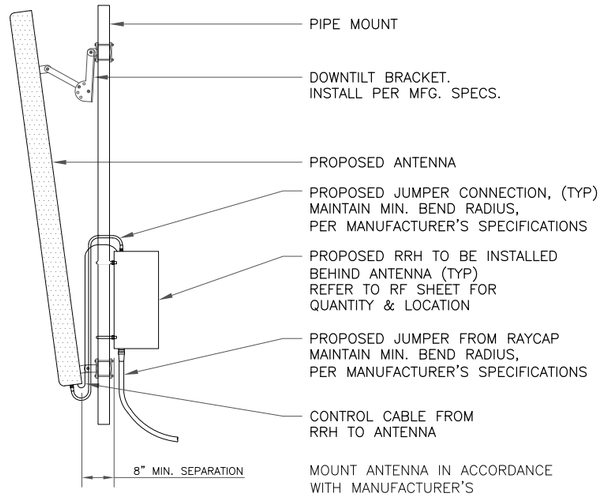
3. NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED



1 RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



2 BASE LEVEL DRAWING
SCALE: NOT TO SCALE



3 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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B&T ENGINEERING, INC.
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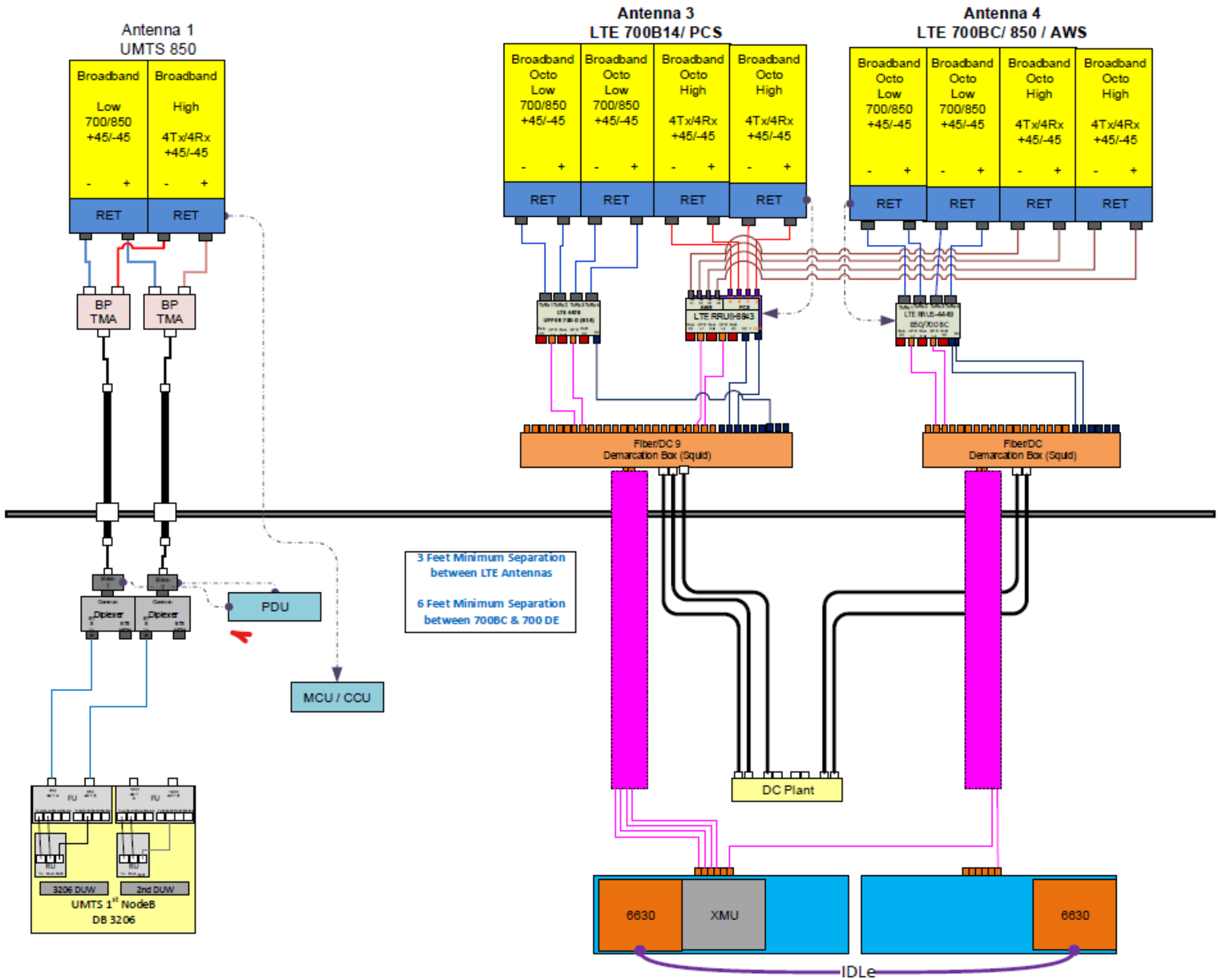
SHEET NUMBER: C-7

REVISION: 1



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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COUNTRY CLUB

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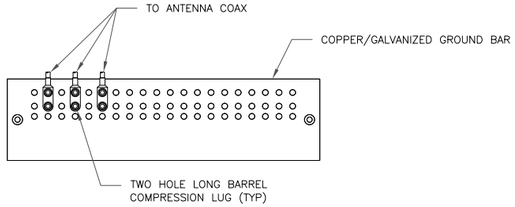
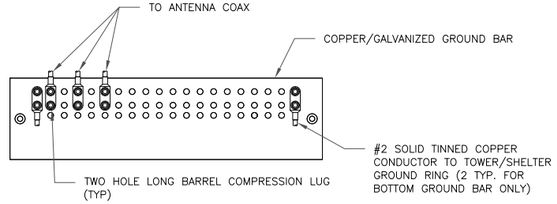
SHEET NUMBER: C-8
REVISION: 1



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

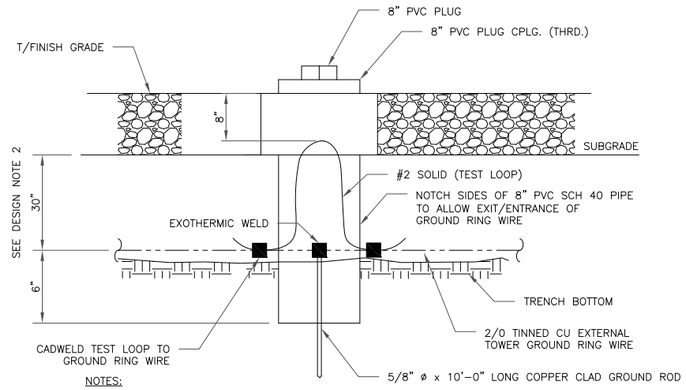
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

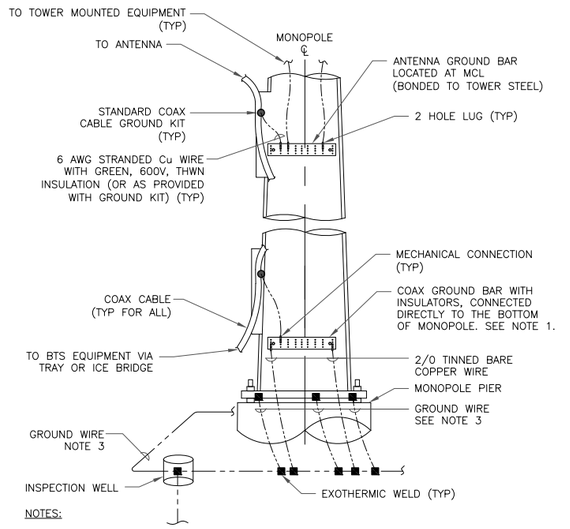
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

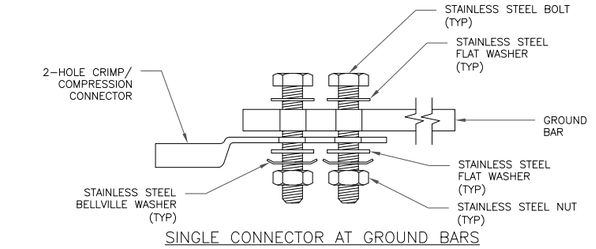
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



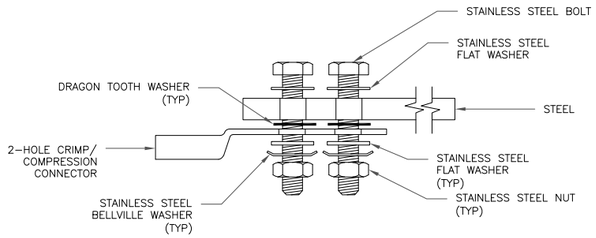
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

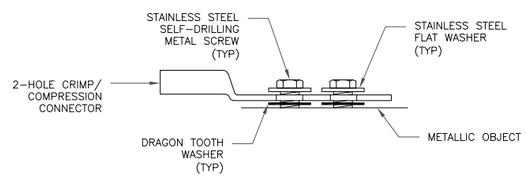
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

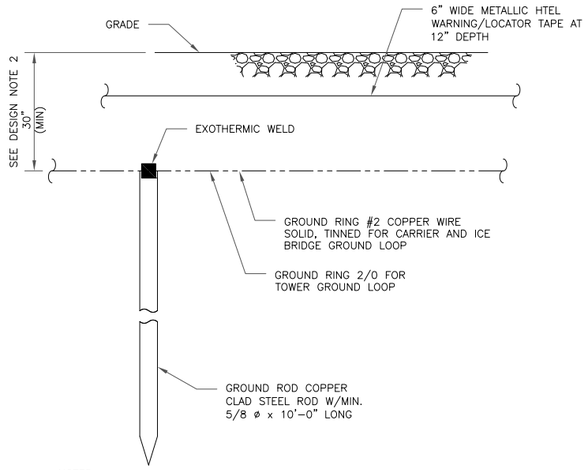


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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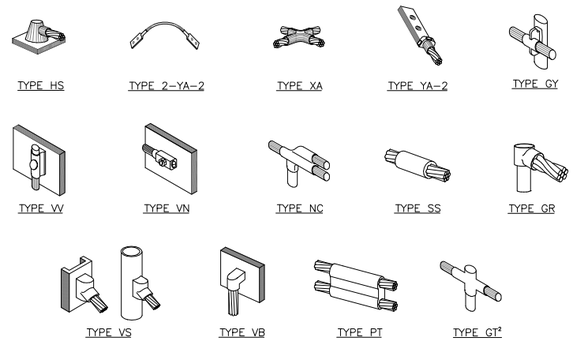
SHEET NUMBER: G-1
REVISION: 1

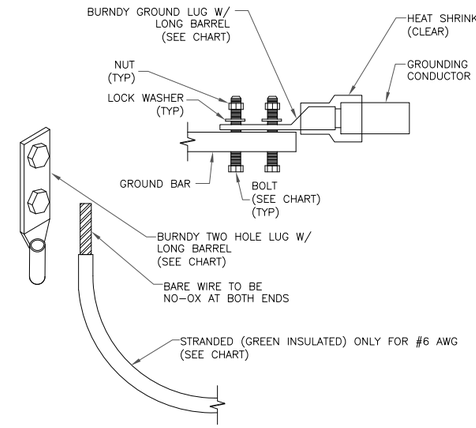


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

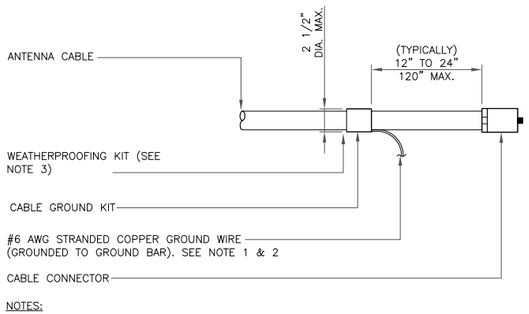
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

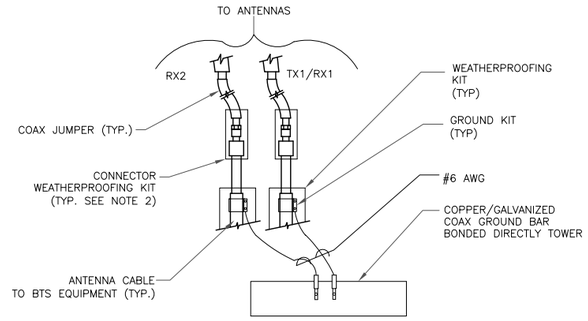
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

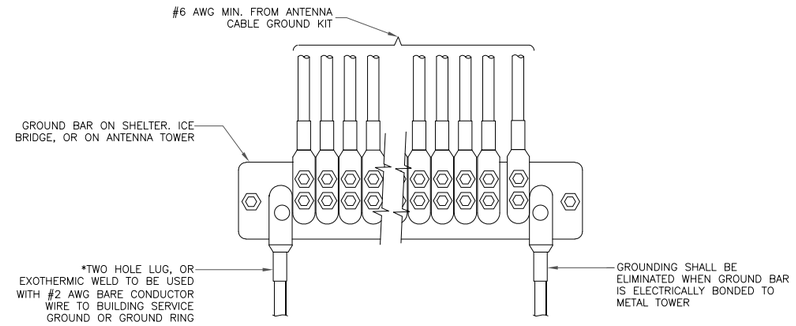
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



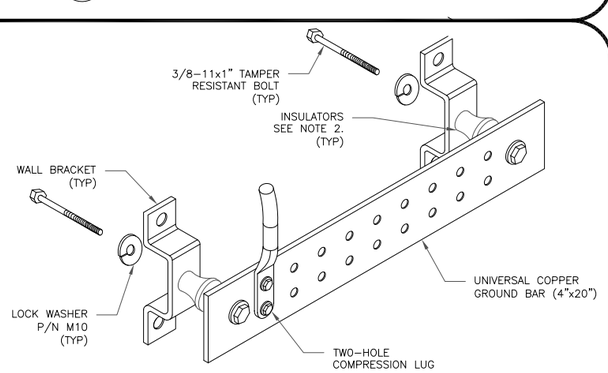
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



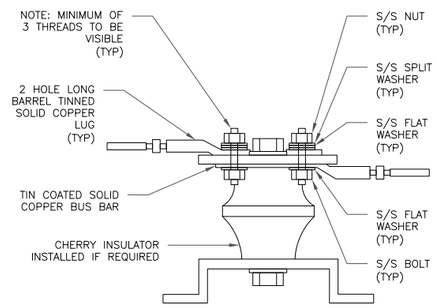
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



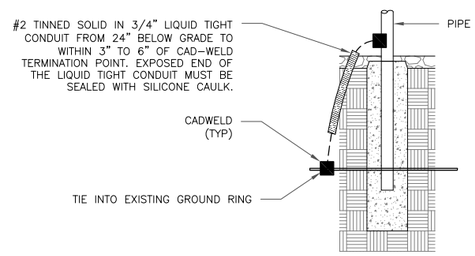
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CROWN CASTLE
3200 HORIZON DRIVE, SUITE 150
KING OF PRUSSIA, PA 19406

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

AT&T SITE NUMBER:
14243

BU #: **842879**
WOODBRIDGE COUNTRY CLUB

50 WOODFIELD RD
WOODBRIDGE, CT 06525

EXISTING 102'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/6/20	GEH	CONSTRUCTION	FWP
1	3/18/20	GEH	CONSTRUCTION	FWP

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER: G-2
REVISION: 1

Exhibit D

Structural Analysis Report

Date: **March 05, 2020**

Denice Nicholson
Crown Castle
3 Corporate Dr
Clifton Park, NY 12065

Crown Castle
2000 Corporate Drive
Cannonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	14243
	Carrier Site Name:	WOODBRIDGE COUNTRY CLUB
Crown Castle Designation:	**Crown Castle BU Number:**	842879
	Crown Castle Site Name:	WOODBRIDGE COUNTRY CLUB
	Crown Castle JDE Job Number:	596323
	Crown Castle Work Order Number:	1832576
	Crown Castle Order Number:	509321 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1832576
Site Data:	**50 WOODFIELD ROAD, WOODBRIDGE, New Haven County, CT**	
	Latitude *41° 19' 39.5"*, Longitude *-72° 59' 36.84"*	
	102 Foot - Monopole Tower	

Dear Denice Nicholson,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria.

Structural analysis prepared by: Carolina Castro / TMB

Respectfully submitted by:

Maribel Dentinger

Maribel Dentinger, P.E.
Senior Project Engineer

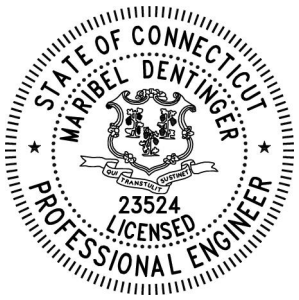


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 102 ft Monopole tower designed by Engineered Endeavors, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
98.0	99.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe	6 2 2 3	1-5/8 3/4 3/8 7/8
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS 8843 B2/B66A_CCIV2		
		6	powerwave technologies	LGP21401		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
		1	raycap	DC9-48-60-24-8C-EV		
	98.0	1	tower mounts	Platform Mount [LP 712-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
90.0	90.0	3	alcatel lucent	RRH2X40-AWS	13	1-5/8
		3	antel	BXA-171063-8BF-2 w/ Mount Pipe		
		3	antel	BXA-171063/8CF w/ Mount Pipe		
		3	antel	BXA-70063/6CF w/ Mount Pipe		
		3	antel	BXA-80063/4CF w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		1	tower mounts	Platform Mount [LP 303-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
80.0	83.0	2	dragonwave	A-ANT-18G-2-C	5 4	1/2 5/16
		2	dragonwave	HORIZON DUO		
	80.0	3	argus technologies	LLPX310R w/ Mount Pipe		
		3	samsung telecommunications	URAS-FLEXIBLE		
		1	tower mounts	Side Arm Mount [SO 102-3]		
75.0	75.0	3	commscope	NNVV-65B-R4 w/ Mount Pipe	3	1-3/8
		3	commscope	TTTT65AP-1XR w/ Mount Pipe		
		3	nokia	AHCC		
		3	nokia	AHFIB		
		3	nokia	AZHL		
		1	sitepro1	RMQP-3XX w/ HRK		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C.	4529495	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	7160639	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	7160648	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	102 - 86.685	Pole	TP34.3925x29.58x0.3125	1	-5.24	1984.48	3.5	Pass
L2	86.685 - 42.869	Pole	TP47.4475x32.2595x0.375	2	-20.87	3294.66	19.4	Pass
L3	42.869 - 0	Pole	TP60x44.6888x0.375	3	-36.72	4359.25	30.8	Pass
							Summary	
						Pole (L3)	30.8	Pass
						Rating =	30.8	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	26.6	Pass
1	Base Plate	0	31.9	Pass
1	Base Foundation (Structure)	0	30.7	Pass
1	Base Foundation (Soil Interaction)	0	31.7	Pass

Structure Rating (max from all components) =	31.9%

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

4.1) Recommendations

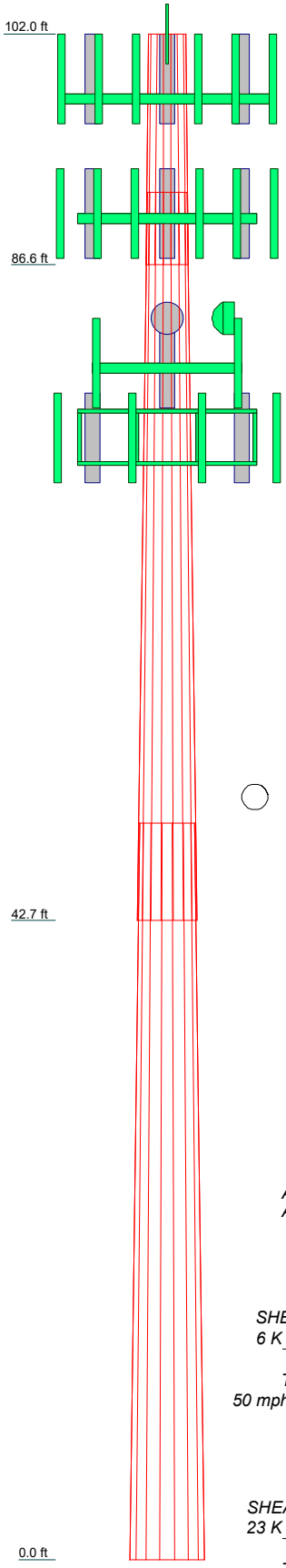
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	15.42	48.67	49.24
Number of Sides	18	18	18
Thickness (in)	0.3125	0.3750	0.3750
Socket Length (ft)	4.83	6.50	
Top Dia (in)	29.5800	32.2591	44.6690
Bot Dia (in)	34.3925	47.4475	60.0000
Grade	A572-65		
Weight (K)	1.6	7.8	10.4

Total Weight (K) 19.8



ALL REACTIONS ARE FACTORED

AXIAL 58 K

SHEAR 6 K

MOMENT 429 kip-ft

TORQUE 1 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 37 K

SHEAR 23 K

MOMENT 1710 kip-ft

TORQUE 1 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 30.8%

CROWN CASTLE
The pathway to possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX:

Job: *BU 842879*			
Project:			
Client: Crown Castle	Drawn by: Travis Bussard		App'd:
Code: TIA-222-H	Date: 03/04/20		Scale: NTS
Path: R:\SA Models - Letters\Work Area\CCastro\WIP\842879 WO 1832576\QA\842879.eri			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) Tower base elevation above sea level: 360.00 ft.
3) Basic wind speed of 125 mph.
4) Risk Category II.
5) Exposure Category C.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.00 ft.
9) Nominal ice thickness of 1.5000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) A non-linear (P-delta) analysis was used.
16) Pressures are calculated at each section.
17) Stress ratio used in pole design is 1.05.
18) Tower analysis based on target reliabilities in accordance with Annex S.
19) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	102.00-86.69	15.32	4.80	18	29.5800	34.3925	0.3125	1.2500	A572-65 (65 ksi)
L2	86.69-42.87	48.62	6.43	18	32.2595	47.4475	0.3750	1.5000	A572-65 (65 ksi)
L3	42.87-0.00	49.30		18	44.6888	60.0000	0.3750	1.5000	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	It/Q in^2	w in	w/t
L1	29.9881	29.0297	3141.6028	10.3900	15.0266	209.0689	6287.3394	14.5176	4.6561	14.899
	34.8749	33.8031	4960.1311	12.0984	17.4714	283.9002	9926.7888	16.9048	5.5031	17.61
L2	34.2217	37.9505	4874.3198	11.3190	16.3878	297.4355	9755.0535	18.9789	5.0177	13.38
	48.1216	56.0280	15684.7439	16.7107	24.1033	650.7293	31390.1262	28.0193	7.6908	20.509
L3	47.3481	52.7445	13085.5436	15.7314	22.7019	576.4075	26188.3054	26.3772	7.2052	19.214
	60.8677	70.9687	31875.7797	21.1669	30.4800	1045.7933	63793.5023	35.4911	9.9000	26.4

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 102.00-86.69				1	1	1			
L2 86.69-42.87				1	1	1			
L3 42.87-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
* ***											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
* ***98***									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	98.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-034-	A	No	No	Inside Pole	98.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
XXX(3/8)							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	98.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	98.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG66ST-BRD(7/8)	A	No	No	Inside Pole	98.00 - 0.00	3	No Ice	0.00	0.91
							1/2" Ice	0.00	0.91
							1" Ice	0.00	0.91
							2" Ice	0.00	0.91
90									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	90.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	90.00 - 0.00	1	No Ice	0.00	1.07
							1/2" Ice	0.00	1.07
							1" Ice	0.00	1.07
							2" Ice	0.00	1.07
80									
LDF4-50A(1/2)	B	No	No	Inside Pole	80.00 - 0.00	5	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
9207(5/16)	B	No	No	Inside Pole	80.00 - 0.00	4	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
2" Flex Conduit	B	No	No	Inside Pole	80.00 - 0.00	2	No Ice	0.00	0.36
							1/2" Ice	0.00	0.36
							1" Ice	0.00	0.36
							2" Ice	0.00	0.36
75									
HB114-21U4M24-XXXF(1-3/8)	B	No	No	Inside Pole	75.00 - 0.00	3	No Ice	0.00	1.93
							1/2" Ice	0.00	1.93
							1" Ice	0.00	1.93
							2" Ice	0.00	1.93
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	102.00-86.69	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L2	86.69-42.87	A	0.000	0.000	0.000	0.000	0.39
		B	0.000	0.000	0.000	0.000	0.33
		C	0.000	0.000	0.000	0.000	0.48
L3	42.87-0.00	A	0.000	0.000	0.000	0.000	0.38
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.47

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	102.00-86.69	A	1.416	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L2	86.69-42.87	A	1.362	0.000	0.000	0.000	0.000	0.39
		B		0.000	0.000	0.000	0.000	0.33
		C		0.000	0.000	0.000	0.000	0.48
L3	42.87-0.00	A	1.221	0.000	0.000	0.000	0.000	0.38
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.47

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	102.00-86.69	0.0000	0.0000	0.0000	0.0000
L2	86.69-42.87	0.0000	0.0000	0.0000	0.0000
L3	42.87-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lighting Rod 5/8" x 4'	C	None		0.0000	102.00	No Ice	0.25	0.25	0.03
						1/2" Ice	0.66	0.66	0.03
						1" Ice	0.97	0.97	0.04
						2" Ice	1.49	1.49	0.06
98									
(2) DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	11.96	5.97	0.11
						1/2" Ice	12.70	6.63	0.20
						1" Ice	13.46	7.30	0.30
						2" Ice	15.02	8.69	0.53
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	98.00	No Ice	11.96	5.97	0.11
						1/2" Ice	12.70	6.63	0.20
						1" Ice	13.46	7.30	0.30
						2" Ice	15.02	8.69	0.53
(2) OPA65R-BU6D w/	B	From Leg	4.00	0.0000	98.00	No Ice	12.25	6.05	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	13.00	6.71	0.18
			1.00			1" Ice	13.76	7.39	0.27
						2" Ice	15.34	8.79	0.51
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.00	0.0000	98.00	No Ice	12.25	6.05	0.09
			0.00			1/2" Ice	13.00	6.71	0.18
			1.00			1" Ice	13.76	7.39	0.27
						2" Ice	15.34	8.79	0.51
(2) RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	98.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	98.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4478 B14_CCIV2	B	From Leg	4.00	0.0000	98.00	No Ice	2.02	1.25	0.06
			0.00			1/2" Ice	2.20	1.40	0.08
			1.00			1" Ice	2.39	1.55	0.10
						2" Ice	2.78	1.89	0.15
(2) RRUS 4478 B14_CCIV2	A	From Leg	4.00	0.0000	98.00	No Ice	2.02	1.25	0.06
			0.00			1/2" Ice	2.20	1.40	0.08
			1.00			1" Ice	2.39	1.55	0.10
						2" Ice	2.78	1.89	0.15
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.00	0.0000	98.00	No Ice	1.98	1.70	0.08
			0.00			1/2" Ice	2.16	1.86	0.10
			1.00			1" Ice	2.34	2.04	0.12
						2" Ice	2.73	2.41	0.18
(2) RRUS 8843 B2/B66A_CCIV2	A	From Leg	4.00	0.0000	98.00	No Ice	1.98	1.70	0.08
			0.00			1/2" Ice	2.16	1.86	0.10
			1.00			1" Ice	2.34	2.04	0.12
						2" Ice	2.73	2.41	0.18
(2) LGP21401	A	From Leg	4.00	0.0000	98.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			1.00			1" Ice	1.38	0.35	0.03
						2" Ice	1.69	0.52	0.05
(2) LGP21401	B	From Leg	4.00	0.0000	98.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			1.00			1" Ice	1.38	0.35	0.03
						2" Ice	1.69	0.52	0.05
(2) LGP21401	C	From Leg	4.00	0.0000	98.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			1.00			1" Ice	1.38	0.35	0.03
						2" Ice	1.69	0.52	0.05
RA21.7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	98.00	No Ice	4.14	2.46	0.06
			0.00			1/2" Ice	4.57	2.87	0.11
			1.00			1" Ice	5.01	3.29	0.17
						2" Ice	5.93	4.15	0.31
RA21.7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	98.00	No Ice	4.14	2.46	0.06
			0.00			1/2" Ice	4.57	2.87	0.11
			1.00			1" Ice	5.01	3.29	0.17
						2" Ice	5.93	4.15	0.31
RA21.7770.00 w/ Mount	C	From Leg	4.00	0.0000	98.00	No Ice	4.14	2.46	0.06

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
Pipe			0.00			1/2"	4.57	2.87	0.11
			1.00			Ice	5.01	3.29	0.17
						1" Ice	5.93	4.15	0.31
						2" Ice			
DC9-48-60-24-8C-EV	A	From Leg	4.00	0.0000	98.00	No Ice	2.74	4.78	0.03
			0.00			1/2"	2.96	5.06	0.06
			1.00			Ice	3.20	5.35	0.10
						1" Ice	3.68	5.95	0.20
						2" Ice			
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	98.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			1.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	98.00	No Ice	24.56	24.56	1.34
						1/2"	27.92	27.92	1.91
						Ice	31.27	31.27	2.55
						1" Ice	37.98	37.98	3.97
						2" Ice			
(2) 6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	98.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	98.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	98.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
Transition Ladder	A	From Leg	1.00	0.0000	98.00	No Ice	6.00	6.00	0.16
			0.00			1/2"	8.00	8.00	0.24
			0.00			Ice	10.00	10.00	0.32
						1" Ice	14.00	14.00	0.48
						2" Ice			
4' x 3.5" Mount Pipe	A	From Leg	1.00	0.0000	98.00	No Ice	1.08	1.08	0.03
			0.00			1/2"	1.36	1.36	0.04
			0.00			Ice	1.62	1.62	0.05
						1" Ice	2.16	2.16	0.09
						2" Ice			
4' x 3.5" Mount Pipe	C	From Leg	1.00	0.0000	98.00	No Ice	1.08	1.08	0.03
			0.00			1/2"	1.36	1.36	0.04
			0.00			Ice	1.62	1.62	0.05
						1" Ice	2.16	2.16	0.09
						2" Ice			
4' x 2" Horizontal Face Mount Pipe	A	From Leg	1.00	0.0000	98.00	No Ice	0.87	0.01	0.01
			0.00			1/2"	1.11	0.05	0.02
			0.00			Ice	1.37	0.10	0.03
						1" Ice	1.90	0.24	0.06
						2" Ice			
4' x 2" Pipe Mount	A	From Leg	1.00	0.0000	98.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice	1.81	1.81	0.07
						2" Ice			
90									
RRH2X40-AWS	A	From Leg	4.00	0.0000	90.00	No Ice	2.16	1.42	0.04
			0.00			1/2"	2.36	1.59	0.06
			0.00			Ice	2.57	1.77	0.08
						1" Ice	3.00	2.14	0.13
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRH2X40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.16 2.36 2.57 3.00	1.42 1.59 1.77 2.14	0.04 0.06 0.08 0.13
RRH2X40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.16 2.36 2.57 3.00	1.42 1.59 1.77 2.14	0.04 0.06 0.08 0.13
BXA-171063-8BF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-171063-8BF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-171063-8BF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-171063/8CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.52 3.89 4.65	3.51 4.13 4.76 6.06	0.03 0.06 0.10 0.20
BXA-171063/8CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.52 3.89 4.65	3.51 4.13 4.76 6.06	0.03 0.06 0.10 0.20
BXA-171063/8CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.52 3.89 4.65	3.51 4.13 4.76 6.06	0.03 0.06 0.10 0.20
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.82 8.37 8.89 9.94	5.70 6.85 7.71 9.50	0.04 0.10 0.17 0.33
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.82 8.37 8.89 9.94	5.70 6.85 7.71 9.50	0.04 0.10 0.17 0.33

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.82 8.37 8.89 9.94	5.70 6.85 7.71 9.50	0.04 0.10 0.17 0.33
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
Platform Mount [LP 303-1]	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 18.01 21.34 28.08	14.69 18.01 21.34 28.08	1.25 1.57 1.94 2.85
80									
LLPX310R w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
LLPX310R w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
LLPX310R w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.88 4.29 4.72 5.61	2.36 2.73 3.12 3.94	0.06 0.09 0.13 0.24
HORIZON DUO	A	From Leg	4.00 0.00 3.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.65 0.86	0.29 0.37 0.44 0.62	0.01 0.01 0.02 0.04
HORIZON DUO	B	From Leg	4.00 0.00 3.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.47 0.56 0.65 0.86	0.29 0.37 0.44 0.62	0.01 0.01 0.02 0.04
URAS-FLEXIBLE	A	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
URAS-FLEXIBLE	B	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
URAS-FLEXIBLE	C	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	0.03 0.04 0.06 0.09
Side Arm Mount [SO 102-3]	C	None		0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.18 4.75 5.90	3.60 4.18 4.75 5.90	0.07 0.11 0.14 0.20
6' x 2" Mount Pipe	A	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
						2" Ice			
6' x 2" Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	C	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
75									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	4.23 4.67 5.12 6.05	0.11 0.20 0.30 0.53
TTTT65AP-1XR w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.30 5.81 6.34 7.43	3.18 3.66 4.15 5.17	0.06 0.11 0.17 0.32
TTTT65AP-1XR w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.30 5.81 6.34 7.43	3.18 3.66 4.15 5.17	0.06 0.11 0.17 0.32
TTTT65AP-1XR w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.30 5.81 6.34 7.43	3.18 3.66 4.15 5.17	0.06 0.11 0.17 0.32
AHCC	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.63 1.79 1.96 2.32	1.14 1.28 1.43 1.75	0.05 0.06 0.08 0.12
AHCC	C	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.63 1.79 1.96 2.32	1.14 1.28 1.43 1.75	0.05 0.06 0.08 0.12
AHCC	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.63 1.79 1.96 2.32	1.14 1.28 1.43 1.75	0.05 0.06 0.08 0.12
AHFIB	A	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.68 3.92 4.18 4.72	2.31 2.52 2.73 3.18	0.09 0.12 0.15 0.23
AHFIB	B	From Leg	4.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice	3.68 3.92 4.18	2.31 2.52 2.73	0.09 0.12 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	4.72	3.18	0.23
						2" Ice			
AHFIB	C	From Leg	4.00	0.0000	75.00	No Ice	3.68	2.31	0.09
			0.00			1/2"	3.92	2.52	0.12
			0.00			Ice	4.18	2.73	0.15
						1" Ice	4.72	3.18	0.23
						2" Ice			
AZHL	A	From Leg	4.00	0.0000	75.00	No Ice	1.79	0.86	0.05
			0.00			1/2"	1.95	0.98	0.07
			0.00			Ice	2.13	1.11	0.08
						1" Ice	2.50	1.39	0.13
						2" Ice			
AZHL	B	From Leg	4.00	0.0000	75.00	No Ice	1.79	0.86	0.05
			0.00			1/2"	1.95	0.98	0.07
			0.00			Ice	2.13	1.11	0.08
						1" Ice	2.50	1.39	0.13
						2" Ice			
AZHL	C	From Leg	4.00	0.0000	75.00	No Ice	1.79	0.86	0.05
			0.00			1/2"	1.95	0.98	0.07
			0.00			Ice	2.13	1.11	0.08
						1" Ice	2.50	1.39	0.13
						2" Ice			
Platform Mount [LP 301-1]	C	None		0.0000	75.00	No Ice	23.81	23.81	1.59
						1/2"	30.24	30.24	2.10
						Ice	36.33	36.33	2.73
						1" Ice	48.05	48.05	4.34
						2" Ice			
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	2.00	0.0000		80.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.03
				3.00					1" Ice	4.30	0.36
									2" Ice	4.88	0.07
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	2.00	0.0000		80.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.03
				3.00					1" Ice	4.30	0.36
									2" Ice	4.88	0.07

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	102 - 86.685	Pole	Max Tension	30	0.00	0.00	-0.00
			Max. Compression	26	-11.58	-9.53	4.15
			Max. Mx	8	-5.25	-50.91	-1.80
			Max. My	2	-5.25	0.31	49.44
			Max. Vy	8	6.84	-50.91	-1.80
			Max. Vx	2	-6.85	0.31	49.44
			Max. Torque	12			6.28
L2	86.685 - 42.869	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.37	-10.66	5.68
			Max. Mx	8	-20.89	-654.12	-24.40
			Max. My	2	-20.89	25.55	659.52
			Max. Vy	20	-17.89	648.04	31.01
			Max. Vx	14	18.06	-31.67	-655.78
			Max. Torque	12			6.80
L3	42.869 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.50	-10.70	5.71
			Max. Mx	8	-36.72	-1653.29	-51.53
			Max. My	2	-36.72	56.30	1667.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-22.64	1649.31	60.76
			Max. Vx	14	22.80	-60.43	-1665.01
			Max. Torque	12			6.80

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	58.50	-0.00	0.00
	Max. H_x	21	27.55	22.63	0.60
	Max. H_z	2	36.73	0.62	22.75
	Max. M_x	2	1667.13	0.62	22.75
	Max. M_z	8	1653.29	-22.58	-0.54
	Max. Torsion	12	6.80	-11.77	-20.01
	Min. Vert	19	27.55	19.31	-10.92
	Min. H_x	8	36.73	-22.58	-0.54
	Min. H_z	14	36.73	-0.58	-22.79
	Min. M_x	14	-1665.01	-0.58	-22.79
	Min. M_z	20	-1649.31	22.63	0.60
	Min. Torsion	24	-6.79	11.79	19.99

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	30.61	0.00	0.00	-2.01	-3.13	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	36.73	-0.62	-22.75	-1667.13	56.30	5.91
0.9 Dead+1.0 Wind 0 deg - No Ice	27.55	-0.62	-22.75	-1661.74	57.07	5.91
1.2 Dead+1.0 Wind 30 deg - No Ice	36.73	10.82	-19.43	-1416.94	-781.81	3.61
0.9 Dead+1.0 Wind 30 deg - No Ice	27.55	10.82	-19.43	-1412.28	-778.63	3.60
1.2 Dead+1.0 Wind 60 deg - No Ice	36.73	19.29	-10.91	-788.33	-1405.98	0.06
0.9 Dead+1.0 Wind 60 deg - No Ice	27.55	19.29	-10.91	-785.47	-1401.01	0.06
1.2 Dead+1.0 Wind 90 deg - No Ice	36.73	22.58	0.54	51.53	-1653.29	-3.51
0.9 Dead+1.0 Wind 90 deg - No Ice	27.55	22.58	0.54	51.98	-1647.60	-3.51
1.2 Dead+1.0 Wind 120 deg - No Ice	36.73	19.79	11.91	881.94	-1456.40	-5.86
0.9 Dead+1.0 Wind 120 deg - No Ice	27.55	19.79	11.91	880.02	-1451.27	-5.86
1.2 Dead+1.0 Wind 150 deg - No Ice	36.73	11.77	20.01	1468.66	-875.54	-6.80
0.9 Dead+1.0 Wind 150 deg - No Ice	27.55	11.77	20.01	1465.06	-872.06	-6.79
1.2 Dead+1.0 Wind 180 deg - No Ice	36.73	0.58	22.79	1665.01	-60.43	-6.00
0.9 Dead+1.0 Wind 180 deg - No Ice	27.55	0.58	22.79	1660.86	-59.28	-6.00
1.2 Dead+1.0 Wind 210 deg - No Ice	36.73	-10.80	19.49	1417.36	772.26	-3.61
0.9 Dead+1.0 Wind 210 deg - No Ice	27.55	-10.80	19.49	1413.93	771.03	-3.61
1.2 Dead+1.0 Wind 240 deg	36.73	-19.31	10.92	784.25	1399.78	-0.06

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
- No Ice 0.9 Dead+1.0 Wind 240 deg	27.55	-19.31	10.92	782.64	1396.74	-0.06
- No Ice 1.2 Dead+1.0 Wind 270 deg	36.73	-22.63	-0.60	-60.75	1649.31	3.52
- No Ice 0.9 Dead+1.0 Wind 270 deg	27.55	-22.63	-0.60	-59.95	1645.55	3.52
- No Ice 1.2 Dead+1.0 Wind 300 deg	36.73	-19.84	-11.89	-885.21	1452.93	5.94
- No Ice 0.9 Dead+1.0 Wind 300 deg	27.55	-19.84	-11.89	-882.05	1449.72	5.94
- No Ice 1.2 Dead+1.0 Wind 330 deg	36.73	-11.79	-19.99	-1472.45	869.85	6.79
- No Ice 0.9 Dead+1.0 Wind 330 deg	27.55	-11.79	-19.99	-1467.61	868.30	6.79
- No Ice 1.2 Dead+1.0 Ice+1.0 Temp	58.50	0.00	-0.00	-5.71	-10.70	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	58.50	-0.10	-5.89	-423.15	-0.72	1.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	58.50	2.85	-5.05	-362.77	-209.94	0.59
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	58.50	5.02	-2.87	-206.86	-364.70	-0.15
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	58.50	5.84	0.09	3.08	-424.40	-0.86
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	58.50	5.10	3.03	211.66	-372.82	-1.28
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	58.50	3.00	5.15	360.64	-225.29	-1.39
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	58.50	0.09	5.89	412.21	-20.14	-1.14
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	58.50	-2.84	5.06	352.35	188.00	-0.59
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	58.50	-5.02	2.87	195.53	343.43	0.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	58.50	-5.85	-0.10	-15.44	403.57	0.86
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	58.50	-5.11	-3.03	-222.83	352.10	1.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	58.50	-3.00	-5.14	-371.91	204.11	1.39
Dead+Wind 0 deg - Service	30.61	-0.14	-5.02	-368.44	10.06	1.30
Dead+Wind 30 deg - Service	30.61	2.39	-4.28	-313.37	-174.41	0.80
Dead+Wind 60 deg - Service	30.61	4.25	-2.41	-175.01	-311.79	0.01
Dead+Wind 90 deg - Service	30.61	4.98	0.12	9.84	-366.22	-0.77
Dead+Wind 120 deg - Service	30.61	4.36	2.63	192.62	-322.89	-1.29
Dead+Wind 150 deg - Service	30.61	2.59	4.41	321.76	-195.04	-1.50
Dead+Wind 180 deg - Service	30.61	0.13	5.02	364.97	-15.63	-1.32
Dead+Wind 210 deg - Service	30.61	-2.38	4.30	310.47	167.65	-0.80
Dead+Wind 240 deg - Service	30.61	-4.26	2.41	171.12	305.76	-0.01
Dead+Wind 270 deg - Service	30.61	-4.99	-0.13	-14.87	360.69	0.78
Dead+Wind 300 deg - Service	30.61	-4.38	-2.62	-196.33	317.46	1.31
Dead+Wind 330 deg - Service	30.61	-2.60	-4.41	-325.59	189.12	1.50

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-30.61	0.00	0.00	30.61	0.00	0.000%
2	-0.62	-36.73	-22.75	0.62	36.73	22.75	0.000%
3	-0.62	-27.55	-22.75	0.62	27.55	22.75	0.000%
4	10.82	-36.73	-19.43	-10.82	36.73	19.43	0.000%
5	10.82	-27.55	-19.43	-10.82	27.55	19.43	0.000%
6	19.29	-36.73	-10.91	-19.29	36.73	10.91	0.000%
7	19.29	-27.55	-10.91	-19.29	27.55	10.91	0.000%
8	22.58	-36.73	0.54	-22.58	36.73	-0.54	0.000%
9	22.58	-27.55	0.54	-22.58	27.55	-0.54	0.000%
10	19.79	-36.73	11.91	-19.79	36.73	-11.91	0.000%
11	19.79	-27.55	11.91	-19.79	27.55	-11.91	0.000%
12	11.77	-36.73	20.01	-11.77	36.73	-20.01	0.000%
13	11.77	-27.55	20.01	-11.77	27.55	-20.01	0.000%
14	0.58	-36.73	22.79	-0.58	36.73	-22.79	0.000%
15	0.58	-27.55	22.79	-0.58	27.55	-22.79	0.000%
16	-10.80	-36.73	19.49	10.80	36.73	-19.49	0.000%
17	-10.80	-27.55	19.49	10.80	27.55	-19.49	0.000%
18	-19.31	-36.73	10.92	19.31	36.73	-10.92	0.000%
19	-19.31	-27.55	10.92	19.31	27.55	-10.92	0.000%
20	-22.63	-36.73	-0.60	22.63	36.73	0.60	0.000%
21	-22.63	-27.55	-0.60	22.63	27.55	0.60	0.000%
22	-19.84	-36.73	-11.89	19.84	36.73	11.89	0.000%
23	-19.84	-27.55	-11.89	19.84	27.55	11.89	0.000%
24	-11.79	-36.73	-19.99	11.79	36.73	19.99	0.000%
25	-11.79	-27.55	-19.99	11.79	27.55	19.99	0.000%
26	0.00	-58.50	0.00	-0.00	58.50	0.00	0.000%
27	-0.10	-58.50	-5.89	0.10	58.50	5.89	0.000%
28	2.85	-58.50	-5.05	-2.85	58.50	5.05	0.000%
29	5.02	-58.50	-2.87	-5.02	58.50	2.87	0.000%
30	5.84	-58.50	0.09	-5.84	58.50	-0.09	0.000%
31	5.10	-58.50	3.03	-5.10	58.50	-3.03	0.000%
32	3.00	-58.50	5.15	-3.00	58.50	-5.15	0.000%
33	0.09	-58.50	5.89	-0.09	58.50	-5.89	0.000%
34	-2.84	-58.50	5.06	2.84	58.50	-5.06	0.000%
35	-5.02	-58.50	2.87	5.02	58.50	-2.87	0.000%
36	-5.85	-58.50	-0.10	5.85	58.50	0.10	0.000%
37	-5.11	-58.50	-3.03	5.11	58.50	3.03	0.000%
38	-3.00	-58.50	-5.14	3.00	58.50	5.14	0.000%
39	-0.14	-30.61	-5.02	0.14	30.61	5.02	0.000%
40	2.39	-30.61	-4.28	-2.39	30.61	4.28	0.000%
41	4.25	-30.61	-2.41	-4.25	30.61	2.41	0.000%
42	4.98	-30.61	0.12	-4.98	30.61	-0.12	0.000%
43	4.36	-30.61	2.63	-4.36	30.61	-2.63	0.000%
44	2.59	-30.61	4.41	-2.59	30.61	-4.41	0.000%
45	0.13	-30.61	5.02	-0.13	30.61	-5.02	0.000%
46	-2.38	-30.61	4.30	2.38	30.61	-4.30	0.000%
47	-4.26	-30.61	2.41	4.26	30.61	-2.41	0.000%
48	-4.99	-30.61	-0.13	4.99	30.61	0.13	0.000%
49	-4.38	-30.61	-2.62	4.38	30.61	2.62	0.000%
50	-2.60	-30.61	-4.41	2.60	30.61	4.41	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00015868
3	Yes	4	0.00000001	0.00010483
4	Yes	4	0.00000001	0.00015906
5	Yes	4	0.00000001	0.00010498
6	Yes	4	0.00000001	0.00008109
7	Yes	4	0.00000001	0.00005262

8	Yes	4	0.00000001	0.00008863
9	Yes	4	0.00000001	0.00005859
10	Yes	4	0.00000001	0.00015261
11	Yes	4	0.00000001	0.00010089
12	Yes	4	0.00000001	0.00025736
13	Yes	4	0.00000001	0.00016960
14	Yes	4	0.00000001	0.00017590
15	Yes	4	0.00000001	0.00011627
16	Yes	4	0.00000001	0.00008814
17	Yes	4	0.00000001	0.00005845
18	Yes	4	0.00000001	0.00008051
19	Yes	4	0.00000001	0.00005288
20	Yes	4	0.00000001	0.00010341
21	Yes	4	0.00000001	0.00006844
22	Yes	4	0.00000001	0.00023072
23	Yes	4	0.00000001	0.00015217
24	Yes	4	0.00000001	0.00017365
25	Yes	4	0.00000001	0.00011499
26	Yes	4	0.00000001	0.00000744
27	Yes	4	0.00000001	0.00015045
28	Yes	4	0.00000001	0.00015258
29	Yes	4	0.00000001	0.00015261
30	Yes	4	0.00000001	0.00015188
31	Yes	4	0.00000001	0.00015602
32	Yes	4	0.00000001	0.00015423
33	Yes	4	0.00000001	0.00014304
34	Yes	4	0.00000001	0.00013652
35	Yes	4	0.00000001	0.00013413
36	Yes	4	0.00000001	0.00013707
37	Yes	4	0.00000001	0.00014781
38	Yes	4	0.00000001	0.00015191
39	Yes	4	0.00000001	0.00000846
40	Yes	4	0.00000001	0.00000572
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000813
44	Yes	4	0.00000001	0.00001049
45	Yes	4	0.00000001	0.00000856
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000907
50	Yes	4	0.00000001	0.00000946

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	102 - 86.685	3.284	43	0.2509	0.0047
L2	91.484 - 42.869	2.733	43	0.2472	0.0038
L3	49.2987 - 0	0.864	50	0.1573	0.0012

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	Lighting Rod 5/8" x 4'	43	3.284	0.2509	0.0047	208298
98.00	(2) DMP65R-BU6D w/ Mount Pipe	43	3.074	0.2501	0.0043	208298
90.00	RRH2X40-AWS	43	2.656	0.2461	0.0037	81312
83.00	A-ANT-18G-2-C	43	2.298	0.2382	0.0032	45514
80.00	LLPX310R w/ Mount Pipe	43	2.149	0.2335	0.0030	37965
75.00	NNVV-65B-R4 w/ Mount Pipe	43	1.906	0.2243	0.0026	29743

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	102 - 86.685	14.868	24	1.1282	0.0211
L2	91.484 - 42.869	12.390	24	1.1155	0.0173
L3	49.2987 - 0	3.924	24	0.7142	0.0055

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	Lighting Rod 5/8" x 4'	24	14.868	1.1282	0.0211	54806
98.00	(2) DMP65R-BU6D w/ Mount Pipe	24	13.923	1.1260	0.0197	54806
90.00	RRH2X40-AWS	24	12.043	1.1109	0.0168	20325
83.00	A-ANT-18G-2-C	24	10.428	1.0767	0.0144	10502
80.00	LLPX310R w/ Mount Pipe	24	9.751	1.0563	0.0135	8672
75.00	NNVV-65B-R4 w/ Mount Pipe	24	8.652	1.0155	0.0119	6719

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	102 - 86.685 (1)	TP34.3925x29.58x0.3125	15.31	0.00	0.0	32.3073	-5.24	1889.98	0.003
L2	86.685 - 42.869 (2)	TP47.4475x32.2595x0.375	48.62	0.00	0.0	53.6372	-20.87	3137.77	0.007
L3	42.869 - 0 (3)	TP60x44.6888x0.375	49.30	0.00	0.0	70.9687	-36.72	4151.67	0.009

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	102 - 86.685 (1)	TP34.3925x29.58x0.3125	52.74	1568.01	0.034	0.00	1568.01	0.000
L2	86.685 - 42.869 (2)	TP47.4475x32.2595x0.375	679.79	3458.63	0.197	0.00	3458.63	0.000
L3	42.869 - 0 (3)	TP60x44.6888x0.375	1710.18	5436.67	0.315	0.00	5436.67	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	102 - 86.685 (1)	TP34.3925x29.58x0.3125	7.28	566.99	0.013	5.23	1617.34	0.003
L2	86.685 - 42.869 (2)	TP47.4475x32.2595x0.375	18.49	941.33	0.020	6.79	3714.93	0.002
L3	42.869 - 0 (3)	TP60x44.6888x0.375	23.22	1245.50	0.019	6.79	6503.57	0.001

Pole Interaction Design Data

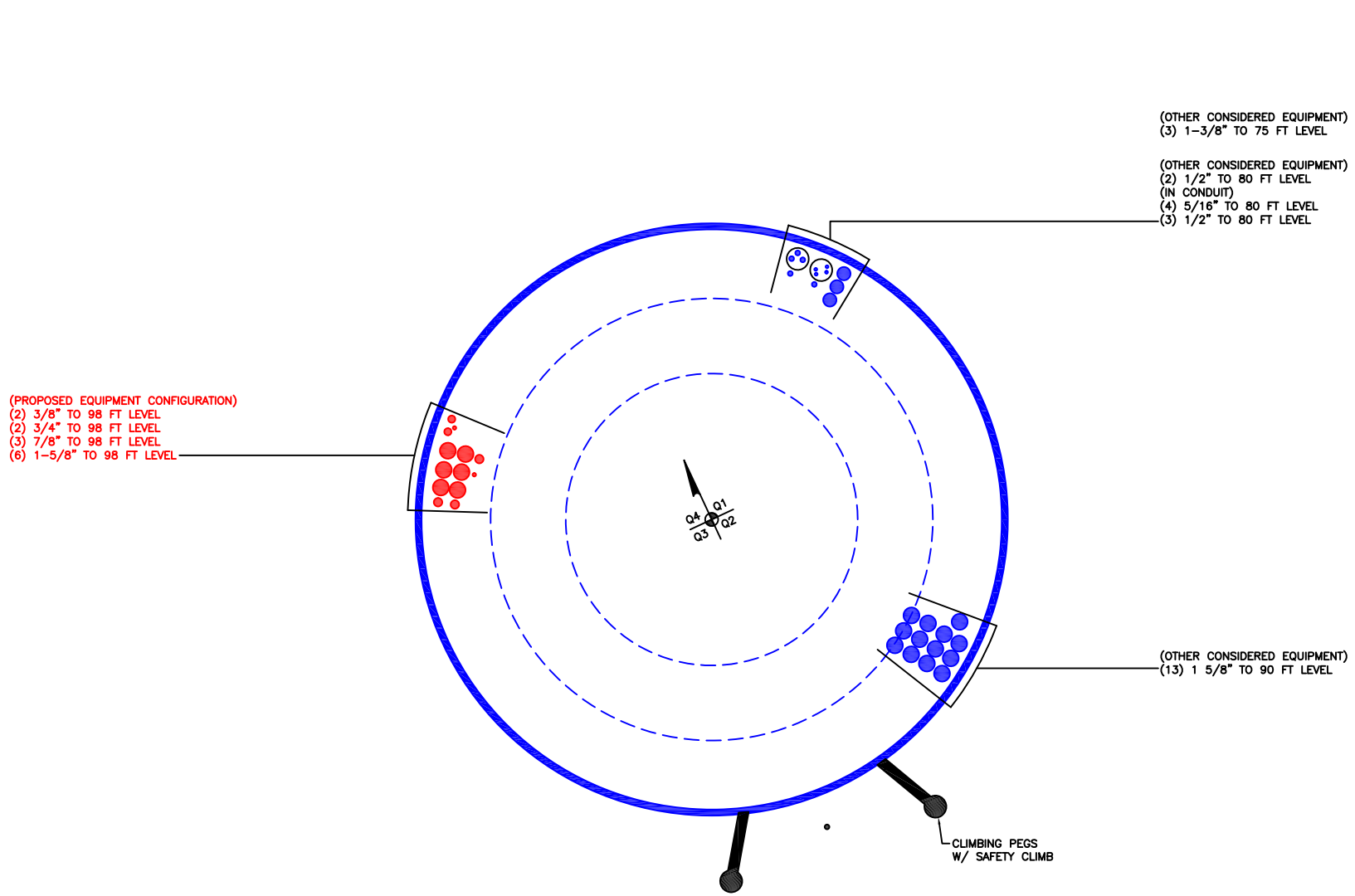
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	102 - 86.685 (1)	0.003	0.034	0.000	0.013	0.003	0.037	1.050	4.8.2
L2	86.685 - 42.869 (2)	0.007	0.197	0.000	0.020	0.002	0.204	1.050	4.8.2
L3	42.869 - 0 (3)	0.009	0.315	0.000	0.019	0.001	0.324	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	102 - 86.685	Pole	TP34.3925x29.58x0.3125	1	-5.24	1984.48	3.5	Pass
L2	86.685 - 42.869	Pole	TP47.4475x32.2595x0.375	2	-20.87	3294.66	19.4	Pass
L3	42.869 - 0	Pole	TP60x44.6888x0.375	3	-36.72	4359.25	30.8	Pass
							Summary	
						Pole (L3)	30.8	Pass
						RATING =	**30.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(3) 1-3/8" TO 75 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 80 FT LEVEL
(IN CONDUIT)
(4) 5/16" TO 80 FT LEVEL
(3) 1/2" TO 80 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(2) 3/8" TO 98 FT LEVEL
(2) 3/4" TO 98 FT LEVEL
(3) 7/8" TO 98 FT LEVEL
(6) 1-5/8" TO 98 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(13) 1 5/8" TO 90 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS

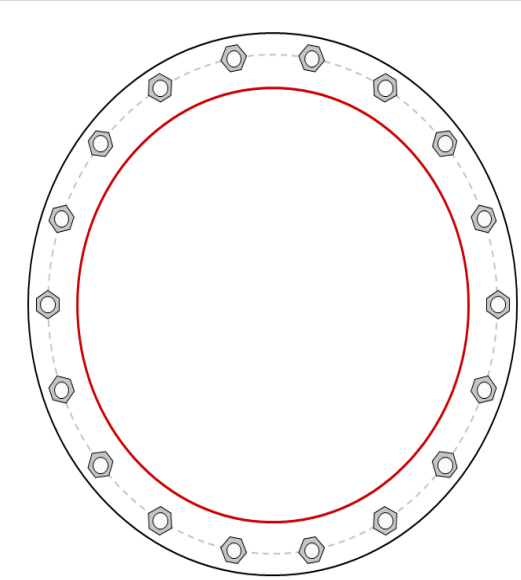
Monopole Base Plate Connection

Site Info	
BU #	842879
Site Name	ODBRIDGE COUNTRY C
Order #	509321 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2

Applied Loads	
Moment (kip-ft)	1710.19
Axial Force (kips)	36.72
Shear Force (kips)	23.22

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(18) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 69" BC

Base Plate Data

75" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

60" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 68.11	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.29	ϕVn = 73.13	**26.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	18.1	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**31.9%**	**Pass**

Pier and Pad Foundation

BU # :	842879
Site Name:	WOODBRIDGE CC
App. Number:	509321 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	37	kips
Base Shear, Vu_comp:	23	kips
Moment, M_u:	1710	ft-kips
Tower Height, **H**:	102	ft
BP Dist. Above Fdn, bp_{dist}:	4	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	40	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	5	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, **W**:	27.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top), Sp_{top}:	8	
Pad Top Rebar Quantity (Top), mp_{top}:	24	
Pad Rebar Size (Bottom), **Sp**:	8	
Pad Rebar Quantity (Bottom), **mp**:	36	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Gross Bearing, Qult:	8.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	60	
Base Friction, μ:		
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	n/a	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	178.63	23.00	**12.3%**	**Pass**
Bearing Pressure (ksf)	6.00	1.63	**25.8%**	**Pass**
*Overturning (kip*ft)*	5847.48	1855.67	**31.7%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	5517.45	1779.00	**30.7%**	**Pass**
Pier Compression (kip)	35802.00	67.38	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	3934.05	653.18	**15.8%**	**Pass**
Pad Shear - 1-way (kips)	986.16	93.55	**9.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.018	**8.8%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3898.96	1067.40	**26.1%**	**Pass**

**Rating per TIA-222-H Section 15.5*

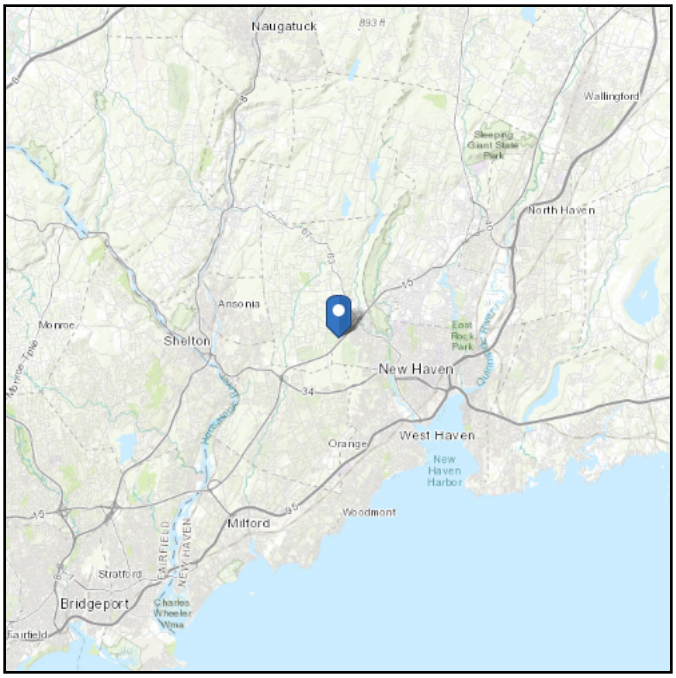
Soil Rating*:	**31.7%**
Structural Rating*:	**30.7%**

Version 3.3.0

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	360.98 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.327639
Soil Class:	D - Stiff Soil	**Longitude:**	-72.993567



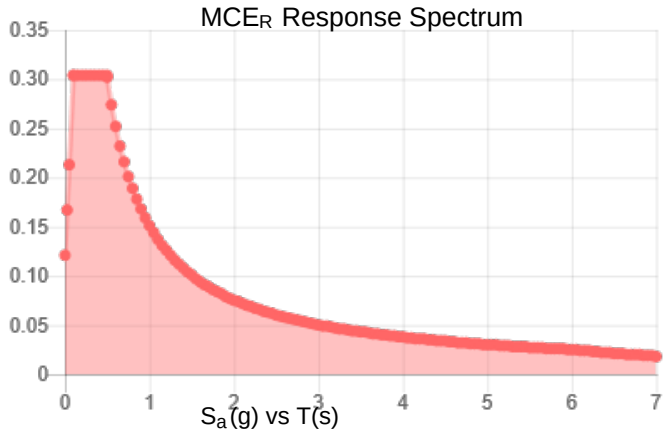
Seismic

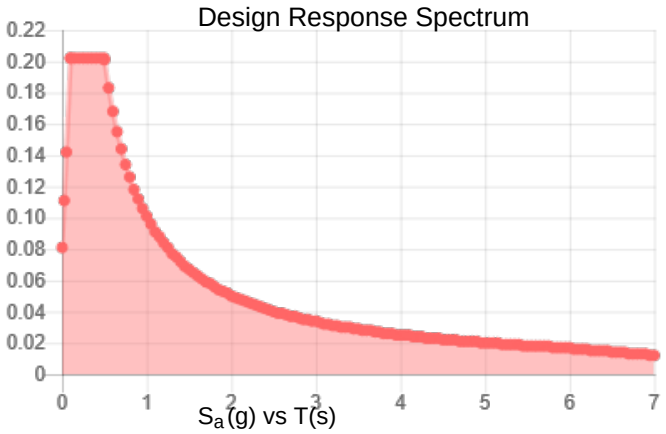
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.19	S_{DS} :	0.202
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.1
S_{MS} :	0.304	PGA_M :	0.159
S_{M1} :	0.151	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Mar 04 2020

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Mar 04 2020

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

Date: February 28, 2020

Ms. Darcy Tarr
Crown Castle USA
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**AT&T Mobility**	
	Carrier Site Number:	14243
	Carrier Site Name:	Woodbridge Country Club
Crown Castle Designation:	**BU Number:**	842879
	Site Name:	Woodbridge Country Club
	JDE Job Number:	596323
	Order Number:	509321, Rev.0
Engineering Firm Designation:	**B+T Group Report Designation:**	140443.003.01
Site Data:	**50 Woodfield Road, Woodbridge Road, Woodbridge, CT 06525** **New Haven County** **Latitude 41° 19' 39.50", Longitude -72° 59' 36.84"**	
Structure Information:	**Tower Height & Type:**	**102.0 ft. Monopole**
	Mount Elevation:	**98.0 ft.**
	Mount Type:	**11.0 ft. Platform**

Dear Ms. Tarr,

B+T Group is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of AT&T Mobility's antenna mounting system with the proposed appurtenance and equipment addition on the above-mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

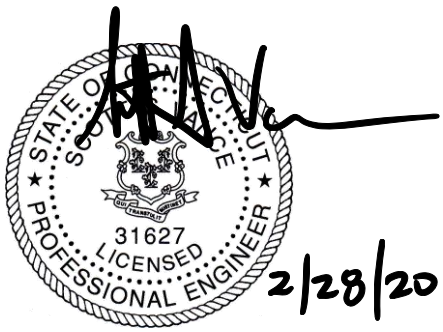
The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **Sufficient**

This analysis has been performed in accordance with the ANSI/TIA-222-H Standard and the 2018 International Building Code based upon a Basic Wind Speed of 119 mph 3-second gust. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Khup Hatzaw.

Respectfully submitted by: B&T Engineering, Inc.
COA #: PEC.001564, Expires: 02/10/2020



Scott S. Vance, P.E.
Engineer of Record

TABLE OF CONTENTS

1) INTRODUCTION

The Mount is a 11.0 ft. Platform mapped by B+T Group, attached to the 102.0 ft. Monopole at the elevation of 98.0 ft.

2) ANALYSIS CRITERIA

Building Code:	**2018 International Building Code**
TIA-222 Revision:	**TIA-222-H**
Risk Category:	**II**
Basic Wind Speed:	**119 mph**
Exposure Category:	**C**
Topographic Factor at Base:	**1.0**
Topographic Factor at Mount:	**1.0**
Escalated Ice Thickness:	**1.0 in**
Wind Speed with Ice:	**50 mph**
Seismic S_S:	**0.200**
Seismic S_1:	**0.054**
Live Loading Wind Speed:	**30 mph**
Man-Live Load at Mid/End-Points:	**250 lb.**
Man-Live Load at Mount Pipes:	**500 lb.**

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Quantity	Manufacturer	Model/Type	Mount / Modification Details
98.0	99.0	3	CCI	DMP65R-BU6D	11.0 ft. Existing Platform
		3	CCI	OPA65R-BU6D	
		3	Powerwave	7770.00	
		3	Ericsson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS 4478 B14_CCIV2	
		3	Ericsson	RRUS 8843 B2/ B66A_CCIV2	
		6	Powerwave	LGP21401	
		1	Raycap	DC6-48-60-18-8F	
		1	Raycap	DC9-48-60-24-8CEV	

Table 2 – Documents Provided

Document	Descriptions	Reference	Source
Crown Castle Order Information	Existing Loading and Proposed Loading	Order ID: 509321, Rev. 0	Crown Castle
RFDS	Existing Loading and Proposed Loading	Dated: 11/12/2019	
Construction Document by Crown Castle	Construction Drawing (Loading Configuration)	Dated: 02/26/2020 98.0 ft. Proposed Level	
Drone Mount Mapping Report by B+T Group	Existing Mount	Dated: 01/03/2020	On File

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by B+T Group, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C). In addition, this analysis is in accordance with *AT&T's Mount Technical Directive – R14.1*.

3.2) Assumptions

1. The mount was properly fabricated and installed in accordance with its original design and manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
10. The following material grades were assumed (Unless Noted Otherwise):
    (a) Connection Bolts : ASTM A325
    (b) Steel Pipe : ASTM A53 (GR. 35)
    (c) HSS (Round) : ASTM 500 (GR. B-42)
    (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
    (e) Channel : ASTM A36 (GR. 36)
    (f) Steel Solid Rod : ASTM A36 (GR. 36)
    (g) Steel Plate : ASTM A36 (GR. 36)
    (h) Steel Angle : ASTM A36 (GR. 36)
    (i) UNISTRUT : ASTM A570 (GR. 33)

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Elevation (ft.)	Critical Member	Capacity (%)	Pass / Fail
1	Antenna Mount – Pipes	98.0	MP33	42.9	Pass
	Face Horizontal – Channels	98.0	F32	63.0	Pass
	Face Bridge – Plates	98.0	P1	5.0	Pass
	Platform Beam – Channels	98.0	B2	93.6	Pass
	Platform Joist – Channels	98.0	J1	3.4	Pass
	Support Rail – Pipes	98.0	H3	34.8	Pass
	Rail Bridge – Angles	98.0	HB1	54.0	Pass

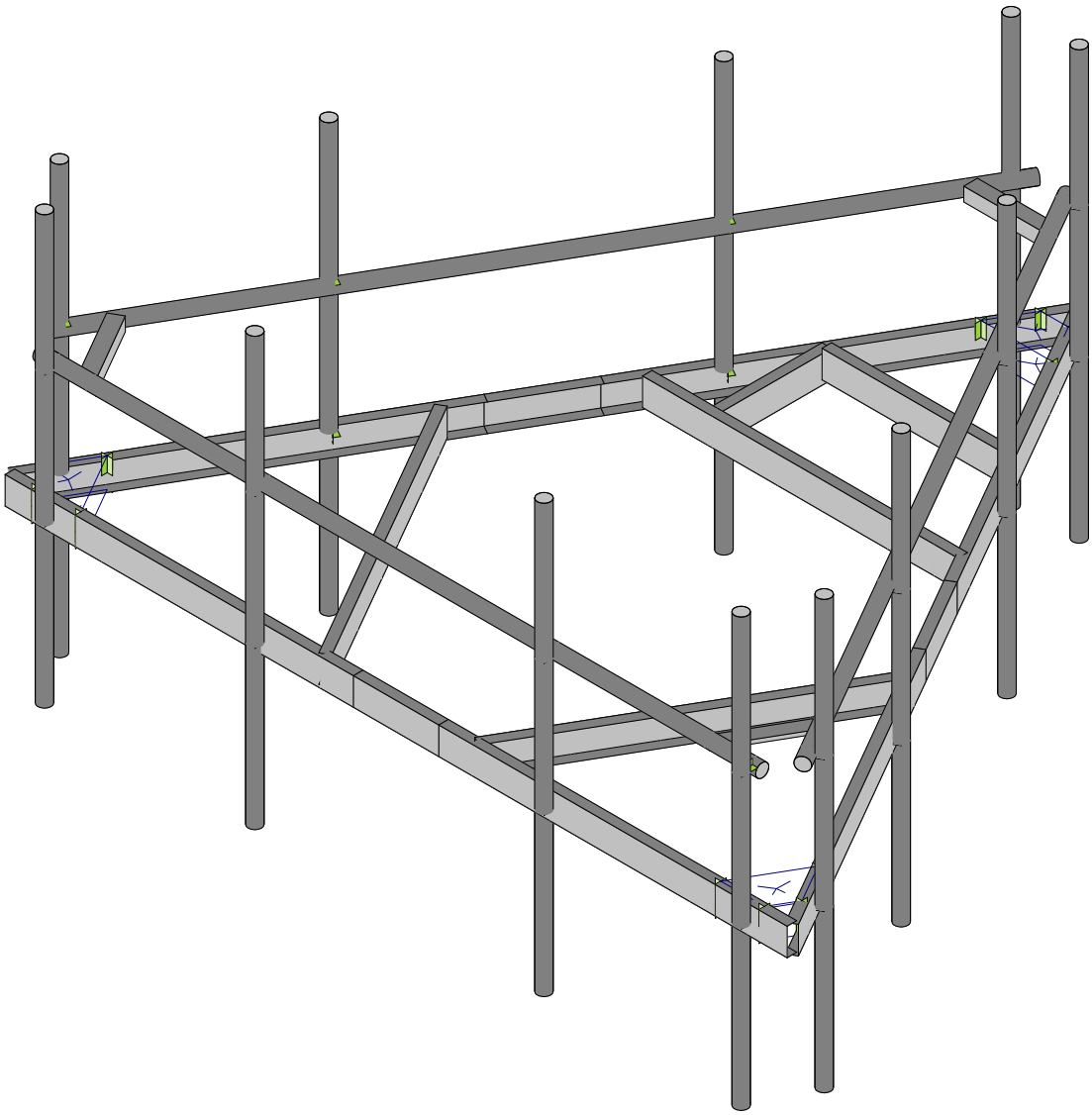
Note:
1. See additional documentation in Appendix C: “Software Input and Output" for the analysis supporting the Capacity percentage usage.

Structural Rating (Max. from Components)	93.6%

5) RECOMMENDATIONS

The Mount has sufficient capacity to carry the proposed loading configuration.
No modifications are required at this time.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

B+T GROUP		SK - 1
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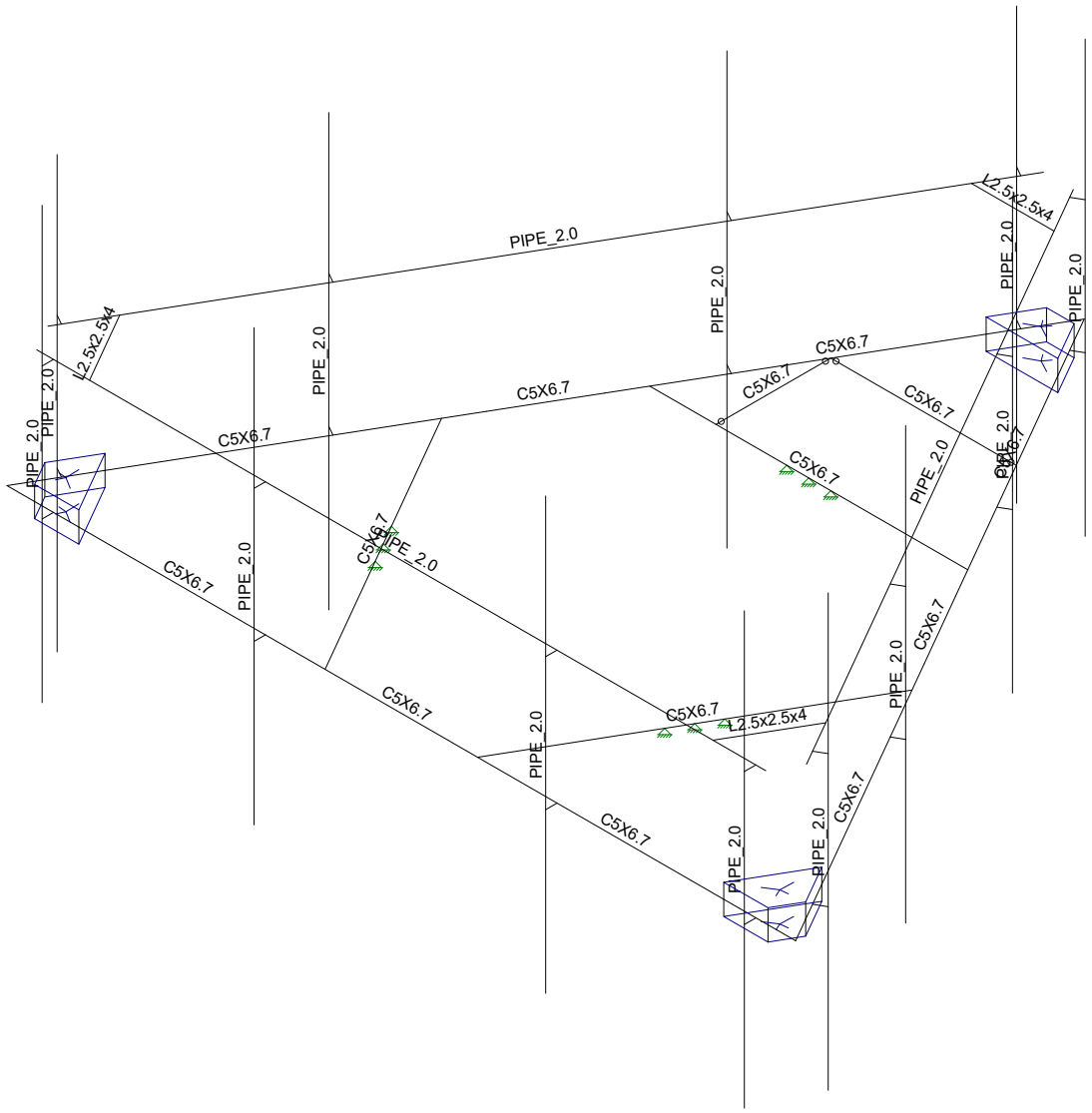
140443.003.01	PLATFORM MOUNT	140443_003_01_Platform.r3d



Envelope Only Solution

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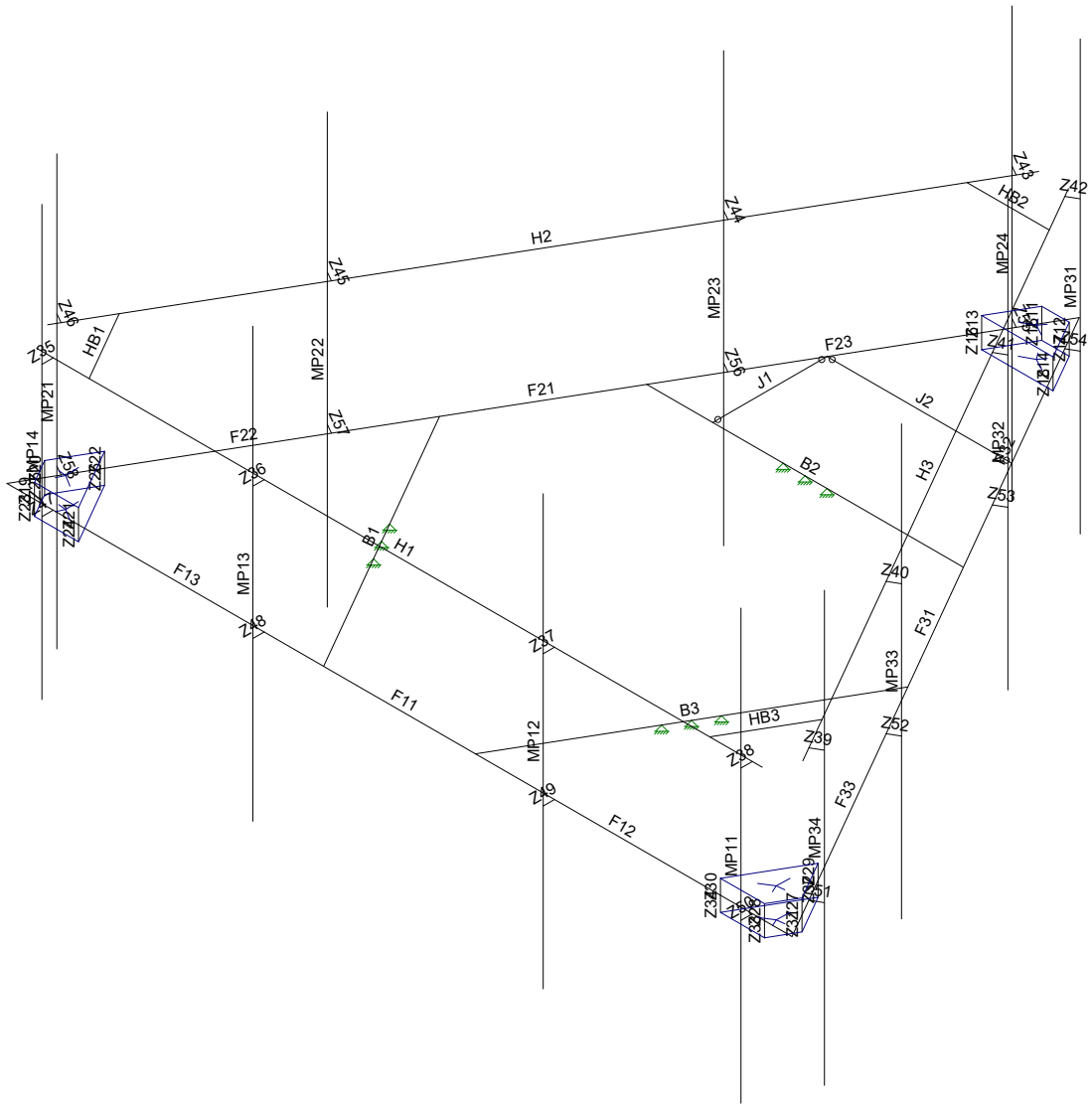

Envelope Only Solution

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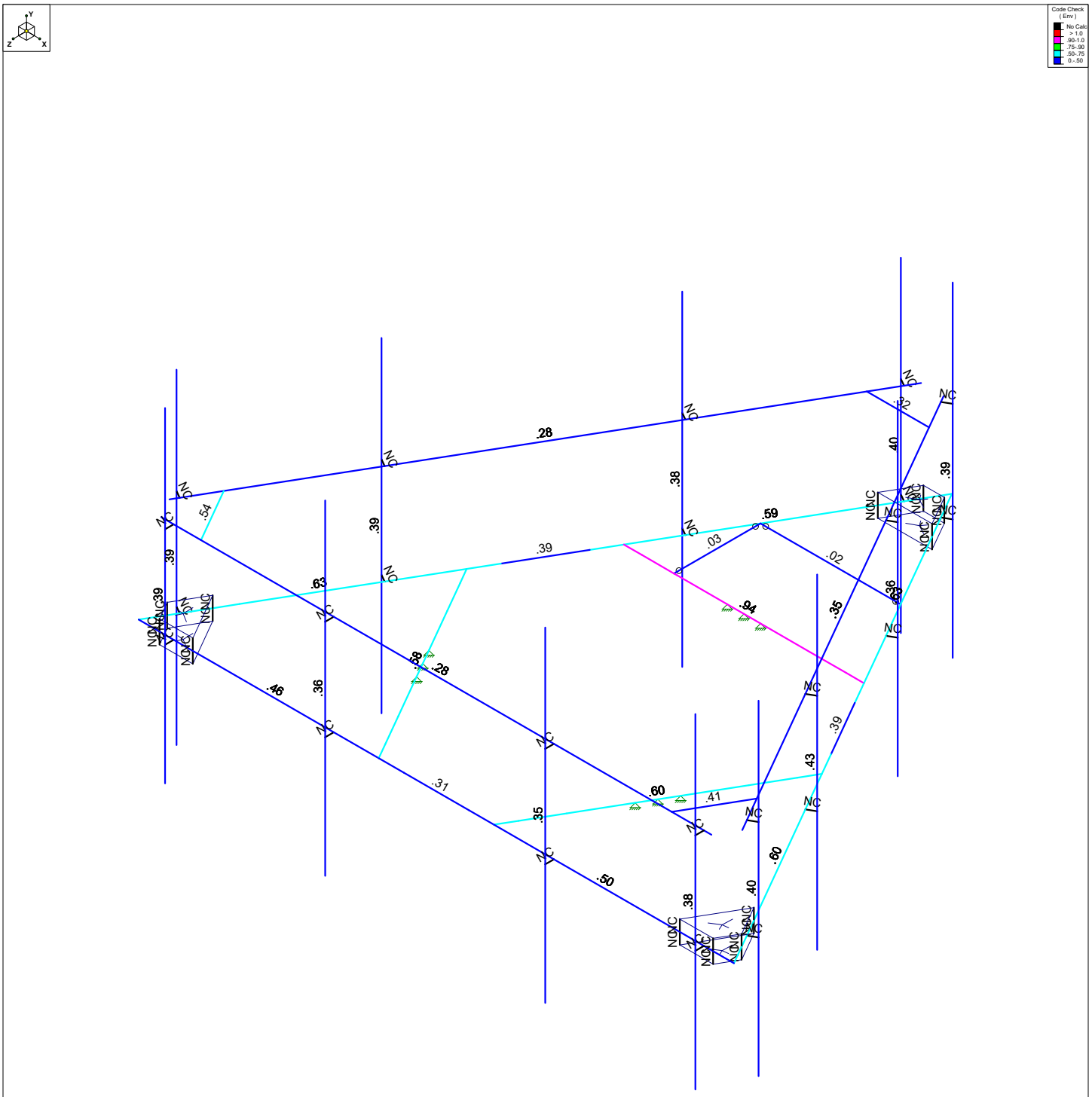

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T GROUP		SK - 4
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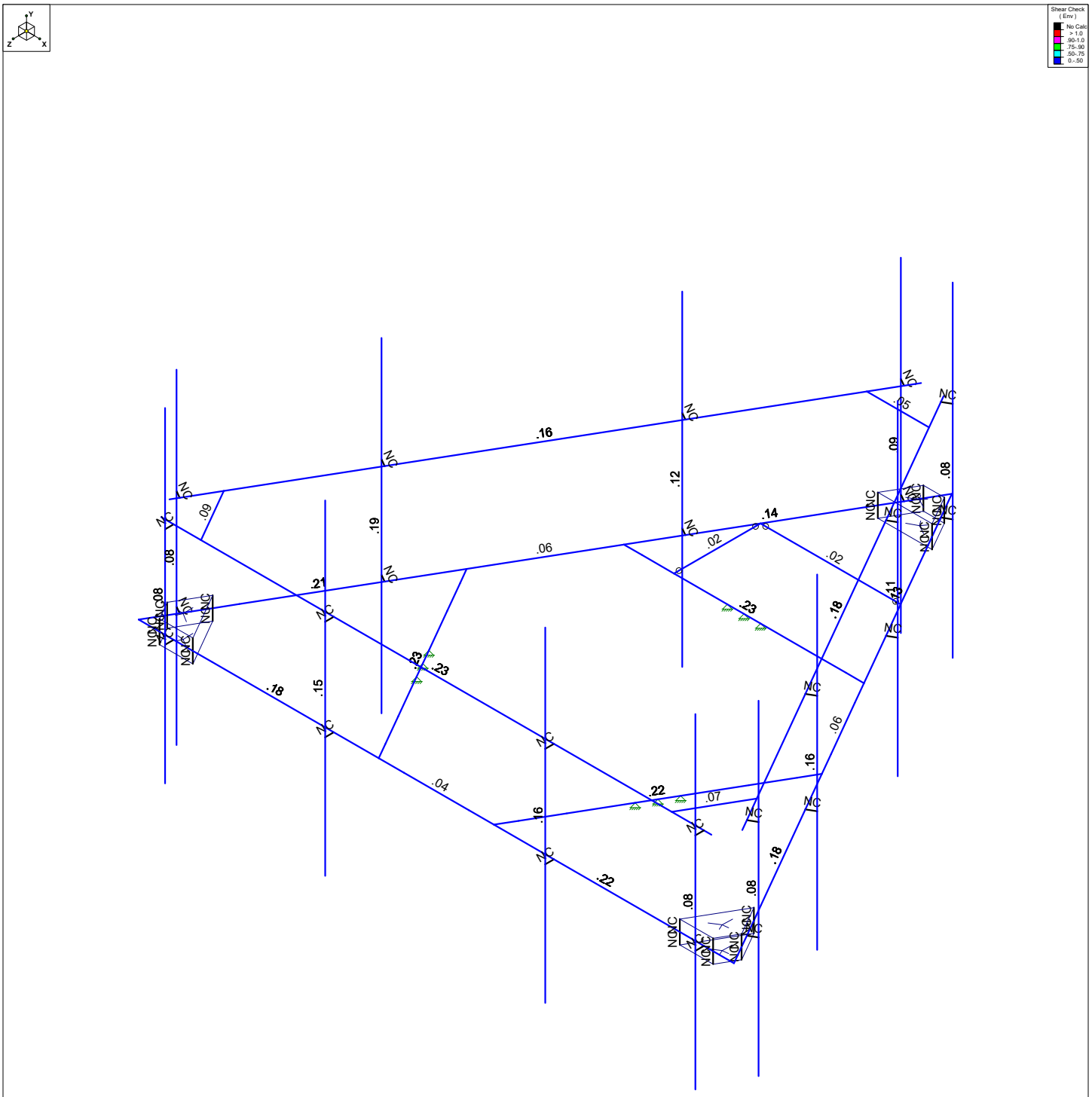

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T GROUP		SK - 5
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APPENDIX B
SOFTWARE INPUT CALCULATIONS

PROJECT	**140443.003.01 - Woodbridge**		**KSC**
SUBJECT	**PLATFORM MOUNT Mount Analysis**		
DATE	**02/28/20**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Tower Type		:	Monopole		
Ground Elevation	z_s	:	361	ft	[ASCE7 Hazard Tool]
Tower Height		:	102.00	ft	
Mount Elevation		:	98.00	ft	
Antenna Elevation		:	99.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	119	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.20		
	S_1	:	0.05		
	S_{DS}	:	0.21		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.26		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.99		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.12	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.107		[Sec. 2.7.7.1]
Amplification	A_s	:	2.843137		[Sec. 16.7]

PROJECT	**140443.003.01 - Woodbridge**		**KSC**
SUBJECT	**PLATFORM MOUNT Mount Analysis**		
DATE	**02/28/20**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.11	0.05	0.02	0.01
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.11	0.05	0.02	0.01
Powerwave	TME-LGP21401	2	1.57	1.20	1.84	0.52	2.64	1.12	0.09	0.02	0.02	0.00
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.26	0.10	0.05	0.02
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.26	0.10	0.05	0.02
Ericsson	TME-RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.03	1.29	0.07	0.04	0.01	0.01
Ericsson	RRUS 8843 B2/B66A_CCIV2	1	1.36	1.20	1.65	1.41	2.17	1.90	0.08	0.07	0.01	0.01
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.26	0.10	0.05	0.02
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.26	0.10	0.05	0.02
Ericsson	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.16	1.63	0.08	0.05	0.01	0.01
RAYCAP	TME-DC9-48-60-24-8C-EV	1	3.07	1.23	2.23	3.99	2.91	4.79	0.11	0.19	0.02	0.03
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.11	0.05	0.02	0.01
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.11	0.05	0.02	0.01
Powerwave	TME-LGP21401	2	1.57	1.20	1.84	0.52	2.64	1.12	0.09	0.02	0.02	0.00
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.26	0.10	0.05	0.02
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.26	0.10	0.05	0.02
Ericsson	TME-RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.03	1.29	0.07	0.04	0.01	0.01
Ericsson	RRUS 8843 B2/B66A_CCIV2	1	1.36	1.20	1.65	1.41	2.17	1.90	0.08	0.07	0.01	0.01

PROJECT	**140443.003.01 - Woodbridge**		**KH**
SUBJECT	**PLATFORM MOUNT Mount Analysis**		
DATE	**02/28/20**	PAGE 3	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.00	0.10	0.05	0.02
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.00	0.10	0.05	0.02
Ericsson	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.16	1.63	0.00	0.05	0.01	0.01
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.00	0.05	0.02	0.01
Powerwave	7770.00	0.5	5.00	1.31	2.10	0.95	2.63	1.44	0.00	0.05	0.02	0.01
Powerwave	TME-LGP21401	2	1.57	1.20	1.84	0.52	2.64	1.12	0.00	0.02	0.02	0.00
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.00	0.10	0.05	0.02
CCI	OPA65R-BU6D	0.5	3.39	1.24	5.19	1.93	5.92	2.56	0.00	0.10	0.05	0.02
Ericsson	TME-RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.03	1.29	0.00	0.04	0.01	0.01
Ericsson	RRUS 8843 B2/B66A_CCIV2	1	1.36	1.20	1.65	1.41	2.17	1.90	0.00	0.07	0.01	0.01
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.00	0.10	0.05	0.02
CCI	DMP65R-BU6D	0.5	3.44	1.24	5.12	1.90	5.85	2.53	0.00	0.10	0.05	0.02
Ericsson	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.16	1.63	0.00	0.05	0.01	0.01

APPENDIX C
SOFTWARE INPUT AND OUTPUT

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	FH-Channel	C5X6.7	Beam	Channel	A36 Gr.36	Typical	1.97	.47	7.48	.055
2	AM-Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	PB-Channel	C5X6.7	Beam	Channel	A36 Gr.36	Typical	1.97	.47	7.48	.055
4	HR-Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	HB-Angle	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design Rul...
1	B1	N9	N10		180	PB-Channel	Beam	Channel	A36 Gr.36	Typical
2	B2	N7	N8		180	PB-Channel	Beam	Channel	A36 Gr.36	Typical
3	B3	N11	N12		180	PB-Channel	Beam	Channel	A36 Gr.36	Typical
4	F11	N1	N2		180	FH-Channel	Beam	Channel	A36 Gr.36	Typical
5	F12	N2	N73		180	FH-Channel	Beam	Channel	A36 Gr.36	Typical
6	F13	N70	N1		180	FH-Channel	Beam	Channel	A36 Gr.36	Typical
7	F21	N71	N3			FH-Channel	Beam	Channel	A36 Gr.36	Typical
8	F22	N70	N71			FH-Channel	Beam	Channel	A36 Gr.36	Typical
9	F23	N3	N5			FH-Channel	Beam	Channel	A36 Gr.36	Typical
10	F31	N72	N4		180	FH-Channel	Beam	Channel	A36 Gr.36	Typical
11	F32	N4	N5		180	FH-Channel	Beam	Channel	A36 Gr.36	Typical
12	F33	N72	N73			FH-Channel	Beam	Channel	A36 Gr.36	Typical
13	H1	N125	N126			HR-Pipe	Beam	Pipe	A53 Gr.B	Typical
14	H2	N145	N146			HR-Pipe	Beam	Pipe	A53 Gr.B	Typical
15	H3	N135	N136			HR-Pipe	Beam	Pipe	A53 Gr.B	Typical
16	HB1	N155	N160		180	HB-Angle	Beam	Single Angle	A36 Gr.36	Typical
17	HB2	N157	N159		180	HB-Angle	Beam	Single Angle	A36 Gr.36	Typical
18	HB3	N156	N158		180	HB-Angle	Beam	Single Angle	A36 Gr.36	Typical
19	J1	N14	N15			PB-Channel	Beam	Channel	A36 Gr.36	Typical
20	J2	N14	N13		180	PB-Channel	Beam	Channel	A36 Gr.36	Typical
21	MP11	N86	N87			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
22	MP12	N82	N83			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
23	MP13	N78	N79			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
24	MP14	N74	N75			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
25	MP21	N118	N119			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
26	MP22	N114	N115			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
27	MP23	N110	N111			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
28	MP24	N106	N107			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
29	MP31	N102	N103			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
30	MP32	N98	N99			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
31	MP33	N94	N95			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
32	MP34	N90	N91			AM-Pipe	Column	Pipe	A53 Gr.B	Typical
33	Z11	N16	N23			RIGID	None	None	RIGID	Typical
34	Z12	N18	N20			RIGID	None	None	RIGID	Typical
35	Z13	N17	N22			RIGID	None	None	RIGID	Typical
36	Z14	N19	N21			RIGID	None	None	RIGID	Typical
37	Z15	N27	N16			RIGID	None	None	RIGID	Typical
38	Z16	N26	N17			RIGID	None	None	RIGID	Typical
39	Z17	N24	N18			RIGID	None	None	RIGID	Typical
40	Z18	N25	N19			RIGID	None	None	RIGID	Typical
41	Z19	N28	N35			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design Rul...
42	Z20	N30	N32			RIGID	None	None	RIGID	Typical
43	Z21	N29	N34			RIGID	None	None	RIGID	Typical
44	Z22	N31	N33			RIGID	None	None	RIGID	Typical
45	Z23	N39	N28			RIGID	None	None	RIGID	Typical
46	Z24	N38	N29			RIGID	None	None	RIGID	Typical
47	Z25	N36	N30			RIGID	None	None	RIGID	Typical
48	Z26	N37	N31			RIGID	None	None	RIGID	Typical
49	Z27	N40	N47			RIGID	None	None	RIGID	Typical
50	Z28	N42	N44			RIGID	None	None	RIGID	Typical
51	Z29	N41	N46			RIGID	None	None	RIGID	Typical
52	Z30	N43	N45			RIGID	None	None	RIGID	Typical
53	Z31	N51	N40			RIGID	None	None	RIGID	Typical
54	Z32	N50	N41			RIGID	None	None	RIGID	Typical
55	Z33	N48	N42			RIGID	None	None	RIGID	Typical
56	Z34	N49	N43			RIGID	None	None	RIGID	Typical
57	Z35	N127	N128			RIGID	None	None	RIGID	Typical
58	Z36	N129	N130			RIGID	None	None	RIGID	Typical
59	Z37	N131	N132			RIGID	None	None	RIGID	Typical
60	Z38	N133	N134			RIGID	None	None	RIGID	Typical
61	Z39	N137	N138			RIGID	None	None	RIGID	Typical
62	Z40	N139	N140			RIGID	None	None	RIGID	Typical
63	Z41	N141	N142			RIGID	None	None	RIGID	Typical
64	Z42	N143	N144			RIGID	None	None	RIGID	Typical
65	Z43	N147	N148			RIGID	None	None	RIGID	Typical
66	Z44	N149	N150			RIGID	None	None	RIGID	Typical
67	Z45	N151	N152			RIGID	None	None	RIGID	Typical
68	Z46	N153	N154			RIGID	None	None	RIGID	Typical
69	Z47	N76	N77			RIGID	None	None	RIGID	Typical
70	Z48	N80	N81			RIGID	None	None	RIGID	Typical
71	Z49	N84	N85			RIGID	None	None	RIGID	Typical
72	Z50	N88	N89			RIGID	None	None	RIGID	Typical
73	Z51	N92	N93			RIGID	None	None	RIGID	Typical
74	Z52	N96	N97			RIGID	None	None	RIGID	Typical
75	Z53	N100	N101			RIGID	None	None	RIGID	Typical
76	Z54	N104	N105			RIGID	None	None	RIGID	Typical
77	Z55	N108	N109			RIGID	None	None	RIGID	Typical
78	Z56	N112	N113			RIGID	None	None	RIGID	Typical
79	Z57	N116	N117			RIGID	None	None	RIGID	Typical
80	Z58	N120	N121			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1	Dead Load	DL		-1			50		6	
2	0 Wind - No Ice	WLZ					50	26		
3	90 Wind - No Ice	WLX					50	26		
4	0 Wind - Ice	WLZ					50	26		
5	90 Wind - Ice	WLX					50	26		
6	0 Wind - Service	WLZ					50	26		
7	90 Wind - Service	WLX					50	26		
8	Ice Load	OL1					50	26	6	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
9	0 Seismic	ELZ					50	26		
10	90 Seismic	ELX					50	26		
11	Live Load a	LL				6				
12	Live Load b	LL				6				
13	Live Load c	LL				6				
14	Live Load d	LL				6				
15	Maint LL 1	LL					1			
16	Maint LL 2	LL					1			
17	Maint LL 3	LL					1			
18	Maint LL 4	LL					1			
19	Maint LL 5	LL					1			
20	Maint LL 6	LL					1			
21	Maint LL 7	LL					1			
22	Maint LL 8	LL					1			
23	Maint LL 9	LL					1			
24	Maint LL 10	LL								
25	Maint LL 11	LL								
26	Maint LL 12	LL								
27	Maint LL 13	LL								
28	Maint LL 14	LL								
29	Maint LL 15	LL								
30	Maint LL 16	LL								
31	Maint LL 17	LL								
32	Maint LL 18	LL								
33	Maint LL 19	LL								
34	Maint LL 20	LL								
35	Maint LL 21	LL								
36	Maint LL 22	LL								
37	Maint LL 23	LL								
38	Maint LL 24	LL								
39	BLC 1 Transient Area Loads	None						58		
40	BLC 8 Transient Area Loads	None						58		

Load Combinations

	Description	S...	P...	S...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
1	1.4 Dead	Yes	Y		1	1.4																				
2	1.2 D + 1.0 - 0 W	Yes	Y		1	1.2	2	1																		
3	1.2 D + 1.0 - 30 W	Yes	Y		1	1.2	2	.866	3	.5																
4	1.2 D + 1.0 - 60 W	Yes	Y		1	1.2	3	.866	2	.5																
5	1.2 D + 1.0 - 90 W	Yes	Y		1	1.2	3	1																		
6	1.2 D + 1.0 - 120 W	Yes	Y		1	1.2	3	.866	2	-.5																
7	1.2 D + 1.0 - 150 W	Yes	Y		1	1.2	2	-.866	3	.5																
8	1.2 D + 1.0 - 180 W	Yes	Y		1	1.2	2	-1																		
9	1.2 D + 1.0 - 210 W	Yes	Y		1	1.2	2	-.866	3	-.5																
10	1.2 D + 1.0 - 240 W	Yes	Y		1	1.2	3	-.866	2	-.5																
11	1.2 D + 1.0 - 270 W	Yes	Y		1	1.2	3	-1																		
12	1.2 D + 1.0 - 300 W	Yes	Y		1	1.2	3	-.866	2	.5																
13	1.2 D + 1.0 - 330 W	Yes	Y		1	1.2	2	.866	3	-.5																
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y		1	1.2	4	1			8	1														
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y		1	1.2	4	.866	5	.5	8	1														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y		1	1.2	5	.866	4	.5	8	1												
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y		1	1.2	5	1			8	1												
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y		1	1.2	5	.866	4	-.5	8	1												
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y		1	1.2	4	-.866	5	.5	8	1												
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y		1	1.2	4	-1			8	1												
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y		1	1.2	4	-.866	5	-.5	8	1												
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y		1	1.2	5	-.866	4	-.5	8	1												
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y		1	1.2	5	-1			8	1												
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y		1	1.2	5	-.866	4	.5	8	1												
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y		1	1.2	4	.866	5	-.5	8	1												
26	1.2 D + 1.0 E - 0	Yes	Y		1	1.2	9	1																
27	1.2 D + 1.0 E - 30	Yes	Y		1	1.2	9	.866	10	.5														
28	1.2 D + 1.0 E - 60	Yes	Y		1	1.2	10	.866	9	.5														
29	1.2 D + 1.0 E - 90	Yes	Y		1	1.2	10	1																
30	1.2 D + 1.0 E - 120	Yes	Y		1	1.2	10	.866	9	-.5														
31	1.2 D + 1.0 E - 150	Yes	Y		1	1.2	9	-.866	10	.5														
32	1.2 D + 1.0 E - 180	Yes	Y		1	1.2	9	-1																
33	1.2 D + 1.0 E - 210	Yes	Y		1	1.2	9	-.866	10	-.5														
34	1.2 D + 1.0 E - 240	Yes	Y		1	1.2	10	-.866	9	-.5														
35	1.2 D + 1.0 E - 270	Yes	Y		1	1.2	10	-1																
36	1.2 D + 1.0 E - 300	Yes	Y		1	1.2	10	-.866	9	.5														
37	1.2 D + 1.0 E - 330	Yes	Y		1	1.2	9	.866	10	-.5														
38	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	1			11	1.5												
39	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	.866	7	.5	11	1.5												
40	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	.866	6	.5	11	1.5												
41	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	1			11	1.5												
42	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	.866	6	-.5	11	1.5												
43	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	-.866	7	.5	11	1.5												
44	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	-1			11	1.5												
45	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	-.866	7	-.5	11	1.5												
46	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	-.866	6	-.5	11	1.5												
47	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	-1			11	1.5												
48	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	7	-.866	6	.5	11	1.5												
49	1.2 D + 1.5 LL a + Servic...	Yes	Y		1	1.2	6	.866	7	-.5	11	1.5												
50	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	1			12	1.5												
51	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	.866	7	.5	12	1.5												
52	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	.866	6	.5	12	1.5												
53	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	1			12	1.5												
54	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	.866	6	-.5	12	1.5												
55	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	-.866	7	.5	12	1.5												
56	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	-1			12	1.5												
57	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	-.866	7	-.5	12	1.5												
58	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	-.866	6	-.5	12	1.5												
59	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	-1			12	1.5												
60	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	7	-.866	6	.5	12	1.5												
61	1.2 D + 1.5 LL b + Servic...	Yes	Y		1	1.2	6	.866	7	-.5	12	1.5												
62	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	1			13	1.5												
63	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	.866	7	.5	13	1.5												
64	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	.866	6	.5	13	1.5												
65	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	1			13	1.5												
66	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	.866	6	-.5	13	1.5												
67	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	-.866	7	.5	13	1.5												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
68	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	-1			13	1.5												
69	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	-.866	7	-.5	13	1.5												
70	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	-.866	6	-.5	13	1.5												
71	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	-1			13	1.5												
72	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	7	-.866	6	.5	13	1.5												
73	1.2 D + 1.5 LL c + Servic...	Yes	Y		1	1.2	6	.866	7	-.5	13	1.5												
74	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	1			14	1.5												
75	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	.866	7	.5	14	1.5												
76	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	.866	6	.5	14	1.5												
77	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	1			14	1.5												
78	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	.866	6	-.5	14	1.5												
79	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	-.866	7	.5	14	1.5												
80	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	-1			14	1.5												
81	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	-.866	7	-.5	14	1.5												
82	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	-.866	6	-.5	14	1.5												
83	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	-1			14	1.5												
84	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	7	-.866	6	.5	14	1.5												
85	1.2 D + 1.5 LL d + Servic...	Yes	Y		1	1.2	6	.866	7	-.5	14	1.5												
86	1.2 D + 1.5 LL Maint (1)	Yes	Y		1	1.2					15	1.5												
87	1.2 D + 1.5 LL Maint (2)	Yes	Y		1	1.2					16	1.5												
88	1.2 D + 1.5 LL Maint (3)	Yes	Y		1	1.2					17	1.5												
89	1.2 D + 1.5 LL Maint (4)	Yes	Y		1	1.2					18	1.5												
90	1.2 D + 1.5 LL Maint (5)	Yes	Y		1	1.2					19	1.5												
91	1.2 D + 1.5 LL Maint (6)	Yes	Y		1	1.2					20	1.5												
92	1.2 D + 1.5 LL Maint (7)	Yes	Y		1	1.2					21	1.5												
93	1.2 D + 1.5 LL Maint (8)	Yes	Y		1	1.2					22	1.5												
94	1.2 D + 1.5 LL Maint (9)	Yes	Y		1	1.2					23	1.5												
95	1.2 D + 1.5 LL Maint (10)	Yes	Y		1	1.2					24	1.5												
96	1.2 D + 1.5 LL Maint (11)	Yes	Y		1	1.2					25	1.5												
97	1.2 D + 1.5 LL Maint (12)	Yes	Y		1	1.2					26	1.5												
98	1.2 D + 1.5 LL Maint (13)	Yes	Y		1	1.2					27	1.5												
99	1.2 D + 1.5 LL Maint (14)	Yes	Y		1	1.2					28	1.5												
100	1.2 D + 1.5 LL Maint (15)	Yes	Y		1	1.2					29	1.5												
101	1.2 D + 1.5 LL Maint (16)	Yes	Y		1	1.2					30	1.5												
102	1.2 D + 1.5 LL Maint (17)	Yes	Y		1	1.2					31	1.5												
103	1.2 D + 1.5 LL Maint (18)	Yes	Y		1	1.2					32	1.5												
104	1.2 D + 1.5 LL Maint (19)	Yes	Y		1	1.2					33	1.5												
105	1.2 D + 1.5 LL Maint (20)	Yes	Y		1	1.2					34	1.5												
106	1.2 D + 1.5 LL Maint (21)	Yes	Y		1	1.2					35	1.5												
107	1.2 D + 1.5 LL Maint (22)	Yes	Y		1	1.2					36	1.5												
108	1.2 D + 1.5 LL Maint (23)	Yes	Y		1	1.2					37	1.5												
109	1.2 D + 1.5 LL Maint (24)	Yes	Y		1	1.2					38	1.5												

Member Point Loads (BLC 1 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Y	-.018	%20
2	MP11	Y	-.018	%70
3	MP11	Y	-.028	%45
4	MP11	Y	0	0
5	MP11	Y	0	0

Member Point Loads (BLC 1 : Dead Load) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
6	MP13	Y	-.032	%5
7	MP13	Y	-.032	%90
8	MP13	Y	-.06	%20
9	MP13	Y	-.075	%45
10	MP13	Y	0	0
11	MP14	Y	-.045	%5
12	MP14	Y	-.045	%90
13	MP14	Y	-.071	%45
14	MP14	Y	0	0
15	MP14	Y	0	0
16	B1	Y	-.026	%25
17	B1	Y	0	0
18	B1	Y	0	0
19	B1	Y	0	0
20	B1	Y	0	0
21	MP21	Y	-.018	%20
22	MP21	Y	-.018	%70
23	MP21	Y	-.028	%45
24	MP21	Y	0	0
25	MP21	Y	0	0
26	MP23	Y	-.032	%5
27	MP23	Y	-.032	%90
28	MP23	Y	-.06	%20
29	MP23	Y	-.075	%45
30	MP23	Y	0	0
31	MP24	Y	-.045	%5
32	MP24	Y	-.045	%90
33	MP24	Y	-.071	%45
34	MP24	Y	0	0
35	MP24	Y	0	0
36	MP31	Y	-.018	%20
37	MP31	Y	-.018	%70
38	MP31	Y	-.028	%45
39	MP31	Y	0	0
40	MP31	Y	0	0
41	MP33	Y	-.032	%5
42	MP33	Y	-.032	%90
43	MP33	Y	-.06	%20
44	MP33	Y	-.075	%45
45	MP33	Y	0	0
46	MP34	Y	-.045	%5
47	MP34	Y	-.045	%90
48	MP34	Y	-.071	%45
49	MP34	Y	0	0
50	MP34	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Z	-.106	%20
2	MP11	Z	-.106	%70
3	MP11	Z	-.085	%45

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
4	MP11	Z	0	0
5	MP11	Z	0	0
6	MP13	Z	-.262	%5
7	MP13	Z	-.262	%90
8	MP13	Z	-.071	%20
9	MP13	Z	-.076	%45
10	MP13	Z	0	0
11	MP14	Z	-.256	%5
12	MP14	Z	-.256	%90
13	MP14	Z	-.076	%45
14	MP14	Z	0	0
15	MP14	Z	0	0
16	B1	Z	-.106	%25
17	B1	Z	0	0
18	B1	Z	0	0
19	B1	Z	0	0
20	B1	Z	0	0
21	MP21	Z	-.106	%20
22	MP21	Z	-.106	%70
23	MP21	Z	-.085	%45
24	MP21	Z	0	0
25	MP21	Z	0	0
26	MP23	Z	-.262	%5
27	MP23	Z	-.262	%90
28	MP23	Z	-.071	%20
29	MP23	Z	-.076	%45
30	MP23	Z	0	0
31	MP24	Z	-.256	%5
32	MP24	Z	-.256	%90
33	MP24	Z	-.076	%45
34	MP24	Z	0	0
35	MP24	Z	0	0
36	MP31	Z	-.106	%20
37	MP31	Z	-.106	%70
38	MP31	Z	-.085	%45
39	MP31	Z	0	0
40	MP31	Z	0	0
41	MP33	Z	-.262	%5
42	MP33	Z	-.262	%90
43	MP33	Z	-.071	%20
44	MP33	Z	-.076	%45
45	MP33	Z	0	0
46	MP34	Z	-.256	%5
47	MP34	Z	-.256	%90
48	MP34	Z	-.076	%45
49	MP34	Z	0	0
50	MP34	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	X	-.048	%20

Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	MP11	X	-.048	%70
3	MP11	X	-.024	%45
4	MP11	X	0	0
5	MP11	X	0	0
6	MP13	X	-.098	%5
7	MP13	X	-.098	%90
8	MP13	X	-.041	%20
9	MP13	X	-.066	%45
10	MP13	X	0	0
11	MP14	X	-.096	%5
12	MP14	X	-.096	%90
13	MP14	X	-.054	%45
14	MP14	X	0	0
15	MP14	X	0	0
16	B1	X	-.189	%25
17	B1	X	0	0
18	B1	X	0	0
19	B1	X	0	0
20	B1	X	0	0
21	MP21	X	-.048	%20
22	MP21	X	-.048	%70
23	MP21	X	-.024	%45
24	MP21	X	0	0
25	MP21	X	0	0
26	MP23	X	-.098	%5
27	MP23	X	-.098	%90
28	MP23	X	-.041	%20
29	MP23	X	-.066	%45
30	MP23	X	0	0
31	MP24	X	-.096	%5
32	MP24	X	-.096	%90
33	MP24	X	-.054	%45
34	MP24	X	0	0
35	MP24	X	0	0
36	MP31	X	-.048	%20
37	MP31	X	-.048	%70
38	MP31	X	-.024	%45
39	MP31	X	0	0
40	MP31	X	0	0
41	MP33	X	-.098	%5
42	MP33	X	-.098	%90
43	MP33	X	-.041	%20
44	MP33	X	-.066	%45
45	MP33	X	0	0
46	MP34	X	-.096	%5
47	MP34	X	-.096	%90
48	MP34	X	-.054	%45
49	MP34	X	0	0
50	MP34	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Z	-.019	%20
2	MP11	Z	-.019	%70
3	MP11	Z	-.015	%45
4	MP11	Z	0	0
5	MP11	Z	0	0
6	MP13	Z	-.052	%5
7	MP13	Z	-.052	%90
8	MP13	Z	-.013	%20
9	MP13	Z	-.013	%45
10	MP13	Z	0	0
11	MP14	Z	-.051	%5
12	MP14	Z	-.051	%90
13	MP14	Z	-.013	%45
14	MP14	Z	0	0
15	MP14	Z	0	0
16	B1	Z	-.019	%25
17	B1	Z	0	0
18	B1	Z	0	0
19	B1	Z	0	0
20	B1	Z	0	0
21	MP21	Z	-.019	%20
22	MP21	Z	-.019	%70
23	MP21	Z	-.015	%45
24	MP21	Z	0	0
25	MP21	Z	0	0
26	MP23	Z	-.052	%5
27	MP23	Z	-.052	%90
28	MP23	Z	-.013	%20
29	MP23	Z	-.013	%45
30	MP23	Z	0	0
31	MP24	Z	-.051	%5
32	MP24	Z	-.051	%90
33	MP24	Z	-.013	%45
34	MP24	Z	0	0
35	MP24	Z	0	0
36	MP31	Z	-.019	%20
37	MP31	Z	-.019	%70
38	MP31	Z	-.015	%45
39	MP31	Z	0	0
40	MP31	Z	0	0
41	MP33	Z	-.052	%5
42	MP33	Z	-.052	%90
43	MP33	Z	-.013	%20
44	MP33	Z	-.013	%45
45	MP33	Z	0	0
46	MP34	Z	-.051	%5
47	MP34	Z	-.051	%90
48	MP34	Z	-.013	%45
49	MP34	Z	0	0
50	MP34	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	X	-.009	%20
2	MP11	X	-.009	%70
3	MP11	X	-.004	%45
4	MP11	X	0	0
5	MP11	X	0	0
6	MP13	X	-.022	%5
7	MP13	X	-.022	%90
8	MP13	X	-.007	%20
9	MP13	X	-.012	%45
10	MP13	X	0	0
11	MP14	X	-.022	%5
12	MP14	X	-.022	%90
13	MP14	X	-.01	%45
14	MP14	X	0	0
15	MP14	X	0	0
16	B1	X	-.033	%25
17	B1	X	0	0
18	B1	X	0	0
19	B1	X	0	0
20	B1	X	0	0
21	MP21	X	-.009	%20
22	MP21	X	-.009	%70
23	MP21	X	-.004	%45
24	MP21	X	0	0
25	MP21	X	0	0
26	MP23	X	-.022	%5
27	MP23	X	-.022	%90
28	MP23	X	-.007	%20
29	MP23	X	-.012	%45
30	MP23	X	0	0
31	MP24	X	-.022	%5
32	MP24	X	-.022	%90
33	MP24	X	-.01	%45
34	MP24	X	0	0
35	MP24	X	0	0
36	MP31	X	-.009	%20
37	MP31	X	-.009	%70
38	MP31	X	-.004	%45
39	MP31	X	0	0
40	MP31	X	0	0
41	MP33	X	-.022	%5
42	MP33	X	-.022	%90
43	MP33	X	-.007	%20
44	MP33	X	-.012	%45
45	MP33	X	0	0
46	MP34	X	-.022	%5
47	MP34	X	-.022	%90
48	MP34	X	-.01	%45
49	MP34	X	0	0
50	MP34	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Z	-.007	%20
2	MP11	Z	-.007	%70
3	MP11	Z	-.005	%45
4	MP11	Z	0	0
5	MP11	Z	0	0
6	MP13	Z	-.017	%5
7	MP13	Z	-.017	%90
8	MP13	Z	-.004	%20
9	MP13	Z	-.005	%45
10	MP13	Z	0	0
11	MP14	Z	-.016	%5
12	MP14	Z	-.016	%90
13	MP14	Z	-.005	%45
14	MP14	Z	0	0
15	MP14	Z	0	0
16	B1	Z	-.007	%25
17	B1	Z	0	0
18	B1	Z	0	0
19	B1	Z	0	0
20	B1	Z	0	0
21	MP21	Z	-.007	%20
22	MP21	Z	-.007	%70
23	MP21	Z	-.005	%45
24	MP21	Z	0	0
25	MP21	Z	0	0
26	MP23	Z	-.017	%5
27	MP23	Z	-.017	%90
28	MP23	Z	-.004	%20
29	MP23	Z	-.005	%45
30	MP23	Z	0	0
31	MP24	Z	-.016	%5
32	MP24	Z	-.016	%90
33	MP24	Z	-.005	%45
34	MP24	Z	0	0
35	MP24	Z	0	0
36	MP31	Z	-.007	%20
37	MP31	Z	-.007	%70
38	MP31	Z	-.005	%45
39	MP31	Z	0	0
40	MP31	Z	0	0
41	MP33	Z	-.017	%5
42	MP33	Z	-.017	%90
43	MP33	Z	-.004	%20
44	MP33	Z	-.005	%45
45	MP33	Z	0	0
46	MP34	Z	-.016	%5
47	MP34	Z	-.016	%90
48	MP34	Z	-.005	%45
49	MP34	Z	0	0
50	MP34	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	X	-.003	%20
2	MP11	X	-.003	%70
3	MP11	X	-.002	%45
4	MP11	X	0	0
5	MP11	X	0	0
6	MP13	X	-.006	%5
7	MP13	X	-.006	%90
8	MP13	X	-.003	%20
9	MP13	X	-.004	%45
10	MP13	X	0	0
11	MP14	X	-.006	%5
12	MP14	X	-.006	%90
13	MP14	X	-.004	%45
14	MP14	X	0	0
15	MP14	X	0	0
16	B1	X	-.012	%25
17	B1	X	0	0
18	B1	X	0	0
19	B1	X	0	0
20	B1	X	0	0
21	MP21	X	-.003	%20
22	MP21	X	-.003	%70
23	MP21	X	-.002	%45
24	MP21	X	0	0
25	MP21	X	0	0
26	MP23	X	-.006	%5
27	MP23	X	-.006	%90
28	MP23	X	-.003	%20
29	MP23	X	-.004	%45
30	MP23	X	0	0
31	MP24	X	-.006	%5
32	MP24	X	-.006	%90
33	MP24	X	-.004	%45
34	MP24	X	0	0
35	MP24	X	0	0
36	MP31	X	-.003	%20
37	MP31	X	-.003	%70
38	MP31	X	-.002	%45
39	MP31	X	0	0
40	MP31	X	0	0
41	MP33	X	-.006	%5
42	MP33	X	-.006	%90
43	MP33	X	-.003	%20
44	MP33	X	-.004	%45
45	MP33	X	0	0
46	MP34	X	-.006	%5
47	MP34	X	-.006	%90
48	MP34	X	-.004	%45
49	MP34	X	0	0
50	MP34	X	0	0

Member Point Loads (BLC 8 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Y	-.041	%20
2	MP11	Y	-.041	%70
3	MP11	Y	-.035	%45
4	MP11	Y	0	0
5	MP11	Y	0	0
6	MP13	Y	-.11	%5
7	MP13	Y	-.11	%90
8	MP13	Y	-.031	%20
9	MP13	Y	-.038	%45
10	MP13	Y	0	0
11	MP14	Y	-.122	%5
12	MP14	Y	-.122	%90
13	MP14	Y	-.035	%45
14	MP14	Y	0	0
15	MP14	Y	0	0
16	B1	Y	-.079	%25
17	B1	Y	0	0
18	B1	Y	0	0
19	B1	Y	0	0
20	B1	Y	0	0
21	MP21	Y	-.041	%20
22	MP21	Y	-.041	%70
23	MP21	Y	-.035	%45
24	MP21	Y	0	0
25	MP21	Y	0	0
26	MP23	Y	-.11	%5
27	MP23	Y	-.11	%90
28	MP23	Y	-.031	%20
29	MP23	Y	-.038	%45
30	MP23	Y	0	0
31	MP24	Y	-.122	%5
32	MP24	Y	-.122	%90
33	MP24	Y	-.035	%45
34	MP24	Y	0	0
35	MP24	Y	0	0
36	MP31	Y	-.041	%20
37	MP31	Y	-.041	%70
38	MP31	Y	-.035	%45
39	MP31	Y	0	0
40	MP31	Y	0	0
41	MP33	Y	-.11	%5
42	MP33	Y	-.11	%90
43	MP33	Y	-.031	%20
44	MP33	Y	-.038	%45
45	MP33	Y	0	0
46	MP34	Y	-.122	%5
47	MP34	Y	-.122	%90
48	MP34	Y	-.035	%45
49	MP34	Y	0	0
50	MP34	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	Z	-.011	%20
2	MP11	Z	-.011	%70
3	MP11	Z	-.004	%45
4	MP11	Z	0	0
5	MP11	Z	0	0
6	MP13	Z	-.019	%5
7	MP13	Z	-.019	%90
8	MP13	Z	-.018	%20
9	MP13	Z	-.023	%45
10	MP13	Z	0	0
11	MP14	Z	-.027	%5
12	MP14	Z	-.027	%90
13	MP14	Z	-.022	%45
14	MP14	Z	0	0
15	MP14	Z	0	0
16	B1	Z	-.008	%25
17	B1	Z	0	0
18	B1	Z	0	0
19	B1	Z	0	0
20	B1	Z	0	0
21	MP21	Z	-.011	%20
22	MP21	Z	-.011	%70
23	MP21	Z	-.004	%45
24	MP21	Z	0	0
25	MP21	Z	0	0
26	MP23	Z	-.019	%5
27	MP23	Z	-.019	%90
28	MP23	Z	-.018	%20
29	MP23	Z	-.023	%45
30	MP23	Z	0	0
31	MP24	Z	-.027	%5
32	MP24	Z	-.027	%90
33	MP24	Z	-.022	%45
34	MP24	Z	0	0
35	MP24	Z	0	0
36	MP31	Z	-.011	%20
37	MP31	Z	-.011	%70
38	MP31	Z	-.004	%45
39	MP31	Z	0	0
40	MP31	Z	0	0
41	MP33	Z	-.019	%5
42	MP33	Z	-.019	%90
43	MP33	Z	-.018	%20
44	MP33	Z	-.023	%45
45	MP33	Z	0	0
46	MP34	Z	-.027	%5
47	MP34	Z	-.027	%90
48	MP34	Z	-.022	%45
49	MP34	Z	0	0
50	MP34	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP11	X	-.011	%20
2	MP11	X	-.011	%70
3	MP11	X	-.004	%45
4	MP11	X	0	0
5	MP11	X	0	0
6	MP13	X	-.019	%5
7	MP13	X	-.019	%90
8	MP13	X	-.018	%20
9	MP13	X	-.023	%45
10	MP13	X	0	0
11	MP14	X	-.027	%5
12	MP14	X	-.027	%90
13	MP14	X	-.022	%45
14	MP14	X	0	0
15	MP14	X	0	0
16	B1	X	-.008	%25
17	B1	X	0	0
18	B1	X	0	0
19	B1	X	0	0
20	B1	X	0	0
21	MP21	X	-.011	%20
22	MP21	X	-.011	%70
23	MP21	X	-.004	%45
24	MP21	X	0	0
25	MP21	X	0	0
26	MP23	X	-.019	%5
27	MP23	X	-.019	%90
28	MP23	X	-.018	%20
29	MP23	X	-.023	%45
30	MP23	X	0	0
31	MP24	X	-.027	%5
32	MP24	X	-.027	%90
33	MP24	X	-.022	%45
34	MP24	X	0	0
35	MP24	X	0	0
36	MP31	X	-.011	%20
37	MP31	X	-.011	%70
38	MP31	X	-.004	%45
39	MP31	X	0	0
40	MP31	X	0	0
41	MP33	X	-.019	%5
42	MP33	X	-.019	%90
43	MP33	X	-.018	%20
44	MP33	X	-.023	%45
45	MP33	X	0	0
46	MP34	X	-.027	%5
47	MP34	X	-.027	%90
48	MP34	X	-.022	%45
49	MP34	X	0	0
50	MP34	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F13	Y	-.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F22	Y	-.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F33	Y	-.25	%95

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F32	Y	-.25	%95

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F23	Y	-.25	%95

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	F12	Y	-.25	%95

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	B1	Y	-.25	%40

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	B2	Y	-.25	%40

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	B3	Y	-.25	%40

Joint Loads and Enforced Displacements (BLC 11 : Live Load a)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N76	L	Y	-.5
2	N92	L	Y	-.5
3	N108	L	Y	-.5
4	N127	L	Y	-.5
5	N137	L	Y	-.5
6	N147	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 12 : Live Load b)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N80	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 12 : Live Load b) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
2	N96	L	Y	-.5
3	N112	L	Y	-.5
4	N129	L	Y	-.5
5	N139	L	Y	-.5
6	N149	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 13 : Live Load c)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N84	L	Y	-.5
2	N100	L	Y	-.5
3	N116	L	Y	-.5
4	N131	L	Y	-.5
5	N141	L	Y	-.5
6	N151	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 14 : Live Load d)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N88	L	Y	-.5
2	N104	L	Y	-.5
3	N120	L	Y	-.5
4	N133	L	Y	-.5
5	N143	L	Y	-.5
6	N153	L	Y	-.5

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	Z	-.025	-.025	0	0
2	F11	Z	-.02	-.02	0	0
3	F12	Z	-.025	-.025	0	0
4	F21	Z	-.02	-.02	0	0
5	F23	Z	-.025	-.025	0	0
6	F31	Z	-.02	-.02	0	0
7	F32	Z	-.025	-.025	0	0
8	B2	Z	-.025	-.025	0	0
9	B1	Z	-.025	-.025	0	0
10	B3	Z	-.025	-.025	0	0
11	J2	Z	-.022	-.022	0	0
12	J1	Z	-.02	-.02	0	0
13	F22	Z	-.025	-.025	0	0
14	F33	Z	-.025	-.025	0	0
15	MP14	Z	-.009	-.009	0	0
16	MP13	Z	-.009	-.009	0	0
17	MP12	Z	-.009	-.009	0	0
18	MP11	Z	-.009	-.009	0	0
19	MP34	Z	-.009	-.009	0	0
20	MP33	Z	-.009	-.009	0	0
21	MP32	Z	-.009	-.009	0	0
22	MP31	Z	-.009	-.009	0	0
23	MP24	Z	-.009	-.009	0	0

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
24	MP23	Z	-.009	-.009	0	0
25	MP22	Z	-.009	-.009	0	0
26	MP21	Z	-.009	-.009	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	X	-.025	-.025	0	0
2	F11	X	-.02	-.02	0	0
3	F12	X	-.025	-.025	0	0
4	F21	X	-.02	-.02	0	0
5	F23	X	-.025	-.025	0	0
6	F31	X	-.02	-.02	0	0
7	F32	X	-.025	-.025	0	0
8	B2	X	-.025	-.025	0	0
9	B1	X	-.025	-.025	0	0
10	B3	X	-.025	-.025	0	0
11	J2	X	-.022	-.022	0	0
12	J1	X	-.02	-.02	0	0
13	F22	X	-.025	-.025	0	0
14	F33	X	-.025	-.025	0	0
15	MP14	X	-.009	-.009	0	0
16	MP13	X	-.009	-.009	0	0
17	MP12	X	-.009	-.009	0	0
18	MP11	X	-.009	-.009	0	0
19	MP34	X	-.009	-.009	0	0
20	MP33	X	-.009	-.009	0	0
21	MP32	X	-.009	-.009	0	0
22	MP31	X	-.009	-.009	0	0
23	MP24	X	-.009	-.009	0	0
24	MP23	X	-.009	-.009	0	0
25	MP22	X	-.009	-.009	0	0
26	MP21	X	-.009	-.009	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	Z	-.007	-.007	0	0
2	F11	Z	-.006	-.006	0	0
3	F12	Z	-.007	-.007	0	0
4	F21	Z	-.006	-.006	0	0
5	F23	Z	-.007	-.007	0	0
6	F31	Z	-.006	-.006	0	0
7	F32	Z	-.007	-.007	0	0
8	B2	Z	-.006	-.006	0	0
9	B1	Z	-.006	-.006	0	0
10	B3	Z	-.006	-.006	0	0
11	J2	Z	-.006	-.006	0	0
12	J1	Z	-.006	-.006	0	0
13	F22	Z	-.007	-.007	0	0
14	F33	Z	-.007	-.007	0	0
15	MP14	Z	-.002	-.002	0	0
16	MP13	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
17	MP12	Z	-.002	-.002	0	0
18	MP11	Z	-.002	-.002	0	0
19	MP34	Z	-.002	-.002	0	0
20	MP33	Z	-.002	-.002	0	0
21	MP32	Z	-.002	-.002	0	0
22	MP31	Z	-.002	-.002	0	0
23	MP24	Z	-.002	-.002	0	0
24	MP23	Z	-.002	-.002	0	0
25	MP22	Z	-.002	-.002	0	0
26	MP21	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	X	-.007	-.007	0	0
2	F11	X	-.006	-.006	0	0
3	F12	X	-.007	-.007	0	0
4	F21	X	-.006	-.006	0	0
5	F23	X	-.007	-.007	0	0
6	F31	X	-.006	-.006	0	0
7	F32	X	-.007	-.007	0	0
8	B2	X	-.006	-.006	0	0
9	B1	X	-.006	-.006	0	0
10	B3	X	-.006	-.006	0	0
11	J2	X	-.006	-.006	0	0
12	J1	X	-.006	-.006	0	0
13	F22	X	-.007	-.007	0	0
14	F33	X	-.007	-.007	0	0
15	MP14	X	-.002	-.002	0	0
16	MP13	X	-.002	-.002	0	0
17	MP12	X	-.002	-.002	0	0
18	MP11	X	-.002	-.002	0	0
19	MP34	X	-.002	-.002	0	0
20	MP33	X	-.002	-.002	0	0
21	MP32	X	-.002	-.002	0	0
22	MP31	X	-.002	-.002	0	0
23	MP24	X	-.002	-.002	0	0
24	MP23	X	-.002	-.002	0	0
25	MP22	X	-.002	-.002	0	0
26	MP21	X	-.002	-.002	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	Z	-.002	-.002	0	0
2	F11	Z	-.001	-.001	0	0
3	F12	Z	-.002	-.002	0	0
4	F21	Z	-.001	-.001	0	0
5	F23	Z	-.002	-.002	0	0
6	F31	Z	-.001	-.001	0	0
7	F32	Z	-.002	-.002	0	0
8	B2	Z	-.002	-.002	0	0
9	B1	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
10	B3	Z	-.002	-.002	0	0
11	J2	Z	-.001	-.001	0	0
12	J1	Z	-.001	-.001	0	0
13	F22	Z	-.002	-.002	0	0
14	F33	Z	-.002	-.002	0	0
15	MP14	Z	-.0003	-.0003	0	0
16	MP13	Z	-.0003	-.0003	0	0
17	MP12	Z	-.0003	-.0003	0	0
18	MP11	Z	-.0003	-.0003	0	0
19	MP34	Z	-.0003	-.0003	0	0
20	MP33	Z	-.0003	-.0003	0	0
21	MP32	Z	-.0003	-.0003	0	0
22	MP31	Z	-.0003	-.0003	0	0
23	MP24	Z	-.0003	-.0003	0	0
24	MP23	Z	-.0003	-.0003	0	0
25	MP22	Z	-.0003	-.0003	0	0
26	MP21	Z	-.0003	-.0003	0	0

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	X	-.002	-.002	0	0
2	F11	X	-.001	-.001	0	0
3	F12	X	-.002	-.002	0	0
4	F21	X	-.001	-.001	0	0
5	F23	X	-.002	-.002	0	0
6	F31	X	-.001	-.001	0	0
7	F32	X	-.002	-.002	0	0
8	B2	X	-.002	-.002	0	0
9	B1	X	-.002	-.002	0	0
10	B3	X	-.002	-.002	0	0
11	J2	X	-.001	-.001	0	0
12	J1	X	-.001	-.001	0	0
13	F22	X	-.002	-.002	0	0
14	F33	X	-.002	-.002	0	0
15	MP14	X	-.0003	-.0003	0	0
16	MP13	X	-.0003	-.0003	0	0
17	MP12	X	-.0003	-.0003	0	0
18	MP11	X	-.0003	-.0003	0	0
19	MP34	X	-.0003	-.0003	0	0
20	MP33	X	-.0003	-.0003	0	0
21	MP32	X	-.0003	-.0003	0	0
22	MP31	X	-.0003	-.0003	0	0
23	MP24	X	-.0003	-.0003	0	0
24	MP23	X	-.0003	-.0003	0	0
25	MP22	X	-.0003	-.0003	0	0
26	MP21	X	-.0003	-.0003	0	0

Member Distributed Loads (BLC 8 : Ice Load)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	Y	-.009	-.009	0	0
2	F11	Y	-.009	-.009	0	0

Member Distributed Loads (BLC 8 : Ice Load) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
3	F12	Y	-.009	-.009	0	0
4	F21	Y	-.009	-.009	0	0
5	F23	Y	-.009	-.009	0	0
6	F31	Y	-.009	-.009	0	0
7	F32	Y	-.009	-.009	0	0
8	B2	Y	-.009	-.009	0	0
9	B1	Y	-.009	-.009	0	0
10	B3	Y	-.009	-.009	0	0
11	J2	Y	-.009	-.009	0	0
12	J1	Y	-.009	-.009	0	0
13	F22	Y	-.009	-.009	0	0
14	F33	Y	-.009	-.009	0	0
15	MP14	Y	-.005	-.005	0	0
16	MP13	Y	-.005	-.005	0	0
17	MP12	Y	-.005	-.005	0	0
18	MP11	Y	-.005	-.005	0	0
19	MP34	Y	-.005	-.005	0	0
20	MP33	Y	-.005	-.005	0	0
21	MP32	Y	-.005	-.005	0	0
22	MP31	Y	-.005	-.005	0	0
23	MP24	Y	-.005	-.005	0	0
24	MP23	Y	-.005	-.005	0	0
25	MP22	Y	-.005	-.005	0	0
26	MP21	Y	-.005	-.005	0	0

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	Z	-.002	-.002	0	0
2	F11	Z	-.002	-.002	0	0
3	F12	Z	-.002	-.002	0	0
4	F21	Z	-.002	-.002	0	0
5	F23	Z	-.002	-.002	0	0
6	F31	Z	-.002	-.002	0	0
7	F32	Z	-.002	-.002	0	0
8	B2	Z	-.002	-.002	0	0
9	B1	Z	-.002	-.002	0	0
10	B3	Z	-.002	-.002	0	0
11	J2	Z	-.002	-.002	0	0
12	J1	Z	-.002	-.002	0	0
13	F22	Z	-.002	-.002	0	0
14	F33	Z	-.002	-.002	0	0
15	MP14	Z	-.001	-.001	0	0
16	MP13	Z	-.001	-.001	0	0
17	MP12	Z	-.001	-.001	0	0
18	MP11	Z	-.001	-.001	0	0
19	MP34	Z	-.001	-.001	0	0
20	MP33	Z	-.001	-.001	0	0
21	MP32	Z	-.001	-.001	0	0
22	MP31	Z	-.001	-.001	0	0
23	MP24	Z	-.001	-.001	0	0
24	MP23	Z	-.001	-.001	0	0

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
25	MP22	Z	-.001	-.001	0	0
26	MP21	Z	-.001	-.001	0	0

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	F13	X	-.002	-.002	0	0
2	F11	X	-.002	-.002	0	0
3	F12	X	-.002	-.002	0	0
4	F21	X	-.002	-.002	0	0
5	F23	X	-.002	-.002	0	0
6	F31	X	-.002	-.002	0	0
7	F32	X	-.002	-.002	0	0
8	B2	X	-.002	-.002	0	0
9	B1	X	-.002	-.002	0	0
10	B3	X	-.002	-.002	0	0
11	J2	X	-.002	-.002	0	0
12	J1	X	-.002	-.002	0	0
13	F22	X	-.002	-.002	0	0
14	F33	X	-.002	-.002	0	0
15	MP14	X	-.001	-.001	0	0
16	MP13	X	-.001	-.001	0	0
17	MP12	X	-.001	-.001	0	0
18	MP11	X	-.001	-.001	0	0
19	MP34	X	-.001	-.001	0	0
20	MP33	X	-.001	-.001	0	0
21	MP32	X	-.001	-.001	0	0
22	MP31	X	-.001	-.001	0	0
23	MP24	X	-.001	-.001	0	0
24	MP23	X	-.001	-.001	0	0
25	MP22	X	-.001	-.001	0	0
26	MP21	X	-.001	-.001	0	0

Member Distributed Loads (BLC 39 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	B1	Y	-.012	-.009	0	2.4
2	B1	Y	-.009	-.006	2.4	4.8
3	F13	Y	-.006	-.009	1.06	4.24
4	F22	Y	-.009	-.009	1.06	3.71
5	B2	Y	-.003	-.006	.96	2.64
6	B2	Y	-.006	-.008	2.64	4.32
7	F23	Y	-.002	-.002	0	1.59
8	F23	Y	-.002	-.003	1.59	3.18
9	F23	Y	-.003	-.004	3.18	4.77
10	F32	Y	-.006	-.005	.53	2.65
11	F32	Y	-.005	-.003	2.65	4.77
12	J1	Y	-.005	-.005	0	.433
13	J1	Y	-.005	-.009	.433	.866
14	J1	Y	-.009	-.011	.866	1.299
15	J1	Y	-.011	-.008	1.299	1.732
16	J2	Y	-.002	-.012	0	.933
17	J2	Y	-.012	-.012	.933	1.867

Member Distributed Loads (BLC 39 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
18	J2	Y	-.012	-.005	1.867	2.8
19	B3	Y	-.006	-.009	0	2.4
20	B3	Y	-.009	-.012	2.4	4.8
21	F12	Y	-.006	-.009	1.06	4.24
22	F33	Y	-.009	-.009	1.59	4.24
23	B1	Y	-.002	-.005	0	.48
24	B1	Y	-.005	-.003	.48	.96
25	B1	Y	-.003	-.0002464	.96	1.44
26	B3	Y	-.0002465	-.003	3.36	3.84
27	B3	Y	-.003	-.005	3.84	4.32
28	B3	Y	-.005	-.002	4.32	4.8
29	F11	Y	-.011	-.011	0	.325
30	F11	Y	-.011	-.011	.325	.65
31	F11	Y	-.011	-.011	.65	.975
32	F11	Y	-.011	-.011	.975	1.3
33	F12	Y	-.001	-.001	0	.717
34	F13	Y	-.001	-.001	4.583	5.3
35	B1	Y	-.0002465	-.003	3.36	3.84
36	B1	Y	-.003	-.005	3.84	4.32
37	B1	Y	-.005	-.002	4.32	4.8
38	B2	Y	-.002	-.005	0	.48
39	B2	Y	-.005	-.003	.48	.96
40	B2	Y	-.003	-.0002464	.96	1.44
41	F21	Y	-.011	-.011	0	.325
42	F21	Y	-.011	-.011	.325	.65
43	F21	Y	-.011	-.011	.65	.975
44	F21	Y	-.011	-.011	.975	1.3
45	F22	Y	-.001	-.001	4.583	5.3
46	F23	Y	-.001	-.001	0	.717
47	B2	Y	-.0002464	-.003	3.36	3.84
48	B2	Y	-.003	-.005	3.84	4.32
49	B2	Y	-.005	-.002	4.32	4.8
50	B3	Y	-.002	-.005	0	.48
51	B3	Y	-.005	-.003	.48	.96
52	B3	Y	-.003	-.0002465	.96	1.44
53	F31	Y	-.011	-.011	0	.325
54	F31	Y	-.011	-.011	.325	.65
55	F31	Y	-.011	-.011	.65	.975
56	F31	Y	-.011	-.011	.975	1.3
57	F32	Y	-.001	-.001	0	.717
58	F33	Y	-.001	-.001	0	.717

Member Distributed Loads (BLC 40 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	B1	Y	-.006	-.005	0	2.4
2	B1	Y	-.005	-.003	2.4	4.8
3	F13	Y	-.003	-.005	1.06	4.24
4	F22	Y	-.005	-.005	1.06	3.71
5	B2	Y	-.002	-.003	.96	2.64
6	B2	Y	-.003	-.004	2.64	4.32
7	F23	Y	-.001	-.0009612	0	1.59

Member Distributed Loads (BLC 40 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
8	F23	Y	-.0009612	-.001	1.59	3.18
9	F23	Y	-.001	-.002	3.18	4.77
10	F32	Y	-.003	-.003	.53	2.65
11	F32	Y	-.003	-.002	2.65	4.77
12	J1	Y	-.002	-.003	0	.433
13	J1	Y	-.003	-.005	.433	.866
14	J1	Y	-.005	-.006	.866	1.299
15	J1	Y	-.006	-.004	1.299	1.732
16	J2	Y	-.001	-.006	0	.933
17	J2	Y	-.006	-.007	.933	1.867
18	J2	Y	-.007	-.002	1.867	2.8
19	B3	Y	-.003	-.005	0	2.4
20	B3	Y	-.005	-.006	2.4	4.8
21	F12	Y	-.003	-.005	1.06	4.24
22	F33	Y	-.005	-.005	1.59	4.24
23	B1	Y	-.001	-.003	0	.48
24	B1	Y	-.003	-.002	.48	.96
25	B1	Y	-.002	-.0001306	.96	1.44
26	B3	Y	-.0001306	-.002	3.36	3.84
27	B3	Y	-.002	-.003	3.84	4.32
28	B3	Y	-.003	-.001	4.32	4.8
29	F11	Y	-.006	-.006	0	.325
30	F11	Y	-.006	-.006	.325	.65
31	F11	Y	-.006	-.006	.65	.975
32	F11	Y	-.006	-.006	.975	1.3
33	F12	Y	-.0007774	-.0007774	0	.717
34	F13	Y	-.0007775	-.0007775	4.583	5.3
35	B1	Y	-.0001306	-.002	3.36	3.84
36	B1	Y	-.002	-.003	3.84	4.32
37	B1	Y	-.003	-.001	4.32	4.8
38	B2	Y	-.001	-.003	0	.48
39	B2	Y	-.003	-.002	.48	.96
40	B2	Y	-.002	-.0001306	.96	1.44
41	F21	Y	-.006	-.006	0	.325
42	F21	Y	-.006	-.006	.325	.65
43	F21	Y	-.006	-.006	.65	.975
44	F21	Y	-.006	-.006	.975	1.3
45	F22	Y	-.0007774	-.0007774	4.583	5.3
46	F23	Y	-.0007775	-.0007775	0	.717
47	B2	Y	-.0001306	-.002	3.36	3.84
48	B2	Y	-.002	-.003	3.84	4.32
49	B2	Y	-.003	-.001	4.32	4.8
50	B3	Y	-.001	-.003	0	.48
51	B3	Y	-.003	-.002	.48	.96
52	B3	Y	-.002	-.0001306	.96	1.44
53	F31	Y	-.006	-.006	0	.325
54	F31	Y	-.006	-.006	.325	.65
55	F31	Y	-.006	-.006	.65	.975
56	F31	Y	-.006	-.006	.975	1.3
57	F32	Y	-.0007775	-.0007775	0	.717
58	F33	Y	-.0007774	-.0007774	0	.717

Member Area Loads (BLC 1 : Dead Load)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N54	N55	N10	N9	Y	Two Way	-10
2	N7	N52	N53	N8	Y	Two Way	-10
3	N12	N11	N56	N57	Y	Two Way	-10
4	N9	N58	N59	N12	Y	Two Way	-10
5	N10	N7	N66	N67	Y	Two Way	-10
6	N62	N11	N8	N63	Y	Two Way	-10

Member Area Loads (BLC 8 : Ice Load)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N54	N55	N10	N9	Y	Two Way	-5.3
2	N7	N52	N53	N8	Y	Two Way	-5.3
3	N12	N11	N56	N57	Y	Two Way	-5.3
4	N9	N58	N59	N12	Y	Two Way	-5.3
5	N10	N7	N66	N67	Y	Two Way	-5.3
6	N62	N11	N8	N63	Y	Two Way	-5.3

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Ch...	Loc[ft]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M...	Cb	Eqn
1	B1	C5X6.7	.580	2.05	6	.227	2.1	y	56	30.695	63.828	1.604	9.585	1.57	H1-1b
2	B2	C5X6.7	.936	2.05	2	.228	2.1	y	51	30.695	63.828	1.604	9.585	1.5..	H1-1b
3	B3	C5X6.7	.596	2.05	9	.222	2.1	y	60	30.695	63.828	1.604	9.585	1.4..	H1-1b
4	F11	C5X6.7	.310	1.3	6	.042	.65	z	5	60.491	63.828	1.604	9.585	1.1..	H1-1b
5	F12	C5X6.7	.499	.497	11	.223	4.748	z	2	26.144	63.828	1.604	9.585	1.8..	H1-1b
6	F13	C5X6.7	.459	4.803	5	.177	4.748	z	2	26.144	63.828	1.604	9.585	2.5..	H1-1b
7	F21	C5X6.7	.386	0	7	.061	.65	z	13	60.491	63.828	1.604	9.585	1.5..	H1-1b
8	F22	C5X6.7	.628	4.803	7	.210	.552	z	9	26.144	63.828	1.604	9.585	1.5..	H1-1b
9	F23	C5X6.7	.588	.497	13	.139	.552	y	59	26.144	63.828	1.604	9.585	2.2..	H1-1b
10	F31	C5X6.7	.394	0	2	.057	.65	z	9	60.491	63.828	1.604	9.585	1.2..	H1-1b
11	F32	C5X6.7	.630	.497	3	.128	4.748	z	5	26.144	63.828	1.604	9.585	1.8..	H1-1b
12	F33	C5X6.7	.604	.497	9	.175	.552	y	13	26.144	63.828	1.604	9.585	2.0..	H1-1b
13	H1	PIPE_2.0	.277	3.438	82	.229	.688		2	8.129	32.13	1.872	1.872	1.8..	H1-1b
14	H2	PIPE_2.0	.284	3.437	79	.161	7.906		3	8.129	32.13	1.872	1.872	1.9..	H1-1b
15	H3	PIPE_2.0	.348	.687	2	.178	.687		7	8.129	32.13	1.872	1.872	2.9..	H1-1b
16	HB1	L2.5x2.5x4	.540	0	2	.086	1.245	y	2	36.654	38.556	1.114	2.537	2.1..	H2-1
17	HB2	L2.5x2.5x4	.325	0	10	.049	1.245	y	10	36.654	38.556	1.114	2.537	2.1..	H2-1
18	HB3	L2.5x2.5x4	.412	0	7	.075	1.245	y	7	36.654	38.556	1.114	2.537	2.2..	H2-1
19	J1	C5X6.7	.034	1.732	8	.021	1.732	y	11	58.025	63.828	1.604	9.585	1.1..	H1-1..
20	J2	C5X6.7	.020	1.4	2	.019	2.8	y	5	49.753	63.828	1.604	9.585	1.1..	H1-1b
21	MP11	PIPE_2.0	.384	4.063	42	.078	4.063		79	19.36	32.13	1.872	1.872	3.2..	H1-1b
22	MP12	PIPE_2.0	.348	4.063	78	.164	4.063		7	19.36	32.13	1.872	1.872	3.46	H1-1b
23	MP13	PIPE_2.0	.363	4.063	47	.153	4.063		9	19.36	32.13	1.872	1.872	3.37	H1-1b
24	MP14	PIPE_2.0	.391	4.063	82	.084	4.063		8	19.36	32.13	1.872	1.872	3.2..	H1-1b
25	MP21	PIPE_2.0	.393	4.063	38	.079	4.063		74	19.36	32.13	1.872	1.872	3.4..	H1-1b
26	MP22	PIPE_2.0	.394	4.063	2	.185	4.063		2	19.36	32.13	1.872	1.872	2.9..	H1-1b
27	MP23	PIPE_2.0	.376	4.063	43	.117	4.063		6	19.36	32.13	1.872	1.872	4.4..	H1-1b
28	MP24	PIPE_2.0	.400	4.063	79	.089	4.063		8	19.36	32.13	1.872	1.872	2.9..	H1-1b
29	MP31	PIPE_2.0	.388	4.063	45	.080	4.063		81	19.36	32.13	1.872	1.872	3.0..	H1-1b
30	MP32	PIPE_2.0	.358	4.063	81	.114	4.063		11	19.36	32.13	1.872	1.872	4.0..	H1-1b
31	MP33	PIPE_2.0	.429	4.063	2	.156	4.063		13	19.36	32.13	1.872	1.872	3.3..	H1-1b
32	MP34	PIPE_2.0	.401	4.063	74	.080	4.063		13	19.36	32.13	1.872	1.872	3.4..	H1-1b

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	R11	max	3.824	12	-.182	13	2.191	6	0	109	0	109	0	109
2		min	-3.796	6	-4.851	67	-2.208	12	0	1	0	1	0	1
3	R31	max	3.384	10	-.405	4	1.953	10	0	109	0	109	0	109
4		min	-3.411	4	-4.817	58	-1.969	4	0	1	0	1	0	1
5	R21	max	.008	5	.396	8	7.053	8	0	109	0	109	0	109
6		min	-.008	11	-4.978	50	-7.031	2	0	1	0	1	0	1
7	CENTER	max	0	109	0	109	0	109	0	109	0	109	0	109
8		min	0	1	0	1	0	1	0	1	0	1	0	1
9	R22	max	1.133	6	5.539	51	5.735	2	0	109	0	109	0	109
10		min	-1.167	12	-.461	9	-5.799	8	0	1	0	1	0	1
11	R23	max	1.116	3	4.967	73	3.783	2	0	109	0	109	0	109
12		min	-1.099	9	-.267	7	-3.767	8	0	1	0	1	0	1
13	R12	max	2.887	5	5.519	56	1.358	13	0	109	0	109	0	109
14		min	-2.927	11	-.606	2	-1.298	7	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
15	R13	max	1.988	7	4.857	64	2.715	13	0	109	0	109	0	109
16		min	-1.995	13	.125	10	-2.738	7	0	1	0	1	0	1
17	R32	max	2.01	4	5.376	59	2.772	3	0	109	0	109	0	109
18		min	-1.937	10	.407	5	-2.764	9	0	1	0	1	0	1
19	R33	max	2.637	5	4.93	68	.601	3	0	109	0	109	0	109
20		min	-2.658	11	-.515	2	-.587	9	0	1	0	1	0	1
21	Totals:	max	4.24	5	7.437	56	6.826	2						
22		min	-4.24	11	2.937	2	-6.826	8						

Exhibit F

Power Density/RF Emissions Report

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of AT&T Mobility LLC

Crown Castle Site Name: WOODBRIDGE COUNTRY CLUB
Crown Castle Site BU: 842879
AT&T Mobility, LLC Site FA #: 10071344
50 Woodfield Road
Woodbridge, CT
3/24/2020

Report Status:

AT&T Mobility LLC is Compliant

Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2021

Signed 25 March 2020

Prepared By:

Site Safe, LLC

8618 Westwood Center Drive
Suite 315

Vienna, VA 22182

Voice: 703-276-1100
Fax: 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
Woodbridge, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of AT&T Mobility, LLC (see attached Site Summary and Carrier documents) and that AT&T Mobility, LLC's installation involves communications equipment, antennas and associated technical equipment at a location referred to as "WOODBRIDGE COUNTRY CLUB" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure, and the antennas used are highly directional and oriented at angles at or just below the horizontal, and that the energy present at ground level is typically so low as to be considered insignificant and has not been included in this analysis (a list of microwave antennas is included); and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," which defines situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and 2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of AT&T Mobility, LLC's operating frequencies as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 5.472% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 12.810% of the maximum in any accessible area up to two meters above the ground per OET 65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET 65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier(s) and frequency range(s) indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding radio frequency safety; and

In summary, it is stated here that the proposed operation at the site will not result in exposure of the public to excessive levels of radio frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307(b), and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals and approved contractor personnel trained in radio frequency safety and that this instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower or in the immediate proximity of the antennas.

Crown Castle
WOODBRIDGE COUNTRY CLUB
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility LLC	0.210 %
AT&T Mobility LLC (Proposed)	1.040 %
AT&T Mobility LLC (Proposed)	0.631 %
AT&T Mobility LLC (Proposed)	0.626 %
AT&T Mobility LLC (Proposed)	1.167 %
AT&T Mobility LLC (Proposed)	1.284 %
AT&T Mobility LLC (Proposed)	0.514 %
Clearwire	0.393 %
Sprint	1.861 %
Sprint	0.712 %
Sprint	0.712 %
Sprint	0.814 %
Verizon Wireless	1.332 %
Verizon Wireless	0.264 %
Verizon Wireless	0.821 %
Verizon Wireless	0.429 %

Composite Site MPE: 12.810 %

AT&T Mobility LLC
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	1.19086	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.21015	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Powerwave	7770	99	70	547	0.564078	0.099543	0.868613	0.153285
Powerwave	7770	99	180	547	0.564078	0.099543	0.868613	0.153285
Powerwave	7770	99	300	547	0.564078	0.099543	0.868613	0.153285

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	2300	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	10.40067	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.04007	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI Antennas	DMP65R-BU6D	99	70	2606	10.322618	1.032262	10.322618	1.032262
CCI Antennas	DMP65R-BU6D	99	180	2606	10.322618	1.032262	10.322618	1.032262
CCI Antennas	DMP65R-BU6D	99	300	2606	10.322618	1.032262	10.322618	1.032262

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	3.57313	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.63055	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI Antennas	DMP65R-BU6D	99	70	2239	1.882302	0.332171	3.398582	0.599750
CCI Antennas	DMP65R-BU6D	99	180	2239	1.882302	0.332171	3.398582	0.599750
CCI Antennas	DMP65R-BU6D	99	300	2239	1.882302	0.332171	3.398582	0.599750

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	$\mu W/cm^2$
Maximum power density at ground level:	3.07449	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.62574	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI Antennas	DMP65R-BU6D	99	70	2400	2.007448	0.408571	2.587778	0.526685
CCI Antennas	DMP65R-BU6D	99	180	2400	2.007448	0.408571	2.587778	0.526685
CCI Antennas	DMP65R-BU6D	99	300	2400	2.007448	0.408571	2.587778	0.526685

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	11.66681	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.16668	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI	OPA65R-BU6D	99	70	4562	8.485716	0.848572	11.473206	1.147321
CCI	OPA65R-BU6D	99	180	4562	8.485716	0.848572	11.473206	1.147321
CCI	OPA65R-BU6D	99	300	4562	8.485716	0.848572	11.473206	1.147321

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	12.83581	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.28358	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI	OPA65R-BU6D	99	70	4458	10.557132	1.055713	12.708499	1.270850
CCI	OPA65R-BU6D	99	180	4458	10.557132	1.055713	12.708499	1.270850
CCI	OPA65R-BU6D	99	300	4458	10.557132	1.055713	12.708499	1.270850

AT&T Mobility LLC (Proposed)
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	763	MHz
Maximum Permissible Exposure (MPE):	508.67	$\mu W/cm^2$
Maximum power density at ground level:	2.61342	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.51378	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI	OPA65R-BU6D	99	70	2450	2.052354	0.403477	2.106161	0.414055
CCI	OPA65R-BU6D	99	180	2450	2.052354	0.403477	2.106161	0.414055
CCI	OPA65R-BU6D	99	300	2450	2.052354	0.403477	2.106161	0.414055

Clearwire
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	3.93386	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.39339	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
ARGUS	LLPX310R	80	0	1542	1.999402	0.199940	3.707370	0.370737
ARGUS	LLPX310R	80	120	1542	1.999402	0.199940	3.707370	0.370737
ARGUS	LLPX310R	80	240	1542	1.999402	0.199940	3.707370	0.370737

Sprint
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	18.60892	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.86089	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
ANDREW	TTTT65AP-1XR	75	60	5213	9.920460	0.992046	16.154091	1.615409
ANDREW	TTTT65AP-1XR	75	200	5213	9.920460	0.992046	16.154091	1.615409
ANDREW	TTTT65AP-1XR	75	300	5213	9.920460	0.992046	16.154091	1.615409

Sprint
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	1990	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	7.11778	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.71178	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	75	60	2781	2.776183	0.277618	5.818509	0.581851
Commscope	NNVV-65B-R4	75	200	2781	2.776183	0.277618	5.818509	0.581851
Commscope	NNVV-65B-R4	75	300	2781	2.776183	0.277618	5.818509	0.581851

Sprint
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	7.11778	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.71178	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	75	60	2781	2.776183	0.277618	5.818509	0.581851
Commscope	NNVV-65B-R4	75	200	2781	2.776183	0.277618	5.818509	0.581851
Commscope	NNVV-65B-R4	75	300	2781	2.776183	0.277618	5.818509	0.581851

Sprint
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	$\mu W/cm^2$
Maximum power density at ground level:	4.68002	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.81439	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	75	60	1901	3.321913	0.578059	3.321913	0.578059
Commscope	NNVV-65B-R4	75	200	1901	3.321913	0.578059	3.321913	0.578059
Commscope	NNVV-65B-R4	75	300	1901	3.321913	0.578059	3.321913	0.578059

Verizon Wireless
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	7.54835	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.33206	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Antel	BXA-80063-4CF	90	0	3192	5.596878	0.987684	7.437838	1.312560
Antel	BXA-80063-4CF	90	120	3192	5.596878	0.987684	7.437838	1.312560
Antel	BXA-80063-4CF	90	240	3192	5.596878	0.987684	7.437838	1.312560

Verizon Wireless
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	2.63535	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.26354	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Antel	BXA-171063-8BF-2	90	0	2711	1.786368	0.178637	2.590665	0.259066
Antel	BXA-171063-8BF-2	90	120	2711	1.786368	0.178637	2.590665	0.259066
Antel	BXA-171063-8BF-2	90	240	2711	1.786368	0.178637	2.590665	0.259066

Verizon Wireless
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	$\mu W/cm^2$
Maximum power density at ground level:	4.10841	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.82059	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Antel	BXA-70063-6CF	90	0	3014	2.954925	0.590198	3.906374	0.780234
Antel	BXA-70063-6CF	90	120	3014	2.954925	0.590198	3.906374	0.780234
Antel	BXA-70063-6CF	90	240	3014	2.954925	0.590198	3.906374	0.780234

Verizon Wireless
WOODBRIDGE COUNTRY CLUB
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	4.29459	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.42946	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Antel	BXA-171063-8CF	90	0	3708	2.720587	0.272059	3.883135	0.388314
Antel	BXA-171063-8CF	90	120	3708	2.720587	0.272059	3.883135	0.388314
Antel	BXA-171063-8CF	90	240	3708	2.720587	0.272059	3.883135	0.388314

WOODBRIDGE COUNTRY CLUB
Composite Microwave Antenna Summary

Carrier	Antenna Make/Model	Height (feet)
Clearwire	Dragonwave A-ANT-18G-2-C	83
Clearwire	Dragonwave A-ANT-18G-2-C	83