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

July 23, 2019

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

RE: **Notice of Exempt Modification for T-Mobile:**
842864 - T-Mobile Site ID: CTNH510A
201 Granite Road, Guilford, CT 06437
Latitude: 41° 17' 31.14"/ Longitude: -72° 43' 58.28"

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) total antennas at the 87-foot mount on the existing 110-foot Monopole Tower, located at 201 Granite Road, Guilford, CT. The tower is owned by Crown Castle and the property is owned by Winterfell Gables (CT) Owner LLC. T-Mobile now intends to replace six (6) existing antennas with six (6) new 600/700/1900/2100 MHz antennas at the 87 foot mount. T-Mobile also proposing tower mount modifications as shown on the enclosed mount analysis.

Planned Modifications:
Tower:

Remove and Replace:

(3) LNX-6515DS-A1M Antenna **(REMOVE)** - (3) RFS-APXVAARR24_43U-NA20 Antenna 600/700 MHz **(REPLACE)**

(3) AIR21 KRC118046-1_B2P_B4A Antenna **(REMOVE) –** (3) AIR32 KRD901146-1_B66A_B2A 1900/2100 MHz **(REPLACE)**

Install New:

(3) 4449 B12/B71 RRUs
(2) 1-5/8" Hybrid Lines

Existing to Remain:
(1) 1-5/8" Hybrid line
(3) AIR21 KRC118046-1_B2A_B4P Antenna 1900 MHz

Ground:
Install new concrete pad.
Existing Cabinet to be removed and replaced.
Internal upgrades to existing cabinet.

The Town of Guilford issued a zoning compliance permit on December 10, 2003 to construct the cell tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j- 73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter and documents are being sent to The First Selectman, Mr. Matthew Hoey III of the Town of Guilford, Town Planner Mr. George Kral of the Town of Guilford and Winterfell Gables (CT) Owner LLC as the property owner. 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, T-Mobile 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
Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
518-373-3543
annemarie.zsamba@crowncastle.com

Attachments
cc:

First Selectman -Mr. Matthew Hoey III
Town of Guilford
31 Park Street
Guilford, CT 06437
(203)453-8015

Town Planner-Mr. George Kral
Town of Guilford
50 Boston Street
Guilford, CT 064 3 7
(203)453-8039

Winterfell Gables (CT) Owner LLC-Property owner
590 Madison Ave 34th FL
New York, NY 10022

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

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

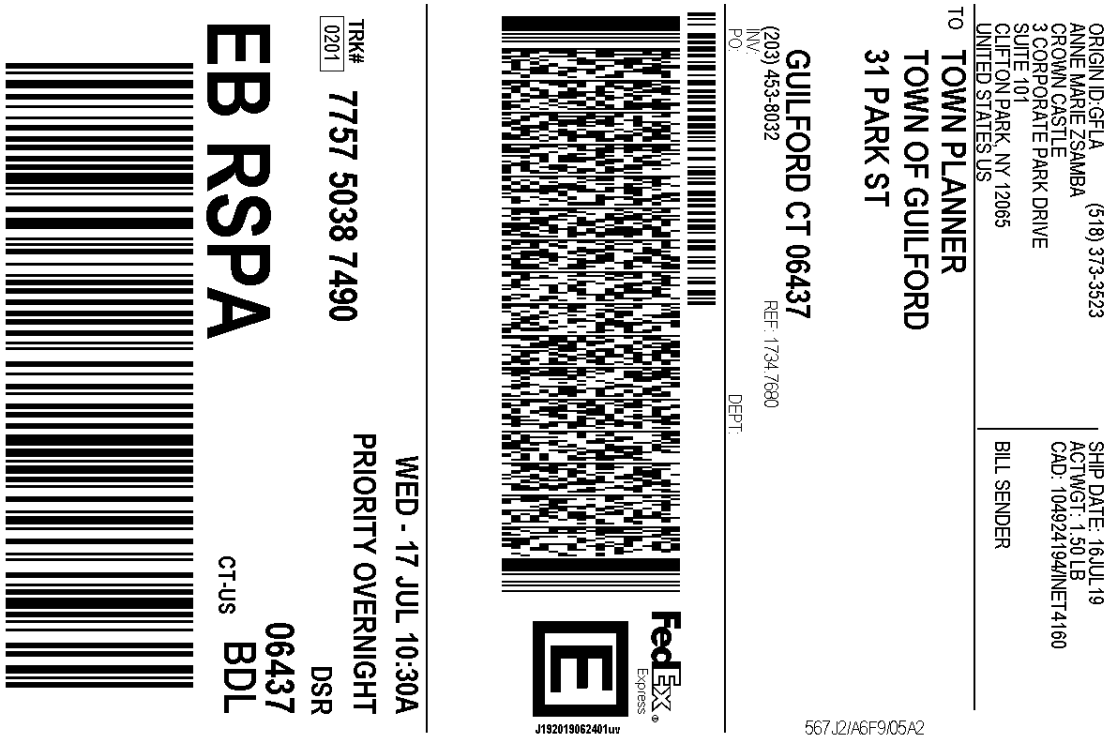

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Exhibit A

Original Facility Approval

Town of Guilford
Building Permit - Zoning Compliance Permit

Permit No. 03-2511

(BP)	$1,400.00
(EF)	$22.40
Total Fee Paid	$1,422.40
Date Issued:	**12/10/2003**

INLAND WETLANDS PERMIT

This building permit is issued pursuant to the Connecticut Building codes and is subject to the provisions thereof. It is issued on the basis of the application submitted and approved and is valid only for the work indicated in Item 4.

1. **Location** Street: Granite Road Street No. 201

   Assessor's Map No: 71 Assessor's Lot No. 11

   Subdivision Name: _____ Lot No. _____

2. **Owner** Name: Guilford Retirement Residence Ltd. Partnership
   c/o Deloitte/Touche LLP PTS
   Mailing Address: 925 4th Avenue, Suite 3300, Seattle, WA 98104-1126

3. **TYPE OF CONSTRUCTION:**
   1:2:3:4:5:
   OCCUPANCY LOAD _____
   USE GROUP

   NATURE OF WORK:

X	New Construction	_____	Moving of Structure
_____	Addition	_____	Demolition
_____	Alteration	_____	Rehabilitation
_____	Repair	_____	Other

4. **TYPE OF WORK:** (This permit is valid only for boxes checked.)

Structural	X	Insulation	_____
Electrical	_____	Oil Burner	_____
Heating and Ventilation	_____	Sewage Disposal*	_____
Plumbing	_____	Gal. Septic Tank Required	_____
Swimming Pool	_____	Sq. ft. leaching area required**	_____
Other	_____	Water Conditioning	_____

* In accordance with CT State Public Health Code
** Reserve seepage are equal to area used in required

Cell Tower

Permit valid one year. Permit will expire if work is not started within six months from date of issuance. Upon written request and payment of $15.00 fee, permit may be renewed for six months at the discretion of the Building Officials. Required building inspections are 1)temporary electric service 2)footing 3) rough electrical, HVAC, plumbing and framing 4) insulation 5) permanent electrical 6) final.

CALL 453-8029 Monday-Friday 8:30 A.M. - 4:30 P.M. to SCHEDULE INSPECTIONS. 24 HOUR ADVANCE NOTICE IS REQUIRED. There is a charge for certificate of occupancy.

PROPERTY OWNER IS RESPONSIBLE TO SCHEDULE A FINAL INSPECTION.

The following special conditions must be met:

1. Approved by CT Siting Council - Regina Reid, Zoning Enforcement Officer
2. Per Site Plan LLC, A. Rafael Martinez, L.S. 10/18/01 Rev. 12/5/03 - Mark Damiani, Ass't Town Engineer
3. Acceptance report by Engineer of record at project completion - William Thody, Building Official II
4. Compliance with all applicable Statutes, Codes, Standards & Regulations constitutes approval of this project - Coleman C. Bushnell, Deputy Fire Marshal

This permit is issued with a red field card which must be conspicuously posted on the site. Neither the Town of Guilford nor any authorized agent assume any responsibility for the construction or maintenance of any facility built under this permit.

William Thody	Regina Reid	Mark Damiani	Dennis Johnson
Building Official II	Zoning Enforcement Officer Inland Wetlands Officer	Asst. Town Engineer	Director of Health

1-Original * 2-File* 3-Fire Marshal* 4-Contractor* 5-Assessor's Office* 6-Planning & Zoning *

Exhibit B

Property card

s

All information is for assessment purposes only. Assessments are calculated at 70% of the estimated October 1, 2017 market value which was the date of the last revaluation as completed by eQuality Valuation Services, LLC.

The Town of Guilford
Connecticut, USA Founded 1639

Information on the Property Records for the Municipality of Guilford was last updated on 6/27/2019.

Property Summary Information

Parcel Data And Values | Building ▾ | Outbuildings | Sales

Parcel Information

Location:	201 GRANITE RD	Map and Parcel:	071011	Census Tract:	1902
Zoning:	R-8	Developer's Map:		Developer's Lot:	
Total Acreage:	58.31	Farm, Forest, Open Space Acres:		Unique ID:	6477

Value Information

	Appraised Value	Assessed Value
Land	1,008,000	705,600
Buildings	15,192,510	10,634,760

	Appraised Value	Assessed Value
Detached Outbuildings	311,200	217,840
Total	16,511,710	11,558,200

Owner's Information

Owner's Data
WINTERFELL GABLES (CT) OWNER LLC 590 MADISON AVE 34TH FL NEW YORK NY 10022

Back To Search (JavaScript:window.history.back(1);)

Print View (PrintPage.aspx?towncode=060&uniqueid=6477)

TOWN OF GUILFORD CONNECTICUT

TOWN HALL ANNEX
50 BOSTON ST.
GUILFORD, CT 06437
PH (203) 453-8074
E-MAIL: GENERAL INFORMATION
E-MAIL: TECHNICAL INFORMATION

MAIN MENU
- GIS HOME
- GIS PROPERTY MAP SEARCH
- TOWN WIDE MAP GALLERY
- INTERACTIVE MAPPING
- HELP

GIS PARCEL MAPS UPDATED
March 2019
PROPERTY INFO DATA UPDATED
Friday Evening
CURRENT PARCEL COUNT
10,545 +/-

SUMMARY PARCEL INFORMATION & MAP DOCUMENTS

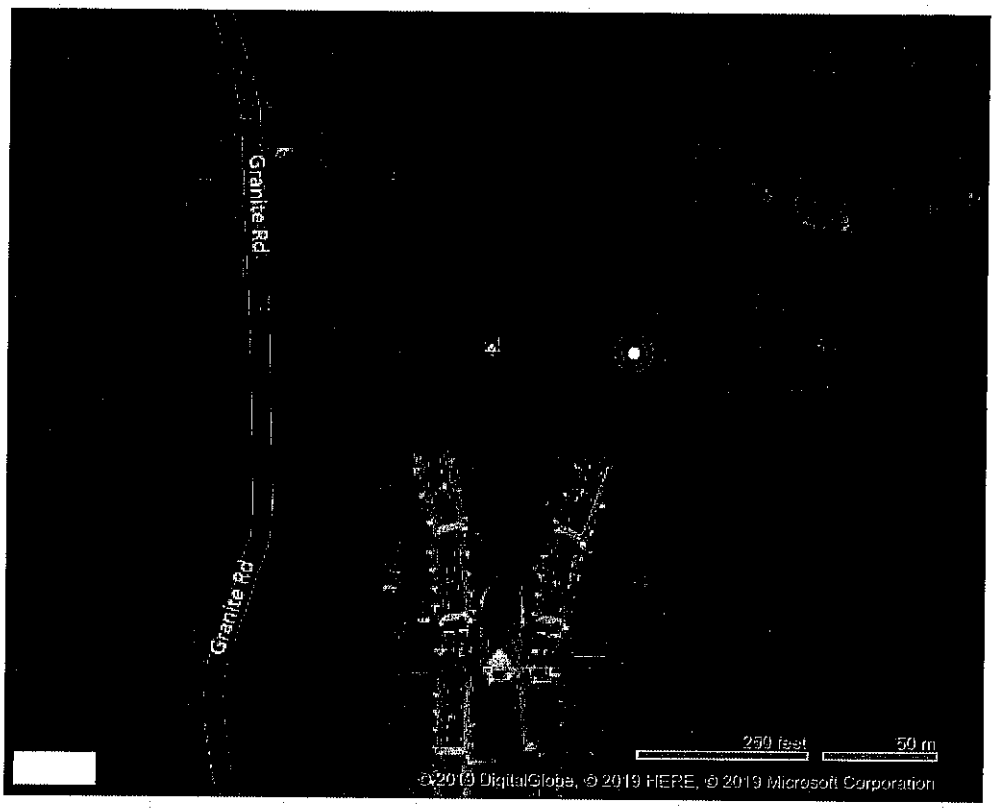
PARCEL ID
071011

OWNER
WINTERFELL GABLES (CT) OWNER LLC

LIST NUMBER
6477

LOCATION
201 GRANITE RD

MAILING ADDRESS
590 MADISON AVE 34TH FL
NEW YORK NY 10022



CREATE PARCEL MAP | PROPERTY SUMMARY CARD

Interactive GIS Maps of Property

GO TO VIRTUAL EARTH BIRDS EYE!

To generate an **Abutters list** please select the link below and click on the highlighted grey parcel.

GO TO GUILFORD'S INTERACTIVE MAP!

PROPERTY INFORMATION

Land Acres	58.31
Class	Commercial
Description	
Zoning	R-8
Census Tract	1902
Neighborhood	E
Lot Utilities	

PARCEL VALUATIONS

	Appraised Value	Assessed Value
TOTALS:	16511710	11558200

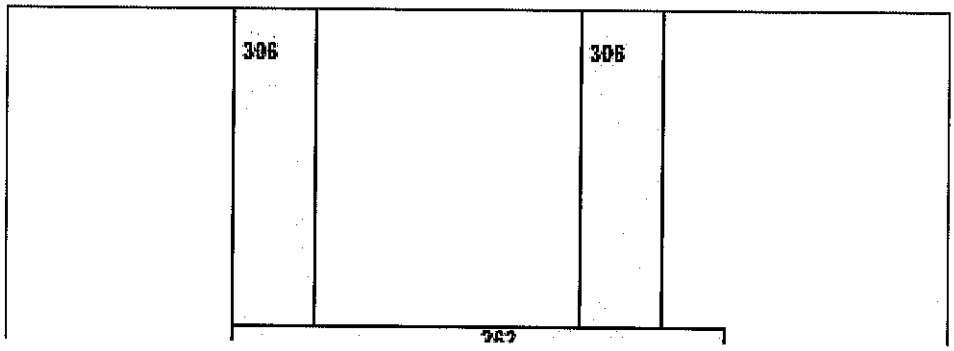
SALE INFORMATION

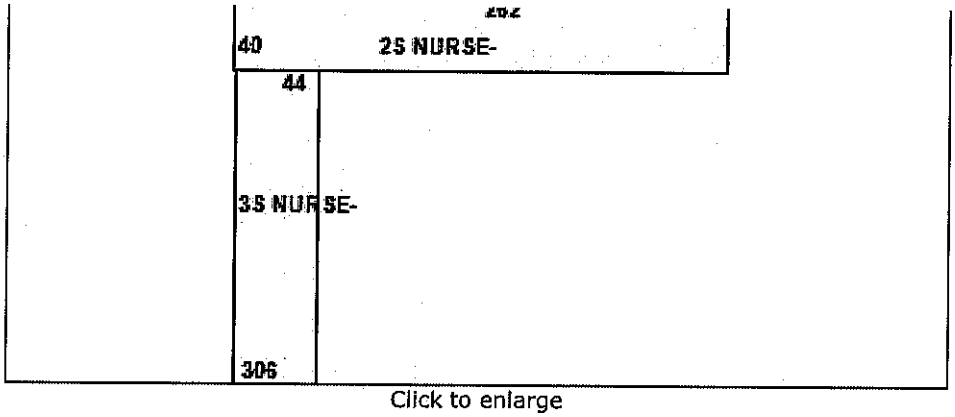
Sale Date	5/26/2015
Sale Price	32535600
Book / Page	0884/0672

BUILDING INFORMATION

Year Built	1993
Total Rooms	0
Building Area	142136
Num Stories	2
Total Bedrooms	0
Total Baths	0
Condition	AVERAGE
Exterior	STUCCO
Roof Type	HIP
Roof Material	METAL
Heating System	FHA
Heating Fuel	GAS

Building Sketch





Click to enlarge

Geographic Location

	X	Y
Longitude / Latitude (decimal deg.)	-72.73381797	41.29415559
CT State Plane NAD '83	1004446.83111604	667905.79048198

Back | New Search | Town Of Guilford

Exhibit C

Construction Drawings

T-MOBILE SITE NAME:

AT&T GUILFORD MONOPOLE

T-MOBILE SITE NUMBER:

CTNH510A

CROWN BU: 842864 / APP#: 482070

67D95ADB W/ 61012 CONFIGURATION

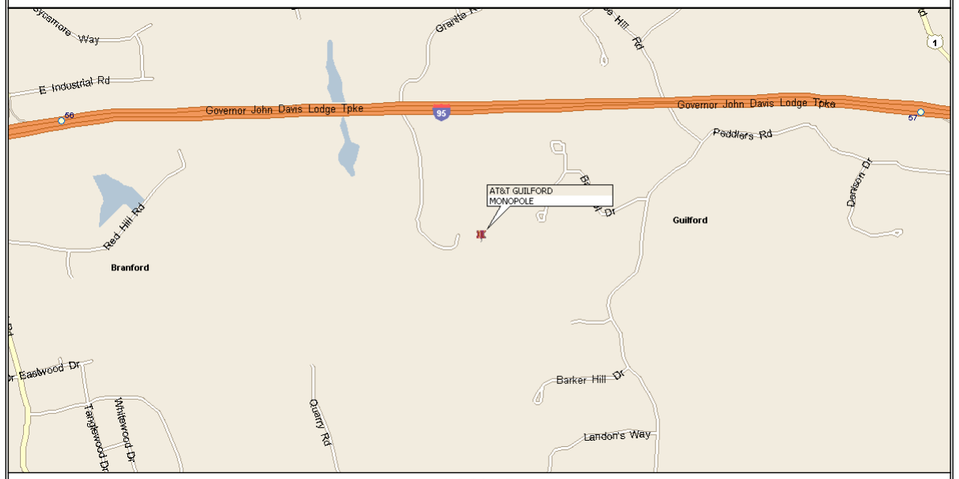
201 GRANITE ROAD
GUILFORD, CT 06437

EXISTING 110'-0" MONOPOLE

PROJECT SUMMARY

SITE TYPE:	EXISTING EQUIPMENT UPGRADE
SITE ADDRESS:	201 GRANITE ROAD GUILFORD, CT 06437
JURISDICTION:	TOWN OF GUILFORD
NAD83	
LATITUDE: LONGITUDE:	41.29190° N 72.732780° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225
CUSTOMER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054 (973) 397-4800
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

LOCATION MAP



NO SCALE

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	1
A-1	OVERALL SITE PLAN	1
A-2	ANTENNA/CABLE SCHEDULE AND AZIMUTH PLANS	1
A-3	TOWER ELEVATION	1
A-4	ANTENNA AND RRU DETAILS	1
A-5	SITE DETAILS	1
A-6	HANDRAIL REINFORCEMENT KIT DETAILS	1
A-7	KICKER BRACE KIT DETAILS	1
E-1	PANEL SCEHDULE AND ONE-LINE DIAGRAM	1

CONTACT INFORMATION

A&E FIRM:	B+T GROUP 1717 S. BOULDER, STE. 300 TULSA, OK 74119	ELECTRIC PROVIDER:	UNITED ILLUMINATING CO. (203) 499-2000
CONTACT: PHONE:	MIKE OAKES (918) 587-4630	TELCO PROVIDER:	COMCAST (800) 934-6489

CODE COMPLIANCE

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/DWELLING	2018 CT STATE BUILDING CODE
STRUCTURAL	2018 CT STATE BUILDING CODE
MECHANICAL	2018 CT STATE BUILDING CODE
ELECTRICAL	2018 CT STATE BUILDING CODE

DRIVING DIRECTIONS

DEPART FROM BRADLEY INTERNATIONAL AIRPORT HEAD ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. TAKE RAMP ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 14, TURN RIGHT ONTO RAMP. TURN RIGHT ONTO E CENTER ST, THEN IMMEDIATELY TURN LEFT ONTO S AIRLINE RD. TURN LEFT ONTO CT-150 [WOODHOUSE AVE]. BEAR LEFT ONTO CT-22 [CLINTONVILLE RD]. BEAR RIGHT ONTO CT-17 [CT-22]. KEEP LEFT ONTO CT-22 [FOREST RD]. TURN LEFT ONTO CT-22 [CT-80]. ROAD NAME CHANGES TO CT-80 [FOXON RD]. TURN RIGHT ONTO NOTCH HILL RD. TURN LEFT ONTO US-1 [BOSTON POST RD]. TURN RIGHT ONTO MOOSE HILL RD. BEAR RIGHT ONTO GRANITE RD. TURN RIGHT ONTO LOCAL ROAD. ARRIVE AT AT&T GUILFORD MONOPOLE.

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES:

- REMOVE (3) RUS01 B4 RRUs.
- REMOVE (6) RUS01 B12 RRUs.
- REMOVE AND REPLACE (6) EXISTING ANTENNAS AT 86'-0".
- REMOVE AND REPLACE (1) RBS 6201 ODE CABINET WITH (1) RBS 6102 CABINET.
- REMOVE AND REPLACE (1) DUS41 WITH (1) BB 6630.
- REMOVE (6) COAX.
- INSTALL (3) NEW RRHS AT 86'-0".
- INSTALL (1) NEW 5'-0"x3'-2" CONCRETE PAD.
- INSTALL (1) NEW BB 6630.
- INSTALL (2) NEW 1 5/8" HYBRID CABLES.

DO NOT SCALE DRAWINGS

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.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

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

811

B+T GRP

CROWN CASTLE

T-Mobile

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
201 GRANITE ROAD
GUILFORD, CT 06437
EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
CHECKED BY:	BLB

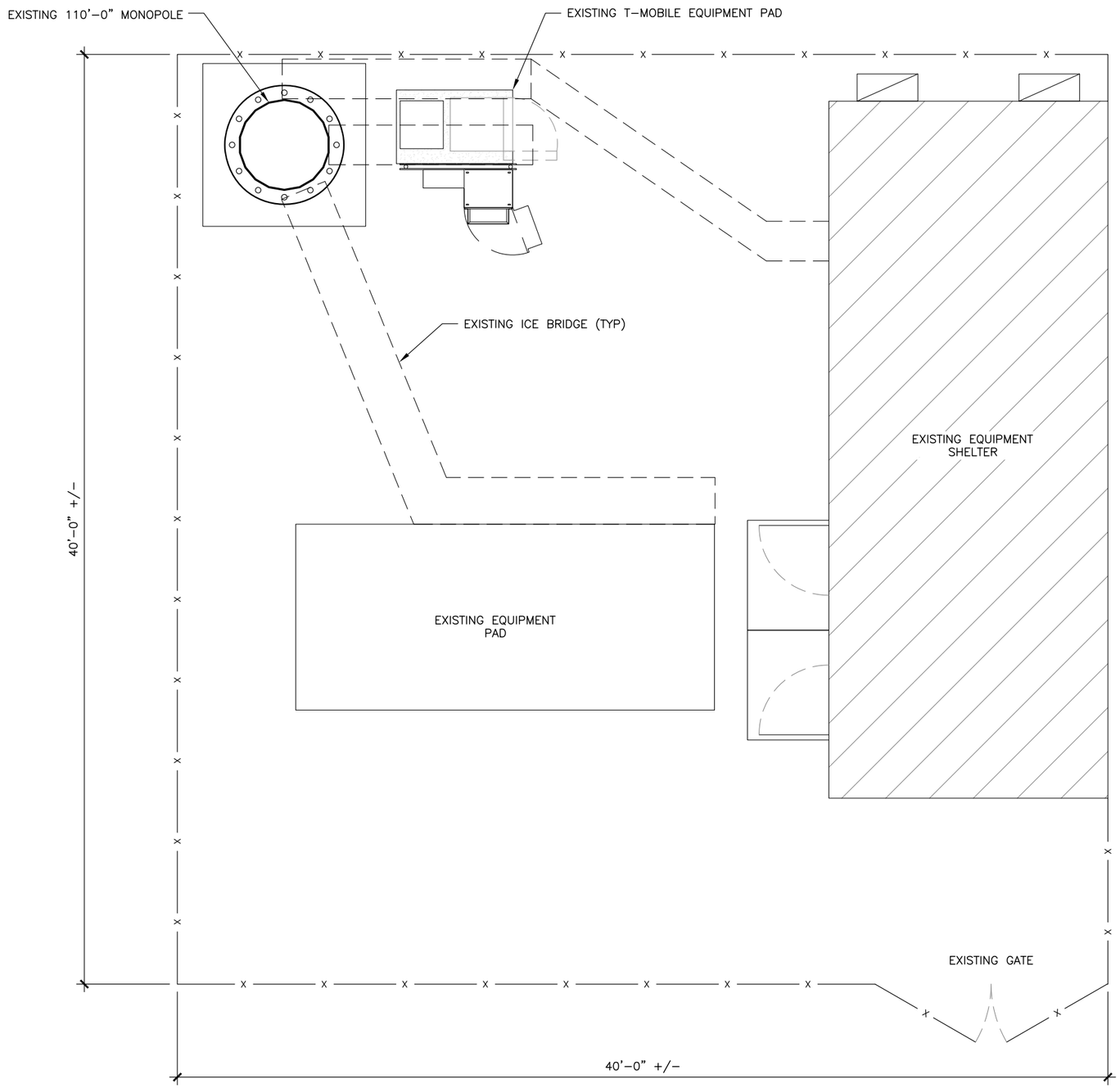
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

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

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
7/23/19

SHEET NUMBER:	REVISION:
T-1	1



1 OVERALL SITE PLAN

SCALE: 0' 1' 4' 8' 16'

N

GENERAL NOTES:

1. SUBJECT PROPERTY IS KNOWN AS BLOCK TBD LOT TBD AS SHOWN ON THE GUILFORD TOWNSHIP TAX MAP AND IS SITUATED AT 201 GRANITE ROAD, GUILFORD, CT 06437.

2. APPLICANT: T-MOBILE
A DELAWARE LIMITED LIABILITY COMPANY
4 SYLVAN WAY
PARSIPPANY, NEW JERSEY 07054
(973) 397-4800

   TOWER OWNER: CROWN CASTLE INTERNATIONAL

- THE APPLICANT IS TO UPDATE THEIR NETWORK BY REPLACING SIX (6) PANEL ANTENNAS, INSTALLING THREE (3) NEW RRUs AND TWO (2) NEW HYBRID CABLES MOUNTED ON AN EXISTING MONOPOLE.

3. THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.

4. THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.29190° N± AND LONGITUDE OF 72.732780° W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).

5. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"

6. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:

   6.A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   6.B. CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.

7. THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.

8. THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.

9. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.

10. SITE INFORMATION SHOWN TAKEN FROM CROWN CASTLE SITE PLANS AND FROM CROWN CASTLE INSPECTION PHOTOS.

11. NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.

12. ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.

B+T GRP

CROWN CASTLE

T-Mobile

CTNH510A
BU #: 842864

AT&T GUILFORD MONOPOLE

201 GRANITE ROAD
GUILFORD, CT 06437

EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
CHECKED BY:	BLB

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

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

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER
7/23/19

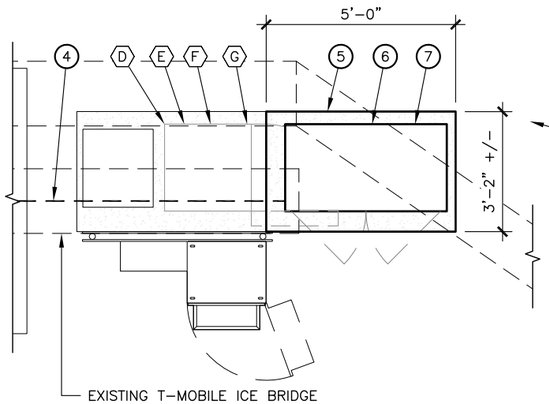
SHEET NUMBER:	REVISION:
A-1	1

LEGEND

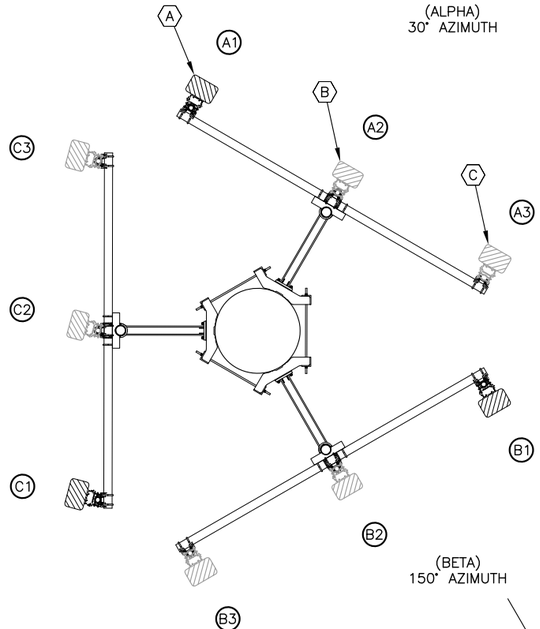
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING ERICSSON AIR21 KRC118023-1_B2A_B4P ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	2	INSTALL ERICSSON AIR32 KRD901146-1_B66A_B2A ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ERICSSON AIR21 KRC118023-1_B2P_B4A ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
D	EXISTING RBS 6201 ODE CABINET TO BE REMOVED (TOTAL OF 1)	4	INSTALL (2) HCS 6x12 HYBRID FIBER TRUNKS FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
E	EXISTING DUS41 TO BE REMOVED FROM EQUIPMENT CABINET (TOTAL OF 1)	5	INSTALL NEW 5'-0"x3'-2" CONCRETE PAD EXTENSION, RE: 1/A-5. RELOCATE EXISTING ICE BRIDGE POSTS AS NEEDED.
F	EXISTING RUS01 B4 TO BE REMOVED FROM EQUIPMENT CABINET (TOTAL OF 3)	6	INSTALL NEW RBS 6102 CABINET, RE: 2/A-5
G	EXISTING RUS01 B12 TO BE REMOVED FROM CABINET (TOTAL OF 6)	7	INSTALL NEW BB 6630 INSIDE NEW RBS 6102 CABINET (TOTAL OF 2)
		8	INSTALL (1) PERFECT VISION PV-PKBK-M PLATFORM KICKER
		9	INSTALL (1) SITEPRO1 PRK-SFS REINFORCEMENT KIT

ANTENNA AND CABLE SCHEDULE

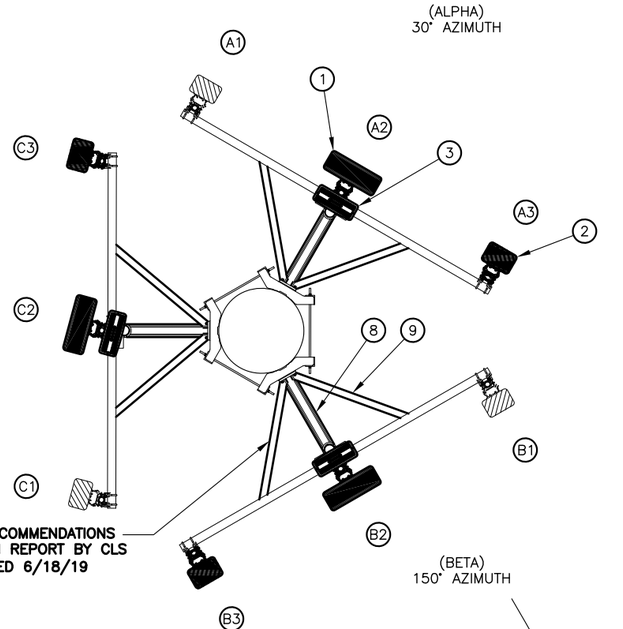
SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION		E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRH	CABLES	JUMPER TYPE	CABLE LENGTH
30° – ALPHA	A1	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS	–	2°	0°	86'-0"	0/0	(1) 1 5/8" HYBRID	DC/FIBER	136'-0"
	A2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71+ B12**	**2°/2°**	**0°**		**0/1**	SHARED	DC/FIBER 1/2" COAX	–
	A3	**ERICSSON AIR32 KRD901146-1_B66A_B2A**	**LTE**	**–**	**2°/2°**	**0°**		**0/0**	SHARED	DC/FIBER	–
150° – BETA	B1	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS	–	2°	0°	86'-0"	0/0	**(1) 1 5/8" HYBRID**	**DC/FIBER**	**136'-0"**
	B2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71+ B12**	**2°/2°**	**0°**		**0/1**	**SHARED**	**DC/FIBER 1/2" COAX**	–
	B3	**ERICSSON AIR32 KRD901146-1_B66A_B2A**	**LTE**	**–**	**2°/2°**	**0°**		**0/0**	**SHARED**	**DC/FIBER**	–
285° – GAMMA	C1	ERICSSON AIR21 KRC118023-1_B2A_B4P	UMTS	–	2°	0°	86'-0"	0/0	**(1) 1 5/8" HYBRID**	**DC/FIBER**	**136'-0"**
	C2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71+ B12**	**2°/2°**	**0°**		**0/1**	**SHARED**	**DC/FIBER 1/2" COAX**	–
	C3	**ERICSSON AIR32 KRD901146-1_B66A_B2A**	**LTE**	**–**	**2°/2°**	**0°**		**0/0**	**SHARED**	**DC/FIBER**	–



(GAMMA) 285° AZIMUTH



(GAMMA) 285° AZIMUTH



MODIFY MOUNT PER RECOMMENDATIONS IN MOUNT MODIFICATION REPORT BY CLS ENGINEERING PLLC DATED 6/18/19

1 ENLARGED AREA PLAN
SCALE: 0' 1' 2' 4' 10'

2 EXISTING ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 16'

3 PROPOSED ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 16'

B+T GRP

CROWN CASTLE

T-Mobile

CTNH510A
BU #: 842864

AT&T GUILFORD MONOPOLE

201 GRANITE ROAD
GUILFORD, CT 06437

EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
CHECKED BY:	BLB

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

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

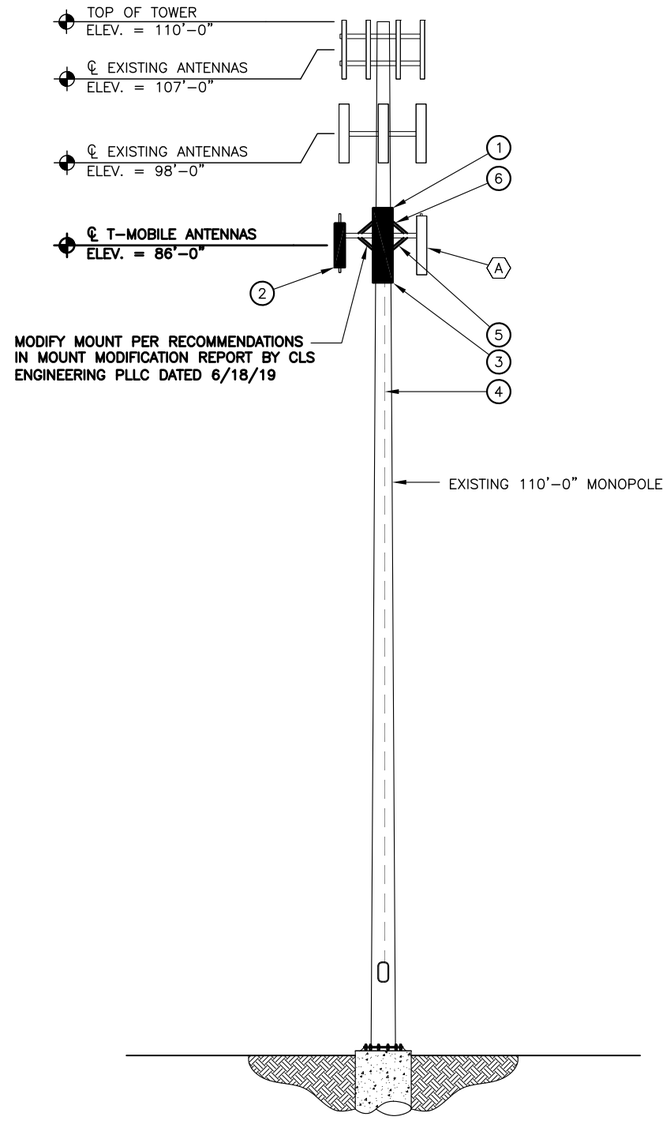
STATE OF CONNECTICUT 31627 LICENSED PROFESSIONAL ENGINEER
7/23/19

SHEET NUMBER:	REVISION:
A-2	1

LEGEND			
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING ERICSSON AIR21 KRC118023-1_B2A_B4P ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	2	INSTALL ERICSSON AIR32 KRD901146-1_B66A_B2A ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ERICSSON AIR21 KRC118023-1_B2P_B4A ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
		4	INSTALL (2) HCS 6x12 HYBRID FIBER TRUNKS FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
		5	INSTALL (1) PERFECT VISION PV-PKBK-M PLATFORM KICKER
		6	INSTALL (1) SITEPRO1 PRK-SFS REINFORCEMENT KIT

LEGEND:

- **NEW**
- EXISTING
- FUTURE



1 TOWER ELEVATION
SCALE: NOT TO SCALE

B+T GRP

CROWN CASTLE

T···Mobile

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
201 GRANITE ROAD
GUILFORD, CT 06437
EXISTING 110'-0" MONOPOLE

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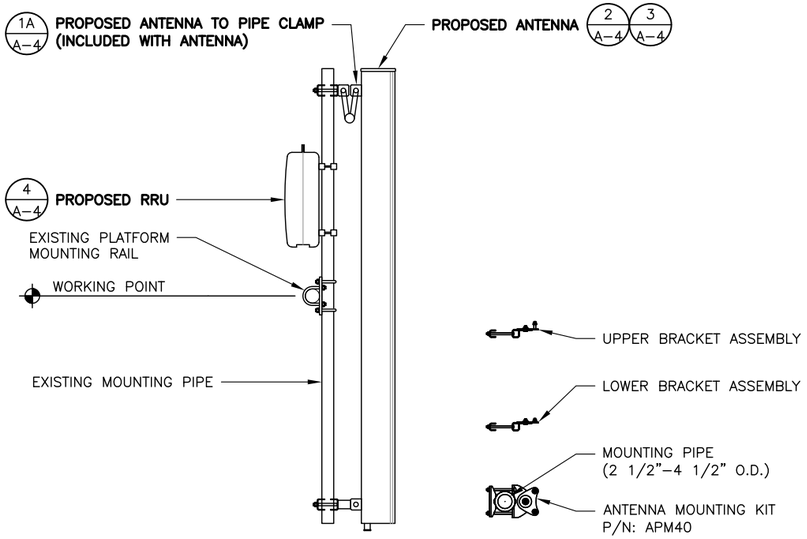
STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
7/23/19

SHEET NUMBER:	REVISION:
A-3	1

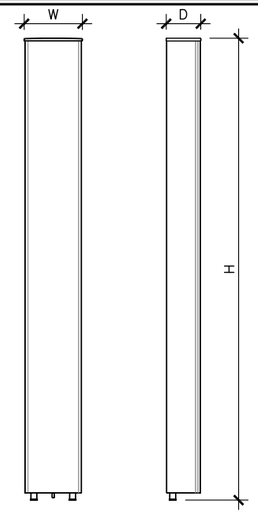


1 PROPOSED ANTENNA & RRU MOUNTING DETAIL

SCALE: N.T.S.

1A ANTENNA MOUNTING BRACKET

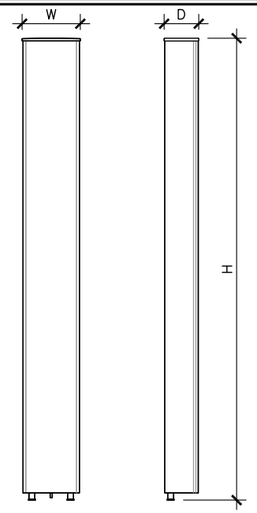
SCALE: N.T.S.



ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS

2 L700/L600 ANTENNA DETAIL

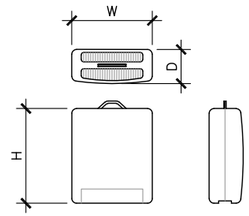
SCALE: N.T.S.



ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR32 KRD901146-1_B66A_B2A
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	132.2 LBS

3 L1900/L2100 ANTENNA DETAIL

SCALE: N.T.S.

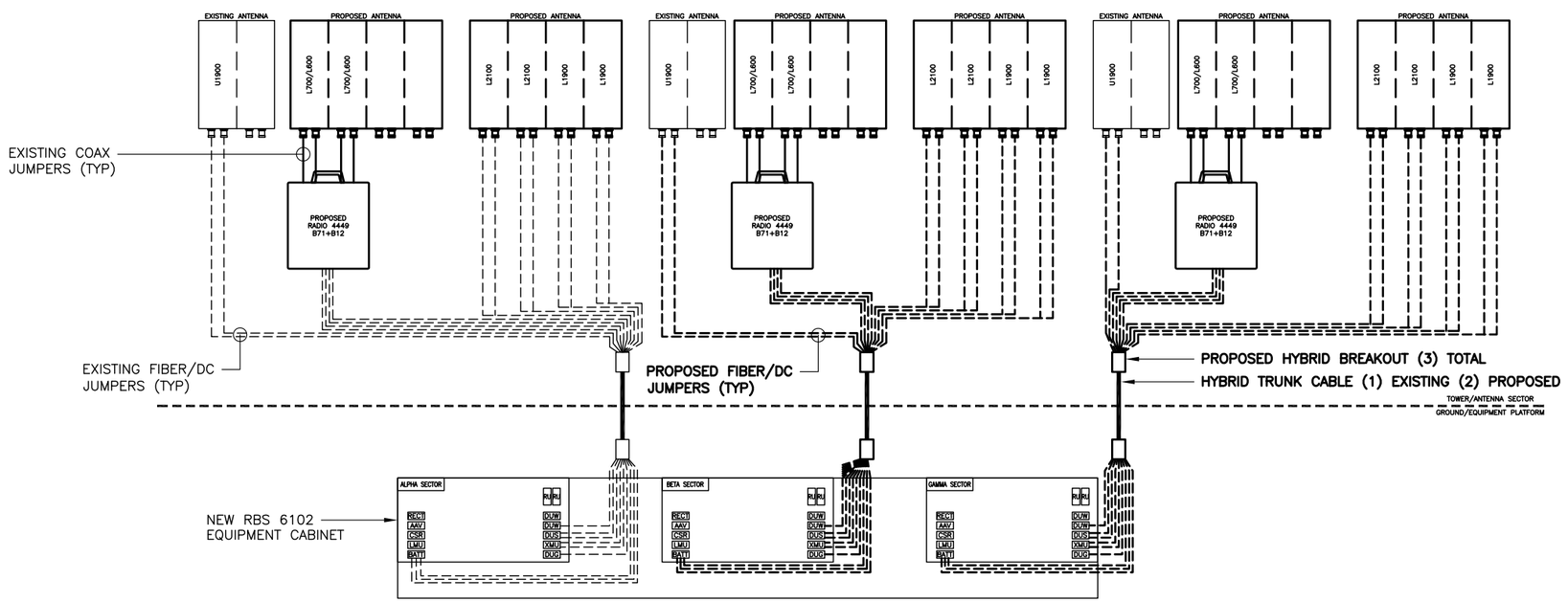


RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449
WIDTH	13.2"
DEPTH	9.2"
HEIGHT	14.9"
WEIGHT	75 LBS

4 REMOTE RADIO UNIT (RRU)

SCALE: N.T.S.

NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
3. REFER TO ANTENNA ORIENTATION ON SHEET C-3 FOR EXACT ANTENNA POSITIONING.



5 ANTENNA & CABLING SCHEMATIC

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T-Mobile

CTNH510A
BU #: 842864

AT&T GUILFORD MONOPOLE

201 GRANITE ROAD
GUILFORD, CT 06437

EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
CHECKED BY:	BLB

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

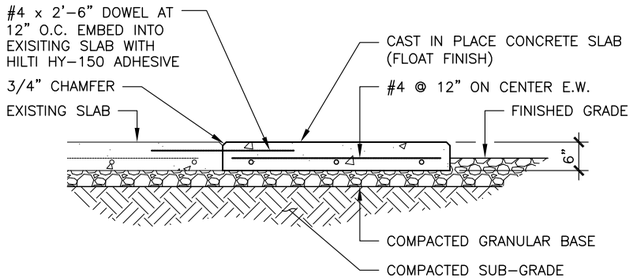
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
7/23/19

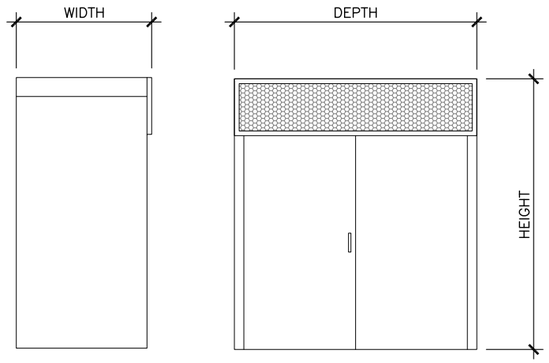
SHEET NUMBER: A-4

REVISION: 1

CABINET SPECS	
MANUFACTURER	ERICSSON
MODEL #	MU AC 6102
WIDTH	27.6"
DEPTH	51.2"
HEIGHT	57.1"
WEIGHT	728 LBS



1 CONCRETE PAD DETAIL
SCALE: N.T.S.



2 CABINET SPECS
SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
201 GRANITE ROAD
GUILFORD, CT 06437
EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
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B&T ENGINEERING, INC.
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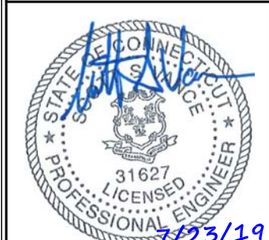
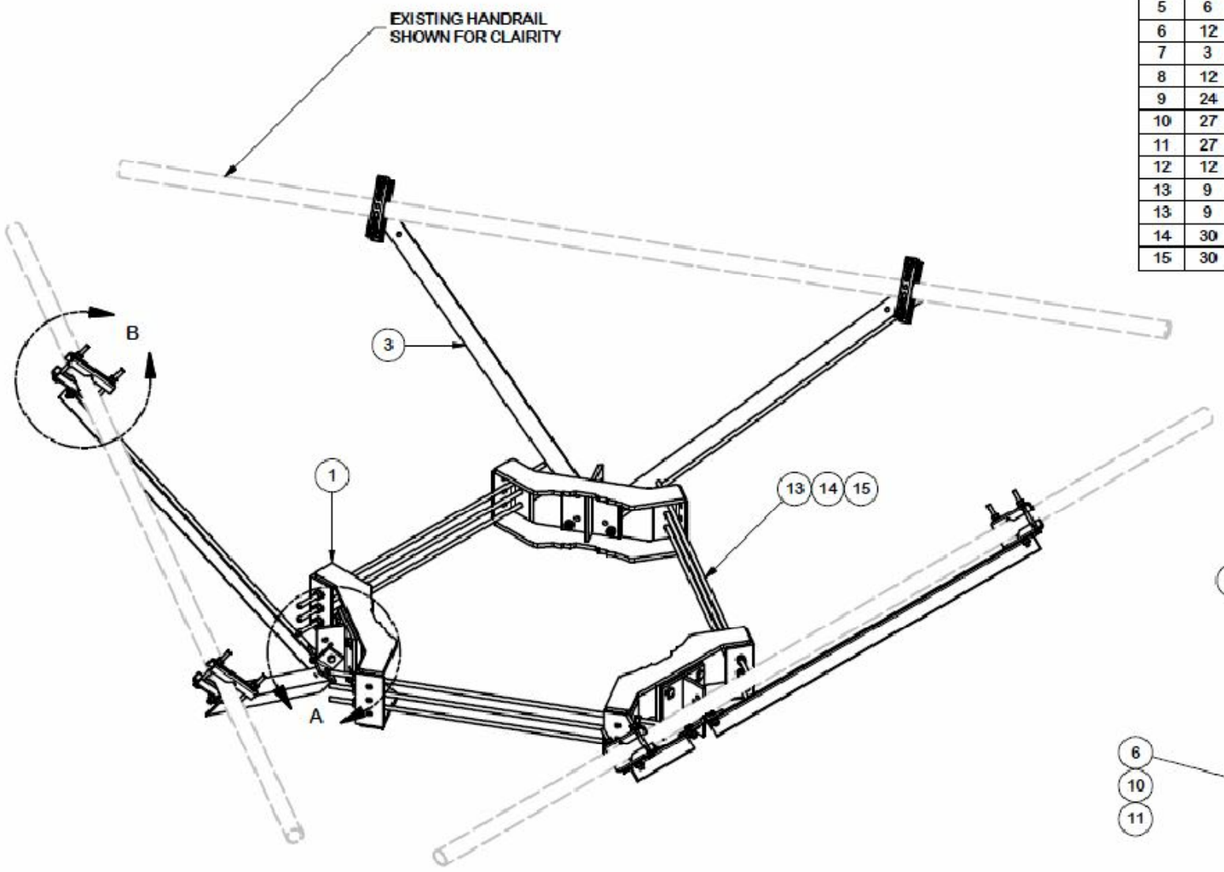
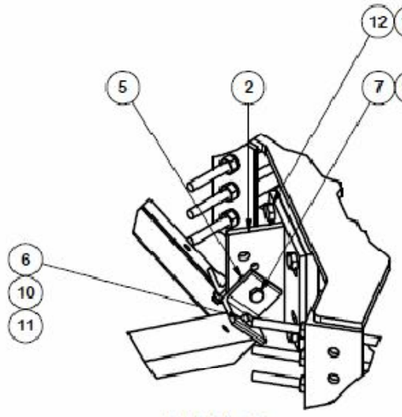
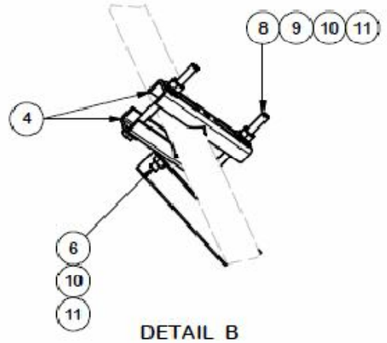


SHEET NUMBER:	REVISION:
A-5	1





DETAIL A



DETAIL B

PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-TBW	T-BRACKET WELDMENT		13.60	40.80
3	6	X-232697	TRPD-HD DIAGONAL ANGLE - SITE PRO 1	52 1/2 in	14.35	86.08
4	12	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	16.46
5	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
6	12	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.77
7	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
8	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
9	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
10	27	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.38
11	27	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.93
12	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
13	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
13	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
14	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
15	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.90
					TOTAL WT. #	587.71

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION: HANDRAIL REINFORCEMENT KIT

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS	1 OF 3
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	
81 / 02	SHOP	BMC 3/16/2017	PRK-SFS	

1 SITEPRO1 PRK-SFS HANDRAIL REINFORCEMENT KIT
SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T-Mobile

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
201 GRANITE ROAD
GUILFORD, CT 06437
EXISTING 110'-0" MONOPOLE

PROJECT NO: 93996.004.01
CHECKED BY: BLB

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

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

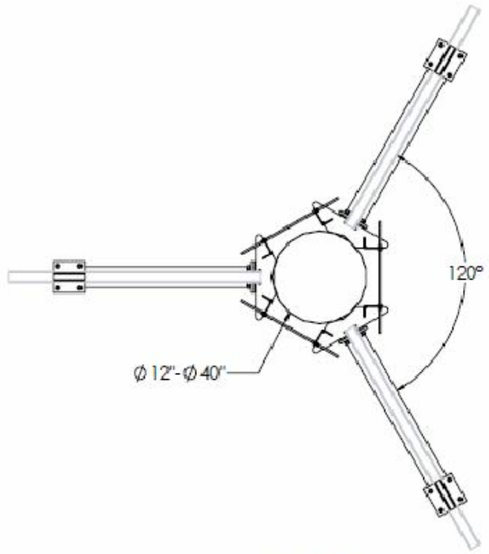
STATE OF CONNECTICUT — 31627 LICENSED PROFESSIONAL ENGINEER — 7/23/19

SHEET NUMBER: A-6
REVISION: 1

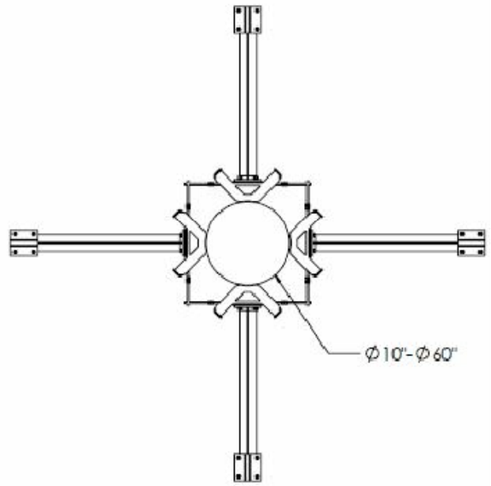
PKBK-ENG-01-R1
MONOPOLE KICKER BRACE KIT

Table 1: Monopole Kicker Brace Kit

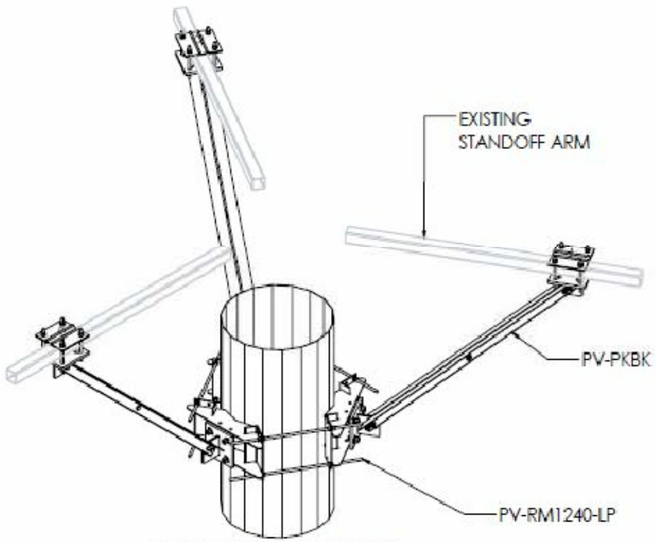
Part Number	Description	Weight (lbs)	Included Parts				
			PV-RM1240-LP	PV-RM3060	PV-RM1060-4	PV-PKBK	PV-PKBK-4
PV-PKBK-M	Brace Kit fits round Pipe OD up to 12"-40", 3 Sector	510	1	-	-	1	-
PV-PKBK-ML	Brace Kit fits round Pipe OD up to 30"-60", 3 Sector	695	-	1	-	1	-
PV-PKBK-4-M	Brace Kit fits round Pipe OD up to 10"-60", 4 Sector	903	-	-	1	-	1



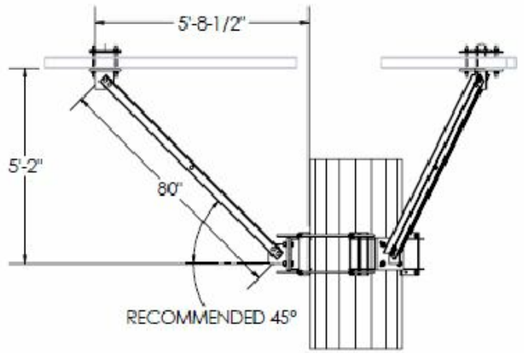
PV-PKBK-M
3-SECTOR KICKER BRACE

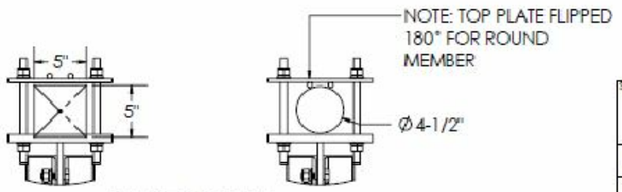


PV-PKBK-4-M
4-SECTOR KICKER BRACE



KICKER BRACE (AS SHOWN)
PV-PKBK-M





ARM ATTACHMENT
CLAMPS TO RECT HSS UP TO 5"X5" & ROUND PIPE UP TO 4-1/2" OD

SHEET 1 OF 1	CATEGORY 02_Monopole	4			PERFECT VISION MANUFACTURING
5/17/2018 SCALE 1:48	SERIES 04_Platform Reinforcement	3			
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: ±1/16" -1/32" ANGULAR: PROFILE±1/4°, BEND±2° ALL OTHERS: ±1/16"	TYPE PV-PKBK_Monopole Platform Kicker	2			MONOPOLE KICKER BRACE KIT
	BY INT	1	5/15/18		DOCUMENT NUMBER PKBK-ENG-01-R1 REV 1
	CHECKED DJN	0	INITIAL RELEASE		
	STATUS APPROVED	REV	DESCRIPTION	DATE	

1 PERFECT VISION PKBK-ENG-01-R1 KICKER BRACE KIT
SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile·

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
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EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
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STATE OF CONNECTICUT 31627 LICENSED PROFESSIONAL ENGINEER
7/23/19

SHEET NUMBER: A-7
REVISION: 1

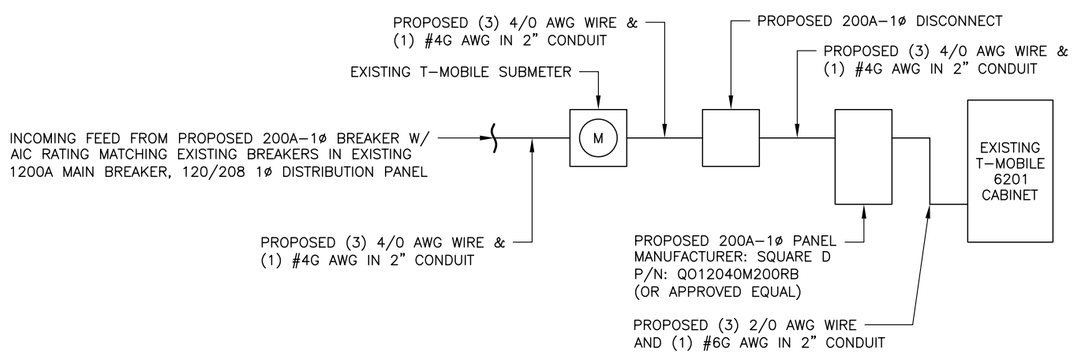
FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
SURGE	2	30A	1	2	125A	2	6201
			3	4			
LED SPOT	1	20A	5	6	20A	1	FIBER

RATED VOLTAGE: ■120/240 ☐_____. 1 PHASE, 3 WIRE		BRANCH POLES: ☐12 ■24 ☐30 ☐42	APPROVED MF'RS
RATED AMPS: ☐100 ■**200** ☐400 ☐_____.		CABINET: ■SURFACE ☐FLUSH	NEMA ☐1 ■3R ☐4X
☐MAIN LUGS ONLY	MAIN **200** AMPS ■BREAKER ☐FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
☐FUSED ■CIRCUIT BREAKER	BRANCH DEVICES	☐_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS / GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL			

EXISTING 100A BREAKER PANEL TO BE REPLACED W/ NEW 200A BREAKER PANEL. SQUARE D P/N: QO12040M200RB (OR APPROVED EQUAL)
REPLACE EXISTING BREAKER IN POSITION 2 AND 4 WITH A NEW 2P 125A BREAKER
REPLACE EXISTING BREAKERS W/ NEW BREAKERS OF SAME AMPERAGE INSIDE NEW PANEL
REPLACE EXISTING WIRES FOR EXISTING 6201 CABINET WITH (3) 2/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2"
UPGRADE FEEDER WIRES TO MEET AMPACITY
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 FINAL T-MOBILE PANEL DETAIL

SCALE: N.T.S.



2 ONE-LINE DIAGRAM

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile

CTNH510A
BU #: 842864
AT&T GUILFORD MONOPOLE
201 GRANITE ROAD
GUILFORD, CT 06437
EXISTING 110'-0" MONOPOLE

PROJECT NO:	93996.004.01
CHECKED BY:	BLB

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	5/30/19	STH	CONSTRUCTION
1	7/23/19	JJD	CONSTRUCTION

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

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER
7/23/19

SHEET NUMBER:	REVISION:
E-1	1

Exhibit D

Structural Analysis Report

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **July 10, 2019**

Darcy Tarr
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Metro PCS* Co-Locate**	
	Carrier Site Number:	CTNH510A
	Carrier Site Name:	AT&T Guilford Monopole
Crown Castle Designation:	**Crown Castle BU Number:**	842864
	Crown Castle Site Name:	GUILFORD SW
	Crown Castle JDE Job Number:	561001
	Crown Castle Work Order Number:	1759987
	Crown Castle Order Number:	482070 Rev. 0
Engineering Firm Designation:	**Tectonic Project Number:**	9800.842864, Phase 3
Site Data:	**201 Granite Road, Guilford, New Haven County, CT** **Latitude *41° 17' 31.14"*, Longitude *-72° 43' 58.28"*** **109 Foot - Monopole Tower**	

Dear Darcy Tarr,

Tectonic Engineering & Surveying Consultants P.C. (Tectonic) 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 130 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: V. Lahoti / KZ

Respectfully submitted by:
Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
No. 25406
LICENSED
PROFESSIONAL ENGINEER

7/10/19

Antonio A. Gualtieri, P.E.
Executive Vice President

Tectonic Engineering & Surveying Consultants P.C.

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
Equal Opportunity Employer

dba, Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road, PO Box 37 | Mountainville, NY 10953

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 109 ft Monopole tower designed by Engineered Endeavors Incorporated.

This tower was originally designed and built to 99 ft height. It was later modified per drawings prepared by B+T Group, in February of 2014, by adding a 10 ft extension making the overall height of tower 109 ft.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
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)
87.0	87.0	1	crown mounts	TA 602-3	3	1-5/8
		1	perfect vision	PV-PKBK Kicker Kit		
		1	perfect vision	PV-RM1240 Collar Mount		
		1	sitepro1	PRK-SFS Reinforcement kit		
	86.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		

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)
107.0	107.0	3	amphenol	BXA-171063-12CF-EDIN-X w/ Mount Pipe	2	1-5/8
		3	amphenol	BXA-70063-6CF-EDIN-X w/ Mount Pipe		
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		1	crown mounts	LP 303-1		
		2	raycap	RRFDC-3315-PF-48		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
98.0	98.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	3 1 2 12	1/2 3/8 3/4 1-1/4
		2	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		1	crown mounts	LP 303-1		
		1	crown mounts	NA 507-1		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		6	powerwave technologies	7020.00		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
		12	powerwave technologies	LGP21401		
		2	raycap	DC6-48-60-18-8F		
77.0	77.0	6	alcatel lucent	800MHZ 2X50W RRH	3	1-5/8
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		1	crown mounts	LP 303-1		
		3	nokia	FZHN		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech, inc.	4713222	CCISITES
4-POST-MODIFICATION INSPECTION	Sinnott Gering and Schmitt Towers, Inc.	5415537	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors Incorporated	4492141	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors Incorporated	4492171	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B + T Group	4492170	CCISITES
4-MOUNT REINFORCEMENT DESIGN DRAWING DATA	CLS Engineering PLLC	8484555	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.
3) Tectonic did not analyze the antenna supporting mounts as a part of this analysis report and assumed they are structurally sufficient. It is the carrier's responsibility to ensure structural compliance of their existing and/or proposed antenna supporting mounts.
4) Effective projected area (EPA) of the panel antennas have been computed by the tower owner using Computational Fluid Dynamics. Verification of its accuracy is outside the scope of this structural analysis. Tectonic does not assume any responsibility for its accuracy.

This analysis may be affected if any assumptions are not valid or have been made in error. Tectonic 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	109 - 99	Pole	TP24x24x0.375	1	-3.867	920.561	6.8	Pass
L2	99 - 79	Pole	TP30.53x24x0.313	2	-12.957	1841.017	17.3	Pass
L3	79 - 59	Pole	TP34.64x30.53x0.313	3	-19.188	2091.421	32.8	Pass
L4	59 - 46.93	Pole	TP37.12x34.64x0.313	4	-20.458	2178.183	37.1	Pass
L5	46.93 - 32.07	Pole	TP39.495x35.439x0.375	5	-25.639	2860.126	38.8	Pass
L6	32.07 - 12.07	Pole	TP43.552x39.495x0.375	6	-30.532	3156.709	45.0	Pass
L7	12.07 - 0	Pole	TP46x43.552x0.375	7	-33.426	3335.692	48.0	Pass
							Summary	
						Pole (L7)	48.0	Pass
						Rating* =	48.0	Pass

*Rating per TIA-222-H Section 15.5

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1, 2	Anchor Rods	0	43.4	Pass
1, 2	Base Plate	0	50.0	Pass
1, 2	Base Foundation	0	44.4	Pass
1, 2	Base Foundation Soil Interaction	0	43.9	Pass
1, 2	Flange Bolts	99	3.9	Pass
1, 2	Flange Plate	99	15.9	Pass

Structure Rating (max from all components) =	50%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5

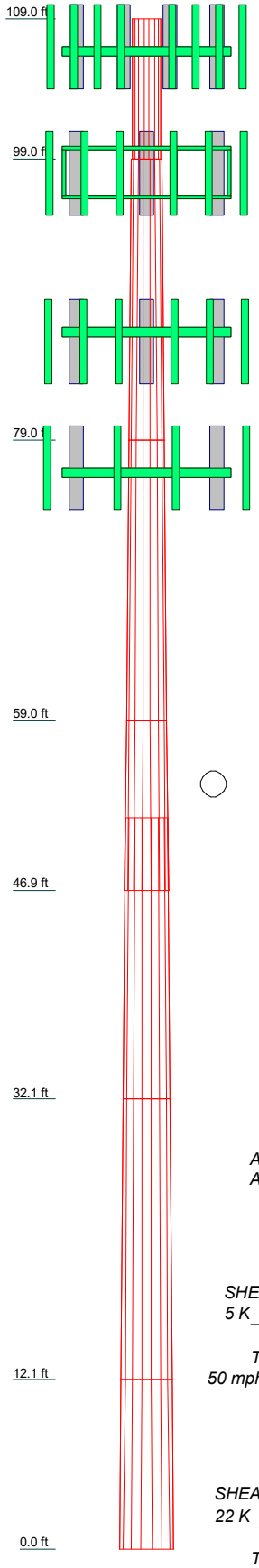
4.1) Recommendations

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.000	0	0.375		24.000	24.000	A53-B-35	0.9
2	20.000	18	0.313		26.420	30.530		1.9
3	20.000	18	0.313		30.530	34.640		2.2
4	12.070	18	0.313	5.140	34.640	37.120	A572-65	1.4
5	20.000	18	0.375		35.439	39.495		3.0
6	20.000	18	0.375		39.495	43.552		3.3
7	12.070	18	0.375		43.552	46.000		2.2



ALL REACTIONS ARE FACTORED

AXIAL 53 K
SHEAR 5 K
MOMENT 411 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 33 K
SHEAR 22 K
MOMENT 1743 kip-ft
TORQUE 1 kip-ft
REACTIONS - 130 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 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 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 48%

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic
1279 Route 300.
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: ***9800.842864, Phase 3***			
Project: ***BU 842864- GUILFORD SW***			
Client: Crown Castle	Drawn by: Vinita Lahoti	App'd:	
Code: TIA-222-H	Date: 07/10/19	Scale: NTS	
Path: I:\Projects\9800\842864\1759987\Structural\9800.842864_Phase 3 Structural Analysis.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: 106.000 ft.
3) Basic wind speed of 130 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.000 ft.
9) Nominal ice thickness of 1.500 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.000 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50.000 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	109.000-99.000	10.000	0.000	Round	24.000	24.000	0.375		A53-B-35 (35 ksi)

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
L2	99.000-79.000	20.000	0.000	18	26.420	30.530	0.313	1.250	A572-65 (65 ksi)
L3	79.000-59.000	20.000	0.000	18	30.530	34.640	0.313	1.250	A572-65 (65 ksi)
L4	59.000-46.930	12.070	5.140	18	34.640	37.120	0.313	1.250	A572-65 (65 ksi)
L5	46.930-32.070	20.000	0.000	18	35.439	39.495	0.375	1.500	A572-65 (65 ksi)
L6	32.070-12.070	20.000	0.000	18	39.495	43.552	0.375	1.500	A572-65 (65 ksi)
L7	12.070-0.000	12.070		18	43.552	46.000	0.375	1.500	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	24.000	27.833	1942.299	8.354	12.000	161.858	3884.597	13.908	0.000	0
	24.000	27.833	1942.299	8.354	12.000	161.858	3884.597	13.908	0.000	0
L2	26.779	25.895	2229.925	9.268	13.421	166.147	4462.784	12.950	4.100	13.12
	30.953	29.972	3457.511	10.727	15.509	222.933	6919.572	14.989	4.823	15.434
L3	30.953	29.972	3457.511	10.727	15.509	222.933	6919.572	14.989	4.823	15.434
	35.126	34.048	5068.853	12.186	17.597	288.053	10144.376	17.027	5.547	17.749
L4	35.126	34.048	5068.853	12.186	17.597	288.053	10144.376	17.027	5.547	17.749
	37.644	36.508	6248.897	13.067	18.857	331.384	12506.016	18.258	5.983	19.146
L5	36.986	41.735	6482.632	12.448	18.003	360.088	12973.795	20.871	5.577	14.873
	40.047	46.563	9002.908	13.888	20.064	448.718	18017.663	23.286	6.291	16.776
L6	40.047	46.563	9002.908	13.888	20.064	448.718	18017.663	23.286	6.291	16.776
	44.166	51.391	12104.006	15.328	22.124	547.090	24223.939	25.701	7.005	18.68
L7	44.166	51.391	12104.006	15.328	22.124	547.090	24223.939	25.701	7.005	18.68
	46.652	54.305	14281.844	16.197	23.368	611.171	28582.480	27.158	7.436	19.829

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 109.000-99.000				1	1	1			
L2 99.000-79.000				1	1	1			
L3 79.000-59.000				1	1	1			
L4 59.000-46.930				1	1	1			
L5 46.930-32.070				1	1	1			
L6 32.070-12.070				1	1	1			
L7 12.070-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
*** Step Bolts	B	No	Surface Ar (CaAa)	109.000 - 8.000	1	1	0.000 0.200	0.375		0.002

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
***										

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 klf
****									
HB158-1-08U8-S8J18(1-5/8)	B	No	No	Inside Pole	107.000 - 8.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	98.000 - 8.000	3	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LDF6-50A(1-1/4)	C	No	No	Inside Pole	98.000 - 8.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98-002-XXX(3/8)	C	No	No	Inside Pole	98.000 - 8.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	98.000 - 8.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
2" Rigid Conduit	C	No	No	Inside Pole	98.000 - 8.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
***									
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	87.000 - 8.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	87.000 - 8.000	2	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
***									
HB158-21U6S12-60M-01(1-5/8)	B	No	No	Inside Pole	77.000 - 8.000	3	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
***									

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	109.000-99.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.375	0.000	0.041
		C	0.000	0.000	0.000	0.000	0.000
L2	99.000-79.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.092
		C	0.000	0.000	0.000	0.000	0.269

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
L3	79.000-59.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.195
		C	0.000	0.000	0.000	0.000	0.351
L4	59.000-46.930	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.453	0.000	0.124
		C	0.000	0.000	0.000	0.000	0.212
L5	46.930-32.070	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.557	0.000	0.153
		C	0.000	0.000	0.000	0.000	0.261
L6	32.070-12.070	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.750	0.000	0.206
		C	0.000	0.000	0.000	0.000	0.351
L7	12.070-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.153	0.000	0.042
		C	0.000	0.000	0.000	0.000	0.071

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	109.000-99.000	A	1.430	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	3.235	0.000	0.072
		C		0.000	0.000	0.000	0.000	0.000
L2	99.000-79.000	A	1.408	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	6.380	0.000	0.153
		C		0.000	0.000	0.000	0.000	0.269
L3	79.000-59.000	A	1.372	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	6.239	0.000	0.253
		C		0.000	0.000	0.000	0.000	0.351
L4	59.000-46.930	A	1.337	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	3.679	0.000	0.158
		C		0.000	0.000	0.000	0.000	0.212
L5	46.930-32.070	A	1.298	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	4.530	0.000	0.195
		C		0.000	0.000	0.000	0.000	0.261
L6	32.070-12.070	A	1.224	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	5.645	0.000	0.254
		C		0.000	0.000	0.000	0.000	0.351
L7	12.070-0.000	A	1.075	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.028	0.000	0.050
		C		0.000	0.000	0.000	0.000	0.071

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	109.000-99.000	0.351	-0.114	1.246	-0.405
L2	99.000-79.000	0.287	-0.093	1.255	-0.408
L3	79.000-59.000	0.287	-0.093	1.257	-0.408
L4	59.000-46.930	0.287	-0.093	1.248	-0.406
L5	46.930-32.070	0.287	-0.093	1.257	-0.408
L6	32.070-12.070	0.287	-0.093	1.187	-0.386
L7	12.070-0.000	0.096	-0.031	0.371	-0.120

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
L1	15	Step Bolts	99.00 - 109.00	1.0000	1.0000
L2	15	Step Bolts	79.00 - 99.00	1.0000	1.0000
L3	15	Step Bolts	59.00 - 79.00	1.0000	1.0000
L4	15	Step Bolts	46.93 - 59.00	1.0000	1.0000
L6	15	Step Bolts	12.07 - 32.07	1.0000	1.0000
L7	15	Step Bolts	8.00 - 12.07	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
BXA-70063-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.806 8.357 8.872 9.927	5.801 6.953 7.819 9.601	0.042 0.103 0.171 0.335
BXA-70063-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.806 8.357 8.872 9.927	5.801 6.953 7.819 9.601	0.042 0.103 0.171 0.335
BXA-70063-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.806 8.357 8.872 9.927	5.801 6.953 7.819 9.601	0.042 0.103 0.171 0.335
BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.029 5.583 6.103 7.166	5.289 6.459 7.348 9.148	0.041 0.087 0.140 0.273
BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.029 5.583 6.103 7.166	5.289 6.459 7.348 9.148	0.041 0.087 0.140 0.273
BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.029 5.583 6.103 7.166	5.289 6.459 7.348 9.148	0.041 0.087 0.140 0.273
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	107.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.316 8.876 9.402 10.475	7.004 8.185 9.081 10.904	0.069 0.138 0.214 0.395
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	107.000	No Ice 1/2"	8.316 8.876	7.004 8.185	0.069 0.138

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000				Ice	9.402	9.081	0.214
							1" Ice	10.475	10.904	0.395
							2" Ice			
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	107.000	No Ice	8.316	7.004	0.069
			0.000				1/2"	8.876	8.185	0.138
			0.000				Ice	9.402	9.081	0.214
							1" Ice	10.475	10.904	0.395
							2" Ice			
RRFDC-3315-PF-48	A	From Leg	4.000	0.000	0.000	107.000	No Ice	3.708	2.192	0.021
			0.000				1/2"	3.950	2.395	0.052
			0.000				Ice	4.200	2.606	0.086
							1" Ice	4.723	3.049	0.166
							2" Ice			
RRFDC-3315-PF-48	C	From Leg	4.000	0.000	0.000	107.000	No Ice	3.708	2.192	0.021
			0.000				1/2"	3.950	2.395	0.052
			0.000				Ice	4.200	2.606	0.086
							1" Ice	4.723	3.049	0.166
							2" Ice			
RFV01U-D2A	A	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.013	0.070
			0.000				1/2"	2.045	1.145	0.087
			0.000				Ice	2.223	1.284	0.106
							1" Ice	2.601	1.585	0.153
							2" Ice			
RFV01U-D2A	B	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.013	0.070
			0.000				1/2"	2.045	1.145	0.087
			0.000				Ice	2.223	1.284	0.106
							1" Ice	2.601	1.585	0.153
							2" Ice			
RFV01U-D2A	C	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.013	0.070
			0.000				1/2"	2.045	1.145	0.087
			0.000				Ice	2.223	1.284	0.106
							1" Ice	2.601	1.585	0.153
							2" Ice			
RFV01U-D1A	A	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.250	0.084
			0.000				1/2"	2.045	1.393	0.103
			0.000				Ice	2.223	1.543	0.124
							1" Ice	2.601	1.865	0.175
							2" Ice			
RFV01U-D1A	B	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.250	0.084
			0.000				1/2"	2.045	1.393	0.103
			0.000				Ice	2.223	1.543	0.124
							1" Ice	2.601	1.865	0.175
							2" Ice			
RFV01U-D1A	C	From Leg	4.000	0.000	0.000	107.000	No Ice	1.875	1.250	0.084
			0.000				1/2"	2.045	1.393	0.103
			0.000				Ice	2.223	1.543	0.124
							1" Ice	2.601	1.865	0.175
							2" Ice			
LP 303-1	C	None			0.000	107.000	No Ice	14.660	14.660	1.250
							1/2"	18.870	18.870	1.481
							Ice	23.080	23.080	1.713
							1" Ice	31.500	31.500	2.175
							2" Ice			
***										
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	98.000	No Ice	5.746	4.254	0.055
			0.000				1/2"	6.179	5.014	0.103
			0.000				Ice	6.607	5.711	0.157
							1" Ice	7.488	7.155	0.287
							2" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	98.000	No Ice	5.746	4.254	0.055
			0.000				1/2"	6.179	5.014	0.103
			0.000				Ice	6.607	5.711	0.157
							1" Ice	7.488	7.155	0.287
							2" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	98.000	No Ice	5.746	4.254	0.055
			0.000				1/2"	6.179	5.014	0.103

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*
			0.000			Ice	6.607	5.711	0.157
						1" Ice	7.488	7.155	0.287
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.000	0.000	98.000	No Ice	9.220	6.250	0.074
			0.000			1/2"	9.980	6.960	0.143
			0.000			Ice	10.760	7.700	0.224
						1" Ice	12.360	9.220	0.420
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.000	0.000	98.000	No Ice	9.220	6.250	0.074
			0.000			1/2"	9.980	6.960	0.143
			0.000			Ice	10.760	7.700	0.224
						1" Ice	12.360	9.220	0.420
						2" Ice			
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.000	0.000	98.000	No Ice	3.040	2.450	0.054
			0.000			1/2"	3.340	2.750	0.104
			0.000			Ice	3.650	3.050	0.162
						1" Ice	4.310	3.680	0.307
						2" Ice			
(4) LGP21401	A	From Leg	4.000	0.000	98.000	No Ice	1.104	0.207	0.014
			0.000			1/2"	1.239	0.274	0.021
			0.000			Ice	1.381	0.348	0.030
						1" Ice	1.688	0.521	0.055
						2" Ice			
(4) LGP21401	B	From Leg	4.000	0.000	98.000	No Ice	1.104	0.207	0.014
			0.000			1/2"	1.239	0.274	0.021
			0.000			Ice	1.381	0.348	0.030
						1" Ice	1.688	0.521	0.055
						2" Ice			
(4) LGP21401	C	From Leg	4.000	0.000	98.000	No Ice	1.104	0.207	0.014
			0.000			1/2"	1.239	0.274	0.021
			0.000			Ice	1.381	0.348	0.030
						1" Ice	1.688	0.521	0.055
						2" Ice			
(2) 7020.00	A	From Leg	4.000	0.000	98.000	No Ice	0.102	0.175	0.002
			0.000			1/2"	0.147	0.239	0.005
			0.000			Ice	0.199	0.311	0.009
						1" Ice	0.326	0.476	0.022
						2" Ice			
(2) 7020.00	B	From Leg	4.000	0.000	98.000	No Ice	0.102	0.175	0.002
			0.000			1/2"	0.147	0.239	0.005
			0.000			Ice	0.199	0.311	0.009
						1" Ice	0.326	0.476	0.022
						2" Ice			
(2) 7020.00	C	From Leg	4.000	0.000	98.000	No Ice	0.102	0.175	0.002
			0.000			1/2"	0.147	0.239	0.005
			0.000			Ice	0.199	0.311	0.009
						1" Ice	0.326	0.476	0.022
						2" Ice			
RRUS 32 B2	A	From Leg	4.000	0.000	98.000	No Ice	2.710	1.661	0.053
			0.000			1/2"	2.931	1.848	0.074
			0.000			Ice	3.159	2.041	0.098
						1" Ice	3.638	2.449	0.157
						2" Ice			
RRUS 32 B2	B	From Leg	4.000	0.000	98.000	No Ice	2.710	1.661	0.053
			0.000			1/2"	2.931	1.848	0.074
			0.000			Ice	3.159	2.041	0.098
						1" Ice	3.638	2.449	0.157
						2" Ice			
RRUS 32 B2	C	From Leg	4.000	0.000	98.000	No Ice	2.710	1.661	0.053
			0.000			1/2"	2.931	1.848	0.074
			0.000			Ice	3.159	2.041	0.098
						1" Ice	3.638	2.449	0.157
						2" Ice			
RRUS 11	A	From Leg	4.000	0.000	98.000	No Ice	2.784	1.187	0.051
			0.000			1/2"	2.992	1.334	0.071
			0.000			Ice	3.207	1.490	0.095

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*
						1" Ice	3.658	1.833	0.153
						2" Ice			
RRUS 11	B	From Leg	4.000	0.000	98.000	No Ice	2.784	1.187	0.051
			0.000			1/2"	2.992	1.334	0.071
			0.000			Ice	3.207	1.490	0.095
						1" Ice	3.658	1.833	0.153
						2" Ice			
RRUS 11	C	From Leg	4.000	0.000	98.000	No Ice	2.784	1.187	0.051
			0.000			1/2"	2.992	1.334	0.071
			0.000			Ice	3.207	1.490	0.095
						1" Ice	3.658	1.833	0.153
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.000	0.000	98.000	No Ice	0.917	0.917	0.019
			0.000			1/2"	1.458	1.458	0.037
			0.000			Ice	1.643	1.643	0.057
						1" Ice	2.042	2.042	0.105
						2" Ice			
DC6-48-60-18-8F	C	From Leg	4.000	0.000	98.000	No Ice	0.917	0.917	0.019
			0.000			1/2"	1.458	1.458	0.037
			0.000			Ice	1.643	1.643	0.057
						1" Ice	2.042	2.042	0.105
						2" Ice			
LP 303-1	C	None		0.000	98.000	No Ice	14.660	14.660	1.250
						1/2"	18.870	18.870	1.481
						Ice	23.080	23.080	1.713
						1" Ice	31.500	31.500	2.175
						2" Ice			
NA 507-1	C	None		0.000	98.000	No Ice	4.800	4.800	0.245
						1/2"	6.700	6.700	0.294
						Ice	8.600	8.600	0.343
						1" Ice	12.400	12.400	0.441
						2" Ice			
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000	0.000	87.000	No Ice	6.329	5.642	0.112
			0.000			1/2"	6.775	6.426	0.169
			-1.000			Ice	7.214	7.131	0.233
						1" Ice	8.117	8.591	0.383
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000	0.000	87.000	No Ice	6.329	5.642	0.112
			0.000			1/2"	6.775	6.426	0.169
			-1.000			Ice	7.214	7.131	0.233
						1" Ice	8.117	8.591	0.383
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000	0.000	87.000	No Ice	6.329	5.642	0.112
			0.000			1/2"	6.775	6.426	0.169
			-1.000			Ice	7.214	7.131	0.233
						1" Ice	8.117	8.591	0.383
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000	0.000	87.000	No Ice	14.690	6.870	0.186
			0.000			1/2"	15.460	7.550	0.315
			-1.000			Ice	16.230	8.250	0.458
						1" Ice	17.820	9.670	0.788
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000	0.000	87.000	No Ice	14.690	6.870	0.186
			0.000			1/2"	15.460	7.550	0.315
			-1.000			Ice	16.230	8.250	0.458
						1" Ice	17.820	9.670	0.788
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000	0.000	87.000	No Ice	14.690	6.870	0.186
			0.000			1/2"	15.460	7.550	0.315
			-1.000			Ice	16.230	8.250	0.458
						1" Ice	17.820	9.670	0.788
						2" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000	0.000	87.000	No Ice	6.747	6.070	0.153
			0.000			1/2"	7.202	6.867	0.214
			-1.000			Ice	7.648	7.583	0.282

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
						1" Ice	8.565	9.063	0.441
						2" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000 0.000 -1.000	0.000	87.000	No Ice	6.747	6.070	0.153
						1/2" Ice	7.202	6.867	0.214
						1" Ice	7.648	7.583	0.282
						2" Ice	8.565	9.063	0.441
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000 0.000 -1.000	0.000	87.000	No Ice	6.747	6.070	0.153
						1/2" Ice	7.202	6.867	0.214
						1" Ice	7.648	7.583	0.282
						2" Ice	8.565	9.063	0.441
RADIO 4449 B12/B71	A	From Leg	4.000 0.000 -1.000	0.000	87.000	No Ice	1.650	1.300	0.075
						1/2" Ice	1.810	1.445	0.092
						1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
RADIO 4449 B12/B71	B	From Leg	4.000 0.000 -1.000	0.000	87.000	No Ice	1.650	1.300	0.075
						1/2" Ice	1.810	1.445	0.092
						1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
RADIO 4449 B12/B71	C	From Leg	4.000 0.000 -1.000	0.000	87.000	No Ice	1.650	1.300	0.075
						1/2" Ice	1.810	1.445	0.092
						1" Ice	1.978	1.597	0.112
						2" Ice	2.336	1.924	0.161
Perfect Vision - PV-PKBK Kicker Kit	C	None		0.000	87.000	No Ice	11.840	11.840	0.275
						1/2" Ice	16.960	16.960	0.296
						1" Ice	22.080	22.080	0.317
						2" Ice	32.320	32.320	0.359
SitePro1- PRK-SFS Reinforcement kit	C	None		0.000	87.000	No Ice	11.840	11.840	0.275
						1/2" Ice	16.960	16.960	0.296
						1" Ice	22.080	22.080	0.317
						2" Ice	32.320	32.320	0.359
Perfect Vision - PV-RM1240 Collar Mount	C	None		0.000	87.000	No Ice	0.000	0.000	0.228
						1/2" Ice	0.000	0.000	0.285
						1" Ice	0.000	0.000	0.342
						2" Ice	0.000	0.000	0.456
TA 602-3	C	None		0.000	87.000	No Ice	11.590	11.590	0.774
						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
						2" Ice	26.990	26.990	1.639
****									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	12.509	7.413	0.103
						1/2" Ice	13.108	8.598	0.194
						1" Ice	13.672	9.496	0.293
						2" Ice	14.822	11.328	0.520
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	12.509	7.413	0.103
						1/2" Ice	13.108	8.598	0.194
						1" Ice	13.672	9.496	0.293
						2" Ice	14.822	11.328	0.520
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	12.509	7.413	0.103
						1/2" Ice	13.108	8.598	0.194
						1" Ice	13.672	9.496	0.293
						2" Ice	14.822	11.328	0.520
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
						Ice	4.880	3.610	0.185

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*
						1" Ice	5.710	4.400	0.331
						2" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
						1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
						1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
(2) 800MHZ 2X50W RRH	A	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.058	1.362	0.053
						1/2" Ice	2.240	1.519	0.071
						1" Ice	2.429	1.683	0.092
						2" Ice	2.829	2.034	0.144
(2) 800MHZ 2X50W RRH	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.058	1.362	0.053
						1/2" Ice	2.240	1.519	0.071
						1" Ice	2.429	1.683	0.092
						2" Ice	2.829	2.034	0.144
(2) 800MHZ 2X50W RRH	C	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.058	1.362	0.053
						1/2" Ice	2.240	1.519	0.071
						1" Ice	2.429	1.683	0.092
						2" Ice	2.829	2.034	0.144
(2) FZHN	A	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.020	0.607	0.044
						1/2" Ice	2.197	0.715	0.058
						1" Ice	2.381	0.829	0.075
						2" Ice	2.772	1.089	0.116
FZHN	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.020	0.607	0.044
						1/2" Ice	2.197	0.715	0.058
						1" Ice	2.381	0.829	0.075
						2" Ice	2.772	1.089	0.116
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.322	2.238	0.060
						1/2" Ice	2.527	2.441	0.083
						1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
(2) PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	2.322	2.238	0.060
						1/2" Ice	2.527	2.441	0.083
						1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	77.000	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
LP 303-1	C	None		0.000	77.000	No Ice	14.660	14.660	1.250
						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
						2" Ice	31.500	31.500	2.175

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			

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
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	109 - 99	Pole	Max Tension	20	0.000	-0.000	-0.000
			Max. Compression	26	-8.194	0.499	0.345
			Max. Mx	20	-3.871	35.642	-0.118
			Max. My	2	-3.868	-0.107	35.847
			Max. Vy	20	-4.657	35.642	-0.118
			Max. Vx	2	-4.684	-0.107	35.847
			Max. Torque	4			0.384
L2	99 - 79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.384	1.136	0.838
			Max. Mx	20	-12.966	235.855	-1.128
			Max. My	2	-12.959	-1.106	237.390
			Max. Vy	20	-13.432	235.855	-1.128
			Max. Vx	2	-13.502	-1.106	237.390
			Max. Torque	4			1.189
L3	79 - 59	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-35.660	1.222	0.543
			Max. Mx	20	-19.197	568.359	-2.089
			Max. My	2	-19.189	-1.927	572.284
			Max. Vy	20	-17.652	568.359	-2.089
			Max. Vx	2	-17.785	-1.927	572.284
			Max. Torque	14			-1.268
L4	59 - 46.93	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.320	1.175	0.570
			Max. Mx	20	-20.466	692.325	-2.361
			Max. My	2	-20.458	-2.229	697.207
			Max. Vy	20	-18.145	692.325	-2.361
			Max. Vx	2	-18.278	-2.229	697.207
			Max. Torque	14			-1.267
L5	46.93 - 32.07	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.979	1.033	0.652
			Max. Mx	20	-25.645	1069.878	-3.139
			Max. My	2	-25.639	-3.103	1077.518
			Max. Vy	20	-19.574	1069.878	-3.139
			Max. Vx	2	-19.706	-3.103	1077.518
			Max. Torque	14			-1.267
L6	32.07 - 12.07	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.987	0.888	0.735
			Max. Mx	20	-30.534	1473.655	-3.901
			Max. My	2	-30.532	-3.979	1484.036
			Max. Vy	20	-20.834	1473.655	-3.901
			Max. Vx	2	-20.965	-3.979	1484.036
			Max. Torque	14			-1.266
L7	12.07 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.470	0.860	0.752
			Max. Mx	20	-33.426	1729.660	-4.369
			Max. My	2	-33.426	-4.474	1741.629
			Max. Vy	20	-21.610	1729.660	-4.369
			Max. Vx	2	-21.739	-4.474	1741.629
			Max. Torque	14			-1.266

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	53.470	0.000	0.000
	Max. H_x	20	33.432	21.600	-0.039
	Max. H_z	2	33.432	-0.039	21.729
	Max. M_x	2	1741.629	-0.039	21.729
	Max. M_z	8	1729.447	-21.600	0.039
	Max. Torsion	2	1.265	-0.039	21.729

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	11	25.074	-18.687	-10.831
	Min. H_x	8	33.432	-21.600	0.039
	Min. H_z	15	25.074	0.039	-21.729
	Min. M_x	14	-1741.214	0.039	-21.729
	Min. M_z	20	-1729.660	21.600	-0.039
	Min. Torsion	14	-1.266	0.039	-21.729

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	27.860	0.000	0.000	-0.167	0.080	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	33.432	0.039	-21.729	-1741.629	-4.474	-1.265
0.9 Dead+1.0 Wind 0 deg - No Ice	25.074	0.039	-21.729	-1729.005	-4.463	-1.260
1.2 Dead+1.0 Wind 30 deg - No Ice	33.432	10.834	-18.838	-1510.610	-868.632	-1.187
0.9 Dead+1.0 Wind 30 deg - No Ice	25.074	10.834	-18.838	-1499.650	-862.384	-1.183
1.2 Dead+1.0 Wind 60 deg - No Ice	33.432	18.726	-10.899	-874.883	-1500.016	-0.791
0.9 Dead+1.0 Wind 60 deg - No Ice	25.074	18.726	-10.899	-868.510	-1489.214	-0.788
1.2 Dead+1.0 Wind 90 deg - No Ice	33.432	21.600	-0.039	-4.784	-1729.447	-0.182
0.9 Dead+1.0 Wind 90 deg - No Ice	25.074	21.600	-0.039	-4.692	-1716.993	-0.182
1.2 Dead+1.0 Wind 120 deg - No Ice	33.432	18.687	10.831	866.544	-1495.446	0.475
0.9 Dead+1.0 Wind 120 deg - No Ice	25.074	18.687	10.831	860.346	-1484.683	0.474
1.2 Dead+1.0 Wind 150 deg - No Ice	33.432	10.766	18.798	1505.624	-860.708	1.006
0.9 Dead+1.0 Wind 150 deg - No Ice	25.074	10.766	18.798	1494.810	-854.528	1.002
1.2 Dead+1.0 Wind 180 deg - No Ice	33.432	-0.039	21.729	1741.214	4.679	1.266
0.9 Dead+1.0 Wind 180 deg - No Ice	25.074	-0.039	21.729	1728.696	4.613	1.261
1.2 Dead+1.0 Wind 210 deg - No Ice	33.432	-10.834	18.838	1510.197	868.839	1.187
0.9 Dead+1.0 Wind 210 deg - No Ice	25.074	-10.834	18.838	1499.343	862.535	1.182
1.2 Dead+1.0 Wind 240 deg - No Ice	33.432	-18.726	10.899	874.470	1500.226	0.790
0.9 Dead+1.0 Wind 240 deg - No Ice	25.074	-18.726	10.899	868.204	1489.368	0.787
1.2 Dead+1.0 Wind 270 deg - No Ice	33.432	-21.600	0.039	4.369	1729.660	0.181
0.9 Dead+1.0 Wind 270 deg - No Ice	25.074	-21.600	0.039	4.383	1717.149	0.181
1.2 Dead+1.0 Wind 300 deg - No Ice	33.432	-18.687	-10.831	-866.963	1495.657	-0.475
0.9 Dead+1.0 Wind 300 deg - No Ice	25.074	-18.687	-10.831	-860.657	1484.837	-0.473
1.2 Dead+1.0 Wind 330 deg - No Ice	33.432	-10.766	-18.798	-1506.043	860.916	-1.004
0.9 Dead+1.0 Wind 330 deg - No Ice	25.074	-10.766	-18.798	-1495.121	854.680	-1.001
1.2 Dead+1.0 Ice+1.0 Temp	53.470	-0.000	-0.000	-0.752	0.860	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	53.470	0.006	-5.103	-411.294	0.229	-0.266
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	53.470	2.546	-4.422	-356.657	-203.938	-0.258

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
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	53.470	4.404	-2.556	-206.671	-353.205	-0.181
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	53.470	5.082	-0.006	-1.523	-407.578	-0.056
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	53.470	4.398	2.546	203.817	-352.487	0.085
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	53.470	2.536	4.416	354.329	-202.694	0.203
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	53.470	-0.006	5.103	409.684	1.665	0.266
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	53.470	-2.546	4.422	355.048	205.831	0.258
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	53.470	-4.404	2.556	205.061	355.099	0.181
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	53.470	-5.082	0.006	-0.087	409.472	0.056
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	53.470	-4.398	-2.546	-205.428	354.381	-0.085
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	53.470	-2.536	-4.416	-355.940	204.587	-0.203
Dead+Wind 0 deg - Service	27.860	0.008	-4.359	-347.997	-0.826	-0.254
Dead+Wind 30 deg - Service	27.860	2.174	-3.779	-301.854	-173.430	-0.238
Dead+Wind 60 deg - Service	27.860	3.757	-2.187	-174.876	-299.540	-0.159
Dead+Wind 90 deg - Service	27.860	4.334	-0.008	-1.086	-345.365	-0.037
Dead+Wind 120 deg - Service	27.860	3.749	2.173	172.948	-298.627	0.095
Dead+Wind 150 deg - Service	27.860	2.160	3.771	300.595	-171.848	0.202
Dead+Wind 180 deg - Service	27.860	-0.008	4.359	347.652	1.001	0.254
Dead+Wind 210 deg - Service	27.860	-2.174	3.779	301.509	173.604	0.238
Dead+Wind 240 deg - Service	27.860	-3.757	2.187	174.531	299.714	0.159
Dead+Wind 270 deg - Service	27.860	-4.334	0.008	0.741	345.540	0.037
Dead+Wind 300 deg - Service	27.860	-3.749	-2.173	-173.294	298.801	-0.095
Dead+Wind 330 deg - Service	27.860	-2.160	-3.771	-300.941	172.022	-0.202

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-27.860	0.000	0.000	27.860	0.000	0.000%
2	0.039	-33.432	-21.729	-0.039	33.432	21.729	0.000%
3	0.039	-25.074	-21.729	-0.039	25.074	21.729	0.000%
4	10.834	-33.432	-18.838	-10.834	33.432	18.838	0.000%
5	10.834	-25.074	-18.838	-10.834	25.074	18.838	0.000%
6	18.726	-33.432	-10.899	-18.726	33.432	10.899	0.000%
7	18.726	-25.074	-10.899	-18.726	25.074	10.899	0.000%
8	21.600	-33.432	-0.039	-21.600	33.432	0.039	0.000%
9	21.600	-25.074	-0.039	-21.600	25.074	0.039	0.000%
10	18.687	-33.432	10.831	-18.687	33.432	-10.831	0.000%
11	18.687	-25.074	10.831	-18.687	25.074	-10.831	0.000%
12	10.766	-33.432	18.798	-10.766	33.432	-18.798	0.000%
13	10.766	-25.074	18.798	-10.766	25.074	-18.798	0.000%
14	-0.039	-33.432	21.729	0.039	33.432	-21.729	0.000%
15	-0.039	-25.074	21.729	0.039	25.074	-21.729	0.000%
16	-10.834	-33.432	18.838	10.834	33.432	-18.838	0.000%
17	-10.834	-25.074	18.838	10.834	25.074	-18.838	0.000%
18	-18.726	-33.432	10.899	18.726	33.432	-10.899	0.000%
19	-18.726	-25.074	10.899	18.726	25.074	-10.899	0.000%
20	-21.600	-33.432	0.039	21.600	33.432	-0.039	0.000%
21	-21.600	-25.074	0.039	21.600	25.074	-0.039	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
22	-18.687	-33.432	-10.831	18.687	33.432	10.831	0.000%
23	-18.687	-25.074	-10.831	18.687	25.074	10.831	0.000%
24	-10.766	-33.432	-18.798	10.766	33.432	18.798	0.000%
25	-10.766	-25.074	-18.798	10.766	25.074	18.798	0.000%
26	0.000	-53.470	0.000	0.000	53.470	0.000	0.000%
27	0.006	-53.470	-5.103	-0.006	53.470	5.103	0.000%
28	2.546	-53.470	-4.422	-2.546	53.470	4.422	0.000%
29	4.404	-53.470	-2.556	-4.404	53.470	2.556	0.000%
30	5.082	-53.470	-0.006	-5.082	53.470	0.006	0.000%
31	4.398	-53.470	2.546	-4.398	53.470	-2.546	0.000%
32	2.536	-53.470	4.416	-2.536	53.470	-4.416	0.000%
33	-0.006	-53.470	5.103	0.006	53.470	-5.103	0.000%
34	-2.546	-53.470	4.422	2.546	53.470	-4.422	0.000%
35	-4.404	-53.470	2.556	4.404	53.470	-2.556	0.000%
36	-5.082	-53.470	0.006	5.082	53.470	-0.006	0.000%
37	-4.398	-53.470	-2.546	4.398	53.470	2.546	0.000%
38	-2.536	-53.470	-4.416	2.536	53.470	4.416	0.000%
39	0.008	-27.860	-4.359	-0.008	27.860	4.359	0.000%
40	2.174	-27.860	-3.779	-2.174	27.860	3.779	0.000%
41	3.757	-27.860	-2.187	-3.757	27.860	2.187	0.000%
42	4.334	-27.860	-0.008	-4.334	27.860	0.008	0.000%
43	3.749	-27.860	2.173	-3.749	27.860	-2.173	0.000%
44	2.160	-27.860	3.771	-2.160	27.860	-3.771	0.000%
45	-0.008	-27.860	4.359	0.008	27.860	-4.359	0.000%
46	-2.174	-27.860	3.779	2.174	27.860	-3.779	0.000%
47	-3.757	-27.860	2.187	3.757	27.860	-2.187	0.000%
48	-4.334	-27.860	0.008	4.334	27.860	-0.008	0.000%
49	-3.749	-27.860	-2.173	3.749	27.860	2.173	0.000%
50	-2.160	-27.860	-3.771	2.160	27.860	3.771	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	0.00093738
3	Yes	4	0.00000001	0.00060876
4	Yes	5	0.00000001	0.00025220
5	Yes	5	0.00000001	0.00011861
6	Yes	5	0.00000001	0.00027876
7	Yes	5	0.00000001	0.00013184
8	Yes	4	0.00000001	0.00035086
9	Yes	4	0.00000001	0.00021056
10	Yes	5	0.00000001	0.00026714
11	Yes	5	0.00000001	0.00012635
12	Yes	5	0.00000001	0.00025025
13	Yes	5	0.00000001	0.00011791
14	Yes	5	0.00000001	0.00003628
15	Yes	4	0.00000001	0.00067739
16	Yes	5	0.00000001	0.00028529
17	Yes	5	0.00000001	0.00013499
18	Yes	5	0.00000001	0.00025610
19	Yes	5	0.00000001	0.00012058
20	Yes	4	0.00000001	0.00027957
21	Yes	4	0.00000001	0.00015884
22	Yes	5	0.00000001	0.00025721
23	Yes	5	0.00000001	0.00012134
24	Yes	5	0.00000001	0.00027674
25	Yes	5	0.00000001	0.00013096
26	Yes	4	0.00000001	0.00000607
27	Yes	5	0.00000001	0.00017610
28	Yes	5	0.00000001	0.00018745
29	Yes	5	0.00000001	0.00018717
30	Yes	5	0.00000001	0.00017344
31	Yes	5	0.00000001	0.00018517
32	Yes	5	0.00000001	0.00018543

33	Yes	5	0.00000001	0.00017490
34	Yes	5	0.00000001	0.00018848
35	Yes	5	0.00000001	0.00018781
36	Yes	5	0.00000001	0.00017551
37	Yes	5	0.00000001	0.00018795
38	Yes	5	0.00000001	0.00018866
39	Yes	4	0.00000001	0.00005678
40	Yes	4	0.00000001	0.00009080
41	Yes	4	0.00000001	0.00010933
42	Yes	4	0.00000001	0.00003994
43	Yes	4	0.00000001	0.00009959
44	Yes	4	0.00000001	0.00008868
45	Yes	4	0.00000001	0.00005737
46	Yes	4	0.00000001	0.00011704
47	Yes	4	0.00000001	0.00009087
48	Yes	4	0.00000001	0.00003981
49	Yes	4	0.00000001	0.00009151
50	Yes	4	0.00000001	0.00011025

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 99	7.642	40	0.547	0.002
L2	99 - 79	6.499	40	0.543	0.002
L3	79 - 59	4.319	40	0.489	0.001
L4	59 - 46.93	2.473	40	0.384	0.001
L5	52.07 - 32.07	1.949	40	0.337	0.000
L6	32.07 - 12.07	0.749	40	0.222	0.000
L7	12.07 - 0	0.106	40	0.084	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.000	BXA-70063-6CF-EDIN-X w/ Mount Pipe	40	7.413	0.547	0.002	94307
98.000	(2) 7770.00 w/ Mount Pipe	40	6.386	0.542	0.002	42173
87.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	5.164	0.518	0.001	19975
77.000	NNVV-65B-R4 w/ Mount Pipe	40	4.116	0.481	0.001	13461

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	109 - 99	38.286	4	2.741	0.009
L2	99 - 79	32.561	4	2.720	0.008
L3	79 - 59	21.638	4	2.454	0.005
L4	59 - 46.93	12.387	4	1.923	0.003
L5	52.07 - 32.07	9.763	4	1.691	0.002
L6	32.07 - 12.07	3.749	4	1.113	0.001
L7	12.07 - 0	0.531	4	0.420	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.000	BXA-70063-6CF-EDIN-X w/ Mount Pipe	4	37.137	2.740	0.009	19181
98.000	(2) 7770.00 w/ Mount Pipe	4	31.993	2.715	0.008	8545
87.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	25.872	2.596	0.007	4009
77.000	NNVV-65B-R4 w/ Mount Pipe	4	20.618	2.412	0.005	2695

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	109 - 99 (1)	TP24x24x0.375	10.000	0.000	0.0	27.833	-3.867	876.725	0.004
L2	99 - 79 (2)	TP30.53x24x0.313	20.000	0.000	0.0	29.972	-12.957	1753.350	0.007
L3	79 - 59 (3)	TP34.64x30.53x0.313	20.000	0.000	0.0	34.048	-19.188	1991.830	0.010
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	12.070	0.000	0.0	35.461	-20.458	2074.460	0.010
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	20.000	0.000	0.0	46.563	-25.639	2723.930	0.009
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	20.000	0.000	0.0	51.391	-30.532	3006.390	0.010
L7	12.07 - 0 (7)	TP46x43.552x0.375	12.070	0.000	0.0	54.305	-33.426	3176.850	0.011

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	109 - 99 (1)	TP24x24x0.375	35.899	538.742	0.067	0.000	538.742	0.000
L2	99 - 79 (2)	TP30.53x24x0.313	237.997	1374.583	0.173	0.000	1374.583	0.000
L3	79 - 59 (3)	TP34.64x30.53x0.313	573.101	1717.283	0.334	0.000	1717.283	0.000
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	698.004	1841.283	0.379	0.000	1841.283	0.000
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	1078.333	2713.625	0.397	0.000	2713.625	0.000
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	1484.925	3216.650	0.462	0.000	3216.650	0.000
L7	12.07 - 0 (7)	TP46x43.552x0.375	1742.542	3531.475	0.493	0.000	3531.475	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	109 - 99 (1)	TP24x24x0.375	4.698	263.018	0.018	0.384	546.307	0.001
L2	99 - 79 (2)	TP30.53x24x0.313	13.535	526.006	0.026	1.189	1391.958	0.001
L3	79 - 59 (3)	TP34.64x30.53x0.313	17.788	597.548	0.030	1.188	1796.350	0.001
L4	59 - 46.93 (4)	TP37.12x34.64x0.313	18.280	622.337	0.029	1.188	1948.483	0.001
L5	46.93 - 32.07 (5)	TP39.495x35.439x0.375	19.708	817.180	0.024	1.187	2799.625	0.000
L6	32.07 - 12.07 (6)	TP43.552x39.495x0.375	20.966	901.917	0.023	1.187	3410.342	0.000

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 $\frac{T_u}{\phi T_n}$
L7	12.07 - 0 (7)	TP46x43.552x0.375	21.741	953.056	0.023	1.187	3808.033	0.000

Pole Interaction Design Data

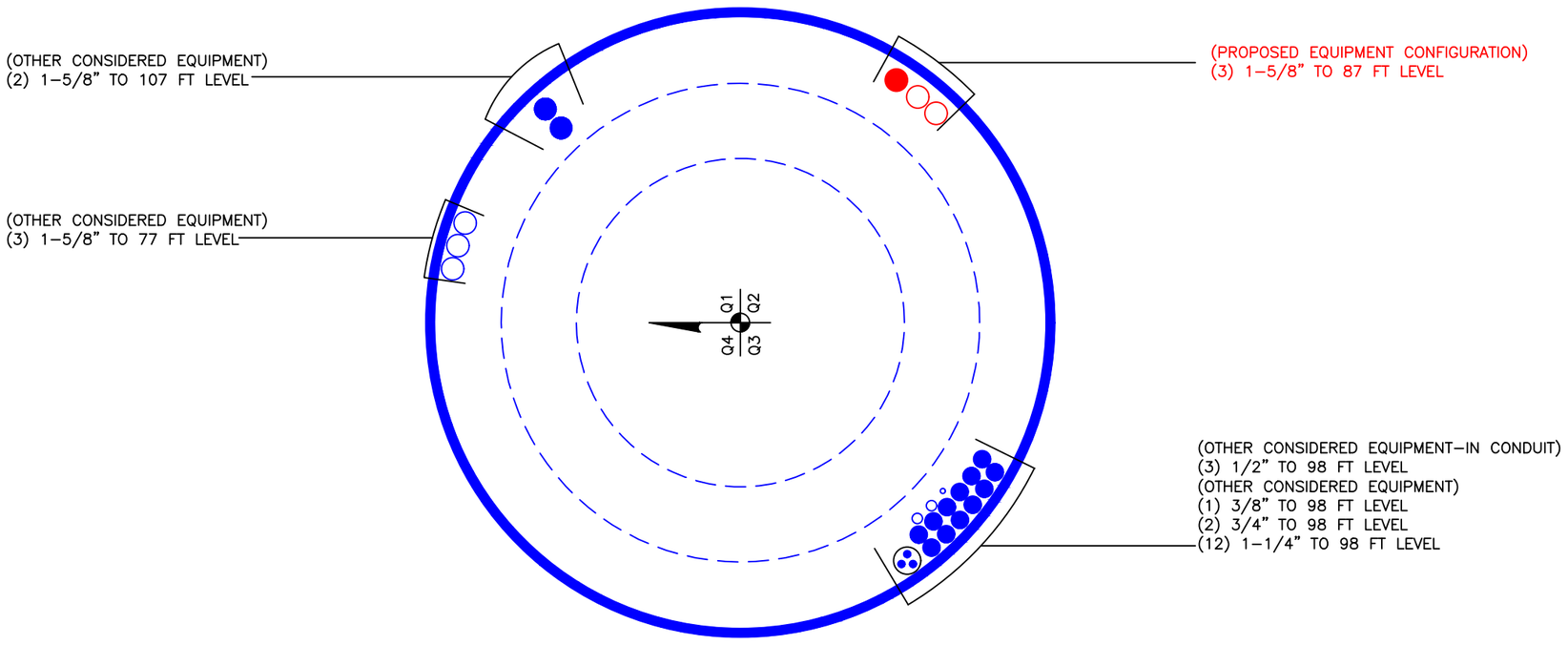
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	109 - 99 (1)	0.004	0.067	0.000	0.018	0.001	0.071	1.050	4.8.2
L2	99 - 79 (2)	0.007	0.173	0.000	0.026	0.001	0.181	1.050	4.8.2
L3	79 - 59 (3)	0.010	0.334	0.000	0.030	0.001	0.344	1.050	4.8.2
L4	59 - 46.93 (4)	0.010	0.379	0.000	0.029	0.001	0.390	1.050	4.8.2
L5	46.93 - 32.07 (5)	0.009	0.397	0.000	0.024	0.000	0.407	1.050	4.8.2
L6	32.07 - 12.07 (6)	0.010	0.462	0.000	0.023	0.000	0.472	1.050	4.8.2
L7	12.07 - 0 (7)	0.011	0.493	0.000	0.023	0.000	0.504	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	109 - 99	Pole	TP24x24x0.375	1	-3.867	920.561	6.8	Pass
L2	99 - 79	Pole	TP30.53x24x0.313	2	-12.957	1841.017	17.3	Pass
L3	79 - 59	Pole	TP34.64x30.53x0.313	3	-19.188	2091.421	32.8	Pass
L4	59 - 46.93	Pole	TP37.12x34.64x0.313	4	-20.458	2178.183	37.1	Pass
L5	46.93 - 32.07	Pole	TP39.495x35.439x0.375	5	-25.639	2860.126	38.8	Pass
L6	32.07 - 12.07	Pole	TP43.552x39.495x0.375	6	-30.532	3156.709	45.0	Pass
L7	12.07 - 0	Pole	TP46x43.552x0.375	7	-33.426	3335.692	48.0	Pass
							Summary	
						Pole (L7)	48.0	Pass
						RATING =	**48.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842864 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Flange Plate Connection

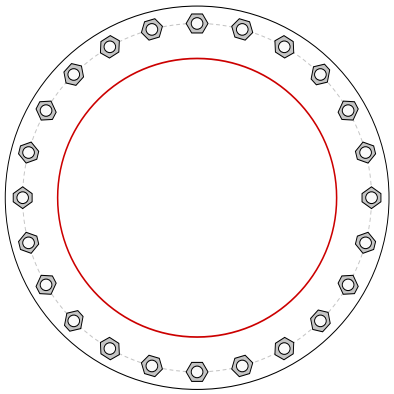
Elevation = 99 ft.

BU #	842864
Site Name	GULFORD SW
Order #	482070 Rev 0
TIA-222 Revision	H

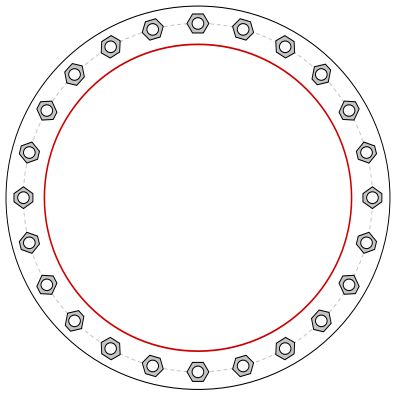
Applied Loads	
Moment (kip-ft)	35.90
Axial Force (kips)	3.87
Shear Force (kips)	4.70

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(24) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 30" BC

Top Plate Data

33" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

33" OD x 1.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

26.42" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	2.23	
Allowable (kips)	54.54	
Stress Rating:	**3.9%**	Pass

Top Plate Capacity

Max Stress (ksi):	5.42	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**15.9%**	Pass
Tension Side Stress Rating:	**7.8%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	1.44	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	**2.5%**	Pass
Tension Side Stress Rating:	**1.2%**	Pass

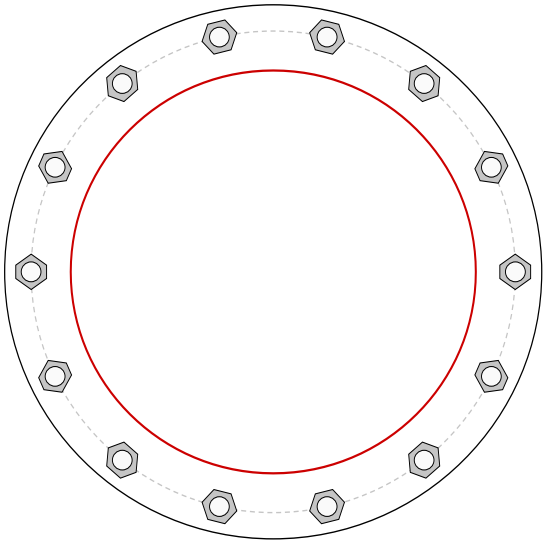
Monopole Base Plate Connection

Site Info	
BU #	842864
Site Name	GULFORD SW
Order #	482070 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.25

Applied Loads	
Moment (kip-ft)	1742.54
Axial Force (kips)	33.43
Shear Force (kips)	21.74

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(14) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 55" BC

Base Plate Data

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

Stiffener Data

N/A

Pole Data

46" 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 = 110.94	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.55	ϕVn = 73.13	**43.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	28.37	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**50.0%**	**Pass**

Pier and Pad Foundation

BU # :	8428864
Site Name:	GUILFORD SW
App. Number:	482070 Rev 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	33	kips
Base Shear, Vu_comp:	22	kips
Moment, M_u:	1743	ft-kips
Tower Height, **H**:	109	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	7	ft
Pad Width, **W**:	21.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom), **Sp**:	8	
Pad Rebar Quantity (Bottom), **mp**:	30	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	120	pcf
Ultimate Net Bearing, Qnet:	16.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	5	
Base Friction, μ:	0.5	
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)	258.16	22.00	**8.1%**	**Pass**
Bearing Pressure (ksf)	12.63	2.84	**21.4%**	**Pass**
*Overturning (kip*ft)*	4382.10	1923.58	**43.9%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3974.29	1853.00	**44.4%**	**Pass**
Pier Compression (kip)	31187.52	77.10	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	3273.03	568.42	**16.5%**	**Pass**
Pad Shear - 1-way (kips)	770.99	101.15	**12.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.020	**10.2%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4841.25	1111.80	**21.9%**	**Pass**

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

Soil Rating*:	**43.9%**
Structural Rating*:	**44.4%**

Version 3.2.0

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 105.75 ft (NAVD 88)
Latitude: 41.291983
Longitude: -72.732856

Wind

Results:

Wind Speed:	128 Vmph	PER JURISDICTION REQUIREMENT 130 MPH IS USED
10-year MRI	78 Vmph	
25-year MRI	88 Vmph	
50-year MRI	95 Vmph	
100-year MRI	104 Vmph	

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jul 09 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

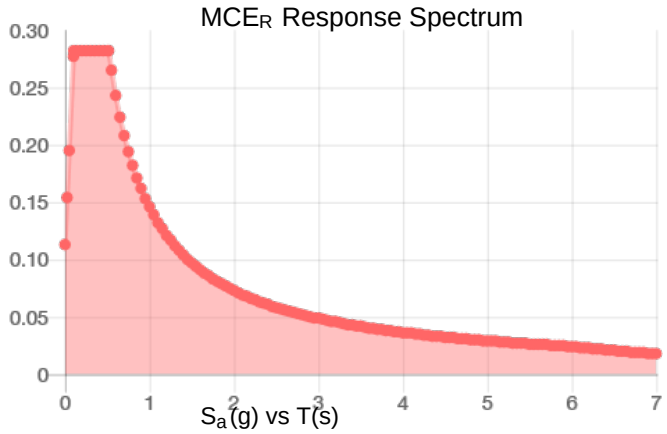
Seismic

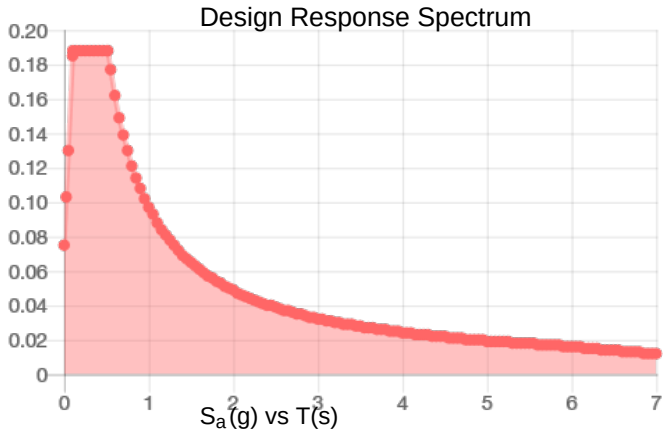
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.176	S_{DS} :	0.188
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.282	PGA_M :	0.145
S_{M1} :	0.146	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Jul 09 2019

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: Tue Jul 09 2019

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: June 18, 2019

CLS Engineering PLLC
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Subject:	**Mount Modification Report**	
Carrier Designation:	**Metro PCS Equipment Change-Out**	
	Carrier Site Number:	CTNH510A
	Carrier Site Name:	AT&T Guilford Monopole
Crown Castle Designation:	**Crown Castle BU Number:**	842864
	Crown Castle Site Name:	GUILFORD SW
	Crown Castle JDE Job Number:	561001
	Crown Castle Order Number:	482070 Rev. 0
Engineering Firm Designation:	**CLS Engineering PLLC Project #:**	42284-CTNH510A-02-MOD-R1
Site Data:	**201 Granite Road, Guilford, CT 06437, New Haven County** **Latitude: 41° 17' 31.14" Longitude: -72° 43' 58.28"**	
Structure Information:	**Tower Height & Type:**	109 ft Monopole
	Mount Elevation:	87 ft
	Mount Width & Type:	12.5 ft T-Arms

Dear Charles R. McGuirt II,

CLS Engineering PLLC is pleased to submit this **"Mount Modification Report"** to determine the structural integrity of Metro PCS'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 stress level. Based on our analysis we have determined the mount stress level to be:

T-Arms	**Sufficient***

***Sufficient upon completion of the changes listed in the 'Conclusion and Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Sean Rock, E.I.

Respectfully Submitted by:

Tyler M. Barker, P.E.
Director of Engineering

STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

IdenTrust part of HID Global
Digitally signed by Tyler Barker
DN: c=US, o=Telamon Corporation, ou=A01427E0000016A4525ADF800001D17, cn=Tyler Barker
Date: 2019.06.19 18:17:49 -04'00'

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1. INTRODUCTION

The proposed equipment is to be mounted to the existing T-Arms. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

2. ANALYSIS CRITERIA

STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-H
BASIC WIND SPEED	130 mph, V_{ult} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 1.5" Radial Ice (Escalating)
EXPOSURE CATEGORY	B
MAX. TOPOGRAPHIC FACTOR,	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M: 500 lb

Table 1 - Final Equipment Configuration

ELEVATION (ft)		ANTENNAS	
MOUNT	**RAD.**	**#**	**NAME**
87.0	86.0	3	Ericsson AIR -32 B2A/B66AA
		3	Ericsson AIR 21 B2A/B4P
		3	Ericsson RADIO 4449 B12/B71
		3	RFS Celwave APXVAARR24_43-U-NA20

3. ANALYSIS PROCEDURE

Table 2 - Documents Provided

STRUCTURAL DATA	Site photos, dated February 26, 2019 Mount Mapping Report by Pier Structural Engineering Corp., Project #19651-26, dated April 17, 2019
PREVIOUS ANALYSES	Mount Analysis by CLS Engineering PLLC, Project #: 42284-CTNH510A-01-MA, dated April 30, 2019 Tower SA by B+T Group, Project #93996.003.01, dated August 16, 2018
LOADING DATA	Crown Castle Order ID #482070 Rev. 0, dated April 22, 2019

3.1. Analysis Method

RISA-3D, 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. This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 Tower Mount Analysis (Revision B).

4. ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

COMPONENT	PEAK USAGE	RESULT
Face Horizontals	78%	Pass
Connections	73%	Pass
Mount Pipes	49%	Pass
Collar Reactions	44%	Pass
Stand-Off Horizontals	42%	Pass
Bracing Members	20%	Pass
Reinforcement Members	20%	Pass

Structure Rating (max from all components) =	78%

Notes:

1) **See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.**
2) **All sectors are typical.**

4.1 Conclusion and Recommendations

According to our structural analysis, the mounts have been found to **PASS PENDING MODIFICATIONS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the referenced modifications are installed.

This analysis incorporates modifications per CLS Engineering PLLC, dated June 18, 2019.

- **Install (1) PerfectVision PV-PKBK-M monopole platform kicker kit as shown. Field-cut kicker angle as required. Maintain minimum bolt edge distance. Connect kickers to (1) proposed PerfectVision PV-RM1240 monopole collar included in the kit.**
- **Install (1) Site Pro 1 PRK-SFS reinforcement kit at existing face horizontal member as shown. Collar to be installed flush with existing monopole at a height of ±1 ft. Above the centerline of existing platform mount collar.**
- **Relocate equipment, as required, to facilitate installation of proposed modifications on existing mount.**

See "Appendix E: Mount Modification Design Drawings (MDD)" for additional details.

5. ASSUMPTIONS AND CONDITIONS

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, CLS Engineering PLLC should be notified immediately to revise results.

This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from CLS Engineering PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS Engineering PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by CLS Engineering PLLC verifies the adequacy of the primary members of the structure. CLS Engineering PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

APPENDIX A

SOFTWARE INPUT CALCULATIONS

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	87 ft	**K_a**	0.90
Nominal Rad Elevation (AGL), z_{rad}	86 ft	**K_d**	0.95
TIA Standard	H	**K_z**	0.95
Basic Wind Speed, V_{ult} (bare)	130 mph	**K_{zt}**	1.00
Basic Wind Speed, V (ice)	50 mph	**Ks**	1.00
Design Ice Thickness, t_i	1 1/2 in	**t_{iz}**	1.65 in
Exposure Category	B	**G_h**	1.00
Risk Category	II	**q_z (bare)**	38.9 psf
Seismic Response Coeff., C_s	-	**q_z (ice)**	5.8 psf

Live Loading

At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3

Member Distributed Loading

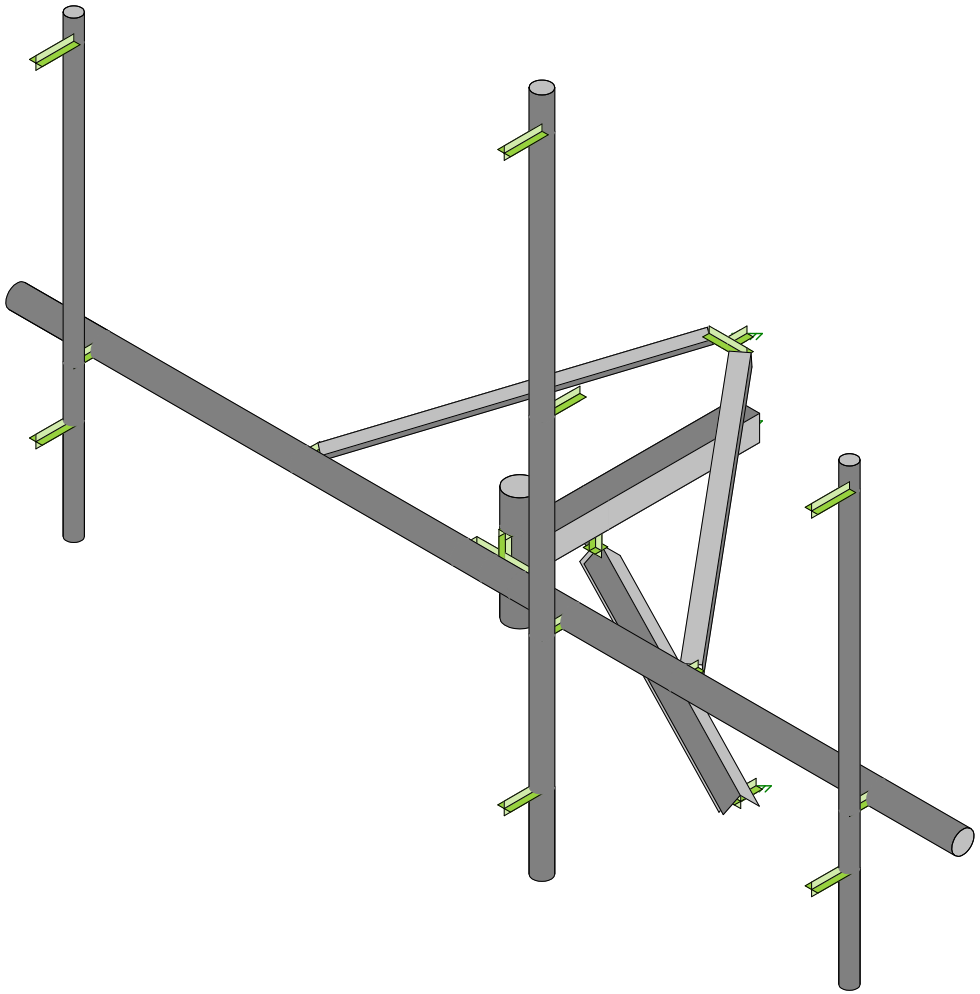
Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Face Horizontal	PIPE_3.0	12.25	3.52	10.40
Vertical Pipe	PIPE_4.0	15.75	4.04	12.42
Standoff Arm	HSS4X4X4	23.33	1.97	13.62
Mount Pipe 2	PIPE_2.5	10.06	3.20	9.14
Mount Pipe 1	PIPE_2.0	8.31	2.94	8.13
MOD PKBK	L3X3X3	17.50	1.91	10.82
MOD PRK	L2.5x2.5x3	14.58	1.87	9.54

Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty.	Total Qty. Override	0° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°		1	2							N	T	N	T	N	T	N	T
AIR -32 B2A/B66AA				☐			1	***3***	A5	A6	56.6	12.9	8.7	132.2	Flat	171.61	6.51	4.71	8.45	6.54	227.06	164.36	43.58	33.76
AIR 21 B2A/B4P				☐			1	***3***	A1	A2	55	12	7.9	83	Flat	135.37	5.92	4.22	7.79	5.99	206.64	147.17	40.22	30.89
APXVAARR24_43-U-NA20				☐			1	***3***	A3	A4	0	0	0	153.3	Generic	371.72	14.67	5.32	17.18	7.53	511.69	185.56	88.64	38.86
RADIO 4449 B12/B71				☐	0.5		1	***3***	R1		15	13.2	10.4	75	Flat	56.80	0.83	1.30	1.26	2.09	28.78	45.34	6.49	10.78

APPENDIX B

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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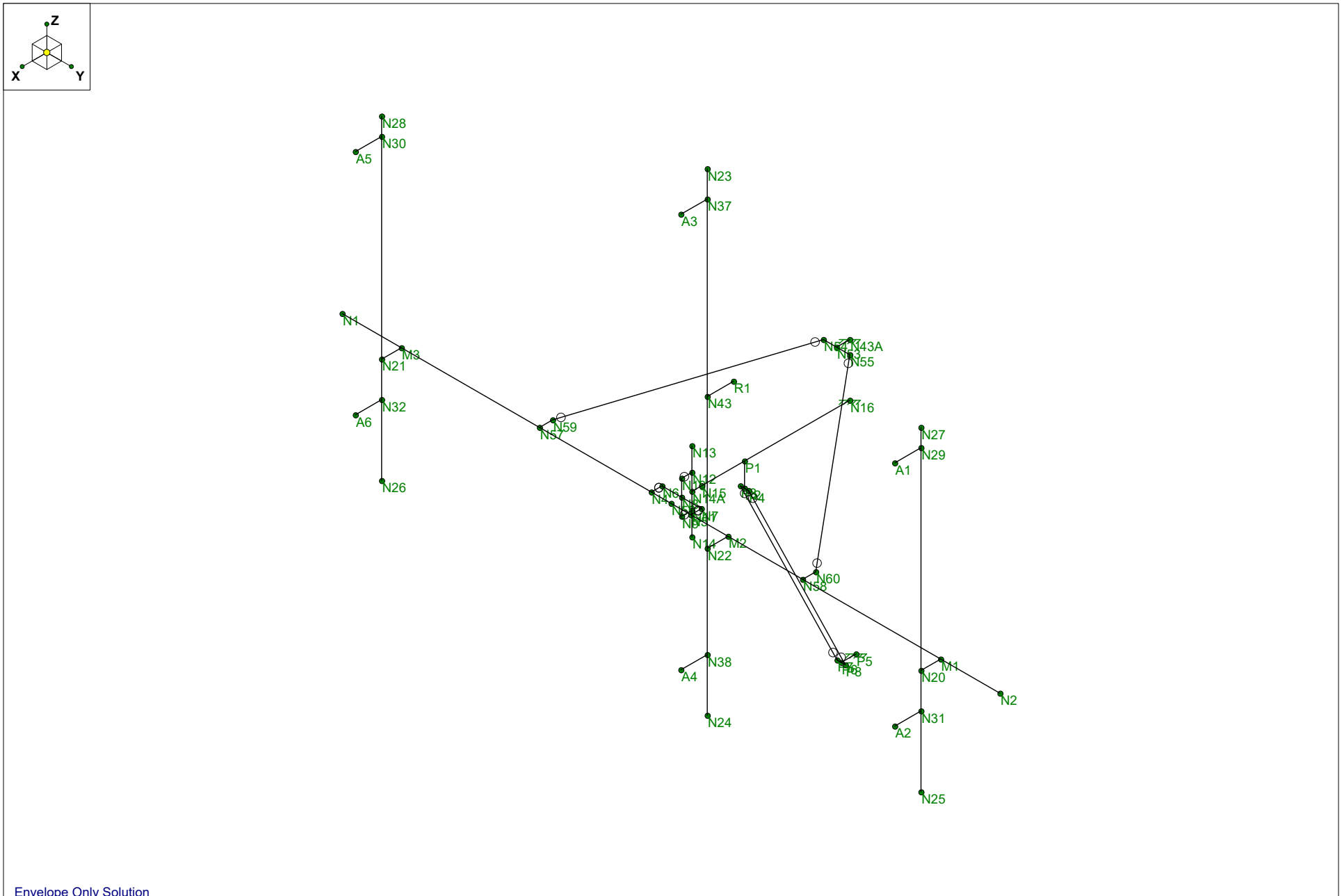

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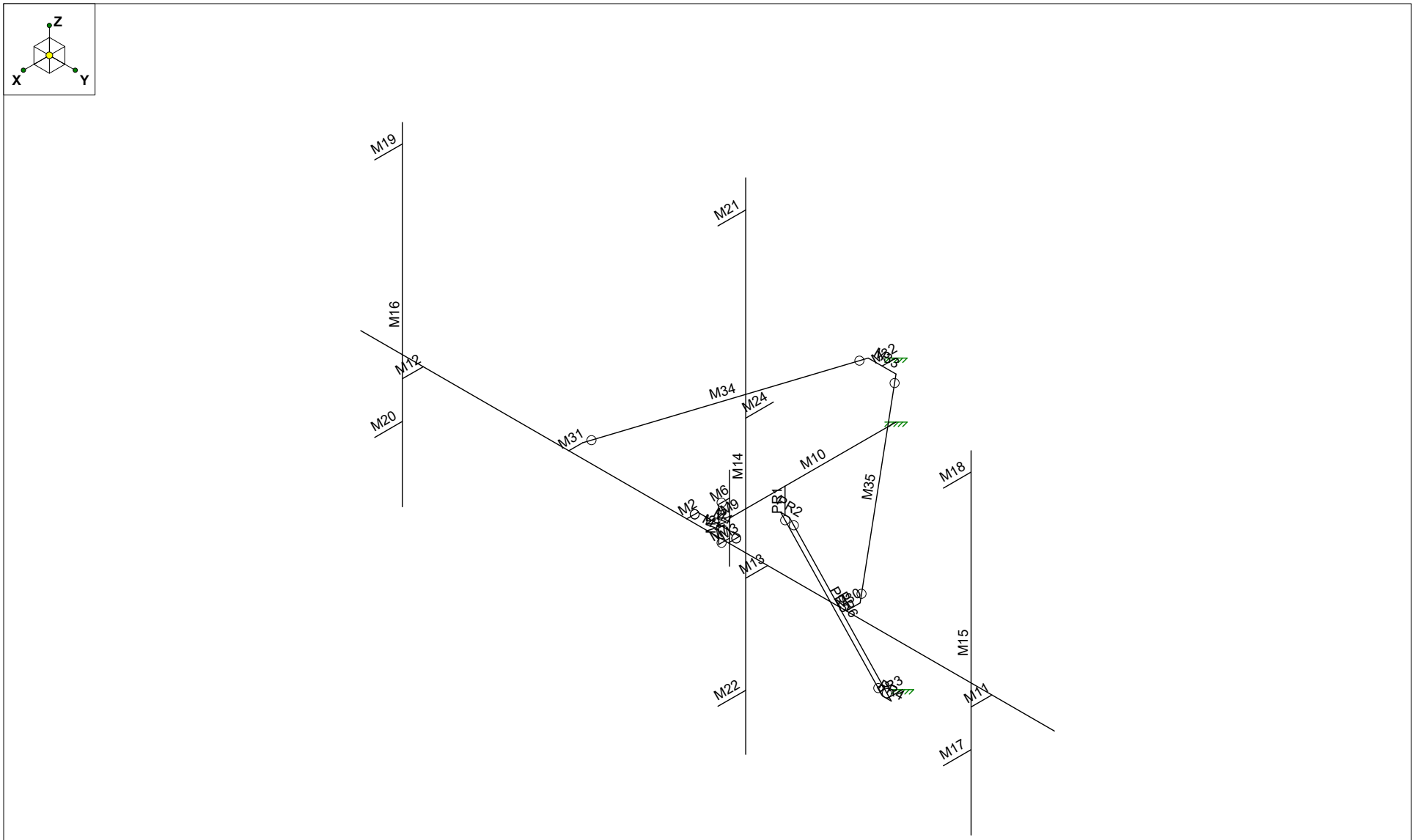

Envelope Only Solution

CLS	42284-CTNH510A-AT&T Guilford Monopole	SK - 3
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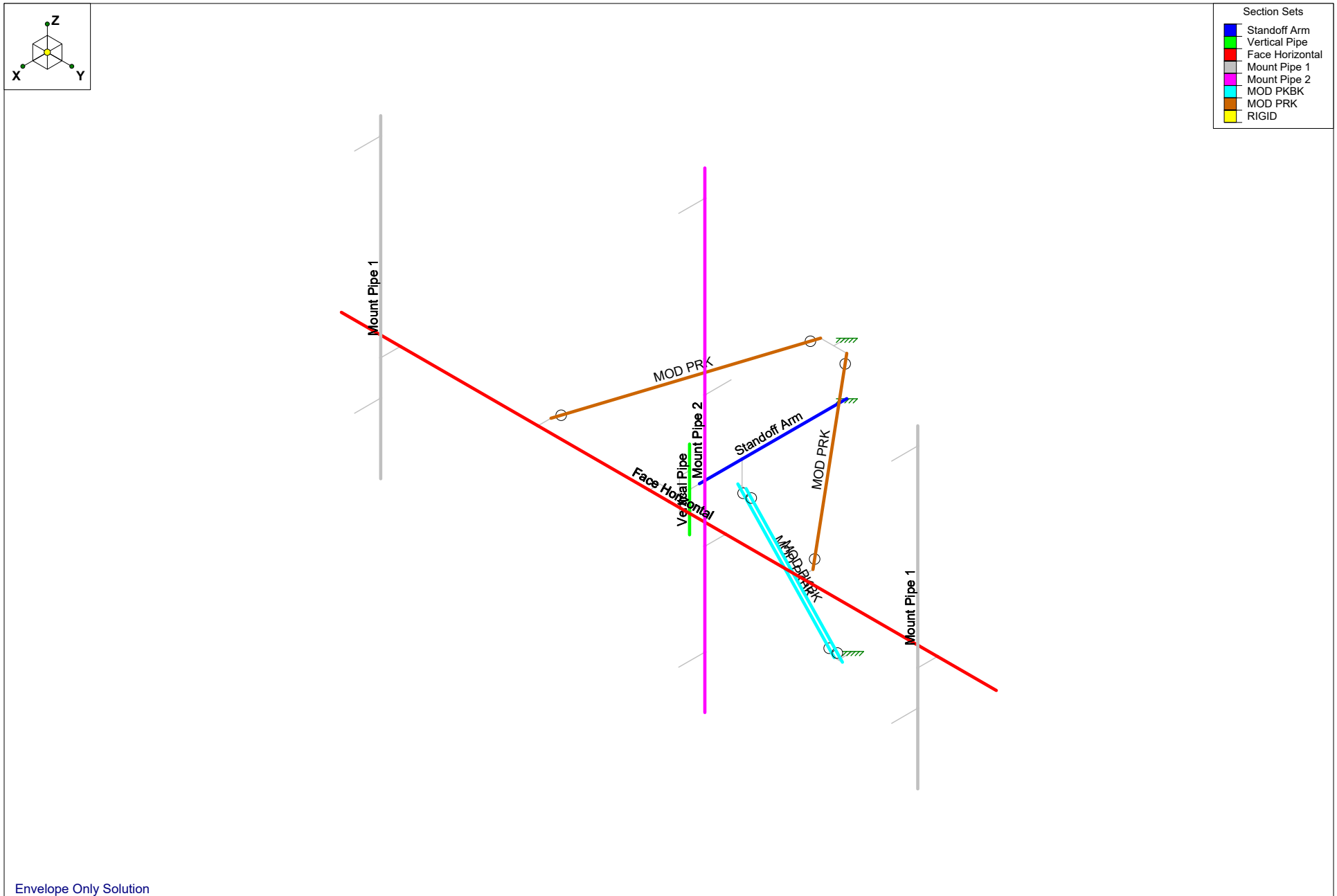

Envelope Only Solution

CLS	42284-CTNH510A-AT&T Guilford Monopole	SK - 4
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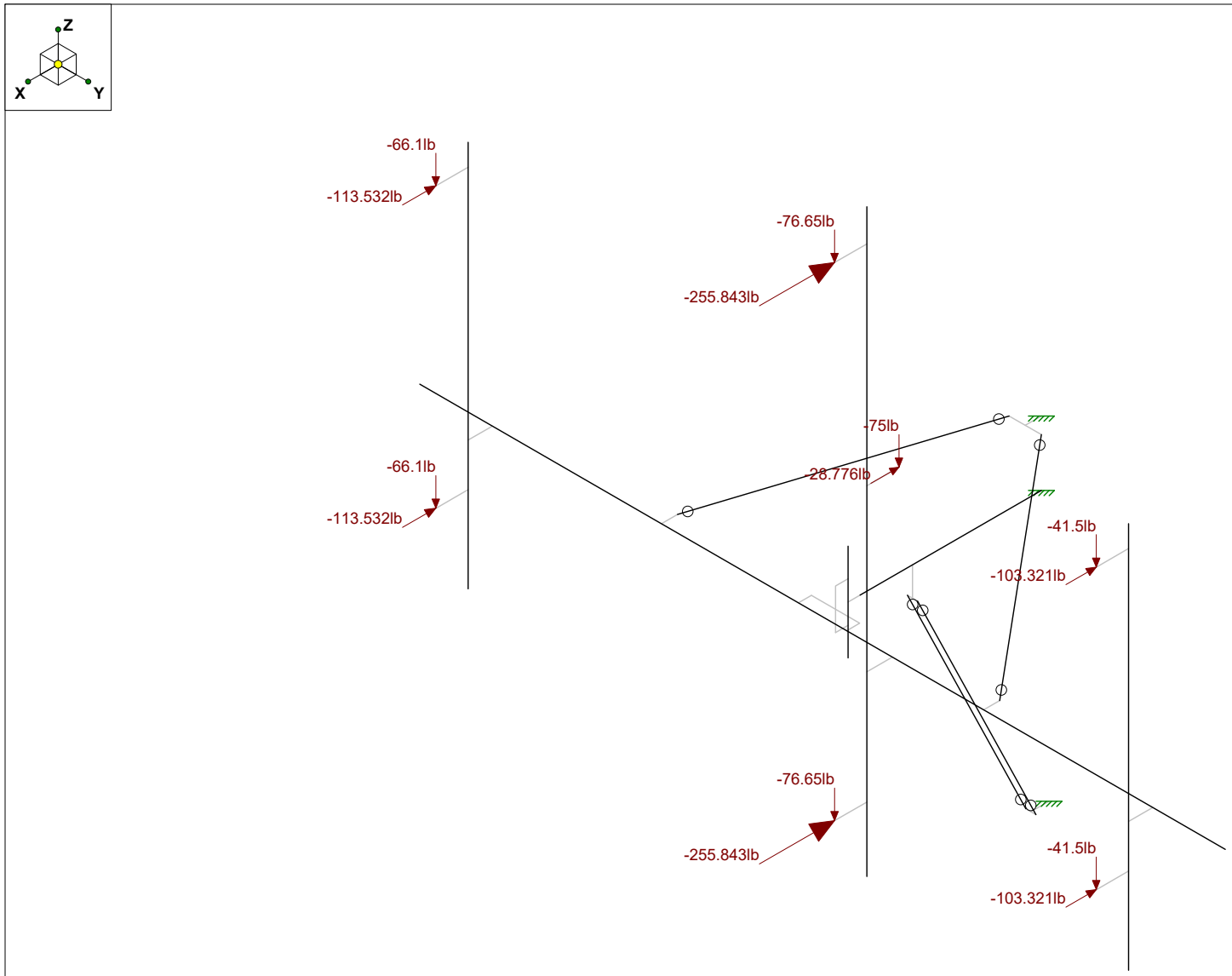
42284-CTNH510A-02-MOD-R1	Section Sets	42284-CTNH510A-02-MOD-R1.r3d



Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS	42284-CTNH510A-AT&T Guilford Monopole	SK - 5
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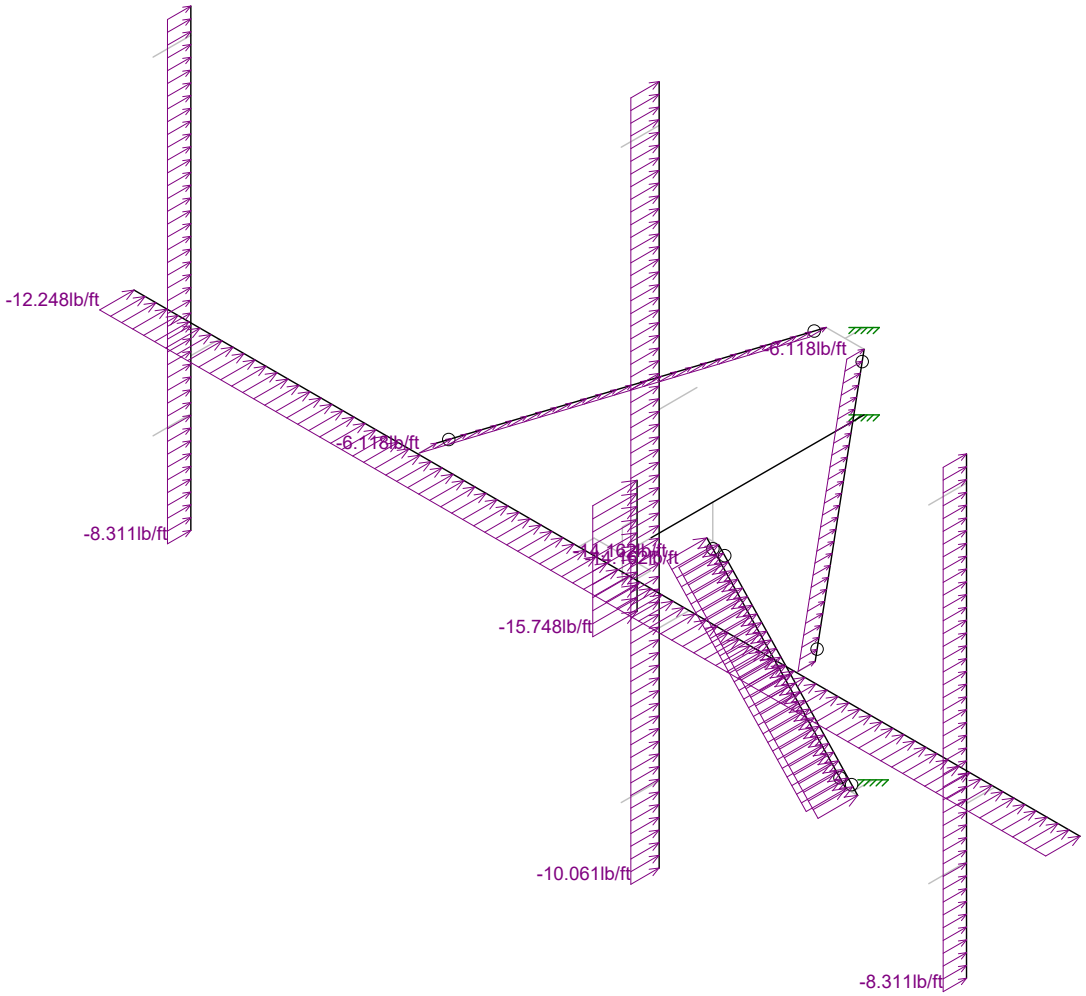

Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS	42284-CTNH510A-AT&T Guilford Monopole	SK - 6
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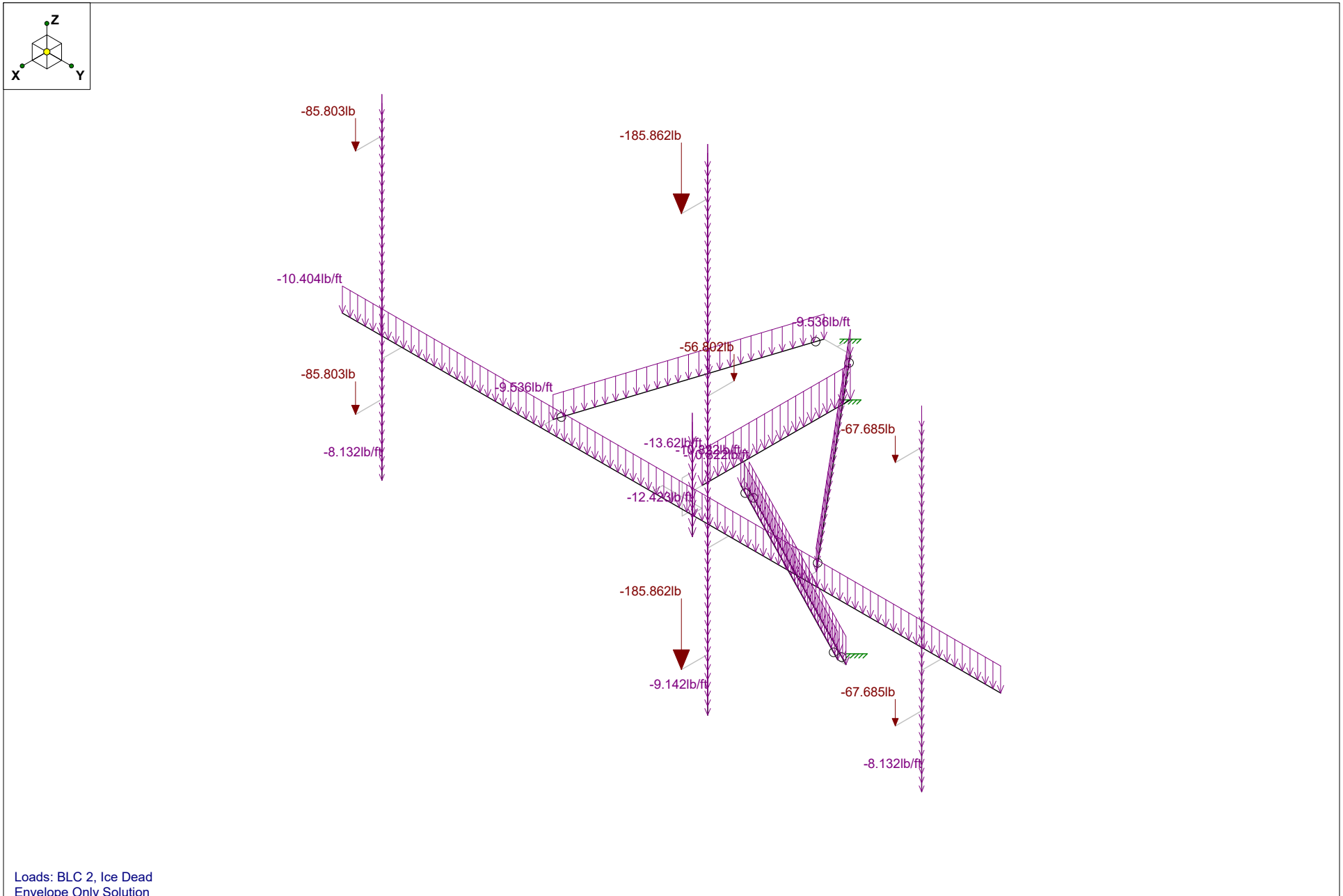

Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS	42284-CTNH510A-AT&T Guilford Monopole	SK - 7
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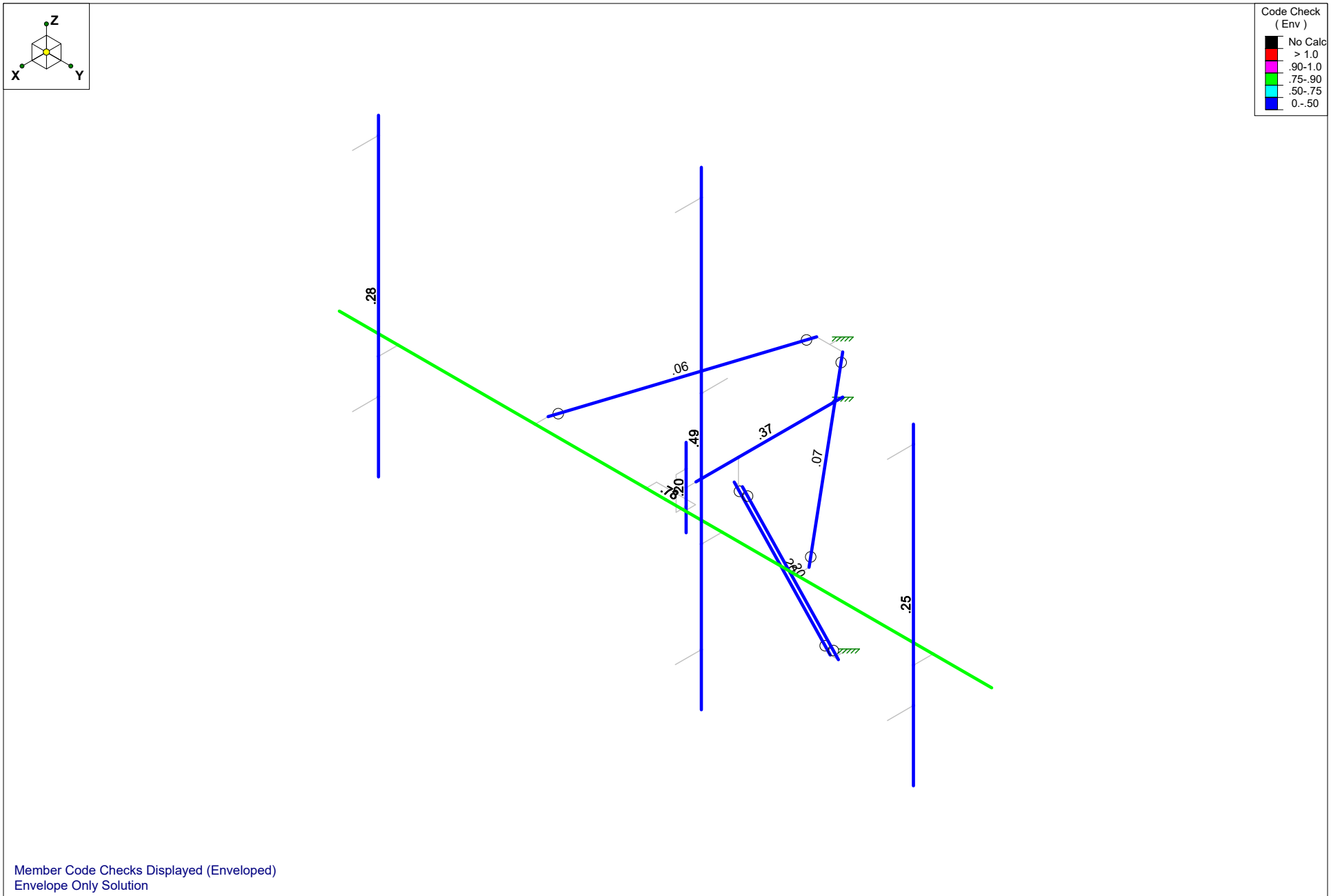

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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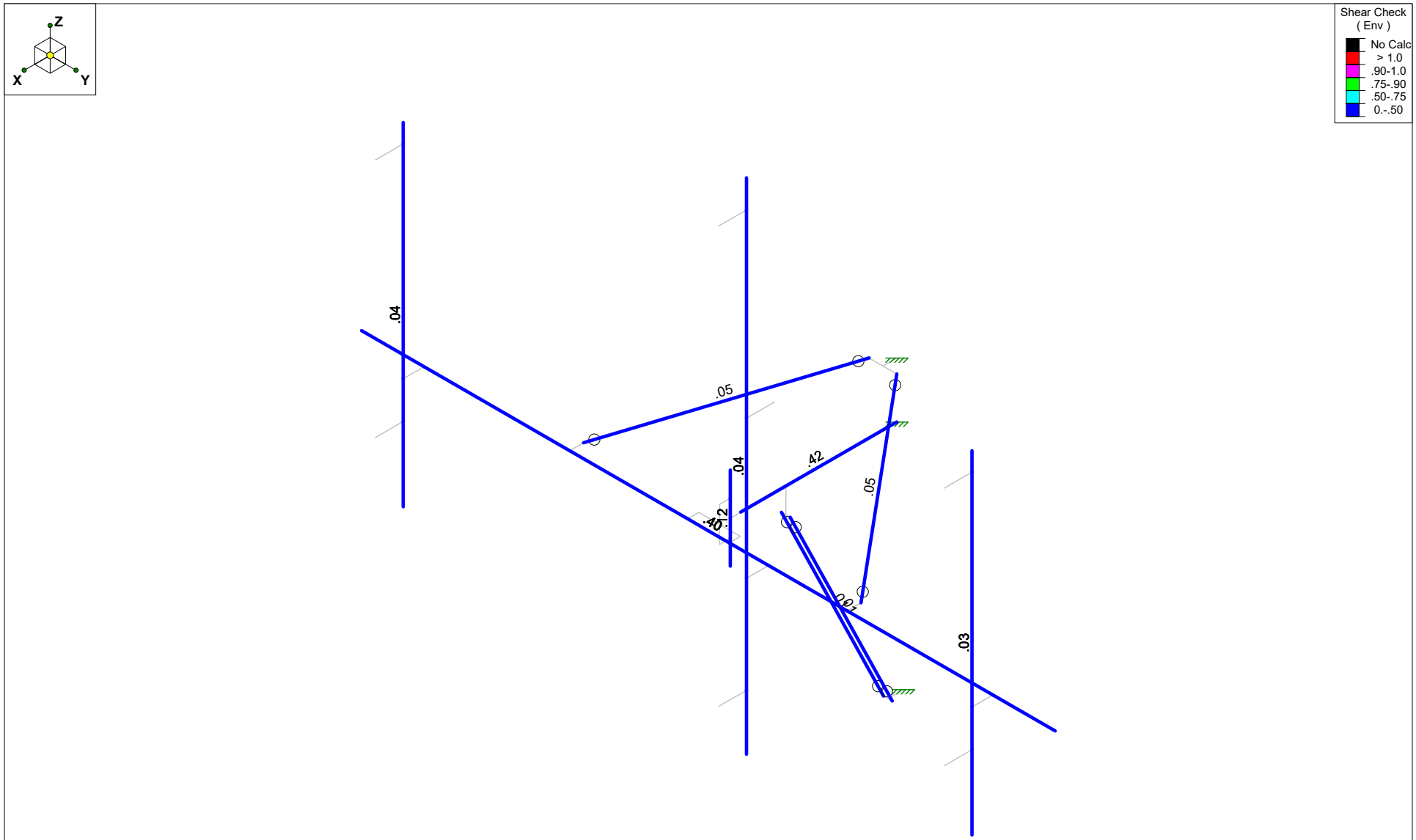

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 9
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42284-CTNH510A-02-MOD-R1	Envelope Member Check Results - Shear	42284-CTNH510A-02-MOD-R1.r3d

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Dead	DL			-1	7				
2	Ice Dead	RL				7		10		
4	Structure Wind 0Á	None						9		
5	Structure Wind 30Á	None						20		
6	Structure Wind 45Á	None						20		
7	Structure Wind 60Á	None						20		
8	Structure Wind 90Á	None						9		
9	Structure Wind 120Á	None						20		
10	Structure Wind 135Á	None						20		
11	Structure Wind 150Á	None						20		
12	Structure Wind w/ Ice 0Á	None						9		
13	Structure Wind w/ Ice 30Á	None						20		
14	Structure Wind w/ Ice 45Á	None						20		
15	Structure Wind w/ Ice 60Á	None						20		
16	Structure Wind w/ Ice 90Á	None						9		
17	Structure Wind w/ Ice 120Á	None						20		
18	Structure Wind w/ Ice 135Á	None						20		
19	Structure Wind w/ Ice 150Á	None						20		
20	Antenna Wind 0Á	None				7				
21	Antenna Wind 30Á	None				14				
22	Antenna Wind 45Á	None				14				
23	Antenna Wind 60Á	None				14				
24	Antenna Wind 90Á	None				7				
25	Antenna Wind 120Á	None				14				
26	Antenna Wind 135Á	None				14				
27	Antenna Wind 150Á	None				14				
28	Antenna Wind w/ Ice 0Á	None				7				
29	Antenna Wind w/ Ice 30Á	None				14				
30	Antenna Wind w/ Ice 45Á	None				14				
31	Antenna Wind w/ Ice 60Á	None				14				
32	Antenna Wind w/ Ice 90Á	None				7				
33	Antenna Wind w/ Ice 120Á	None				14				
34	Antenna Wind w/ Ice 135Á	None				14				
35	Antenna Wind w/ Ice 150Á	None				14				
39	Maintenance Live 500 (1)	OL1				1				
40	Maintenance Live 500 (2)	OL2				1				
41	Maintenance Live 500 (3)	OL3				1				

Load Combinations

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	DISPLAY (1.0D + ...	Yes	Y		DL	1	20	1																		
2	1.4D	Yes	Y		DL	1.4																				
3	1.2D + 1.0W 0Á	Yes	Y		DL	1.2	4	1	20	1																
4	1.2D + 1.0W_30Á	Yes	Y		DL	1.2	5	1	21	1																
5	1.2D + 1.0W_45Á	Yes	Y		DL	1.2	6	1	22	1																
6	1.2D + 1.0W_60Á	Yes	Y		DL	1.2	7	1	23	1																
7	1.2D + 1.0W_90Á	Yes	Y		DL	1.2	8	1	24	1																
8	1.2D + 1.0W_120Á	Yes	Y		DL	1.2	9	1	25	1																
9	1.2D + 1.0W_135Á	Yes	Y		DL	1.2	10	1	26	1																

Load Combinations (Continued)

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
10	1.2D + 1.0W_150Á	Yes	Y		DL	1.2	11	1	27	1																
11	1.2D + 1.0W_180Á	Yes	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1.0W_210Á	Yes	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1.0W_225Á	Yes	Y		DL	1.2	6	-1	22	-1																
14	1.2D + 1.0W_240Á	Yes	Y		DL	1.2	7	-1	23	-1																
15	1.2D + 1.0W_270Á	Yes	Y		DL	1.2	8	-1	24	-1																
16	1.2D + 1.0W_300Á	Yes	Y		DL	1.2	9	-1	25	-1																
17	1.2D + 1.0W_315Á	Yes	Y		DL	1.2	10	-1	26	-1																
18	1.2D + 1.0W_330Á	Yes	Y		DL	1.2	11	-1	27	-1																
19	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	12	1	28	1	RL	1														
20	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	13	1	29	1	RL	1														
21	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	14	1	30	1	RL	1														
22	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	15	1	31	1	RL	1														
23	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	16	1	32	1	RL	1														
24	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	17	1	33	1	RL	1														
25	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	18	1	34	1	RL	1														
26	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	19	1	35	1	RL	1														
27	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	12	-1	28	-1	RL	1														
28	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	13	-1	29	-1	RL	1														
29	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	14	-1	30	-1	RL	1														
30	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	15	-1	31	-1	RL	1														
31	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	16	-1	32	-1	RL	1														
32	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	17	-1	33	-1	RL	1														
33	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	18	-1	34	-1	RL	1														
34	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	19	-1	35	-1	RL	1														
35	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	4	.056	20	.056	OL1	1.5														
36	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	5	.056	21	.056	OL1	1.5														
37	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	6	.056	22	.056	OL1	1.5														
38	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	7	.056	23	.056	OL1	1.5														
39	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	8	.056	24	.056	OL1	1.5														
40	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	9	.056	25	.056	OL1	1.5														
41	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	10	.056	26	.056	OL1	1.5														
42	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	11	.056	27	.056	OL1	1.5														
43	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	4	-.056	20	-.056	OL1	1.5														
44	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	5	-.056	21	-.056	OL1	1.5														
45	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL1	1.5														
46	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL1	1.5														
47	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL1	1.5														
48	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL1	1.5														
49	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL1	1.5														
50	1.2D + 1.5Lm_1 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL1	1.5														
51	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	4	.056	20	.056	OL2	1.5														
52	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	5	.056	21	.056	OL2	1.5														
53	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	6	.056	22	.056	OL2	1.5														
54	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	7	.056	23	.056	OL2	1.5														
55	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	8	.056	24	.056	OL2	1.5														
56	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	9	.056	25	.056	OL2	1.5														
57	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	10	.056	26	.056	OL2	1.5														
58	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	11	.056	27	.056	OL2	1.5														
59	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	4	-.056	20	-.056	OL2	1.5														
60	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	5	-.056	21	-.056	OL2	1.5														
61	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL2	1.5														

Load Combinations (Continued)

	Description	Solve	PDe..	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
62	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL2	1.5														
63	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL2	1.5														
64	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL2	1.5														
65	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL2	1.5														
66	1.2D + 1.5Lm_2 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL2	1.5														
67	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	4	.056	20	.056	OL3	1.5														
68	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	5	.056	21	.056	OL3	1.5														
69	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	6	.056	22	.056	OL3	1.5														
70	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	7	.056	23	.056	OL3	1.5														
71	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	8	.056	24	.056	OL3	1.5														
72	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	9	.056	25	.056	OL3	1.5														
73	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	10	.056	26	.056	OL3	1.5														
74	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	11	.056	27	.056	OL3	1.5														
75	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	4	-.056	20	-.056	OL3	1.5														
76	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	5	-.056	21	-.056	OL3	1.5														
77	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	6	-.056	22	-.056	OL3	1.5														
78	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	7	-.056	23	-.056	OL3	1.5														
79	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	8	-.056	24	-.056	OL3	1.5														
80	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	9	-.056	25	-.056	OL3	1.5														
81	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	10	-.056	26	-.056	OL3	1.5														
82	1.2D + 1.5Lm_3 +...	Yes	Y		DL	1.2	11	-.056	27	-.056	OL3	1.5														

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff Arm	HSS4X4X4	Beam	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
2	Vertical Pipe	PIPE_4.0	Column	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
3	Face Horizontal	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
4	Mount Pipe 1	PIPE_2.0	Column	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Mount Pipe 2	PIPE_2.5	Column	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	MOD PKBK	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014
7	MOD PRK	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011

Hot Rolled Steel Design Parameters

	Label	Shape	Length[...	Lbyy[in]	Lbzz[in]	Lcomp top...	Lcomp bot...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Face Horizontal	150			Lbyy						Lateral
2	M8	Vertical Pipe	18			Lbyy						Lateral
3	M10	Standoff Arm	33.75			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[...	Lbyy[in]	Lbzz[in]	Lcomp top...	Lcomp bot...	L-torq...	Kyy	Kzz	Cb	Functi...
4	M14	Mount Pipe 2	108			Lbyy						Lateral
5	M15	Mount Pipe 1	72			Lbyy						Lateral
6	M16	Mount Pipe 1	72			Lbyy						Lateral
7	PR5	MOD PKBK	50.531									Lateral
8	PR6	MOD PKBK	50.531									Lateral
9	M34	MOD PRK	45.613			Lbyy						Lateral
10	M35	MOD PRK	45.613			Lbyy						Lateral

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N16	max	-136.588	1	1246.229	14	298.668	1	3585.017	38	1145.413	27	3484.035	14
2		min	-1029.842	27	-1249.166	6	-2001.133	27	-3476.199	78	-232.212	1	-3487.207	6
3	N43A	max	1178.14	3	352.899	4	624.13	11	37.223	13	98.948	3	38.884	13
4		min	-1783.21	11	-345.113	12	-388.717	3	-39.772	4	-156.759	11	-35.715	5
5	P5	max	1765.753	27	72.509	15	3718.664	27	425.89	38	-193.277	1	200.265	78
6		min	325.942	1	-72.554	7	687.206	1	-413.134	78	-1045.874	27	-206.413	38
7	Totals:	max	1506.996	3	1041.355	15	2135.287	21						
8		min	-1506.972	11	-1041.356	7	724.411	1						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Ch...	Loc[in]	LC	Shear ...	Loc[in]	...	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y-y [...	phi*Mn z...	Cb	Eqn
1	M1	PIPE 3.0	.776	79.592	37	.396	79.592		11	28250.5...	65205	5748.75	5748.75	1.964	H1-1b
2	M14	PIPE 2.5	.492	33.061	3	.035	33.061		4	26137.1...	50715	3596.25	3596.25	2.123	H1-1b
3	M10	HSS4X4X4	.366	9.643	41	.416	9.643	y	38	106395....	109188	12663	12663	1.697	H3-6
4	M16	PIPE 2.0	.282	24.245	11	.037	24.245		15	20866.7...	32130	1871.625	1871.625	1.907	H1-1b
5	M15	PIPE 2.0	.253	24.245	11	.033	24.245		7	20866.7...	32130	1871.625	1871.625	1.902	H1-1b
6	PR6	L3X3X3	.199	26.297	40	.007	50.531	y	15	22549.51	35316	1320.097	2539.842	1.136	H2-1
7	M8	PIPE 4.0	.198	9	40	.125	5.327		41	92571.3...	93240	10631.25	10631.25	1.923	H1-1b
8	PR5	L3X3X3	.196	26.039	77	.007	50.531	z	15	22549.51	35316	1320.097	2539.842	1.136	H2-1
9	M35	L2.5x2.5x3	.071	22.574	12	.045	45.613	z	36	18062.26	29192.4	872.574	1772.435	1.136	H2-1
10	M34	L2.5x2.5x3	.064	22.807	9	.046	0	z	81	18062.26	29192.4	872.574	1772.435	1.136	H2-1

APPENDIX D

ADDITIONAL CALCULATIONS

CLSGroup

Bolted Connection Checks
AISC 14th Edition (360-10)

Member/Node Number	LC	Tensile Load, T_u (kips)	Shear Load, V_u (kips)	Bolt Diameter (in)	Number of Bolts	Shear Planes per Bolt	U-Bolt?	Bolt Grade	Connected Member Thickness (in)	Connected Member Edge Clear Distance (in)	Connected Member Ultimate Strength, F_u (ksi)	Bolt Tensile Usage	Bolt Shear Usage	Member Bearing Usage
M10	Env.	15.423	8.693	0.625	4	1	No	A325-X (1/2" to 1" Dia)	0.5	0.75	58	**19%**	**14%**	**11%**
M2	Env.	9.559	4.987	0.5	2	1	Yes	A307		0.75	58	**73%**	**31%**	**-**

APPENDIX E

MOUNT MODIFICATION DESIGN DRAWINGS (MDD)

metroPCS
Wireless for All.
12920 SE 36TH STREET
BELLEVUE, WA 98006

CARRIER SITE NAME | NUMBER: **AT&T GUILFORD MONOPOLE | CTNH510A**

BUN | ORDER ID: **842864 | 482070 REV. #0**

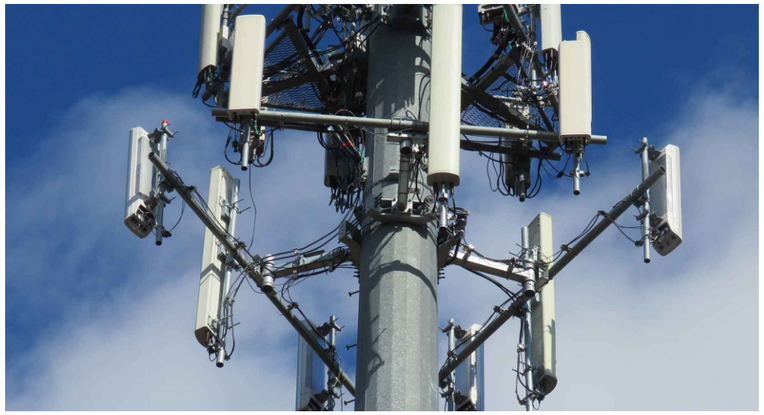
CROWN CASTLE SITE NAME: **GUILFORD SW**

STRUCTURE TYPE: **109'-0" MONOPOLE**

PROJECT SCOPE: **MOUNT REINFORCEMENT**

LOCATION MAP

STRUCTURE ELEVATION PHOTOGRAPH



DRIVING DIRECTIONS

FROM TWEED NEW HAVEN AIRPORT:

DEPART TOWARD BURR ST. IN 0.2 MILES TURN RIGHT ONTO BURR ST. IN 0.2 MILES TURN LEFT TO STAY ON BURR ST. IN 0.3 MILES TURN LEFT ONTO HAINES ST. IN 423 FEET TURN RIGHT ONTO CHARTER OAK AVE. IN 0.4 MILES TURN RIGHT ONTO MAIN ST. IN 0.2 MILES TURN LEFT ONTO KIMBERLY AVE. IN 0.2 MILES TURN RIGHT ONTO FRONTAGE RD. IN 92 FEET TAKE RAMP LEFT FOR I-95 NORTH TOWARD PROVIDENCE. IN 5.9 MILES AT EXIT 56, TAKE RAMP RIGHT FOR LEETES ISLAND RD TOWARD STONY CREEK. IN 0.3 MILES TURN LEFT ONTO LEETES ISLAND RD. IN 0.3 MILES TURN RIGHT ONTO US-1/E MAIN ST. IN 1.9 MILES TURN RIGHT ONTO MOOSE HILL RD. IN 0.6 MILES BEAR RIGHT ONTO GRANITE RD. IN 0.9 MILES ARRIVE AT SITE ON RIGHT.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

PROJECT TEAM

ENGINEER/ARCHITECT:
CLS ENGINEERING, PLLC.
319 CHAPANOKE ROAD, SUITE 118
RALEIGH, NC 27603
(405) 348-5460

APPLICANT/CUSTOMER:
METRO PCS
12920 SE 36TH STREET
BELLEVUE, WA 98006

STRUCTURE OWNER:
CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

OWNER SITE NAME:
GUILFORD SW

BUN:
842864

ONE CALL

CALL CONNECTICUT ONE-CALL
3 DAYS BEFORE YOU DIG
811 OR 1-800-922-4455

PROJECT INFORMATION

STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	109'-0"
LATITUDE:	41.291983 (NAD 83)
LONGITUDE:	-72.732856 (NAD 83)
ADDRESS:	842864 - GUILFORD SW
	201 GRANITE ROAD
	GUILFORD, CT 06437
COUNTY:	NEW HAVEN
CODE JURISDICTION:	TOWN OF GUILFORD
GROUND ELEVATION:	106' AMSL

DRAWING INDEX

SHEET	SHEET DESCRIPTION	REV
T-1	TITLE SHEET & DRAWING INDEX	1
GN-1	STRUCTURAL NOTES	1
IN-1	MODIFICATION INSPECTION NOTES	1
S-1	MOUNT VIEWS & MODIFICATION SCHEDULE	1
S-2	MODIFICATION DETAIL VIEWS	1
S-3	REFERENCE CUT SHEET	1
S-4	REFERENCE CUT SHEET	1

SCOPE OF WORK

1. (1) THIS MODIFICATION PLAN HAS BEEN DESIGNED UTILIZING THE STRUCTURAL ANALYSIS BY CLS ENGINEERING, REPORT #42284-CTNH510A-02-MOD, DATED JUNE 18, 2019.
2. FULL MODIFICATION SCHEDULE CAN BE FOUND ON S-1.
3. CONTRACTOR SHALL SCHEDULE A SITE VISIT TO CONFIRM ALL EXISTING STRUCTURE DIMENSIONS, SITE CONSTRAINTS, PROPOSED REINFORCING DIMENSIONS, THE CLEARANCES OF THE PROPOSED REINFORCING, EXISTING FOUNDATION INFORMATION, EXISTING SITE UTILITIES, AND ALL OTHER INFORMATION NECESSARY TO PERFORM THE WORK ON THESE DRAWINGS IN ORDER TO ELIMINATE THE RISK OF RFIS ONCE CONSTRUCTION AND FABRICATION HAVE BEGUN. THE CONTRACTOR SHALL NOT BEGIN FABRICATION OR CONSTRUCTION PRIOR TO PERFORMING THIS SITE VISIT AND VALIDATING THE INFORMATION ON THESE DRAWINGS AND ANY ADDITIONAL INFORMATION THE CONTRACTOR NEEDS TO PERFORM THE WORK.
4. THE CONTRACTOR SHALL PERFORM THIS PRE-CONSTRUCTION WORK AND REPORT ALL DISCREPANCIES TO THE CUSTOMER AND THE ENGINEER OF RECORD OR BE LIABLE FOR THE LABOR & MATERIALS FOR DISCREPANCIES NOT CAUGHT BY THE CONTRACTOR'S DUE DILIGENCE SITE VISIT.

CODE COMPLIANCE

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.

STRUCTURAL CODE: IBC 2015
DESIGN STANDARD: TIA-222-H

metroPCS
Wireless for All.
12920 SE 36TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

CLS ENGINEERING PLLC
319 CHAPANOKE ROAD, SUITE 118, RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

CLS PROJECT ID: 42284-842864-482070
COA# PEC.001833 EXP. 08/14/2019

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	06/14/19	PRELIMINARY ISSUE	MJA
0	06/14/19	FOR CONSTRUCTION	MJA
1	06/18/19	REPORT CHANGE	MJA

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE

CARRIER SITE NUMBER: CTNH510A

BUN: 842864

201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
TITLE SHEET & DRAWING INDEX

SHEET NUMBER
T-1

T:\CROWN CASTLE\42284 - CROWN MOUNT ANALYSIS\842864\02 - MOD\R1\CAD\42284-842864-482070-REV A.DWG - CLS PROJECT ID: 42284-842864-482070

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
2. ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
3. ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
5. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
6. ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

STRUCTURAL STEEL NOTES

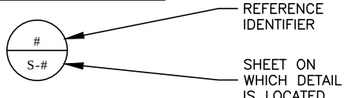
1. STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS:
   - A. STRUCTURAL STEEL SHAPES, PLATES AND BARS (EXCEPT W-SHAPES)- ASTM A36, Fy=36 KSI
   - B. PIPES - ASTM A53, GRADE B, Fy=35 KSI
   - C. HSS-SHAPES - ASTM A500, GRADE B, Fy=42 KSI (ROUND) Fy=46 KSI (SQUARE & RECTANGULAR)
   - D. ANCHOR & ALL-THREAD RODS - ASTM F1554, GRADE 55
   - E. STRUCTURAL BOLTS 1/2"ø AND LARGER - ASTM A325
   - F. STRUCTURAL BOLTS SMALLER THAN 1/2"ø - DIMENSIONS: ASME B18.2.1 MATERIAL: SAE J429 GRADE 5 | THREADING: ASME B1.1, UNC, CLASS 2A | FINISH: HOT-DIP GALVANIZED OR ZINC-PLATED
   - G. SHEET METAL SCREWS - DIMENSIONS: ASME B18.6.3 MATERIAL: SAE J933 | FINISH: HOT-DIP GALVANIZED OR ZINC-PLATED
   - H. NUTS FOR BOLTS/ALL-THREAD - ASTM A563 (THREADING TO MATCH BOLT)
   - I. WASHERS FOR BOLTS/ALL-THREAD - ASTM F436
   - J. W & WT SHAPES - ASTM A36, Fy=36 KSI ALTERNATE SPEC: ASTM A992 (IF OTHER SPEC IS UNAVAILABLE)
2. STRUCTURAL BOLTS SHALL CONFORM TO THIS NOTE. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (5/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
3. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN 1/2" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZRC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
4. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". WELD ELECTRODES SHALL BE E70XX. UNLESS OTHERWISE NOTED, PROVIDE CONTINUOUS FILLET WELDS WITH MINIMUM SIZE OF 3/16 INCH OR OF A SIZE EQUAL TO THE THICKNESS OF THE THINNER MATERIAL BEING JOINED (WHICHEVER IS LESS). FOR ACUTE OR OBTUSE JOINT ANGLES, THE FILLET WELD LEG SIZE SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN THE EFFECTIVE THROAT OF A 3/16 INCH FILLET WELD IN A 90° JOINT. ALL WELD SIZES SHOWN IN INCHES.
5. PRIOR TO WELDING, THE CONTRACTOR SHALL SUBMIT CERTIFICATION FOR EACH WELDER STATING THE TYPE OF WELDING AND POSITIONS QUALIFIED FOR, THE CODE AND PROCEDURE QUALIFIED UNDER, DATE QUALIFIED, AND THE FIRM AND INDIVIDUAL CERTIFYING THE QUALIFICATION TESTS. THIS INFORMATION SHALL BE SUBMITTED TO THE MODIFICATION INSPECTOR (SEE SHEET S-003) AS WELL AS ANY THIRD-PARTY CERTIFIED WELD INSPECTOR (CWI).
6. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

CONTRACTOR NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO STRUCTURE OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED MODIFICATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE MODIFICATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "MODIFICATION INSPECTION NOTES" SHEET. THE INSPECTOR SHALL BE QUALIFIED AS A REGISTERED PROFESSIONAL ENGINEER (PE) OR AS AN ENGINEERING INTERN (EI) OR ENGINEER IN TRAINING (EIT) UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER (PE). IT IS ALSO ACCEPTABLE FOR THE CONTRACTOR TO SUBCONTRACT THE MODIFICATION INSPECTOR DUTIES TO A THIRD PARTY FIRM MEETING THE ABOVE REQUIREMENTS.
4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AND TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD WHEN PHASES OF CONSTRUCTION HAVE BEEN MOVED UP AND SHALL GIVE THE ENGINEER ADEQUATE NOTICE SO THAT THE ENGINEER OF RECORD MAY, AT THEIR DISCRETION, INSPECT PORTIONS OF THE WORK THAT ARE DEEMED CRITICAL TO THE INTEGRITY OF THE STRUCTURE. FAILURE TO PROVIDE THIS NOTICE MAY RESULT IN REJECTION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO NOTIFY THE ENGINEER OF RECORD AND THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED MODIFICATION INSPECTIONS & TESTING.
5. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, QUALIFIED WELDER CERTIFICATES, CERTIFIED WELDING INSPECTOR CREDENTIALS, ET CETERA.
6. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

SYMBOLS AND CALL-OUTS

TYPICAL DETAIL CALL-OUT

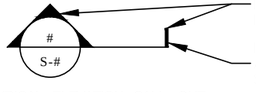


DETAIL REFERENCE IDENTIFIER

SHEET ON WHICH DETAIL IS LOCATED

NOTE:
THE DETAIL CALL-OUT INFORMATION IS THE SAME FOR SECTION, ELEVATION, AND PHOTOGRAPH CALL-OUTS

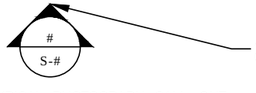
TYPICAL SECTION CALL-OUT



ARROW AND TAIL INDICATE DIRECTION SECTION VIEW IS FACING

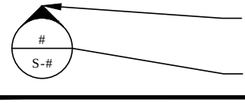
EXTENT OF TAIL INDICATES APPROXIMATE WIDTH OF SECTION VIEW

TYPICAL ELEVATION CALL-OUT



ARROW INDICATES ORIENTATION OF ELEVATION VIEW

TYPICAL PHOTOGRAPH CALL-OUT



ARROW INDICATES APPROXIMATE ORIENTATION OF CAMERA

CALL-OUT INDICATES APPROXIMATE POSITION OF CAMERA

STANDARD ABBREVIATIONS

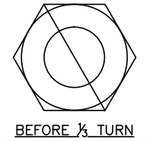
AFF	ABOVE FINISHED FLOOR	LONG	LONGITUDINAL
ARCH	ARCHITECT, -URAL	MAS	MASONRY
BLDG	BUILDING	MATL	MATERIAL
BOD	BOTTOM OF DECK	MAX	MAXIMUM
BOT	BOTTOM	MECH	MECHANICAL
BRCG	BRACING	MFR	MANUFACTURER
BRDG	BRIDGING	MIN	MINIMUM
C	CHANNEL	MOD	MODIFICATION
CL	CENTER LINE	MPH	MILES PER HOUR
CLR	CLEAR	MRI	MEAN RECURRENCE INTERVAL
CMU	CONCRETE MASONRY UNIT	#	NUMBER
CONC	CONCRETE	NTS	NOT TO SCALE
CONT	CONTINUOUS	OC	ON CENTER
DIA (OR) ø	DIAMETER	OPH	OPPOSITE HAND
DWGS	DRAWINGS	OPNG	OPENING
EA	EACH	PC	PIECE
EL	ELEVATION	PL	PLATE
EQ, EQUIV	EQUAL, EQUIVALENT	PSF	POUNDS PER SQUARE FOOT
EW	EACH WAY	PSI	POUNDS PER SQUARE INCH
EXIST	EXISTING	REF	REFERENCE
' OR FT	FEET (DIMENSION)	REINF	REINFORCE/REINFORCEMENT
f'c	COMPRESSIVE STRESS	REQD	REQUIRED
FDN	FOUNDATION	REV	REVISION
FTG	FOOTING	SF	SQUARE FEET
GALV	GALVANIZED	SIM	SIMILAR
HORIZ	HORIZONTAL	SR	SOLID ROUND (SHAPE)
HSS	HOLLOW STRUCTURAL SHAPES	STD	STANDARD
		T&B	TOP AND BOTTOM
KIP	KILOPOUNDS (1000 LBS PER UNIT)	THK	THICKNESS
		TOF	TOP OF FOOTING
KSI	KIPS PER SQUARE INCH	TOM	TOP OF MASONRY
" OR IN	INCH	TOS	TOP OF STEEL
L	ANGLE	TYP	TYPICAL
LB	POUND	UON	UNLESS OTHERWISE NOTED
LLH	LONG LEG HORIZONTAL	VERT	VERTICAL
LLV	LONG LEG VERTICAL	W/	WITH

BOLT TIGHTENING PROCEDURE

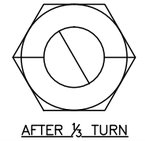
1. TIGHTEN BOLTS BY AISC "TURN OF THE NUT" METHOD USING THE CHART BELOW:
   - BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS: +1/3 TURN BEYOND SNUG TIGHT
   - BOLT LENGTHS OVER FOUR AND UP TO EIGHT DIAMETERS: +1/2 TURN BEYOND SNUG TIGHT
   - BOLT LENGTHS OVER EIGHT AND UP TO TWELVE DIAMETERS: +2/3 TURN BEYOND SNUG TIGHT
2. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8(d)(1) OF THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS AS FOLLOWS:

   "FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND BE TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8(d)(1) THROUGH 8(d)(4).

   8(d)(1) TURN-OF-THE-NUT TIGHTENING.
   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE PLIES OF A JOINT ARE IN FIRM CONTACT. THIS MAY BE OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. SNUG TIGHTENING SHALL PROGRESS SYSTEMATICALLY...UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION, ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION, THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

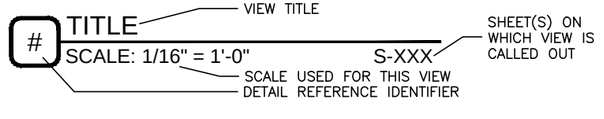


BEFORE ⅓ TURN



AFTER ⅓ TURN

SECTION / ELEVATION / DETAIL VIEW CALLOUTS



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CLS PROJECT ID: 42284-842864-482070
COA# PEC.001833 EXP. 08/14/2019

REVISIONS

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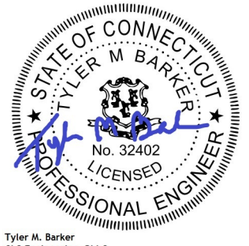

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE

CARRIER SITE NUMBER: CTNH510A

BUN: 842864

201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE

STRUCTURAL NOTES

SHEET NUMBER

GN-1

PRE-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	MODIFICATION INSPECTION CHECKLIST
√	SHOP DRAWINGS APPROVED BY ENGINEER OF RECORD (LATEST REVISION)
√	FABRICATION INSPECTION
	FABRICATOR'S CERTIFIED WELD INSPECTOR (CWI)
	FABRICATOR'S QUALIFIED PERSONNEL FOR WELDING
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
	FABRICATOR'S NON-DESTRUCTIVE TESTING (NDT) TECHNICIAN
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	FOUNDATION INSPECTIONS
	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTING RESULTS/CERTIFICATES
	ADHESIVE ANCHOR ROD(S) INSTALLATION INSPECTION
	BASE PLATE GROUT INSPECTION
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
	SOIL EXCAVATION – DENSITY TESTING, COMPACTION INSPECTION/VERIFICATION, USE OF SUITABLE FILL
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
	GUY WIRE (RE-)TENSION REPORT AND INSPECTION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)

POST-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	MODIFICATION INSPECTOR'S ISSUE LIST (INCLUDING CORRECTIVE ACTIONS TAKEN) AND/OR REDLINED RECORD DRAWINGS
	POST-INSTALLED ADHESIVE ANCHOR ROD PULL-OUT TESTING
√	PHOTOGRAPHS OF MODIFICATIONS (INCLUDE PHOTOS OF BOTH SIDES OF WELDED OR BOLTED CONNECTIONS, OF OVERALL AND DETAIL VIEWS OF INSTALLED MODIFICATIONS, AND BEFORE/AFTER PHOTOS OF ANY ISSUES IDENTIFIED BY THE INSPECTOR)

GENERAL NOTES

1. THE POST-MODIFICATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE MODIFICATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERIFY THAT THE MODIFICATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACT DOCUMENTS INCLUDE THESE MODIFICATION DRAWINGS, ANY PROJECT SPECIFICATIONS REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE MODIFICATION DRAWINGS WITH THE INTENT THAT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.
2. THE POST-MODIFICATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE MODIFICATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE MODIFICATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE MODIFICATION DESIGN'S EFFECTIVENESS AND INTENT, AS WELL AS ALL ASSOCIATED RISK, LIES WITH THE ENGINEER OF RECORD AT ALL TIMES.
3. TO ENSURE THAT THE REQUIREMENTS OF THE POST-MODIFICATION INSPECTION ARE MET, IT IS ESSENTIAL THAT COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR BEGIN AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATING THESE ISSUES TO EACH OTHER AND TO THE ENGINEER OF RECORD AND STRUCTURE OWNER & CUSTOMER, AS REQUIRED.

INSPECTION AND REPORT RECOMMENDATIONS

1. THE FOLLOWING ARE PROVIDED WITH THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE MODIFICATION INSPECTION AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USABLE REPORT:

1.1. IT IS RECOMMENDED THAT THE PRIME CONTRACTOR PROVIDE THE MODIFICATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION.
1.2. THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
1.3. THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTION IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTION, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON-SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

INSPECTION RESCHEDULING AND CANCELLATION

1. IF THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE MODIFICATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

REMEDIATION OF FAILING INSPECTION

1. IN THE EVENT THAT ANY PORTION OF THE MODIFICATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE MODIFICATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:

1.1. REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY THAT IT IS SATISFACTORY
1.2. OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE MODIFICATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE. IF THIS ACTION IS NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

MODIFICATION INSPECTOR'S RESPONSIBILITIES

1. THE MODIFICATION INSPECTOR SHALL CONTACT THE PRIME CONTRACTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THIS INSPECTION. THE MODIFICATION INSPECTOR SHALL REVIEW THE REQUIREMENTS OF THE INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME CONTRACTOR TO DEVELOP A SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AND SHALL DISCUSS ANY SITE-SPECIFIC INSPECTION REQUIREMENTS OR OTHER CONCERNS.
2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL PRIME CONTRACTOR INSPECTION AND TEST REPORTS (INCLUDING THOSE OF ASSIGNED SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, SHALL CONDUCT THE NECESSARY ON-SITE INSPECTIONS, AND SHALL COMPILE AND SUBMIT THE MODIFICATION INSPECTION REPORT.

PRIME CONTRACTOR'S RESPONSIBILITIES

1. THE PRIME CONTRACTOR SHALL CONTACT THE MODIFICATION INSPECTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THE MODIFICATION INSTALLATION OR PROJECT. THE PRIME CONTRACTOR SHALL REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST, SHALL WORK WITH THE MODIFICATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTION AND TESTING REQUIREMENTS WITH THE MODIFICATION INSPECTOR IN DETAIL TO OBTAIN A FULL UNDERSTANDING OF THE REQUIRED INSPECTIONS AND TESTING.
2. THE PRIME CONTRACTOR SHALL PERFORM AND RECORD THE TESTING AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

PHOTOGRAPHY REQUIREMENTS

1. THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL, BETWEEN THE EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PERSONNEL, PROVIDE PHOTOGRAPHS WITH THE INSPECTION REPORT TO INCLUDE THE FOLLOWING:

a. GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION
b. MODIFICATION INSTALLATION PHOTOGRAPHS DURING CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIONS
b.1. RAW MATERIALS
b.2. PHOTOS OF DETAILED WORK REQUIRED ON THE DRAWINGS (CONNECTIONS, WELDMENTS, FIELD-FABRICATED MEMBERS, ETC)
b.3. WELD PREPARATION AND COMPLETED WELD INSPECTION (INCLUDING A FILLET WELD SIZE GAUGE, AS APPLICABLE)
b.4. BOLT INSTALLATION AND TORQUE/PRETENSION.
b.5. FINAL INSTALLED CONDITION (AFTER DEFICIENT CONDITIONS, IF ANY, ARE REMEDIATED).
b.6. REPAIR OF SURFACE COATINGS (INCLUDING GALVANIZING AND/OR PAINT COATING)
c. POST-MODIFICATION PHOTOGRAPHS OF THE SITE & WORK.
d. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE AT CONCLUSION OF THE WORK BY THE PRIME CONTRACTOR, ASSOCIATED SUBCONTRACTORS, AND THE MODIFICATION INSPECTOR.
e. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONTRACTOR & MODIFICATION INSPECTOR'S DISCRETION.

NOTE: PHOTOS OF MODIFICATIONS INSTALLED ON THE STRUCTURE ABOVE AN ELEVATION OF 20 FT SHALL REQUIRE PHOTOS TAKEN FROM THE STRUCTURE AS WELL AS OVERALL PHOTOGRAPHS OF THE MODIFICATIONS TAKEN FROM THE GROUND.

OWNER INSPECTIONS

1. THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED MODIFICATION INSPECTION REPORTS FOR THE MODIFICATION INSTALLATION WORK.
2. INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A MODIFICATION PROJECT IS COMPLETED AND A PASSING MODIFICATION INSPECTION REPORT IS ISSUED.

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STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE

CARRIER SITE NUMBER: CTNH510A

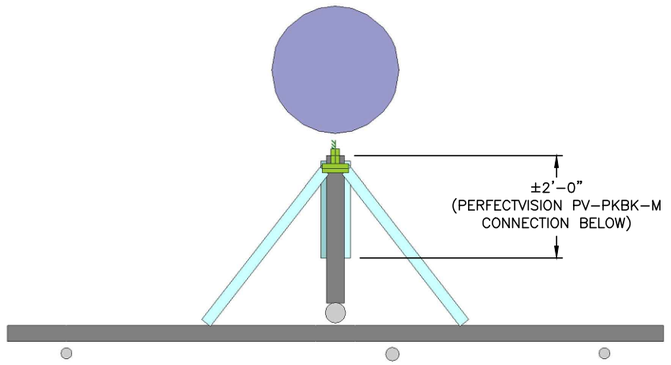
BUN: 842864

201 GRANITE ROAD
GUILFORD, CT 06437

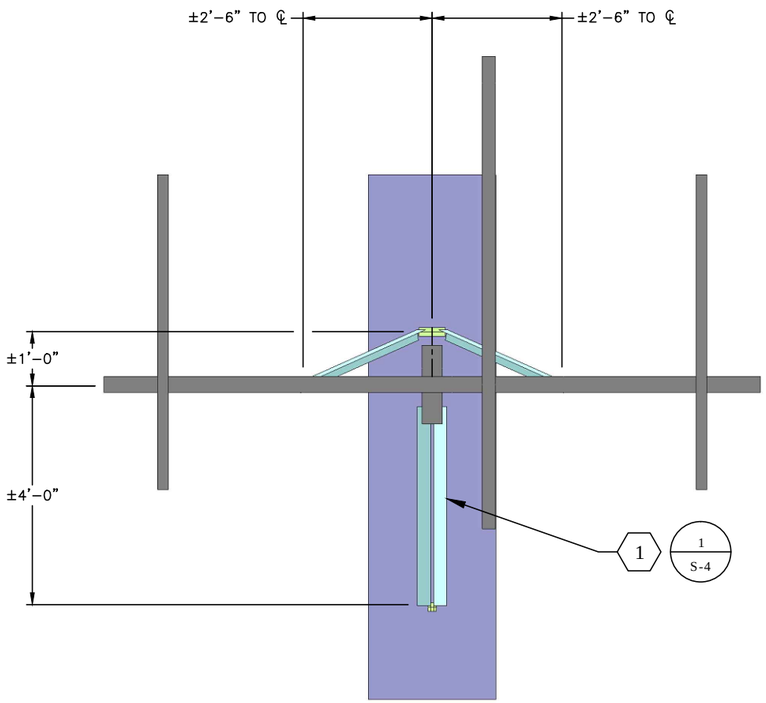
SHEET TITLE
MODIFICATION INSPECTION NOTES

SHEET NUMBER
IN-1

NOTE:
EXISTING MOUNT SHOWN IS REPRESENTATIVE TO ILLUSTRATE MODIFICATION AND MAY DIFFER SLIGHTLY ON SITE



2 MOUNT - PLAN VIEW
SCALE: N.T.S.



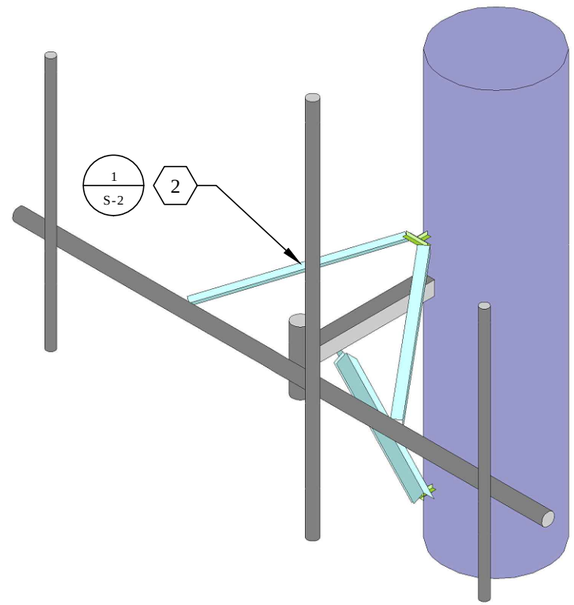
1 MOUNT - FRONT ELEVATION VIEW
SCALE: N.T.S.

CONSTRUCTION NOTES

1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.

MODIFICATION SCHEDULE

LABEL	ELEVATION	SCOPE	MATERIAL	NOTES
1	±87'-0"	INSTALL (1) PERFECTVISION PV-PKBK-M MONOPOLE PLATFORM KICKER KIT AS SHOWN. FIELD-CUT KICKER ANGLE AS REQUIRED. MAINTAIN MINIMUM BOLT EDGE DISTANCE. CONNECT KICKERS TO (1) PROPOSED PERFECTVISION PV-RM1240 MONOPOLE COLLAR INCLUDED IN THE KIT. **FIELD-CUT PROPOSED MEMBERS AS REQUIRED. MAINTAIN MINIMUM BOLT EDGE DISTANCE.**	PERFECTVISION PV-PKBK-M	S-1 S-4
2	±87'-0"	INSTALL (1) SITE PRO 1 PRK-SFS REINFORCEMENT KIT AT EXISTING FACE HORIZONTAL MEMBER AS SHOWN. COLLAR TO BE INSTALLED FLUSH WITH EXISTING MONOPOLE AT A HEIGHT OF ±1 FT. ABOVE THE CENTERLINE OF EXISTING PLATFORM MOUNT COLLAR.	SITE PRO 1 PRK-SFS	S-1 S-2 S-3
3	±87'-0"	RELOCATE EQUIPMENT, AS REQUIRED, TO FACILITATE INSTALLATION OF PROPOSED MODIFICATIONS ON EXISTING MOUNT.	--	S-1



3 MOUNT - ISOMETRIC VIEW
SCALE: N.T.S.

metroPCS.
Wireless for All.
12920 SE 36TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

CLS ENGINEERING PLLC
319 CHAPANOKE ROAD, SUITE 118, RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

CLS PROJECT ID: 42284-842864-482070
COA# PEC.001833 EXP. 08/14/2019

REVISIONS

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A	06/14/19	PRELIMINARY ISSUE	MJA
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1	06/18/19	REPORT CHANGE	MJA

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STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE

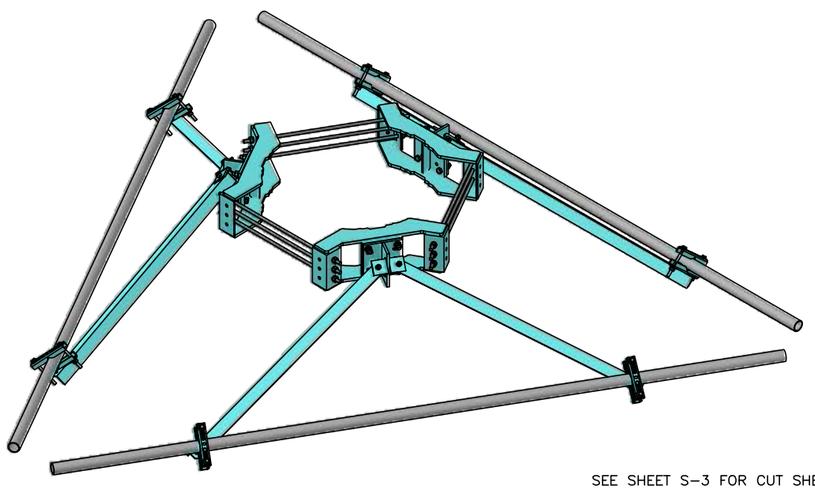
CARRIER SITE NUMBER: CTNH510A

BUN: 842864

201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
MOUNT VIEWS & MODIFICATION SCHEDULE

SHEET NUMBER
S-1



SEE SHEET S-3 FOR CUT SHEET

1 SITE PRO 1 PRK-SFS REINFORCEMENT KIT
SCALE: N.T.S.

metroPCS.
Wireless for All.
12920 SE 36TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

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319 CHAPANOKE ROAD, SUITE 118, RALEIGH, NC 27603
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No. 32402
LICENSED
PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE

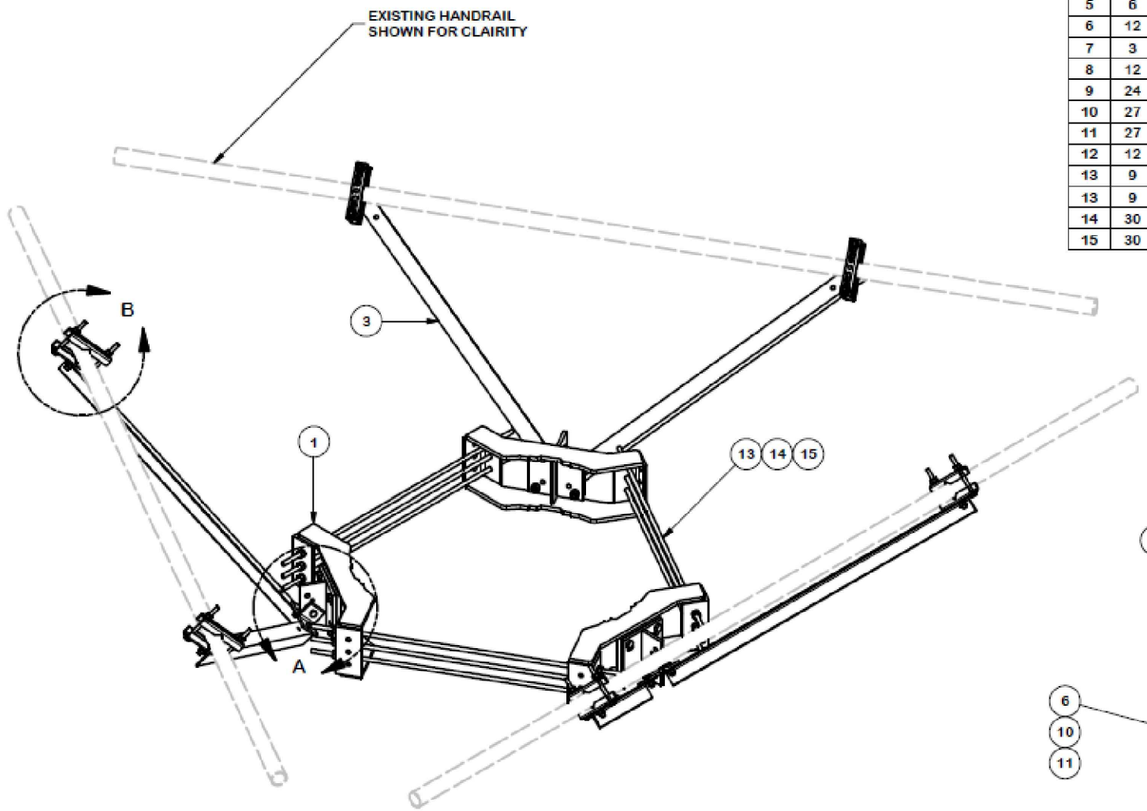
CARRIER SITE NUMBER: CTNH510A

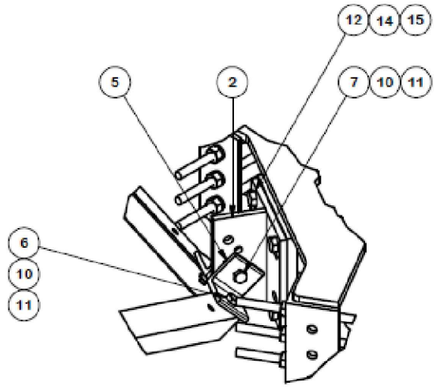
BUN: 842864

201 GRANITE ROAD
GUILFORD, CT 06437

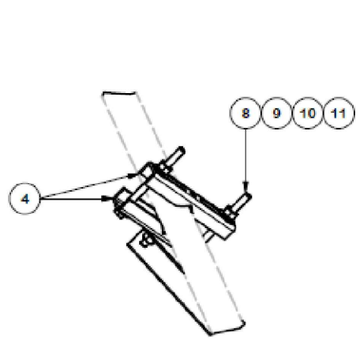
SHEET TITLE
MODIFICATION
DETAIL VIEWS

SHEET NUMBER
S-2





DETAIL A



DETAIL B

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-TBW	T-BRACKET WELDMENT		13.60	40.80
3	6	X-232697	TRPD-HD DIAGONAL ANGLE - SITR PRO 1	52 1/2 in	14.35	86.08
4	12	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	16.46
5	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.84	11.05
6	12	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.77
7	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
8	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
9	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
10	27	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.38
11	27	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.93
12	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
13	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
13	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
14	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
15	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.90
					TOTAL WT. #	587.71

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION: HANDRAIL REINFORCEMENT KIT

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 3/16/2017	PRK-SFS

SITE PRO 1 — A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

PAGE 1 OF 3

1 SITE PRO 1 PRK-SFS CUT SHEET
SCALE: N.T.S.

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12920 SE 36TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

CLS ENGINEERING PLLC
319 CHAPANOKE ROAD, SUITE 118, RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

CLS PROJECT ID: 42284-842864-482070
COA# PEC.001833 EXP. 08/14/2019

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STATE OF CONNECTICUT — TYLER M BARKER — No. 32402 LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019
6/19/2019

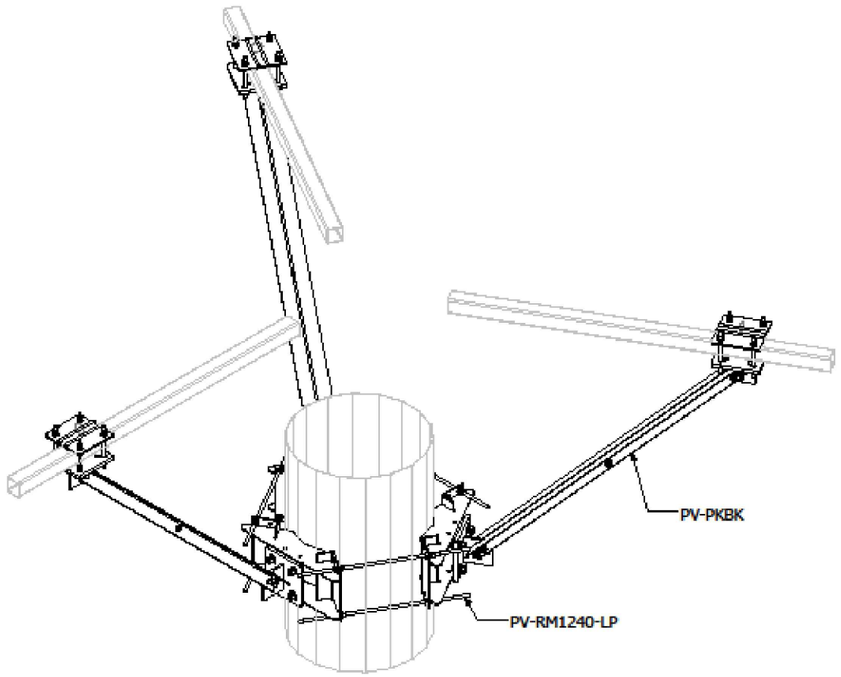
PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE
CARRIER SITE NUMBER: CTNH510A
BUN: 842864
201 GRANITE ROAD
GUILFORD, CT 06437

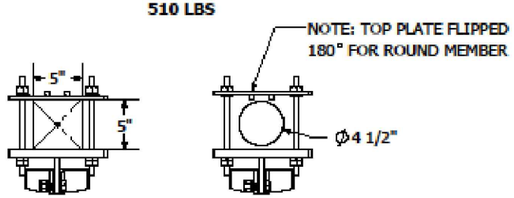
SHEET TITLE
REFERENCE CUT SHEET

SHEET NUMBER
S-3

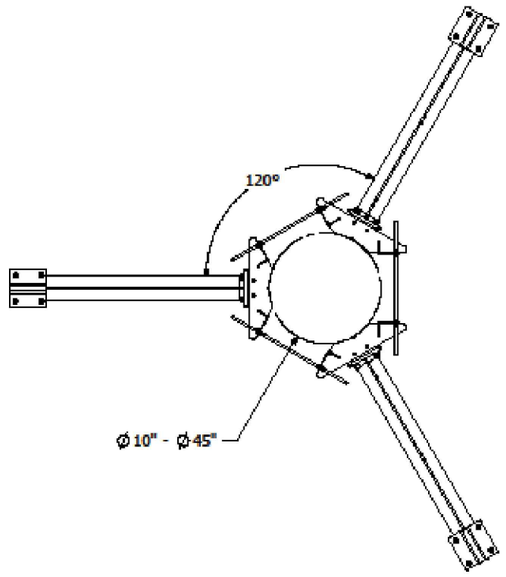
T:\CROWN CASTLE\42284 - CROWN MOUNT ANALYSIS\842864\02 - MOD\R1\CAD\42284-842864-482070-REV A.DWG - CLS PROJECT ID: 42284-842864-482070

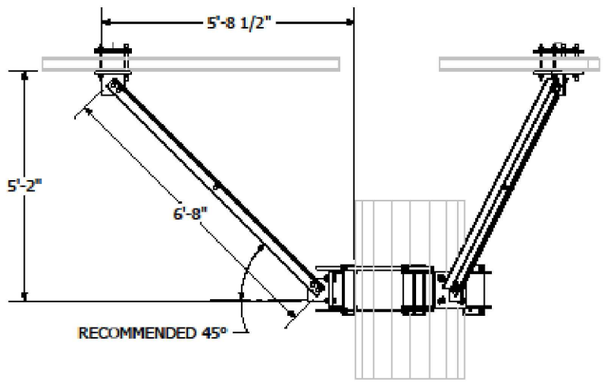


PV-PKBK-M
(INCLUDES (1) PV-RM1240-LP AND (1) PV-PKBK)
KICKER BRACE
510 LBS



ARM ATTACHMENT
CLAMPS TO RECT HSS UP TO 5"X5" AND ROUND PIPE UP TO 4-1/2" OD





FIELD–CUT PROPOSED MEMBERS AS REQUIRED.
MAINTAIN MINIMUM BOLT EDGE DISTANCE.

1 PERFECT VISION PV-PKBK-M
SCALE: N.T.S.

PERFECT VISION WIRELESS
16101 La Grande Dr.
Little Rock, AR 72223
1-800-205-8620

STAMP:

REVISIONS:

NO.	DATE	DESCRIPTION	BY	CHK	APP'D
0	4/19/17	INITIAL RELEASE	DJN	LL	SS
1					
2					
3					
4					
5					

SITE INFORMATION:

DESIGN TYPE:
MONOPOLE KICKER BRACE KIT

SHEET TITLE:
ENGINEERING DETAIL

SHEET TITLE	REVISION
E-1	0

metroPCS.
Wireless for All.
12920 SE 36TH STREET
BELLEVUE, WA 98006

CROWN CASTLE

CLS ENGINEERING PLLC
319 CHAPANOKE ROAD, SUITE 118, RALEIGH, NC 27603
PH: (405)348-5460 FAX: (405)341-4625

CLS PROJECT ID: 42284-842864-482070
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LICENSED
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Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

6/19/2019

PE# 32402 EXP: 1/31/2020

AT&T GUILFORD MONOPOLE
CARRIER SITE NUMBER: CTNH510A
BUN: 842864
201 GRANITE ROAD
GUILFORD, CT 06437

SHEET TITLE
REFERENCE CUT SHEET

SHEET NUMBER
S-4

Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTNH510A

AT&T Guilford Monopole
201 Granite Rd
Guilford, CT 06437

May 20, 2019

Transcom Engineering Project Number: 737001-0027

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**20.68 %**

May 20, 2019

T-MOBILE
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CTNH510A – AT&T Guilford Monopole**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **201 Granite Rd, Guilford, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **201 Granite Rd, Guilford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	2	60
UMTS	1900 MHz (PCS)	1	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR32 B66A / B2A	86
A	2	Ericsson AIR21 B2A/B4P	86
A	3	RFS APXVAARR24_43-U-NA20	86
B	1	Ericsson AIR32 B66A / B2A	86
B	2	Ericsson AIR21 B2A/B4P	86
B	3	RFS APXVAARR24_43-U-NA20	86
C	1	Ericsson AIR32 B66A / B2A	86
C	2	Ericsson AIR21 B2A/B4P	86
C	3	RFS APXVAARR24_43-U-NA20	86

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	6.05
Antenna A2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.87
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	3.26
						Sector A Composite MPE%	**10.18**
Antenna B1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	6.05
Antenna B2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.87
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	3.26
						Sector B Composite MPE%	**10.18**
Antenna C1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85	6	280	10,768.57	6.05
Antenna C2	Ericsson AIR21 B2A/B4P	1900 MHz (PCS)	15.9	1	40	1,556.18	0.87
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	3.26
						Sector C Composite MPE%	**10.18**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**10.18 %**
AT&T	5.82 %
Verizon Wireless	4.68 %
Site Total MPE %:	**20.68 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	10.18 %
T-MOBILE Sector B Total:	10.18 %
T-MOBILE Sector C Total:	10.18 %
Site Total:	20.68 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,538.37	86	34.57	1900 MHz (PCS)	1000	3.46%
T-Mobile 2100 MHz (AWS) LTE	2	2,307.55	86	25.92	2100 MHz (AWS)	1000	2.59%
T-Mobile 1900 MHz (PCS) UMTS	1	1,556.18	86	8.74	1900 MHz (PCS)	1000	0.87%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	86	8.86	600 MHz	400	2.22%
T-Mobile 700 MHz LTE	2	432.54	86	4.86	700 MHz	467	1.04%
						Total:	**10.18%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

The anticipated maximum composite contributions from the T-MOBILE facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-MOBILE Sector	Power Density Value (%)
Sector A:	10.18 %
Sector B:	10.18 %
Sector C:	10.18 %
T-MOBILE Maximum Total (per sector):	10.18 %
Site Total:	20.68 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.68 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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