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April 23, 2020

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification**
330 Pokorny Road, Haddam, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 145-foot level of the existing 280-foot Eversource tower at 330 Pokorny Road in Haddam, Connecticut (the "Property"). The tower and underlying property are owned by Eversource. The tower was approved by the Siting Council ("Council) in Petition No. 1027. The Council approved Cellco's shared use of the tower in 2016 (Sub-Petition 1133). A copy of the Council's Staff Report for Petition No. 1027 and Council's 2016 Sub- Petition 1133 decision are included in Attachment 1.

Cellco now intends to modify its facility by replacing six (6) of its existing antennas with six (6) new antennas, removing six (6) remote radio heads ("RRHs") and installing six (6) new RRHs and installing three (3) new fiber optic antenna cables. The existing antenna mounts will be reinforced as part of these proposed facility modifications. A set of project plans showing the proposed facility modifications and the specifications for Cellco's new antennas, RRHs and fiber optic cables are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Haddam's First Selectman, Robert McGarry; Bill Warner, Haddam's Zoning Enforcement Officer; and Eversource, the tower and Property owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed at the 145-foot level on the 280-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The installation of new antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for the modified facility is included in Attachment 3.

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

6. The tower, its foundation and antenna mounts, with certain modifications, can support Cellco's proposed facility modifications. (*See* Structural Analysis Report included in Attachment 4 and Mount Structural Analysis Report included in Attachment 5).

A copy of the parcel map and Property owner information is included in Attachment 6. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 7.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Robert McGarry, Haddam First Selectman
Bill Warner, Haddam Zoning Enforcement Officer
Eversource
Tim Parks

ATTACHMENT 1

Petition No. 1027
Connecticut Light & Power
Haddam, Connecticut
Staff Report
May 10, 2012

On April 5, 2012, the Connecticut Siting Council (Council) received a petition from The Connecticut Light & Power (CL&P) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed replacement of an existing guyed lattice communications tower in Haddam, Connecticut. Council member Phil Ashton and Siting Analyst David Martin visited the site on May 4, 2012 to review the proposal. John Morissette and Steve Florio represented CL&P at the field review.

CL&P currently owns and operates a 280-foot guyed lattice wireless communications tower at 330 Pokorny Road in Haddam. The tower is host for a number of different antennas for several different users, including CL&P, the Connecticut State Police, Valley Shore Communications, and Sprint/Nextel. It provides critical microwave communication links for both CL&P and the State Police. A detailed structural analysis of the existing tower determined that it was overstressed and that there was no practical way of reinforcing the tower to bring it into compliance with state building code and CL&P engineering requirements.

CL&P proposes to replace the existing tower with a self-supporting lattice tower at the same height. The center of the replacement tower would be located approximately 50 feet to the west of the existing tower, which is the only location where it is possible to erect the new tower between the existing guy wires. CL&P would relocate the antennas on the existing tower onto the replacement tower. The replacement tower would also include a yield point to effectively reduce its potential fall zone and would be lit to comply with FAA requirements.

There are two fence lines on the CL&P property on which the existing tower is located. An outer fence encloses the locations where the guy wires are anchored to the ground. A smaller, inner fence encloses the existing tower and several equipment shelters. This inner fence would have to be extended a short distance to surround the proposed replacement tower. But the outer fence would remain at its current dimensions.

A number of large, single family homes have been built in the area surrounding CL&P's tower within the last twenty years. However, mature deciduous trees around the perimeter of CL&P's property help to minimize the visible impact of the tower on the nearest homes. Council member Ashton recommended that CL&P submit a D&M plan to show additional evergreen trees that would be planted within the facility's outer fence to help augment the existing vegetative screening of the tower.

The proposed replacement tower is not expected to have any substantial adverse environmental impacts. In fact, eliminating the existing guy wires will greatly reduce this wireless communications tower's potential for causing bird fatalities.

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

October 11, 2016

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **PE1133-VER-20160912** – Cellco Partnership d/b/a Verizon Wireless sub-petition for a declaratory ruling for approval of an eligible facility request for modifications to an existing telecommunications facility located at 330 Pokorny Road, Haddam, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby approves your Eligible Facilities Request (EFR) to install antennas and associated equipment at the above-referenced facility pursuant to the Federal Communications Commission Wireless Infrastructure Report and Order, with the following conditions:

1. Prior to commencement of installation, Cellco shall provide one copy of the Structural Analysis Report to the Council referencing Revision G of the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* as adopted by the Connecticut State Building Code effective October 1, 2016;
2. All coax cables shall be routed as specified in Section 3 of the Structural Analysis Report prepared by Centek Engineering, Inc. dated April 9, 2015 and stamped by Timothy Lynn or subsequent structural analysis report in accordance with Revision G as stated in the condition above;
3. Within 45 days following completion of equipment installation, Cellco shall provide documentation that its installation complied with the recommendations of the structural analysis;
4. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
5. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function;
6. The validity of this action shall expire one year from the date of this letter; and
7. The Petitioner may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the EFR dated September 9, 2016.

Thank you for your attention and cooperation.

Very truly yours,

Melanie Bachman
Acting Executive Director

MB/CW

c: Honorable Lizz Milardo, First Selectman, Town of Haddam
Elizabeth Glidden, Town Planner, Town of Haddam

S:\PETITIONS\1101-1200\1133\3_Subpetitions_ByTown\Haddam\PokornyRd\VERIZON\P1133-VER-20160912-dcltr-pokornyrd-haddam.docx

ATTACHMENT 2

LOCUS MAP SCALE: N.T.S.

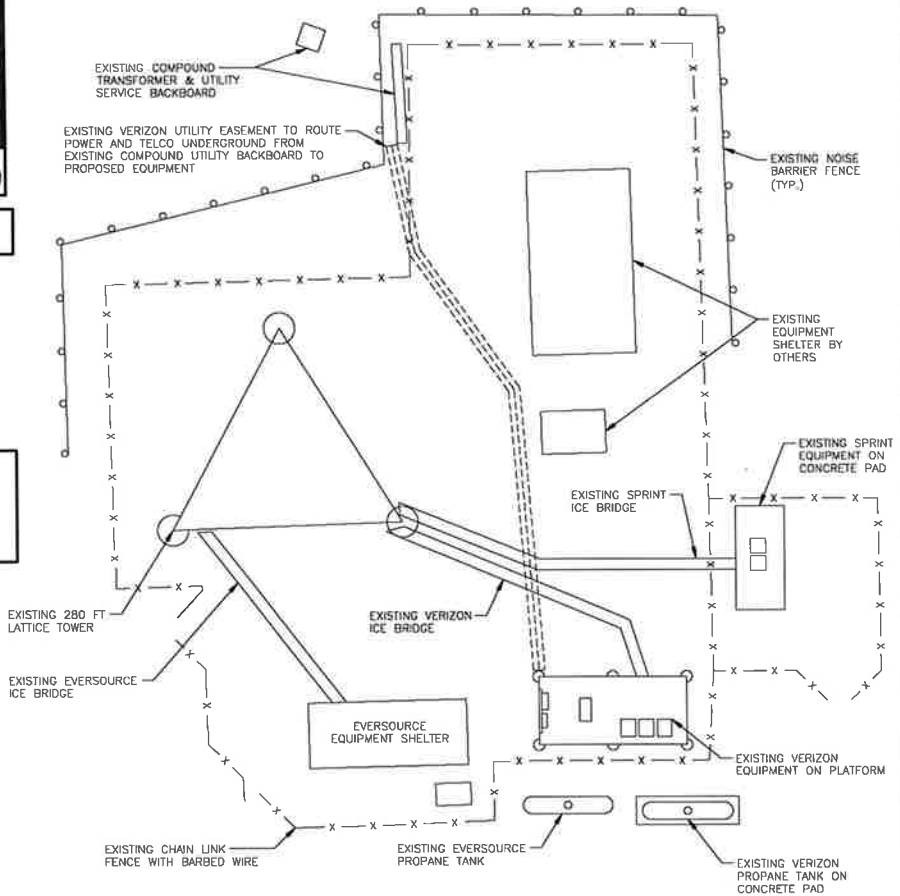
APPROXIMATE SITE COORDINATES: LAT: N41° 26' 36.89" LONG: W72° 33' 58.89"

NOTE:
A MOUNT ANALYSIS OF THE CAPACITY OF THE EXISTING MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC DATED: MAY 6, 2019 (REV.1)

A STRUCTURAL ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY PAUL J. FORD & COMPANY DATED: APRIL 15, 2020

DESIGN EXHIBIT

THIS PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED ANTENNA UPGRADE.



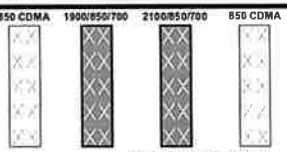
COMPOUND PLAN (1 / DE-1)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

GRAPHIC SCALE
0 5'-4" 10'-8" 21'-4" 32'-0"

SCOPE

1. (3) EXISTING HBXX-6517DS-A2M ANTENNAS TO BE REMOVED
   (2) EXISTING LNX-6515DS-A1M_4DT ANTENNAS TO BE REMOVED
   (1) EXISTING LNX-6515DS-A1M_5DT ANTENNAS TO BE REMOVED
   (3) EXISTING RRHs TO BE REMOVED
2. (6) EXISTING ANTENNAS TO REMAIN
   (24) EXISTING 1/2" COAX TO REMAIN
3. (3) EXISTING OVP TO REMAIN
   (3) EXISTING HYBRID CABLES TO BE REMOVED.
4. INSTALL (6) NEW NHH 65C R2B ANTENNAS
5. INSTALL (3) NEW RRH B2/B66A
   INSTALL (3) NEW RRH B5/B13
   INSTALL (3) NEW BSAMNT-SBS-1-2 MOUNT
   INSTALL (3) NEW HYBRID CABLES
   INSTALL (6) NEW SAMSUNG FIBER JUMPERS
   INSTALL (6) NEW SAMSUNG POWER JUMPERS
   INSTALL (24) NEW 1/2" COAX JUMPERS
6. INSTALL (3) NEW SECTOR FRAME STABILIZER KITS SITEPRO1, SFS-V
   INSTALL (3) NEW 2" (2.38 O.D.) PIPE BRACES (SEE S-1)
   INSTALL (3) NEW 2-1/2" (2.88 O.D.) PIPE MASTS (SEE S-1)
7. ALL REPLACEMENT ANTENNAS TO MATCH EXISTING CONDITIONS AND HEIGHTS.
8. RECONFIGURE / RELOCATE EXISTING ANTENNA MOUNTS AS NECESSARY TO ACCOMMODATE HORIZONTAL SEPARATION, PROPOSED AZIMUTHS, AND ANTENNA CONFIGURATION.

NEW ANTENNA CONFIGURATION

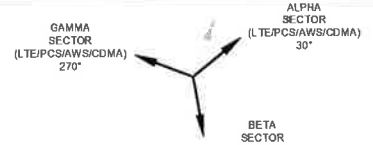


NOTE:
VIEW IS FROM BEHIND ANTENNA ARRAY LOOKING OUTWARDS

NOTES

1. NORTH SHOWN AS APPROXIMATE.
2. SOME EXISTING & PROPOSED INFORMATION NOT SHOWN FOR CLARITY.
3. ANTENNAS WILL BE PAINTED PER VERIZON WIRELESS & BUILDING OWNER'S APPROVAL.
4. PRIOR TO COMMENCEMENT OF ANY WORK, PROPOSED ANTENNA INSTALLATION IS PURSUANT TO FINDINGS DICTATED IN STRUCTURAL ANALYSIS, STRUCTURAL ANALYSIS TO VERIFY CAPACITY OF EXISTING STRUCTURE TO ENSURE STRUCTURAL INTEGRITY FOLLOWING INSTALLATION OF PROPOSED ANTENNAS, COAX CABLES AND REQUIRED HARDWARE. COPY OF STRUCTURAL ANALYSIS TO BE SENT TO DESIGN ENGINEER.
5. CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, VERIZON WIRELESS ANTENNA MOUNT LOCATION AND ANTENNAS TO BE INSTALLED.
6. CONTRACTOR SHALL NOTIFY ENGINEERS IF FILED CONDITIONS DIFFER FROM DESIGN.
7. RAD CENTERS MEASURED IN THE FIELD WITH LASER BY HDG. RAD CENTERS MAY NOT MATCH RF ANTENNA DESIGN SHEET.

ANTENNA ORIENTATION



DESIGN EXHIBIT

PREPARED FOR: CELCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL. (978) 557 5553
FAX. (978) 336 5586

DANIEL P. HAMM — No. 21472 — LICENSED PROFESSIONAL ENGINEER — STATE OF CONNECTICUT

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREON.

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	JLM
2	7/12/19	REVISED PER COMMENTS	SLT
1	05/30/19	REVISED PER COMMENTS	KAM
0	03/28/19	ISSUED FOR REVIEW	KAM

SITE NAME:
HIGGANUM SOUTH CT

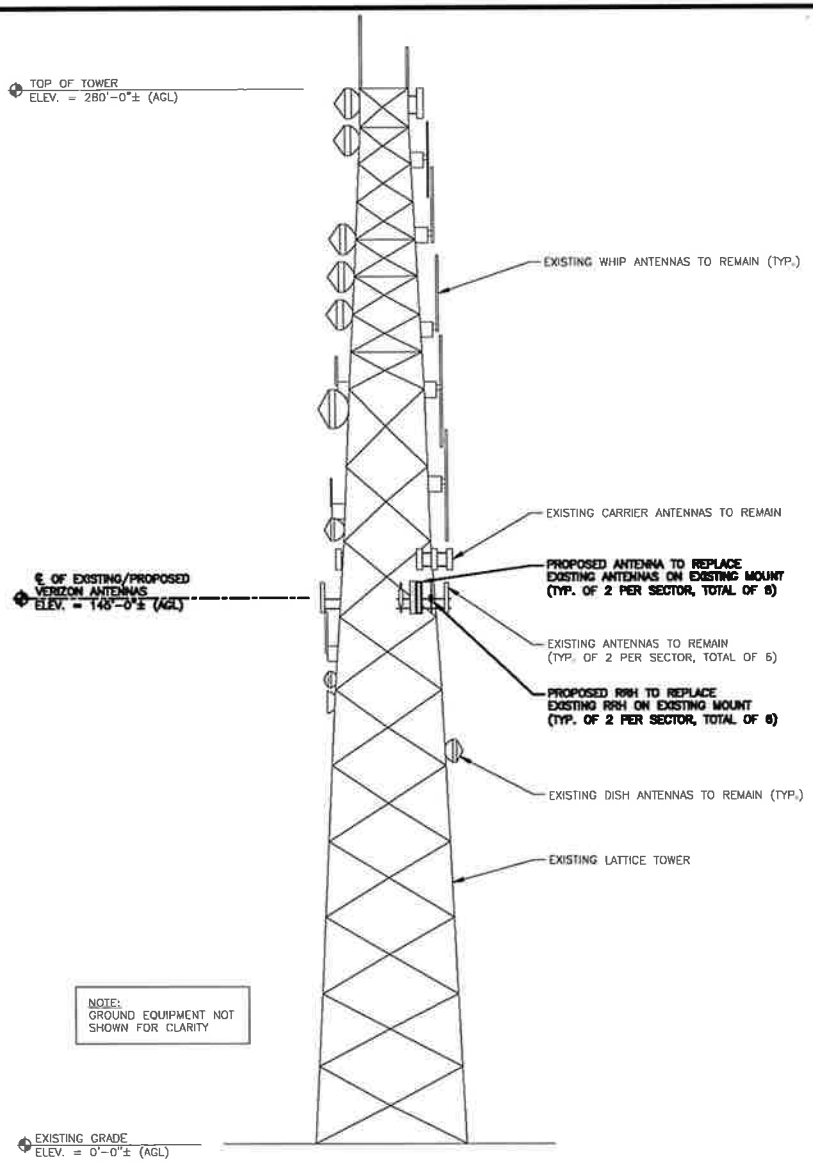
SITE ADDRESS:
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
DE-1

NOTE:
A MOUNT ANALYSIS OF THE CAPACITY OF THE EXISTING MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC
DATED: MAY 6, 2019 (REV.1)

A STRUCTURAL ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY PAUL J. FORD & COMPANY
DATED: APRIL 15, 2020



ELEVATION (1 / DE-2)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

GRAPHIC SCALE
0 8 16 32 48 FEET

DESIGN EXHIBIT

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.
verizon

HUDSON
Design Group LLC
45 BEECHWOOD DRIVE
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TEL. (978) 557 5553
FAX (978) 336 5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED
PROFESSIONAL ENGINEER
CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER'S SIGNATURE AND RECORDS STAMPED AND SIGNED SUBMITTAL DATE NOTED HEREIN

Daniel P. Hamm

CHECKED BY: JX
APPROVED BY: DPH

SUBMITTALS

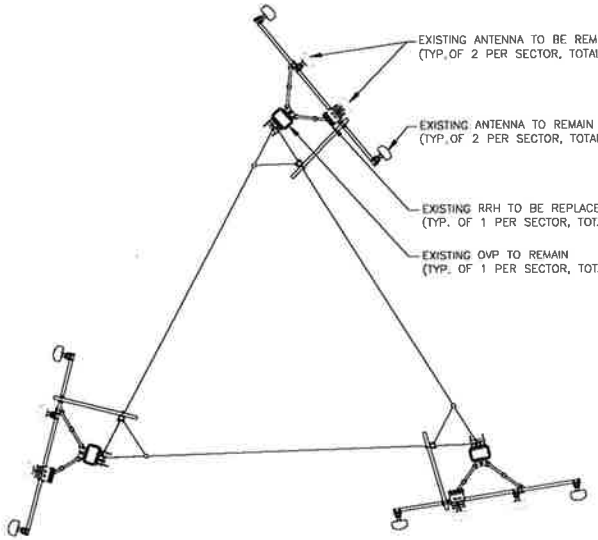
REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	DJH
2	7/10/19	REVISED PER COMMENTS	SLF
1	03/26/19	REVISED PER COMMENTS	KAM
0	03/08/19	ISSUED FOR REVIEW	KAM

SITE NAME:
HIGGANUM SOUTH CT

SITE ADDRESS
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
ELEVATION

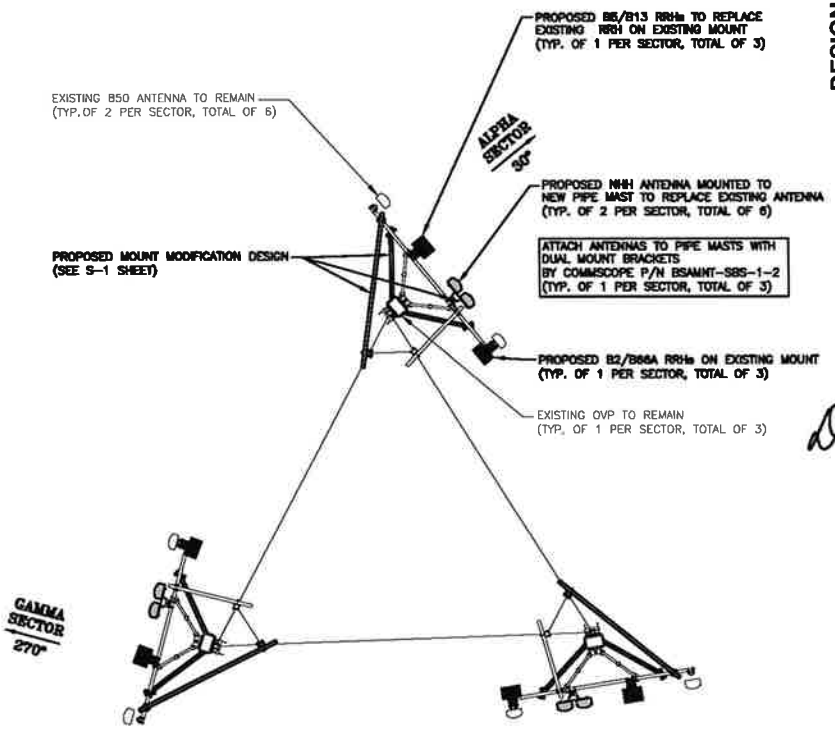
SHEET NUMBER
DE-2



13°36' MAGNETIC NORTH TRUE NORTH

ANTENNA PLAN (BEFORE) (1 / DE-3)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

GRAPHIC SCALE 0 2 4 8 12 FEET



13°36' MAGNETIC NORTH TRUE NORTH

ANTENNA PLAN (AFTER) (2 / DE-3)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

GRAPHIC SCALE 0 2 4 8 12 FEET

DESIGN EXHIBIT

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL. (978) 557 5553
FAX. (978) 336 5586

STATE OF CONNECTICUT DANIEL P. HAMM LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE NOTED HEREIN

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

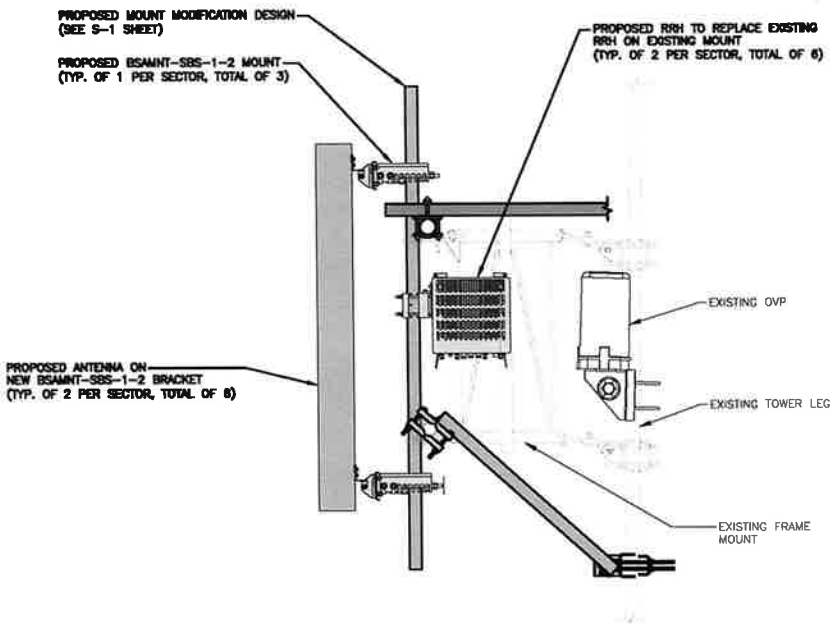
REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	DJH
2	7/10/19	REVISED PER COMMENTS	SLT
1	05/30/19	REVISED PER COMMENTS	KAM
0	03/28/19	ISSUED FOR REVIEW	KAM

SITE NAME:
HIGGANUM SOUTH CT

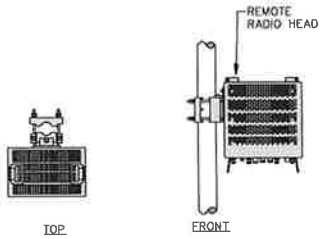
SITE ADDRESS:
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
ANTENNA CONFIGURATIONS

SHEET NUMBER
DE-3



ANTENNA MOUNTING DETAIL (1 / DE-4)
SCALE: N.T.S.



REMOTE RADIO HEAD MOUNTING DETAIL (2 / DE-4)
22x34 SCALE: N.T.S

DESIGN EXHIBIT

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.
verizon

HUDSON Design Group LLC
45 NEWBURY DRIVE
N. ANDOVER, MA 01845
TEL. (978) 557-5553
FAX. (978) 336-5514

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 21178 — LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE UNLESS NOTED

Daniel P. Hamm

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	JLM
2	7/10/19	REVISED PER COMMENTS	SLY
1	05/30/19	REVISED PER COMMENTS	KMI
0	03/28/19	ISSUED FOR REVIEW	KMI

SITE NAME:
HIGGANUM SOUTH CT

SITE ADDRESS:
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
ANTENNA CONFIGURATIONS

SHEET NUMBER
DE-4

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL, ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER. REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D I 10MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED, FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

DESIGN EXHIBIT

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL. (978) 557 5553
FAX (978) 336 5586

STATE OF CONNECTICUT DANIEL P. HAMM No. 24179 LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE NOTED HEREON

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	DJM
2	3/12/19	REVISED PER COMMENTS	SLY
1	02/20/19	REVISED PER COMMENTS	KAM
0	02/08/19	ISSUED FOR REVIEW	KAM

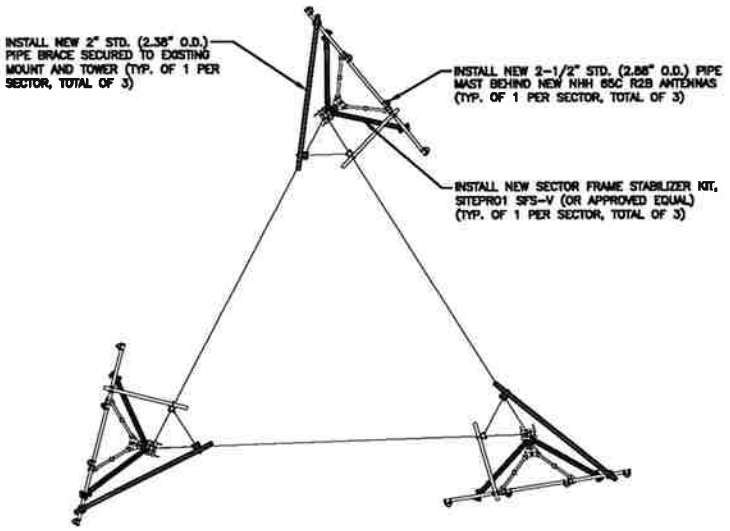
SITE NAME:
HIGGANUM SOUTH CT

SITE ADDRESS:
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE:
STRUCTURAL NOTES & INSPECTION CHECK LIST

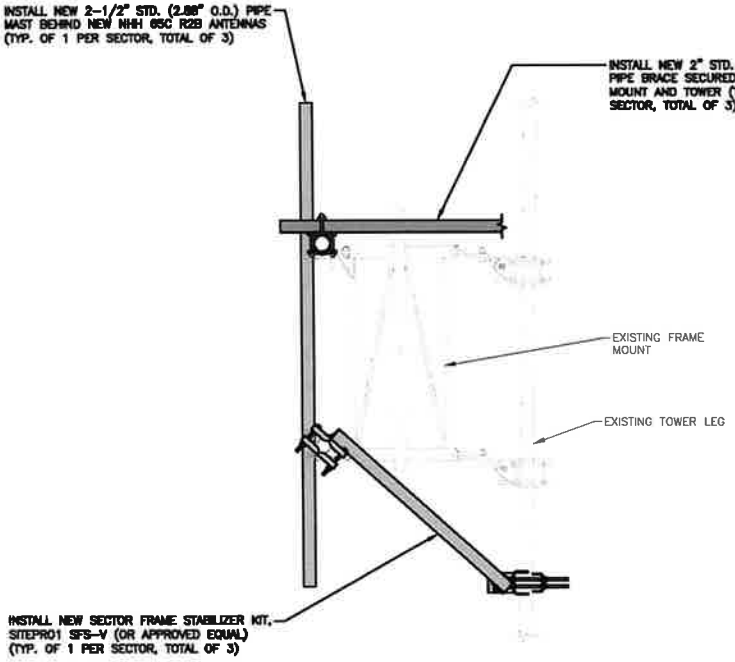
SHEET NUMBER:
SN-1

DESIGN EXHIBIT

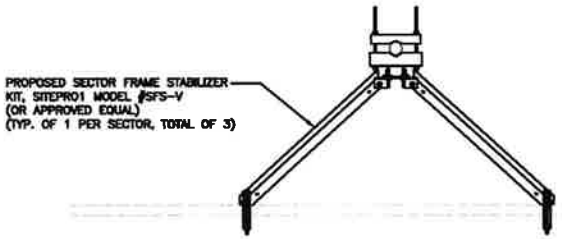


PROPOSED MOUNT MODIFICATION PLAN (1 / S-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

GRAPHIC SCALE
0 2 4 8 12 FEET



PROPOSED MOUNT MODIFICATION ELEVATION (2 / S-1)
SCALE: N.T.S.



SECTOR FRAME STABILIZER KIT (3 / S-1)
SCALE: N.T.S

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BRENTWOOD DRIVE
N. ANDOVER, MA 01845
TEL. (978) 557 5553
FAX (978) 336 5359

DANIEL P. HAMM — STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER
CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS WITHOUT ENGINEER'S ORIGINAL SIGNATURE AND SEALED & DATED DATE NOTED HEREON

CHECKED BY: JX
APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	4/15/20	REVISED PER COMMENTS	DJH
2	7/12/19	REVISED PER COMMENTS	SLY
1	05/30/19	REVISED PER COMMENTS	KAM
0	03/28/19	ISSUED FOR REVIEW	KAM

SITE NAME:
HIGGANUM SOUTH CT

SITE ADDRESS
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
MOUNT MODIFICATION DESIGN

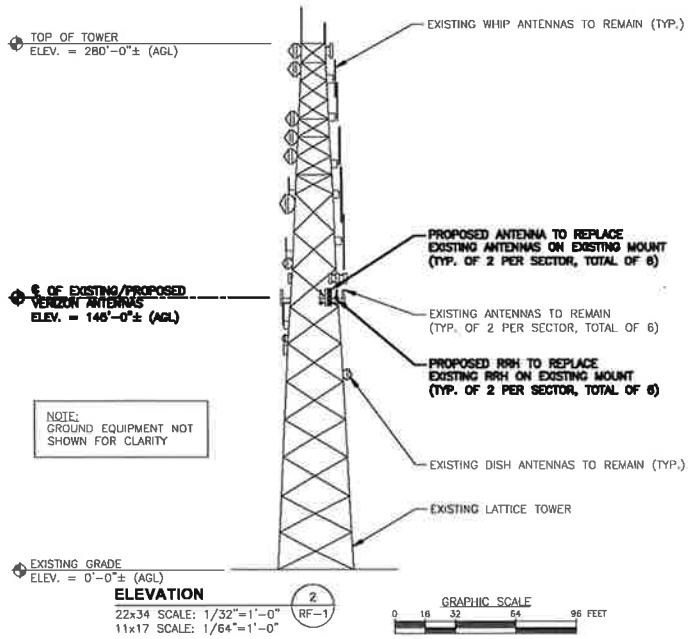
SHEET NUMBER
S-1

BILL OF MATERIALS

SITE NAME: HIGGANUM SOUTH CT

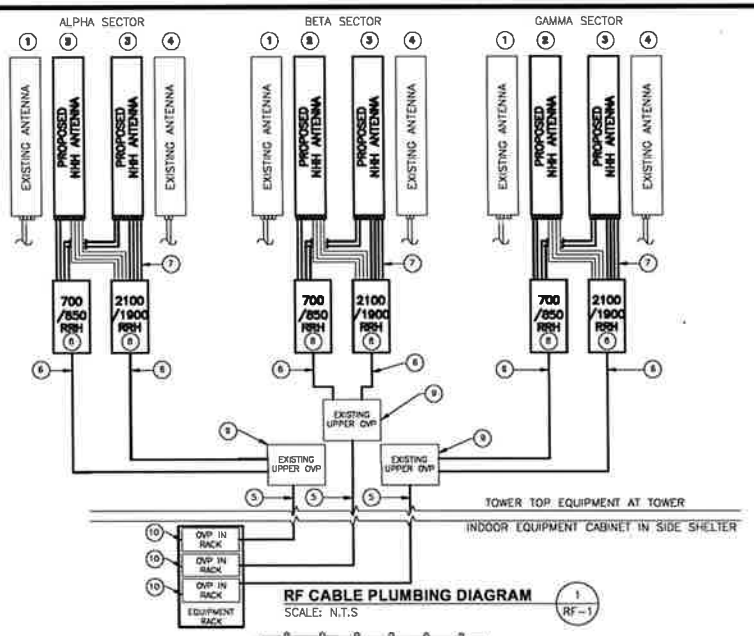
ITEM	DESCRIPTION	QTY	LENGTH	COMMENTS
1	ANTENNA– (EXISTING) CDMA HBXX–6517DS–A2M	3		MOUNTED TO SECTOR FRAME (EXISTING)
2	**ANTENNA– (PROPOSED) (LTE) NHH–65C–R2B**	**3**		**MOUNTED TO SECTOR FRAME (EXISTING)**
3	**ANTENNA– (PROPOSED) (AWS/PCS) NHH–65C–R2B**	**3**		**MOUNTED TO SECTOR FRAME (EXISTING)**
4	ANTENNA– (EXISTING) CDMA LNX–6515DS–A1M	3		MOUNTED TO SECTOR FRAME (EXISTING)
5	**6x12 HYBRID CABLE (PROPOSED)**	**1**	**185 FT.**	**ROUTE FROM INDOOR EQUIPMENT TO ANTENNA SECTOR**
5	**6x12 HYBRID CABLE (PROPOSED)**	**1**	**185 FT.**	**ROUTE FROM INDOOR EQUIPMENT TO ANTENNA SECTOR**
5	**6x12 HYBRID CABLE (PROPOSED)**	**1**	**185 FT.**	**ROUTE FROM INDOOR EQUIPMENT TO ANTENNA SECTOR**
6	**SAMSUNG FIBER JUMPERS (PROPOSED)**	**6**	**15 FT.**	**ROUTE FROM UPPER OVP TO RRHs**
6	**SAMSUNG POWER JUMPERS (PROPOSED)**	**6**	**15 FT.**	**ROUTE FROM UPPER OVP TO RRHs**
7	**1/2" TOP COAX JUMPERS**	**6**	**6 FT.**	**ROUTE FROM RRH TO ANTENNA**
7	**1/2" TOP COAX JUMPERS**	**6**	**6 FT.**	**ROUTE FROM RRH TO ANTENNA**
7	**1/2" TOP COAX JUMPERS**	**6**	**6 FT.**	**ROUTE FROM RRH TO ANTENNA**
7	1/2" TOP COAX JUMPERS	24	6 FT.	ROUTE FROM RRH TO ANTENNA
8	**LTE RRH**	**3**		**(SAMSUNG) B5/B13 PIPE MOUNTED**
8	**PCS/AWS RRH**	**3**		**(SAMSUNG) B2/B66A PIPE MOUNTED**
9	UPPER OVP (EXISTING)	3		MOUNTED TO SECTOR FRAME
10	LOWER OVP (EXISTING)	3		MOUNTED INSIDE EQUIPMENT CABINET

RF BOM IS PER ANTENNA RF COMMENDATION DATE SHEET DATED 03/31/2019

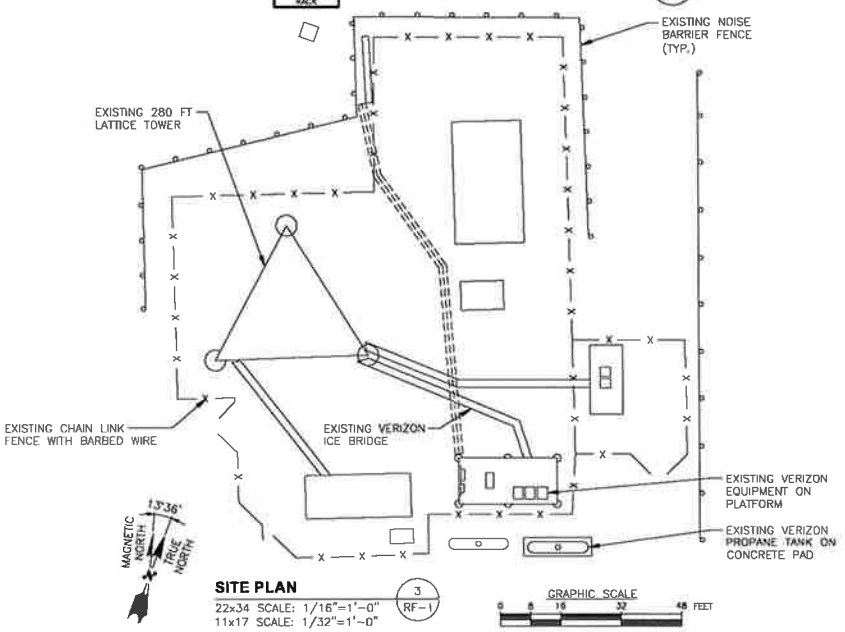


ELEVATION 2 RF-1
22x34 SCALE: 1/32"=1'-0"
11x17 SCALE: 1/64"=1'-0"

GRAPHIC SCALE



RF CABLE PLUMBING DIAGRAM 1 RF-1
SCALE: N.T.S



SITE PLAN 3 RF-1
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

GRAPHIC SCALE 0 8 16 32 48 FEET

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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TEL. (978) 557 5553
FAX. (978) 336 5586

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV	DATE	DESCRIPTION	BY
1	05/30/19	REVISED PER COMMENTS	KAM
0	03/08/19	ISSUED FOR REVIEW	KAM

SITE NAME:
HIGGANUM SOUTH CT

SITE ADDRESS:
330 POKORNY ROAD
HIGGANUM, CT 06441

SHEET TITLE
RF PLUMBING DIAGRAM AND BILL OF MATERIALS

SHEET NUMBER
RF-1

NHH-65C-R2B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	0.37 m^2 | 3.983 ft^2
Effective Projective Area (EPA), lateral	0.31 m^2 | 3.337 ft^2
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	6

Remote Electrical Tilt (RET) Information, General

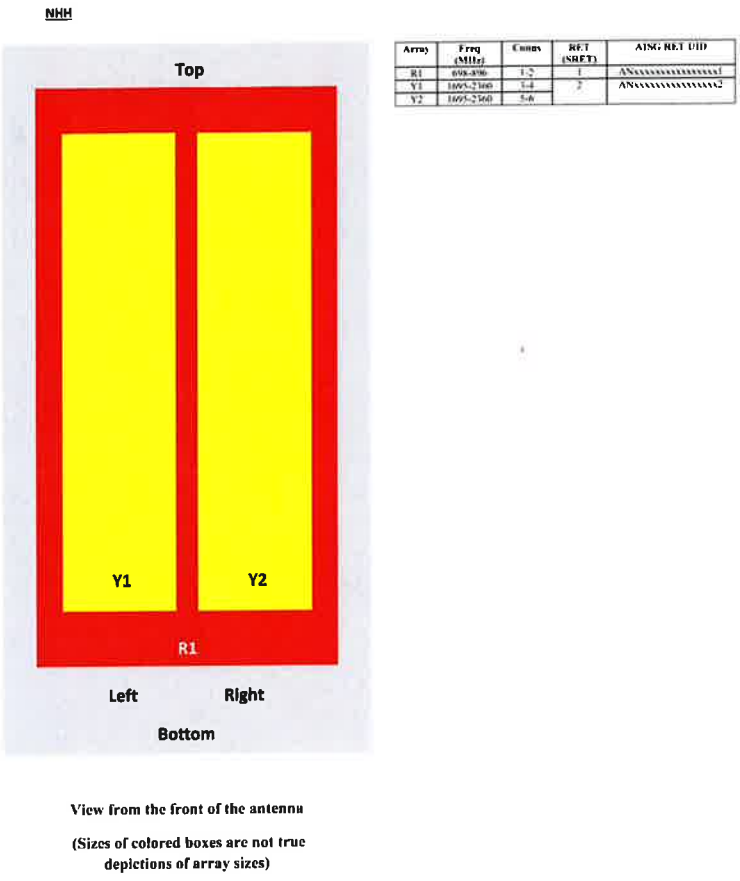
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

Dimensions

Width	301 mm | 11.85 in
Length	2438 mm | 95.984 in
Depth	180 mm | 7.087 in

Array Layout

NHH-65C-R2B



Array	Freq (MHz)	Conn	RET (SRET)	AISG RET DID
R1	698-896	1-2	1	AN[illegible]1
Y1	1695-2360	3-4	2	AN[illegible]2
Y2	1695-2360	5-6		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Total Input Power, maximum	900 W @ 50 °C

Remote Electrical Tilt (RET) Information, Electrical

Protocol	3GPP/AISG 2.0 (Single RET)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 3
Internal RET	High band (1) | Low band (1)

NHH-65C-R2B

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	16	16.1	17.3	17.7	18.3	18.2
Beamwidth, Horizontal, degrees	65	62	74	66	62	59
Beamwidth, Vertical, degrees	9	7.9	5.6	5.2	4.9	4.5
Beam Tilt, degrees	0–11	0–11	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	21	18	19	20	22	18
Front-to-Back Ratio at 180°, dB	35	31	33	29	29	30
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	30	30	30	30	30	30
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	400	400	350	350	350	300

Electrical Specifications, BASTA

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	15.8	15.9	16.9	17.5	18	17.9
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.4	±0.4	±0.3	±0.6	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 15.9 5 ° | 15.9 11 ° | 15.5	0 ° | 15.8 5 ° | 16.0 11 ° | 15.7	0 ° | 16.9 4 ° | 17.0 7 ° | 16.9	0 ° | 17.4 4 ° | 17.5 7 ° | 17.4	0 ° | 17.9 4 ° | 18.0 7 ° | 18.0	0 ° | 17.8 4 ° | 17.9 7 ° | 17.9
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.6	±5.3	±3.4	±6	±3.1
Beamwidth, Vertical Tolerance, degrees	±0.6	±0.4	±0.3	±0.2	±0.2	±0.2
USLS, beampeak to 20° above beampeak, dB	15	14	17	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	25.6	23.8	28	25	25	24
CPR at Boresight, dB	18	26	20	25	20	17
CPR at Sector, dB	15	9	11	10	8	2

Material Specifications

Radiator Material	Copper | Low loss circuit board

NHH-65C-R2B

Reflector Material	Aluminum

Mechanical Specifications

Wind Loading at Velocity, frontal	393.0 N @ 150 km/h | 88.8 lbf @ 150 km/h
Wind Loading at Velocity, lateral	330.0 N @ 150 km/h | 74.2 lbf @ 150 km/h
Wind Loading at Velocity, maximum	170.2 lbf @ 150 km/h | 757.0 N @ 150 km/h
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	409 mm | 16.102 in
Depth, packed	299 mm | 11.772 in
Length, packed	2561 mm | 100.827 in
Net Weight, without mounting kit	23.4 kg | 51.588 lb
Weight, gross	36.1 kg | 79.587 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance
ROHS	Compliant/Exempted

Included Products

BSAMNT-3 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

SAMSUNG

Dual-Band Radio Unit

700/850MHz (B13/B5)

RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

PRODUCT DATASHEET

HB114-U6S12-120-LI

RADIO FREQUENCY SYSTEMS
The Clear Choice

HYBRIFLEX® RRH Hybrid Cable Solution 6x12, 6AWG Low-Inductance, 1-1/4", Single-Mode Fiber With DLC Connectors

HYBRIFLEX Series

DC Wire Insulator

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

This low-inductance version of HYBRIFLEX allows mobile operators deploying an RRH architecture to deploy >400ft sites without the danger of power-cycling their RRHs due to voltage swings, which could occur in some specific instances. It combines bend-insensitive single-mode fiber (12 pairs of DLC connectors), 6 pairs of low-inductance DC wires and 9 pairs of 18AWG wires used to carry alarm signals. The package also includes a special RFS-designed DC insulating boot, used to properly protect and insulate the DC wires after stripping the jacket, avoiding possible short-circuits while wiring it to the distribution boxes. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable.

FEATURES / BENEFITS

- DC Wire Insulator (Patent pending) – Used at the DC wire connection in distribution boxes, prevents potential short circuits
- Aluminum corrugated armor with outstanding bending characteristics – Minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1-1/4" coaxial cable – Saves installation costs and time
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor, flame-retardant jacket – Ensures long-lasting cable protection

Technical Features

STRUCTURE		
Cable Type		HYBRIFLEX® Low Inductance
Size		1-1/4"
Fire Performance		Flame Retardant
Length	m (ft)	36.57 (120)
MECHANICAL SPECIFICATIONS		
Outer Diameter Nominal	mm (in)	39 (1.54)
Cable Weight	kg/m (lb/ft)	2.52 (1.7)
Minimum Bending Radius, Single Bend	mm (in)	152 (6)
Minimum Bending Radius, Multi Bends	mm (in)	254 (10)
Recommended / Maximum Clamp Spacing	m (ft)	1 / 1.2 (3.25 / 4)
DC POWER CABLE SPECIFICATIONS		
Number of DC Pairs		6
Maximum DC-Resistance Power Cable	Ω/km (Ω/kft)	1.4 (0.42)
Cross Section of Power Cable	mm² (AWG)	13.3 (6)
DC Wire Jacket Material		PVC/Nylon
DC Cable Diameter	mm (in)	9.3 (0.365)
DC Cable Jacket		PVC/Nylon
DC Standards (Meets or Exceeds)		For use in Type RHC per UL 2882,PVC/Nylon,RoHS/REACH Compliant
Break-out length	mm(in)	812.8
DC Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive
Alarm Wire		18 (9 twisted pairs), 0.8mm2 (18AWG)
CABLE JACKET		
UV-Protection Individual and External Jacket		Yes
ARMOR SPECIFICATIONS		
Armor Type		Corrugated Aluminum
Maximum DC-Resistance of Armor	Ω/km (Ω/kft)	0.9 (0.27)
Diameter Corrugated Armor	mm (in)	36 (1.42)
F/O CABLE SPECIFICATIONS		
F/O Cable Type		Single-Mode, Bend Tolerant
Number of F/O Pairs		12
Core/Clad	µm	9 /125
Secondary Protection Nominal	µm (in)	900 (0.035)
Single Bending Radius	mm (in)	137 (5.4)
F/O Standards (Meets or Exceeds)		UL Listed Type OFNR (UL1666), RoHS Compliant
Optical Loss	dB/Km	0.5 @ 1310 nm 0.5 @ 1550 nm
Fiber Termination End 1		DLC Connectors
Fiber Termination End 2		DLC Connectors
FO Break-out length	mm(in)	939.8 +/-50.8 (37 +/-2)
Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive
TESTING AND ENVIRONMENTAL		
Storage Temperature	°C (°F)	-40 to 70 (-40 to 158)
Operation Temperature	°C (°F)	-40 to 65 (-40 to 158)
Installation Temperature	°C (°F)	-20 to 65 (-4 to 149)
Jacket Specifications		UL2882 Type RHC, UL listed
Alarm Wire Standards (Meets or Exceeds)		UL Standard 1063, 1581 VW-1, MTW Oil and Gasoline RES1 SUNRES (Cable meets UL requirements), RoHS/REACH Compliant

RADIO FREQUENCY SYSTEMS
The Clear Choice®

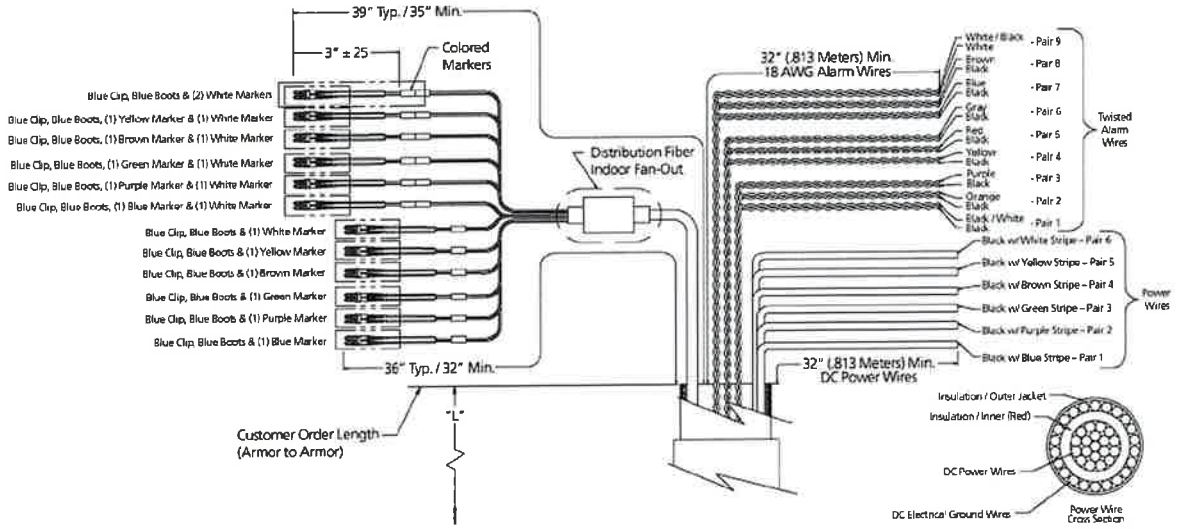
HYBRIFLEX® RRH Hybrid Cable Solution 6x12, 6AWG Low-Inductance, 1-1/4", Single-Mode Fiber With DLC Connectors

External Document Links

Installation Guidelines
Quick Ship 2.0 Program Information

Notes

External Link Reference



Drawing

ATTACHMENT 3

	General	Power	Density					
Site Name: Higganum S (Haddam)								
Tower Height: 280 Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Eversource Energy	1	3428	240	6256	0.0225	1.0000	0.23%	
*Eversource Energy	1	776	123	2145	0.0204	1.0000	0.20%	
*Sprint	8	778	144	2500	0.1175	1.0000	1.18%	
*Sprint	4	859	144	800	0.0649	0.5333	1.22%	
*Sprint	4	1440	144	1900	0.1088	1.0000	1.09%	
*Northeast	1	501	251	37.1	0.0010	0.2000	0.05%	
*Northeast	1	335	274	150	0.0006	0.2000	0.03%	
*Northeast	1	335	274	166	0.0006	0.2000	0.03%	
*Northeast	1	2500	274	450	0.0011	0.3000	0.04%	
*Northeast	1	335	154	157	0.0018	0.2000	0.09%	
*Northeast	1	1005	214	150	0.0028	0.2000	0.14%	
*Northeast	1	100	74	47.96	0.0024	0.2000	0.12%	
*Middlesex Fire	1	100	274	45.98	0.0002	0.2000	0.01%	
*Haddam Fire	1	316	64	46.24	0.0100	0.2000	0.50%	
*Operations	1	178	214	42.06	0.0005	0.2000	0.03%	
*NL County Fire	1	316	111	33.76	0.0033	0.2000	0.17%	
*MED 9	1	150	244	460	0.0001	0.3067	0.00%	
*Hi-Band TRP-TRP	1	878	144	150	0.0055	0.2000	0.27%	
*Operations	1	398	114	450	0.0010	0.3000	0.03%	
*MS to Talcott	1	9927	269	6805	0.0005	1.0000	0.00%	
*MW to CT Yankee	1	9957	269	6815	0.0005	1.0000	0.00%	
*MW to Madison	1	9869	269	6785	0.0005	1.0000	0.00%	
*MW to Talcott	1	845	194	6000	0.0001	1.0000	0.00%	
*MW to Millstone	2	9782	194	6000	0.0019	1.0000	0.02%	
*MW to Troop F	1	5413	187	6525	0.0006	1.0000	0.01%	
*MW to Mt. Beseck	1	5413	185	6525	0.0006	1.0000	0.01%	
*MW to Jenks Hill	1	18741	94	17700	0.0076	1.0000	0.08%	
*Troop F 800 MHz	5	200	169	866	0.0005	0.5773	0.01%	
*Troop K 800 MHz	5	200	234	866	0.0005	0.5773	0.01%	
*Interop 800 MHz	5	200	169	866	0.0005	0.5773	0.01%	
*Educational TV	1	151	234	2500	0.0000	1.0000	0.00%	
*VoiceStream	8	208	125	1930	0.0423	1.0000	0.42%	5.99%
*Northeast Utilities		6-foot dish owned by State Police was proposed to be added but no power denisty was provided.						
VZW PCS	**4**	**1531**	**145**	**0.1047**	**1970**	**1.0**	**10.47%**	
VZW Cellular	**4**	**460**	**145**	**0.0315**	**880**	**0.58666**	**5.36%**	
VZW AWS	**4**	**1702**	**145**	**0.1164**	**2145**	**1.0**	**11.64%**	
VZW 700	**4**	**965**	**145**	**0.0660**	**746**	**0.4973333**	**13.27%**	
								46.74%
* Source: Siting Council								

ATTACHMENT 4

PAUL J. FORD & COMPANY

Report Date: April 15, 2020

Client: Hudson Design Group
110 Washington Ave, Fourth Floor
North Haven, CT 06473
Attn: Doug Roberts
Phone: 203-208-3919

Structure: Existing 280-ft Self-Support Tower
Site Name: Higganum South CT
Site Address: 330 Pokorny Road
City, County, State: Haddam, Middlesex County, CT
Latitude, Longitude: 41° 26' 36.9 ", -72° 33' 58.9"

PJF Project: A00019-0111.003.8700_R4 (revised Table 3 to show date of MSA and CD)

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned self-support tower. The purpose of this analysis is to determine the acceptability of the self-support tower stress level.

Analysis Criteria:

Reference Standard:	2016 Connecticut State Building Code with the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1.
Ultimate Wind Speed:	140 mph 3-second gust wind speed without ice
Nominal Wind Speed:	108 mph 3-second gust wind speed without ice
Ice Wind Speed:	50 mph 3-second gust wind speed with 0.75" ice
Service Wind Speed:	60.0 mph (Serviceability) without ice
TIA-222 Criteria:	Structure Class III, Topographic Category I, Exposure Category C

Proposed Appurtenance Loads:
The structure was analyzed with the addition of the proposed appurtenance loads shown in Table 1 combined with the existing and reserved loads shown in Table 2 of this report.

Summary of Analysis Results:

Existing Structure:	Pass
Existing Foundation:	Pass

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

Respectfully submitted by:

04.15.2020

Joseph Jacobs, PE
Project Manager
jjacobs@pauljford.com

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 280 ft Self Support tower designed by Valmont in February of 2012. The tower was originally designed for a wind speed of 85 mph per EIA/TIA-222-F.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	III
Ultimate Wind Speed:	140 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Nominal Service Wind Speed:	108.4 mph

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
145.0	145.0	6	commscope	NHH-65C-R2B	48	1/2 -6' jumper	-
		3	commscope	BSAMNT-SBS-1-2 (Mount Bracket)			
		3	samsung telecommunications	B2/B66A RRH-BR049			
		3	samsung telecommunications	B5/B13 RRH-BR04C			
		3	-	2" STD Stabilizing Pipe			
		3	-	2.5" STD Pipe Mount Reinforcing			
		3	site pro	SFS-V Sector Frame Stabilizer			
		3	Site pro	VFA12-RRU Sector Frame			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
280.0	280.0	1	-	FAA L-864 Beacon	1	1/2	1
279.0	299.2	1	-	ANT150F6-3	1 2	1 5/8 7/8	1
	289.8	1	-	DB538-G			
	286.25	1	kreco	Kreco CO-35A			
	279.0	3	tower mounts	4' x 2" Std. Pipe Mount			
276.0	276.0	3	rfs celwave	PAL8 w/ radome	3	EW63	1
		4	-	8' x 2" Sch 40 Pipe Mount			
266.0	266.0	1	rfs celwave	PAL8 w/ radome	1	EW63	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	-	8' x 2" Sch 40 Pipe Mount			
261.0	261.0	1	-	10' 8-Bay Dipole	2	7/8	1
		1	-	3' Side Arm Mount			
260.0	265.5	1	decibel	DB589-Y	2 1	1 5/8 3/8	1
	260.0	1	-	12" x 12" x 6" TMA			
		1	-	6' Side Arm Mount			
	254.5	1	decibel	DB589-Y			
255.0	255.0	1	-	DB212-C	1	7/8	1
		1	-	6' Side Arm Mount			
241.0	241.0	1	sinclair	SD110-SFXPASNM	1	7/8	1
		1	-	6' Side Arm Mount			
240.0	247.0	1	kreco	CO-36A	1	7/8	1
		1	-	6' Side Arm Mount			
	240.0	1	rfs celwave	PAL6 w/ radome	2	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
235.2	240.8	1	-	SE419-SF3P4LDF	2 1 1	1 5/8 1/2 3/8	1
	235.2	1	-	6' Side Arm Mount			
		1	-	12" x 16" x 6"AMP			
	229.5	1	-	SE419-SF3P4LDF			
230.0	230.0	1	-	3' Side Arm Mount	1	7/8	1
		1	comprod	Comprod 531-70HD			
		1	rfs celwave	PAL8 w/ radome	1	WE63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
220.0	220.0	1	rfs celwave	PAL8 w/ radome	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
216.0	224.0	1	telewave	ANT450F10	2	7/8	1
	216.0	1	sinclair	SD110-SFXPASNM			
		2	-	6' Side Arm Mount			
205.5	205.5	1	rfs celwave	PA10-59 w/ radome	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
204.0	204.0	1	-	3' Side Arm Mount	1	1 5/8	1
	200.0	1	sinclair	SC479-HF1LDF			
200.0	210.0	1	telewave	Telewave ANT900D6-9	3 1	1 5/8 1/2	1
	206.0	1	sinclair	SC479-HF1LDF			
	200.0	1	-	3' Side Arm Mount			
		1	-	12" x 16" x 6"AMP			
		1	tower mounts	6' Side Arm Mount			
	194.0	1	sinclair	SC479-HF1LDF			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
197.0	197.0	1	rfs celwave	PAL6-59 w/ radome	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
195.0	195.0	1	rfs celwave	PA10-59 w/ radome	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
175.0	181.0	1	antel	BCR-80010:90	4 1 1	1 5/8 1/2 3/8	1
		1	sinclair	SC479-HF1LDF			
	175.0	2	-	6' Side Arm Mount			
		1	-	12" x 16" x 6"AMP			
	169.0	1	antel	BCR-80010:90			
		1	sinclair	SC479-HF1LDF			
168.0	168.0	1	-	3' Side Arm Mount	1	7/8	1
	178.0	1	telewave	ANT450F6			
163.0	163.0	1	rfs celwave	RFS PAD6-65AC	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
153.5	153.5	12	decibel	DB980H90E-M	18	1 5/8	1,3
		3	-	Sector Frame			
145.0	145.0	3	alcatel lucent	B13 RRH4X30-4R	-	-	2
		3	commscope	HBXX-6517DS-A2M			
		3	commscope	LNX-6515DS-A1M			
		3	commscope	HBXX-6517DS-A2M	3	6 x 12 Hybrid Cables	1
		3	commscope	LNX-6515DS-A1M			
		3	raycap	RC3DC-3315-PF-48 OVP			
		1	rfs celwave	DB-T1-6Z-8AB-0Z	-	-	2
		3	tower mounts	Generic Sector Frame			
140.0	140.0	3	-	FAA L-810 Sidelight	1	3/8	1
130.0	130.0	1	kreco	CO-36A	1	7/8	1
		1	-	6' Side Arm Mount			
128.0	133.0	1	telewave	ANT450F6	1	7/8	1
		1	-	6' Side Arm Mount			
126.0	132.0	1	kathrein	PRF-950	1	7/8	1
	126.0	1	-	6' Side Arm Mount			
123.0	123.0	1	rfs celwave	SBX4-W60AC2	1	E60	1
		1	-	8' x 2" Sch 40 Pipe Mount			
117.0	117.0	1	-	3' Side Arm Mount	1	7/8	1
		1	kathrein	PRF-950			
116.0	116.0	2	-	3' Side Arm Mount	1	7/8	1
		1	browning	BR6155			
	113.0	1	telewave	ANT400D			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
104.0	104.0	1	rfs celwave	RFS PAD6-65AC w/ radome	1	EW63	1
		1	-	8' x 2" Sch 40 Pipe Mount			
97.0	97.0	1	-	3' Side Arm Mount	1	7/8	1
		1	browning	BR6155			
55.0	55.0	1	-	3' Side Arm Mount	1	7/8	1
	60.0	1	astron wireless	V-1500			
50.0	50.0	1	-	3' Side Arm Mount	1	1/2	1
	51.5	1	telewave	Telewave ANT790-S2			

Notes:
1) Existing Equipment
2) Equipment To Be Removed, Not Considered In Analysis
3) Coax is assumed to be stacked 6 lines over 12 on PiRod supplies line brackets installed inside leg.

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference
Tower Manufacturer Drawings	Valmont, 2/29/2012	#240898
Geotechnical Report	8/1/2011	-
Structural Analysis	Centek, 2/3/2015	#14316.000
Mount Modifications	**HDG, 04/15/20**	**Higganum**
Mount Analysis	**HDG, May 6, 2019**	**-**

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 in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) All transmission lines assumed to be on PiRod supplied line brackets attached inside to each leg.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	280 - 270	Leg	Valmont 207628 (12x1.25)	2	-4.70	142.49	25.6	Pass
T2	270 - 260	Leg	Valmont 207628 (12x1.25)	18	-11.34	142.49	20.4	Pass
T3	260 - 240	Leg	Valmont 207628 (12x1.25)	28	-38.39	142.49	26.9	Pass
T4	240 - 220	Leg	Valmont 207628 (12x1.25)	43	-73.69	142.49	51.7	Pass
T5	220 - 210	Leg	Valmont 195557 (12x1.75)	64	-96.41	301.49	46.1	Pass
T6	210 - 200	Leg	Valmont 195557 (12x1.75)	73	-119.40	301.49	47.0	Pass
T7	200 - 180	Leg	Valmont 211843 (12x2)	85	-159.37	356.29	61.9	Pass
T8	180 - 160	Leg	Valmont 208334 (12x2.25)	94	-218.79	451.15	48.5	Pass
T9	160 - 140	Leg	Valmont 208334 (12x2.25)	103	-279.14	451.15	87.4	Pass
T10	140 - 120	Leg	Valmont 208335 (12x2.5)	112	-347.98	557.27	62.4	Pass
T11	120 - 100	Leg	Valmont 208337 (12x2.75)	121	-419.10	674.68	62.1	Pass
T12	100 - 80	Leg	Valmont 208338 (12x3)	130	-490.44	803.44	61.0	Pass
T13	80 - 60	Leg	Valmont 208338 (12x3)	139	-562.67	803.44	70.0	Pass
T14	60 - 40	Leg	Valmont 208339 (12x3.25)	149	-634.68	943.57	67.3	Pass
T15	40 - 20	Leg	Valmont 208339 (12x3.25)	158	-710.30	943.57	75.3	Pass
T16	20 - 0	Leg	Valmont 208339 (12x3.25)	167	-780.81	943.57	82.8	Pass
T1	280 - 270	Diagonal	L 3 x 3 x 5/16	7	-3.66	17.33	21.1	Pass
T2	270 - 260	Diagonal	L 3 x 3 x 5/16	20	-6.08	15.59	39.0	Pass
T3	260 - 240	Diagonal	L 3 x 3 x 5/16	32	-7.92	12.75	62.2	Pass
T4	240 - 220	Diagonal	L 4 x 4 x 1/4	53	-13.05	20.95	62.3	Pass
T5	220 - 210	Diagonal	L 4 x 4 x 1/4	68	-15.45	19.15	80.7	Pass
T6	210 - 200	Diagonal	L 4 x 4 x 1/4	77	-15.34	17.55	87.4	Pass
T7	200 - 180	Diagonal	2L 3.5 x 3.5 x 1/4 (3/8)	89	-24.43	28.37	86.1	Pass
T8	180 - 160	Diagonal	2L 3.5 x 3.5 x 1/4 (3/8)	98	-25.61	25.65	99.9	Pass
T9	160 - 140	Diagonal	2L 4 x 4 x 1/4 (3/8)	107	-30.31	34.45	88.0	Pass
T10	140 - 120	Diagonal	2L 4 x 4 x 3/8 (1/2)	116	-35.07	46.79	75.0	Pass
T11	120 - 100	Diagonal	2L 4 x 4 x 3/8 (1/2)	125	-36.12	43.07	83.9	Pass
T12	100 - 80	Diagonal	2L 5 x 5 x 5/16 (1/2)	134	-38.40	63.83	60.2	Pass
T13	80 - 60	Diagonal	2L 5 x 5 x 5/16 (1/2)	143	-39.52	58.27	67.8	Pass
T14	60 - 40	Diagonal	2L 5 x 5 x 5/16 (1/2)	152	-41.38	53.32	77.6	Pass
T15	40 - 20	Diagonal	2L 5 x 5 x 5/16 (1/2)	161	-41.77	48.93	85.4	Pass
T16	20 - 0	Diagonal	2L 5 x 5 x 5/16 (1/2)	170	-44.14	45.01	98.1	Pass
T1	280 - 270	Secondary Horizontal	L 2.5 x 2.5 x 5/16	14	-1.93	13.33	14.5	Pass
T2	270 - 260	Secondary Horizontal	L 2.5 x 2.5 x 5/16	27	-0.92	11.83	7.8	Pass
T6	210 - 200	Secondary Horizontal	L 5 x 5 x 3/8	82	-2.07	45.50	4.6	Pass
T1	280 - 270	Top Girt	L 3.5 x 3.5 x 5/16	6	-0.44	13.40	3.3	Pass
T4	240 - 220	Top Girt	L 5 x 5 x 3/8	47	-1.59	32.66	4.9	Pass
T4	240 - 220	Mid Girt	L 5 x 5 x 3/8	50	-2.31	29.78	7.8	Pass
							Summary	
						Leg (T9)	87.4	Pass
						Diagonal	99.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						(T8)		
						Secondary Horizontal (T1)	14.5	Pass
						Top Girt (T4)	4.9	Pass
						Mid Girt (T4)	7.8	Pass
						Bolt Checks	99.5	Pass
						Rating =	99.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	-	89.1	Pass
1	Base Foundation Structural	-	47.6	Pass
1	Base Foundation Soil Interaction	-	57.5	Pass

Structure Rating (max from all components) =	99.9%

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

4.1) Recommendations

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

Table 6-Twist & Sway

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	*Appurtenance*	*Gov. Load Comb.*	*Deflection* in	*Sway* °	*Twist* °	*Combined Twist & Sway* °
276.00	PAL8	47	12.669	0.3892	0.0708	0.46
266.00	PAL8	47	11.846	0.3878	0.0703	0.4581
240.00	PADX6-59AC	47	9.735	0.3651	0.0662	0.4313
230.00	PAL8	47	8.961	0.3460	0.0626	0.4086
220.00	PAL8	47	8.219	0.3274	0.0570	0.3844
205.50	PA10-59	47	7.195	0.3083	0.0482	0.3565
197.00	PAL6-59	47	6.618	0.2948	0.0449	0.3397
195.00	PA10-59	47	6.487	0.2917	0.0442	0.3359
163.00	RFS PAD6-65AC	43	4.592	0.2451	0.0337	0.2788
126.00	PRF-950	43	2.825	0.1825	0.0235	0.206
117.00	PRF-950	43	2.471	0.1683	0.0218	0.1901
104.00	RFS PAD6-65AC	43	2.002	0.1485	0.0192	0.1677

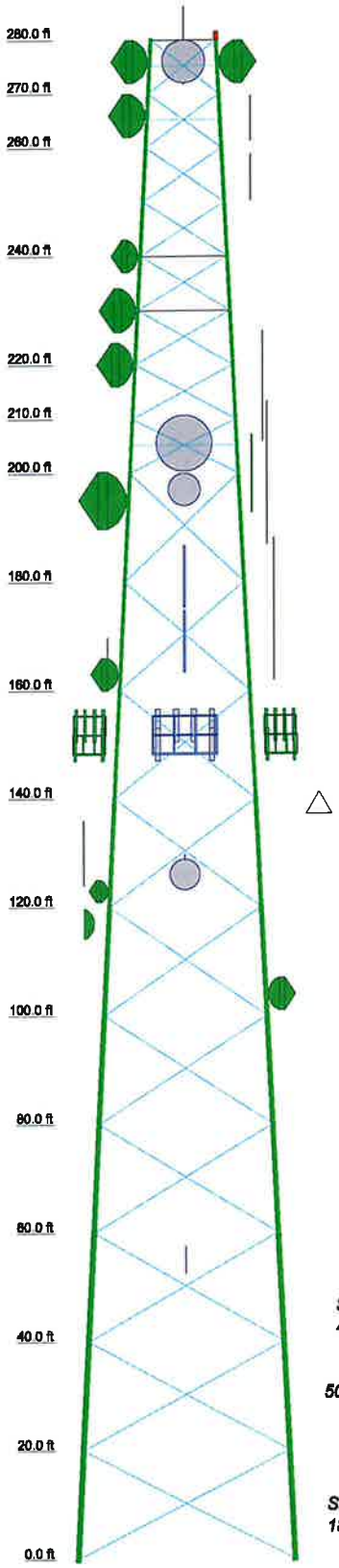
Table 7-Tower Deflection

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Sway °	Twist °	Combined Twist & Sway °
T1	280 - 270	12.997	47	0.3891	0.0707	0.4598
T2	270 - 260	12.176	47	0.3888	0.0707	0.4595
T3	260 - 240	11.351	47	0.3852	0.0692	0.4544
T4	240 - 220	9.735	47	0.3651	0.0662	0.4313
T5	220 - 210	8.219	47	0.3277	0.0571	0.3844
T6	210 - 200	7.509	47	0.3149	0.0505	0.3654
T7	200 - 180	6.819	47	0.2996	0.0460	0.3456
T8	180 - 160	5.553	47	0.2697	0.0394	0.3091
T9	160 - 140	4.431	43	0.2404	0.0327	0.2731
T10	140 - 120	3.432	43	0.2057	0.0265	0.2322
T11	120 - 100	2.586	43	0.1730	0.0224	0.1954
T12	100 - 80	1.868	43	0.1428	0.0184	0.1612
T13	80 - 60	1.264	43	0.1151	0.0148	0.1299
T14	60 - 40	0.775	43	0.0852	0.0111	0.0963
T15	40 - 20	0.405	43	0.0583	0.0074	0.0657
T16	20 - 0	0.132	43	0.0296	0.0037	0.0333

APPENDIX A

TNXTOWER OUTPUT



Section	T15	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Valmont 208339 (12x3.25)		Valmont 208338 (12x3)			Valmont 208336 (12x2.5)		Valmont 208334 (12x2.25)		B	A		Valmont 207828 (12x1.25)			
Leg Grade	A572-50															
Diagonals	2L 5 x 5 x 5/16 (1/2)					2L 4 x 4 x 3/8 (1/2)		E	2L 3.5 x 3.5 x 1/4 (3/8)		L 4 x 4 x 1/4			L 3 x 3 x 5/16		
Diagonal Grade	A36															
Top Girts	N.A.										L 5 x 5 x 3/8			N.A.		F
Mid Girts	N.A.										L 5 x 5 x 3/8			N.A.		
Sec. Horizontals	N.A.										G		N.A.			L 2.5 x 2.5 x 5/16
Face Width (ft)	40	36	34	32	30	28	26	24	22	20	18	16	14	13	12	
# Panels @ (ft)					10 @ 20							8 @ 10				
Weight (K)	112.0	12.8	12.4	11.3	11.1	9.5	8.8	6.4	5.8	5.3	2.9	2.1	4.5	2.9	1.6	1.9

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Valmont 195557 (12x1.75)	E	2L 4 x 4 x 1/4 (3/8)
B	Valmont 211843 (12x2)	F	L 3.5 x 3.5 x 5/16
C	Valmont 208335 (12x2.5)	G	L 5 x 5 x 3/8
D	Valmont 208337 (12x2.75)		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 140 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 108 mph wind.
6. Tower Risk Category III and IV.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.9%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 818 K
SHEAR: 109 K

UPLIFT: -668 K
SHEAR: 92 K

AXIAL 463 K
SHEAR 47 K
MOMENT 7432 kip-ft

TORQUE 85 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 163 K
SHEAR 181 K
MOMENT 26444 kip-ft

TORQUE 268 kip-ft
REACTIONS - 140 mph WIND

PJFLogo
Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: **280-ft Self Support Tower Haddam, CT**			
Project: **00019-0111**			
Client: Hudson Design Group	Drawn by: Matthew Buske	App'd:	
Code: TIA-222-G	Date: 03/04/20	Scale: NTS	
Path:		Dwg No. E-1	

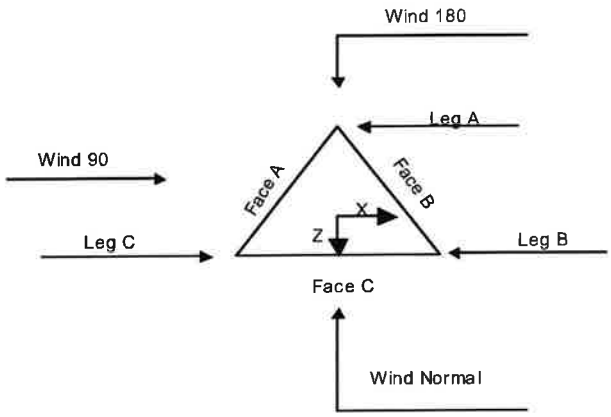
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 280.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 12.00 ft at the top and 40.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Middlesex County, Connecticut.
2) ASCE 7-10 Wind Data is used.
3) Basic wind speed of 140 mph.
4) Risk Category III and IV.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 0.7500 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Deflections calculated using a wind speed of 108 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in tower member design is 1.
16) 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-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G 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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	280.00-270.00			12.00	1	10.00
T2	270.00-260.00			13.00	1	10.00
T3	260.00-240.00			14.00	1	20.00
T4	240.00-220.00			16.00	1	20.00
T5	220.00-210.00			18.00	1	10.00
T6	210.00-200.00			19.00	1	10.00
T7	200.00-180.00			20.00	1	20.00
T8	180.00-160.00			22.00	1	20.00
T9	160.00-140.00			24.00	1	20.00
T10	140.00-120.00			26.00	1	20.00
T11	120.00-100.00			28.00	1	20.00
T12	100.00-80.00			30.00	1	20.00
T13	80.00-60.00			32.00	1	20.00
T14	60.00-40.00			34.00	1	20.00
T15	40.00-20.00			36.00	1	20.00
T16	20.00-0.00			38.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	280.00-270.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	270.00-260.00	10.00	X Brace	No	Yes	0.0000	0.0000
T3	260.00-240.00	10.00	X Brace	No	No	0.0000	0.0000
T4	240.00-220.00	10.00	X Brace	No	No	0.0000	0.0000
T5	220.00-210.00	10.00	X Brace	No	No	0.0000	0.0000
T6	210.00-200.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	200.00-180.00	20.00	X Brace	No	No	0.0000	0.0000
T8	180.00-160.00	20.00	X Brace	No	No	0.0000	0.0000
T9	160.00-140.00	20.00	X Brace	No	No	0.0000	0.0000
T10	140.00-120.00	20.00	X Brace	No	No	0.0000	0.0000
T11	120.00-100.00	20.00	X Brace	No	No	0.0000	0.0000
T12	100.00-80.00	20.00	X Brace	No	No	0.0000	0.0000
T13	80.00-60.00	20.00	X Brace	No	No	0.0000	0.0000
T14	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T15	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T16	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 280.00-270.00	Truss Leg	Valmont 207628 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T2 270.00-260.00	Truss Leg	Valmont 207628 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T3 260.00-240.00	Truss Leg	Valmont 207628 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T4 240.00-220.00	Truss Leg	Valmont 207628 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 4 x 4 x 1/4	A36 (36 ksi)
T5 220.00-210.00	Truss Leg	Valmont 195557 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 4 x 4 x 1/4	A36 (36 ksi)
T6 210.00-200.00	Truss Leg	Valmont 195557 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 4 x 4 x 1/4	A36 (36 ksi)
T7 200.00-180.00	Truss Leg	Valmont 211843 (12x2)	A572-50 (50 ksi)	Double Angle	2L 3.5 x 3.5 x 1/4 (3/8)	A36 (36 ksi)
T8 180.00-160.00	Truss Leg	Valmont 208334 (12x2.25)	A572-50 (50 ksi)	Double Angle	2L 3.5 x 3.5 x 1/4 (3/8)	A36 (36 ksi)
T9 160.00-140.00	Truss Leg	Valmont 208334 (12x2.25)	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 1/4 (3/8)	A36 (36 ksi)
T10 140.00-120.00	Truss Leg	Valmont 208335 (12x2.5)	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 3/8 (1/2)	A36 (36 ksi)
T11 120.00-100.00	Truss Leg	Valmont 208337 (12x2.75)	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 3/8 (1/2)	A36 (36 ksi)
T12 100.00-80.00	Truss Leg	Valmont 208338 (12x3)	A572-50 (50 ksi)	Double Angle	2L 5 x 5 x 5/16 (1/2)	A36 (36 ksi)
T13 80.00-60.00	Truss Leg	Valmont 208338 (12x3)	A572-50 (50 ksi)	Double Angle	2L 5 x 5 x 5/16 (1/2)	A36 (36 ksi)
T14 60.00-40.00	Truss Leg	Valmont 208339 (12x3.25)	A572-50 (50 ksi)	Double Angle	2L 5 x 5 x 5/16 (1/2)	A36 (36 ksi)
T15 40.00-20.00	Truss Leg	Valmont 208339 (12x3.25)	A572-50 (50 ksi)	Double Angle	2L 5 x 5 x 5/16 (1/2)	A36 (36 ksi)
T16 20.00-0.00	Truss Leg	Valmont 208339 (12x3.25)	A572-50 (50 ksi)	Double Angle	2L 5 x 5 x 5/16 (1/2)	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 280.00-270.00	Equal Angle	L 3.5 x 3.5 x 5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T4 240.00-220.00	Single Angle	L 5 x 5 x 3/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 240.00-220.00	1	Single Angle	L 5 x 5 x 3/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 280.00-270.00	Single Angle	L 2.5 x 2.5 x 5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 270.00-260.00	Single Angle	L 2.5 x 2.5 x 5/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 210.00-200.00	Single Angle	L 5 x 5 x 3/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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
T1 280.00-270.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T2 270.00-260.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T3 260.00-240.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T4 240.00-220.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T5 220.00-210.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T6 210.00-200.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T7 200.00-180.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T8 180.00-160.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T9 160.00-140.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T10 140.00-120.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T11 120.00-100.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T12 100.00-80.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T13 80.00-60.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T14 60.00-40.00	0.00	0.5000	A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T15 40.00-	0.00	0.5000	A36	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt

Tower Elevation ft	Gusset Area (per face) ft²	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
20.00 T16 20.00- 0.00	0.00	0.5000	(36 ksi) A36 (36 ksi)	1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 280.00- 270.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 270.00- 260.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 260.00- 240.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 240.00- 220.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 220.00- 210.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 210.00- 200.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 200.00- 180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 180.00- 160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 160.00- 140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 140.00- 120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 120.00- 100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 100.00- 80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T13 80.00- 60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T14 60.00- 40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 40.00- 20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T16 20.00- 0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1 280.00- 270.00	1	0.5	0.85	1	1	1
T2 270.00- 260.00	1	0.5	0.85	1	1	1
T3 260.00-	1	0.5	0.85	1	1	1

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
240.00						
T4 240.00-220.00	1	0.5	0.85	1	1	1
T5 220.00-210.00	1	0.5	0.85	1	1	1
T6 210.00-200.00	1	0.5	0.85	1	1	1
T7 200.00-180.00	1	0.5	0.85	1	1	1
T8 180.00-160.00	1	0.5	0.85	1	1	1
T9 160.00-140.00	1	0.5	0.85	1	1	1
T10 140.00-120.00	1	0.5	0.85	1	1	1
T11 120.00-100.00	1	0.5	0.85	1	1	1
T12 100.00-80.00	1	0.5	0.85	1	1	1
T13 80.00-60.00	1	0.5	0.85	1	1	1
T14 60.00-40.00	1	0.5	0.85	1	1	1
T15 40.00-20.00	1	0.5	0.85	1	1	1
T16 20.00-0.00	1	0.5	0.85	1	1	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 280.00-270.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 270.00-260.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 260.00-240.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 240.00-220.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 220.00-210.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 210.00-200.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T13 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 280.00-270.00	Flange	1.0000 A325N	0	1.0000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 270.00-260.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 260.00-240.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 240.00-220.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 220.00-210.00	Flange	1.0000 A325N	0	1.0000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 210.00-200.00	Flange	1.0000 A325N	12	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 200.00-180.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 180.00-160.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 160.00-140.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 140.00-120.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 120.00-100.00	Flange	1.0000 A325N	12	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 100.00-80.00	Flange	1.2500 A325N	12	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 80.00-60.00	Flange	1.2500 A325N	12	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 60.00-40.00	Flange	1.2500 A325N	12	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 40.00-20.00	Flange	1.2500 A325N	12	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 20.00-0.00	Flange	0.0000 A615-75	0	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
****													

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	No	Ar (CaAa)	280.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
LDF4-50A (1/2" foam)	C	No	No	Ar (CaAa)	280.00 - 0.00	0.0000	0.45	1	1	0.6300	0.6300		0.15
LDF2-50 (3/8" foam)	C	No	No	Ar (CaAa)	140.00 - 0.00	0.0000	0.45	1	1	0.4400	0.4400		0.08
****													
****FACE A****													
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	153.50 - 0.00	0.0000	0.4	18	12	0.5000	1.9800		0.92
**													
EW63(ELLIPTICAL)	A	No	No	Ar (CaAa)	195.00 - 0.00	0.0000	-0.45	1	1	1.0000 0.5000	2.0100		0.51
EW63(ELLIPTICAL)	A	No	No	Ar (CaAa)	163.00 - 0.00	0.0000	-0.43	1	1	1.0000 0.5000	2.0100		0.51
EW63(ELLIPTICAL)	A	No	No	Ar (CaAa)	104.00 - 0.00	0.0000	-0.42	1	1	1.0000 0.5000	2.0100		0.51
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	235.17 - 0.00	0.0000	-0.38	2	2	1.0000 0.5000	1.9800		0.92
LDF2-50 (3/8" foam)	A	No	No	Ar (CaAa)	235.17 - 0.00	0.0000	-0.38	1	1	0.4400	0.4400		0.08
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	235.17 - 0.00	0.0000	-0.38	1	1	0.6300	0.6300		0.15
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	200.00 - 0.00	0.0000	-0.36	3	3	1.0000 0.5000	1.9800		0.92
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	175.00 - 0.00	0.0000	-0.34	4	2	1.0000 0.5000	1.9800		0.92
LDF5-50A (7/8" foam)	A	No	No	Ar (CaAa)	116.00 - 0.00	0.0000	-0.32	2	2	1.0900	1.0900		0.33
LDF5-50A (7/8" foam)	A	No	No	Ar (CaAa)	55.00 - 0.00	0.0000	-0.32	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	175.00 - 0.00	0.0000	-0.4	1	1	0.6300	0.6300		0.15
LDF2-50 (3/8" foam)	A	No	No	Ar (CaAa)	175.00 - 0.00	0.0000	-0.4	1	1	0.4400	0.4400		0.08
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	200.00 - 0.00	0.0000	-0.36	1	1	0.6300	0.6300		0.15
****FACE B****													
EW63(ELLIPTICAL)	B	No	No	Ar (CaAa)	276.00 - 266.00	0.0000	0.47	3	3	0.5000	2.0100		0.51
EW63(ELLIPTICAL)	B	No	No	Ar (CaAa)	266.00 - 168.00	0.0000	0.46	4	4	0.5000	2.0100		0.51
EW63(ELLIPTICAL)	B	No	No	Ar (CaAa)	220.00 - 0.00	0.0000	0.45	5	5	0.5000	2.0100		0.51
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	168.00 - 0.00	0.0000	0.43	1	1	1.0000 0.5000	1.0900		0.33
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	255.00 - 0.00	0.0000	0.41	1	1	1.0900 0.5000	1.0900		0.33
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	240.00 - 0.00	0.0000	0.42	1	1	1.0000 0.5000	1.0900		0.33
LDF2-50 (3/8" foam)	B	No	No	Ar (CaAa)	260.00 - 0.00	0.0000	0.41	1	1	0.4400	0.4400		0.08
LDF7-50A (1 5/8" foam)	B	No	No	Ar (CaAa)	260.00 - 0.00	0.0000	0.39	2	2	1.0000 0.5000	1.9800		0.92
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	230.00 - 0.00	0.0000	0.38	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	216.00 - 0.00	0.0000	0.38	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	280.00 - 0.00	0.0000	0.37	2	1	1.0900	1.0900		0.33
LDF5-50A (7/8" foam)	B	No	No	Ar (CaAa)	130.00 - 0.00	0.0000	0.44	1	1	1.0900	1.0900		0.33
***													
LDF6-50 (1 1/4" foam)	B	No	No	Ar (CaAa)	145.00 - 0.00	0.0000	0.44	1	1	1.5500	1.5500		0.66

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Hybrid Cables ****FACE C****	B	No	No	Ar (CaAa)	145.00 - 0.00	0.0000	0.44	3	3	1.5500	1.5500		0.66
LDF7-50A (1 5/8" foam)	C	No	No	Ar (CaAa)	279.00 - 0.00	0.0000	0.46	1	1	1.0000 0.5000	1.9800		0.92
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	117.00 - 97.00	0.0000	0.45	5	5	1.0000 0.5000	1.0900		0.33
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	97.00 - 0.00	0.0000	0.43	4	4	1.0000 0.5000	1.0900		0.33
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	261.00 - 241.00	0.0000	0.43	2	2	1.0000 0.5000	1.0900		0.33
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	241.00 - 117.00	0.0000	0.43	3	3	1.0000 0.5000	1.0900		0.33
EW63(ELLIPTICAL)	C	No	No	Ar (CaAa)	240.00 - 230.00	0.0000	0.4	2	2	0.5000	2.0100		0.51
EW63(ELLIPTICAL)	C	No	No	Ar (CaAa)	230.00 - 205.50	0.0000	0.4	3	3	0.5000	2.0100		0.51
EW63(ELLIPTICAL)	C	No	No	Ar (CaAa)	205.50 - 197.00	0.0000	0.4	4	4	0.5000	2.0100		0.51
EW63(ELLIPTICAL)	C	No	No	Ar (CaAa)	197.00 - 0.00	0.0000	0.4	5	5	0.5000	2.0100		0.51
E60(ELLIPTICAL)	C	No	No	Ar (CaAa)	123.00 - 0.00	0.0000	0.4	1	1	2.2000	2.2000		0.68
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	128.00 - 0.00	0.0000	0.4	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8" foam)	C	No	No	Ar (CaAa)	126.00 - 0.00	0.0000	0.4	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2" foam) ***	C	No	No	Ar (CaAa)	50.00 - 0.00	0.0000	0.4	1	1	0.6300	0.6300		0.15
LDF4-50A (1/2" foam)	A	No	No	Ar (CaAa)	148.00 - 142.00	0.0000	0	16	8	0.6300	0.6300		0.15
LDF4-50A (1/2" foam)	B	No	No	Ar (CaAa)	148.00 - 142.00	0.0000	0	16	8	0.6300	0.6300		0.15
LDF4-50A (1/2" foam)	C	No	No	Ar (CaAa)	148.00 - 142.00	0.0000	0	16	8	0.6300	0.6300		0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Kreco CO-35A	A	From Leg	0.50 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	3.17 4.74 6.23	3.17 4.74 6.23	0.01 0.03 0.06
4' x 2" Std. Pipe Mount	A	From Leg	0.00 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	0.81 1.11 1.36	0.81 1.11 1.36	0.01 0.02 0.03
***									
ANT150F6-3	C	From Leg	0.50 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	4.80 6.83 8.87	4.80 6.83 8.87	0.03 0.07 0.11
4' x 2" Std. Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	0.81 1.11 1.36	0.81 1.11 1.36	0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
**									
DB538-G	B	From Leg	0.50 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	3.64 5.13 6.63	3.64 5.13 6.63	0.02 0.04 0.08
4' x 2" Std. Pipe Mount	B	From Leg	0.00 0.00 0.00	0.0000	279.00	No Ice 1/2" Ice 1" Ice	0.81 1.11 1.36	0.81 1.11 1.36	0.01 0.02 0.03
**									
FAA L-864 Beacon	B	From Leg	0.00 0.00 0.00	0.0000	280.00	No Ice 1/2" Ice 1" Ice	1.20 2.20 3.20	1.20 2.20 3.20	0.05 0.08 0.12
**									
8' x 2" Sch 40 Pipe Mount	A	From Leg	0.00 0.00 0.00	0.0000	276.00	No Ice 1/2" Ice 1" Ice	1.75 2.73 3.40	1.75 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	B	From Leg	0.00 0.00 0.00	0.0000	276.00	No Ice 1/2" Ice 1" Ice	1.75 2.73 3.40	1.75 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	276.00	No Ice 1/2" Ice 1" Ice	1.75 2.73 3.40	1.75 2.73 3.40	0.03 0.04 0.06
****									
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	276.00	No Ice 1/2" Ice 1" Ice	1.75 2.73 3.40	1.75 2.73 3.40	0.03 0.04 0.06
****									
10' 8-Bay Dipole	A	From Leg	3.00 0.00 0.00	0.0000	261.00	No Ice 1/2" Ice 1" Ice	8.00 10.00 12.00	8.00 10.00 12.00	0.06 0.10 0.14
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	261.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
****									
DB589-Y	B	From Leg	6.00 0.00 5.50	0.0000	260.00	No Ice 1/2" Ice 1" Ice	1.87 3.00 3.76	1.87 3.00 3.76	0.01 0.03 0.05
DB589-Y	B	From Leg	6.00 0.00 -5.50	0.0000	260.00	No Ice 1/2" Ice 1" Ice	1.87 3.00 3.76	1.87 3.00 3.76	0.01 0.03 0.05
12" x 12" x 6" TMA	B	From Leg	6.00 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice 1" Ice	1.20 1.34 1.48	0.60 0.70 0.81	0.03 0.04 0.05
6' Side Arm Mount	B	From Leg	3.00 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
DB212-C	C	From Leg	6.00 0.00 0.00	0.0000	255.00	No Ice 1/2" Ice 1" Ice	3.10 6.22 9.35	3.10 6.22 9.35	0.03 0.06 0.10
6' Side Arm Mount	C	From Leg	3.00	0.0000	255.00	No Ice	4.54	1.23	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice	7.80 11.06	2.55 3.88	0.08 0.10
***									
CO-36A	A	From Leg	6.00 0.00 0.00	0.0000	240.00	No Ice 1/2" Ice 1" Ice	0.75 1.96 3.19	0.75 1.96 3.19	0.01 0.02 0.04
6' Side Arm Mount	A	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
Comprod 531-70HD	A	From Leg	3.00 0.00 0.00	0.0000	230.00	No Ice 1/2" Ice 1" Ice	4.98 6.22 7.47	4.98 6.22 7.47	0.04 0.05 0.06
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	230.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
SD110-SFXPASNM	B	From Leg	6.00 0.00 0.00	0.0000	241.00	No Ice 1/2" Ice 1" Ice	7.50 15.00 22.50	7.50 15.00 22.50	0.03 0.03 0.04
6' Side Arm Mount	B	From Leg	3.00 0.00 0.00	0.0000	241.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	240.00	No Ice 1/2" Ice 1" Ice	1.78 2.73 3.40	1.78 2.73 3.40	0.03 0.04 0.06
***									
SE419-SF3P4LDF w/ Mount Pipe	C	From Leg	6.00 0.00 5.67	0.0000	235.17	No Ice 1/2" Ice 1" Ice	4.36 5.45 6.53	11.82 13.45 15.10	0.06 0.13 0.20
SE419-SF3P4LDF w/ Mount Pipe	C	From Leg	6.00 0.00 -5.67	0.0000	235.17	No Ice 1/2" Ice 1" Ice	4.36 5.45 6.53	11.82 13.45 15.10	0.06 0.13 0.20
6' Side Arm Mount	C	From Leg	3.00 0.00 0.00	0.0000	235.17	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	230.00	No Ice 1/2" Ice 1" Ice	1.79 2.73 3.40	1.79 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	220.00	No Ice 1/2" Ice 1" Ice	1.80 2.73 3.40	1.80 2.73 3.40	0.03 0.04 0.06
***									
ANT450F10	B	From Leg	6.00 0.00 0.00	0.0000	216.00	No Ice 1/2" Ice 1" Ice	4.57 7.66 9.74	4.57 7.66 9.74	0.04 0.08 0.14
6' Side Arm Mount	B	From Leg	3.00 0.00	0.0000	216.00	No Ice 1/2"	4.54 7.80	1.23 2.55	0.05 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice 1" Ice	11.06	3.88	0.10
***									
SD110-SFXPASNM	A	From Leg	6.00 0.00 0.00	0.0000	216.00	No Ice 1/2" Ice 1" Ice	7.50 15.00 22.50	7.50 15.00 22.50	0.03 0.03 0.04
6' Side Arm Mount	A	From Leg	3.00 0.00 0.00	0.0000	216.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
8' x 2" Sch 40 Pipe Mount	A	From Leg	0.00 0.00 0.00	0.0000	205.50	No Ice 1/2" Ice 1" Ice	1.81 2.73 3.40	1.81 2.73 3.40	0.03 0.04 0.06
***									
SC479-HF1LDF	B	From Leg	6.00 0.00 6.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	3.26 6.51 8.00	3.26 6.51 8.00	0.03 0.07 0.11
SC479-HF1LDF	B	From Leg	6.00 0.00 -6.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	3.26 6.51 8.00	3.26 6.51 8.00	0.03 0.07 0.11
TMA (16" x 12" x 6")	B	From Leg	6.00 0.00 0.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.04	0.86 0.99 1.12	0.03 0.04 0.06
6' Side Arm Mount	B	From Leg	3.00 0.00 0.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
SC479-HF1LDF	B	From Leg	3.00 0.00 -4.00	0.0000	204.00	No Ice 1/2" Ice 1" Ice	3.25 6.51 8.00	3.25 6.51 8.00	0.03 0.07 0.11
3' Side Arm Mount	B	From Leg	1.50 0.00 0.00	0.0000	204.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
Telewave ANT900D6-9	C	From Leg	3.00 0.00 0.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	0.80 1.60 2.40	0.80 1.60 2.40	0.01 0.02 0.03
3' Side Arm Mount	C	From Leg	1.50 0.00 0.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
8' x 2" Sch 40 Pipe Mount	A	From Leg	0.00 0.00 0.00	0.0000	197.00	No Ice 1/2" Ice 1" Ice	1.82 2.73 3.40	1.82 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.82 2.73 3.40	1.82 2.73 3.40	0.03 0.04 0.06
***									
SC479-HF1LDF	B	From Leg	6.00 0.00 6.00	0.0000	175.00	No Ice 1/2" Ice	3.30 6.51 8.00	3.30 6.51 8.00	0.03 0.07 0.11

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			
SC479-HF1LDF	B	From Leg	6.00 0.00 -6.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	3.30 6.51 8.00	3.30 6.51 8.00	0.03 0.07 0.11
TMA (16" x 12" x 6")	B	From Leg	6.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.04	0.86 0.99 1.12	0.03 0.04 0.06
6' Side Arm Mount	B	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
BCR-80010:90	A	From Leg	6.00 0.00 6.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.60 6.03 6.80	2.60 6.03 6.80	0.04 0.07 0.11
BCR-80010:90	A	From Leg	6.00 0.00 -6.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	2.60 6.03 6.80	2.60 6.03 6.80	0.04 0.07 0.11
6' Side Arm Mount	A	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
ANT450F6	C	From Leg	3.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	0.69 1.01 1.23	0.69 1.01 1.23	0.01 0.02 0.03
3' Side Arm Mount	C	From Leg	1.50 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.85 2.73 3.40	1.85 2.73 3.40	0.03 0.04 0.06
***									
FAA L-810 Sidelight	A	From Leg	0.50 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.20 0.40 0.60	0.20 0.40 0.60	0.00 0.01 0.01
FAA L-810 Sidelight	B	From Leg	0.50 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.20 0.40 0.60	0.20 0.40 0.60	0.00 0.01 0.01
FAA L-810 Sidelight	C	From Leg	0.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.20 0.40 0.60	0.20 0.40 0.60	0.00 0.01 0.01
***									
(4) DB980H90E-M w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	153.50	No Ice 1/2" Ice 1" Ice	4.26 4.86 5.37	3.83 4.95 5.75	0.03 0.07 0.12
(4) DB980H90E-M w/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	153.50	No Ice 1/2" Ice 1" Ice	4.26 4.86 5.37	3.83 4.95 5.75	0.03 0.07 0.12
(4) DB980H90E-M w/Mount Pipe	C	From Leg	4.00 0.00	0.0000	153.50	No Ice 1/2"	4.26 4.86	3.83 4.95	0.03 0.07

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
			0.00			Ice	5.37	5.75	0.12
						1" Ice			
Generic Sector Frame	A	From Leg	2.00	0.0000	153.50	No Ice	15.00	10.00	0.60
			0.00			1/2"	17.50	12.50	0.80
			0.00			Ice	20.00	15.00	1.00
						1" Ice			
Generic Sector Frame	B	From Leg	2.00	0.0000	153.50	No Ice	15.00	10.00	0.60
			0.00			1/2"	17.50	12.50	0.80
			0.00			Ice	20.00	15.00	1.00
						1" Ice			
Generic Sector Frame	C	From Leg	2.00	0.0000	153.50	No Ice	15.00	10.00	0.60
			0.00			1/2"	17.50	12.50	0.80
			0.00			Ice	20.00	15.00	1.00
						1" Ice			
***									
(2) NHH-65C-R2B w/ Mount Pipe	A	From Leg	0.00	0.0000	145.00	No Ice	5.56	4.47	0.08
			0.00			1/2"	6.07	4.96	0.17
			0.00			Ice	6.58	5.47	0.26
						1" Ice			
(2) NHH-65C-R2B w/ Mount Pipe	B	From Leg	0.00	0.0000	145.00	No Ice	5.56	4.47	0.08
			0.00			1/2"	6.07	4.96	0.17
			0.00			Ice	6.58	5.47	0.26
						1" Ice			
(2) NHH-65C-R2B w/ Mount Pipe	C	From Leg	0.00	0.0000	145.00	No Ice	5.56	4.47	0.08
			0.00			1/2"	6.07	4.96	0.17
			0.00			Ice	6.58	5.47	0.26
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	0.00	0.0000	145.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			0.00			Ice	6.30	5.24	0.26
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	0.00	0.0000	145.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			0.00			Ice	6.30	5.24	0.26
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	0.00	0.0000	145.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			0.00			Ice	6.30	5.24	0.26
						1" Ice			
HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	0.00	0.0000	145.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.50	7.47	0.22
						1" Ice			
HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	0.00	0.0000	145.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.50	7.47	0.22
						1" Ice			
HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	0.00	0.0000	145.00	No Ice	7.97	5.99	0.08
			0.00			1/2"	8.73	6.72	0.14
			0.00			Ice	9.50	7.47	0.22
						1" Ice			
B5/B13 RRH-BR04C	A	From Leg	4.00	0.0000	145.00	No Ice	1.88	1.01	0.07
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
						1" Ice			
B5/B13 RRH-BR04C	B	From Leg	4.00	0.0000	145.00	No Ice	1.88	1.01	0.07
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
						1" Ice			
B5/B13 RRH-BR04C	C	From Leg	4.00	0.0000	145.00	No Ice	1.88	1.01	0.07
			0.00			1/2"	2.05	1.14	0.09
			0.00			Ice	2.22	1.28	0.11
						1" Ice			
B2/B66A RRH-BR049	A	From Leg	4.00	0.0000	145.00	No Ice	1.88	1.01	0.07

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
			0.00				1/2" Ice	2.05	1.14	0.09
			0.00				1" Ice	2.22	1.28	0.11
B2/B66A RRH-BR049	B	From Leg	4.00		0.0000	145.00	No Ice	1.88	1.01	0.07
			0.00				1/2" Ice	2.05	1.14	0.09
			0.00				1" Ice	2.22	1.28	0.11
B2/B66A RRH-BR049	C	From Leg	4.00		0.0000	145.00	No Ice	1.88	1.01	0.07
			0.00				1/2" Ice	2.05	1.14	0.09
			0.00				1" Ice	2.22	1.28	0.11
RVZDC-6627-PF-48	A	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.73	0.06
			0.00				1" Ice	4.30	2.95	0.10
RVZDC-6627-PF-48	B	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.73	0.06
			0.00				1" Ice	4.30	2.95	0.10
RVZDC-6627-PF-48	C	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.73	0.06
			0.00				1" Ice	4.30	2.95	0.10
(3) VFA12-RRU Sector Frame	C	None			0.0000	145.00	No Ice	33.02	33.02	1.67
							1/2" Ice	47.36	47.36	2.22
							1" Ice	61.70	61.70	2.77
BSAMNT-SBS-1-2 (Mount Bracket)	A	From Leg	0.00		0.0000	145.00	No Ice	0.00	0.00	0.07
			0.00				1/2" Ice	0.00	0.00	0.09
			0.00				1" Ice	0.00	0.00	0.11
BSAMNT-SBS-1-2 (Mount Bracket)	B	From Leg	0.00		0.0000	145.00	No Ice	0.00	0.00	0.07
			0.00				1/2" Ice	0.00	0.00	0.09
			0.00				1" Ice	0.00	0.00	0.11
BSAMNT-SBS-1-2 (Mount Bracket)	C	From Leg	0.00		0.0000	145.00	No Ice	0.00	0.00	0.07
			0.00				1/2" Ice	0.00	0.00	0.09
			0.00				1" Ice	0.00	0.00	0.11
RC3DC-3315-PF-48	A	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.72	0.06
			0.00				1" Ice	4.30	2.94	0.10
RC3DC-3315-PF-48	B	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.72	0.06
			0.00				1" Ice	4.30	2.94	0.10
RC3DC-3315-PF-48	C	From Leg	4.00		0.0000	145.00	No Ice	3.79	2.51	0.03
			0.00				1/2" Ice	4.04	2.72	0.06
			0.00				1" Ice	4.30	2.94	0.10
2 Std. Mount Pipe Stabilizer	A	From Leg	0.00		0.0000	145.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.05
			0.00				1" Ice	4.45	4.45	0.08
2 Std. Mount Pipe Stabilizer	B	From Leg	0.00		0.0000	145.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.05
			0.00				1" Ice	4.45	4.45	0.08
2 Std. Mount Pipe Stabilizer	C	From Leg	0.00		0.0000	145.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.05
			0.00				1" Ice	4.45	4.45	0.08
2.5 STD x Mount Pipe	A	From Leg	0.00		0.0000	145.00	No Ice	0.97	0.97	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice 1" Ice	1.22 1.48	1.22 1.48	0.06 0.07
2.5 STD x Mount Pipe	B	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.97 1.22 1.48	0.97 1.22 1.48	0.05 0.06 0.07
2.5 STD x Mount Pipe	C	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.97 1.22 1.48	0.97 1.22 1.48	0.05 0.06 0.07
(2) L 3 x 3 x 1/4 x 3' Mount Angle (Horiz)	A	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	0.01 0.35 0.71	0.01 0.02 0.03
(2) L 3 x 3 x 1/4 x 3' Mount Angle (Horiz)	B	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	0.01 0.35 0.71	0.01 0.02 0.03
(2) L 3 x 3 x 1/4 x 3' Mount Angle (Horiz)	C	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	0.01 0.35 0.71	0.01 0.02 0.03
***									
8' x 2" Sch 40 Pipe Mount	C	From Leg	0.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									
CO-36A	C	From Leg	6.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.75 1.96 3.19	0.75 1.96 3.19	0.01 0.02 0.04
6' Side Arm Mount	C	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
ANT450F6	A	From Leg	6.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.71 1.01 1.23	0.71 1.01 1.23	0.01 0.02 0.03
6' Side Arm Mount	A	From Leg	3.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
***									
6' Side Arm Mount	A	From Leg	3.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice	4.54 7.80 11.06	1.23 2.55 3.88	0.05 0.08 0.10
3' Side Arm Mount	C	From Leg	1.50 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
BR6155	A	From Leg	3.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.02 0.02 0.03
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
ANT400D	A	From Leg	0.00 0.00 -3.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.95 1.19 1.45	0.95 1.19 1.45	0.01 0.02 0.03
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
8' x 2" Sch 40 Pipe Mount	B	From Leg	0.00 0.00 0.00	0.0000	104.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									
BR6155	A	From Leg	3.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.02 0.02 0.03
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
V-1500	A	From Leg	3.00 0.00 0.00	0.0000	55.00	No Ice 1/2" Ice 1" Ice	0.55 1.07 1.45	0.55 1.07 1.45	0.00 0.01 0.02
3' Side Arm Mount	A	From Leg	1.50 0.00 0.00	0.0000	55.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
Telewave ANT790-S2	C	From Leg	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	1.58 2.29 2.60	1.58 2.29 2.60	0.02 0.04 0.06
3' Side Arm Mount	C	From Leg	1.50 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
***									
(2) NHH-65C-R2B w/ Mount Pipe	A	From Leg	0.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.56 6.07 6.58	4.47 4.96 5.47	0.08 0.17 0.26
(2) NHH-65C-R2B w/ Mount Pipe	B	From Leg	0.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.56 6.07 6.58	4.47 4.96 5.47	0.08 0.17 0.26
(2) NHH-65C-R2B w/ Mount Pipe	C	From Leg	0.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.56 6.07 6.58	4.47 4.96 5.47	0.08 0.17 0.26
AHFIC B2/66a AirScale RRH 4T4R 320W	A	From Leg	0.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.31	1.75 1.93 2.13	0.08 0.10 0.13
AHFIC B2/66a AirScale RRH 4T4R 320W	B	From Leg	0.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.86 3.08 3.31	1.75 1.93 2.13	0.08 0.10 0.13
AHFIC B2/66a AirScale RRH 4T4R 320W	C	From Leg	0.00 0.00	0.0000	150.00	No Ice 1/2"	2.86 3.08	1.75 1.93	0.08 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00					Ice	3.31	2.13	0.13
								1" Ice			
AHBCC RRH 4T4R B13/5 320W	A	From Leg	0.00			0.0000	150.00	No Ice	2.86	1.85	0.07
			0.00					1/2"	3.08	2.04	0.10
			0.00					Ice	3.31	2.23	0.12
								1" Ice			
AHBCC RRH 4T4R B13/5 320W	B	From Leg	0.00			0.0000	150.00	No Ice	2.86	1.85	0.07
			0.00					1/2"	3.08	2.04	0.10
			0.00					Ice	3.31	2.23	0.12
								1" Ice			
AHBCC RRH 4T4R B13/5 320W	C	From Leg	0.00			0.0000	150.00	No Ice	2.86	1.85	0.07
			0.00					1/2"	3.08	2.04	0.10
			0.00					Ice	3.31	2.23	0.12
								1" Ice			
BSAMNT-SBS-2-2 (Mount Bracket)	A	From Leg	0.00			0.0000	150.00	No Ice	0.00	0.00	0.07
			0.00					1/2"	0.00	0.00	0.09
			0.00					Ice	0.00	0.00	0.11
								1" Ice			
BSAMNT-SBS-2-2 (Mount Bracket)	B	From Leg	0.00			0.0000	150.00	No Ice	0.00	0.00	0.07
			0.00					1/2"	0.00	0.00	0.09
			0.00					Ice	0.00	0.00	0.11
								1" Ice			
BSAMNT-SBS-2-2 (Mount Bracket)	C	From Leg	0.00			0.0000	150.00	No Ice	0.00	0.00	0.07
			0.00					1/2"	0.00	0.00	0.09
			0.00					Ice	0.00	0.00	0.11
								1" Ice			
RRFDC-3315-PF-48	C	From Leg	0.00			0.0000	150.00	No Ice	3.36	2.19	0.03
			0.00					1/2"	3.60	2.39	0.06
			0.00					Ice	3.84	2.61	0.09
								1" Ice			
(3) Valmont VFA10HD Sector Frames	C	None				0.0000	150.00	No Ice	33.02	33.02	1.67
								1/2"	47.36	47.36	2.22
								Ice	61.70	61.70	2.77
								1" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PAL8	A	Paraboloid w/Radome	From Leg	0.50		0.0000		276.00	8.00	No Ice	50.27	0.29
				0.00						1/2" Ice	51.32	0.55
				0.00						1" Ice	52.37	0.81
PAL8	B	Paraboloid w/Radome	From Leg	0.50		0.0000		276.00	8.00	No Ice	50.27	0.29
				0.00						1/2" Ice	51.32	0.55
				0.00						1" Ice	52.37	0.81
PAL8	C	Paraboloid w/Radome	From Leg	0.50		0.0000		276.00	8.00	No Ice	50.27	0.29
				0.00						1/2" Ice	51.32	0.55
				0.00						1" Ice	52.37	0.81
***												
PAL8	C	Paraboloid w/Radome	From Leg	0.50		0.0000		266.00	8.00	No Ice	50.27	0.29
				0.00						1/2" Ice	51.32	0.55
				0.00						1" Ice	52.37	0.81
PADX6-59AC	C	Paraboloid w/Radome	From Leg	0.50		0.0000		240.00	6.00	No Ice	28.27	0.19
				0.00						1/2" Ice	29.07	0.33
				0.00						1" Ice	29.86	0.48

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
PAL8	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		230.00	8.00	No Ice 1/2" Ice 1" Ice	50.27 51.32 52.37	0.29 0.55 0.81
***											
PAL8	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		220.00	8.00	No Ice 1/2" Ice 1" Ice	50.27 51.32 52.37	0.29 0.55 0.81
PA10-59	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		205.50	10.44	No Ice 1/2" Ice 1" Ice	85.63 87.00 88.38	0.79 1.24 1.69
***											
PAL6-59	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		197.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	0.19 0.33 0.48
PA10-59	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		195.00	10.44	No Ice 1/2" Ice 1" Ice	85.63 87.00 88.38	0.79 1.24 1.69
***											
RFS PAD6-65AC	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		163.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	0.07 0.15 0.23
SBX4-W60AC2	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		123.00	4.14	No Ice 1/2" Ice 1" Ice	13.47 14.02 14.57	0.08 0.15 0.22
***											
PRF-950	A	Grid	From Leg	6.00 0.00 0.00	0.0000		126.00	5.67	No Ice 1/2" Ice 1" Ice	25.22 25.97 26.71	0.04 0.17 0.31
PRF-950	C	Grid	From Leg	3.00 0.00 0.00	0.0000		117.00	5.67	No Ice 1/2" Ice 1" Ice	25.22 25.97 26.71	0.04 0.17 0.31
RFS PAD6-65AC	B	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	0.0000		104.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	0.07 0.15 0.23

Truss-Leg Properties

Section Designation	Area in²	Area Ice in²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in²
Valmont 207628 (12x1.25)	2161.7740	6558.0008	0.48	2.07	7.5062	22.7708	3.6816
Valmont 207628 (12x1.25)	2161.7740	6551.9048	0.48	2.06	7.5062	22.7497	3.6816
Valmont 207628 (12x1.25)	2161.7740	6542.3611	0.48	2.04	7.5062	22.7165	3.6816
Valmont 207628 (12x1.25)	2161.7740	6528.8005	0.48	2.01	7.5062	22.6694	3.6816
Valmont 195557 (12x1.75)	1998.1590	5797.2605	0.78	2.01	6.9381	20.1294	7.2158
Valmont 195557 (12x1.75)	1998.1590	5791.0711	0.78	2.00	6.9381	20.1079	7.2158
Valmont 211843 (12x2)	2279.9276	5853.2574	1.02	1.91	7.9164	20.3238	9.4248
Valmont 208334 (12x2.25)	2264.8364	5911.0263	1.20	1.98	7.8640	20.5244	11.9282
Valmont 208334 (12x2.25)	2264.8364	5895.2000	1.20	1.94	7.8640	20.4694	11.9282
Valmont 208335 (12x2.5)	2550.6273	5949.3467	1.41	1.92	8.8563	20.6575	14.7262
Valmont 208337	2786.4655	6000.8255	1.69	1.93	9.6752	20.8362	17.8187

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	K	K	in	in	in^2
(12x2.75) Valmont 208338	3229.8584	6887.7536	2.03	1.94	11.2148	23.9158	21.2058
(12x3) Valmont 208338	3229.8584	6851.1588	2.03	1.87	11.2148	23.7887	21.2058
(12x3) Valmont 208339	3392.5998	6875.5819	2.30	1.78	11.7799	23.8735	24.8873
(12x3.25) Valmont 208339	3392.5998	6806.3434	2.30	1.62	11.7799	23.6331	24.8873
(12x3.25) Valmont 208339	3392.5998	6668.8943	2.30	1.31	11.7799	23.1559	24.8873
(12x3.25)							

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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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

Comb. No.	Description
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 270	13.014	47	0.3891	0.0707
T2	270 - 260	12.192	47	0.3888	0.0707
T3	260 - 240	11.366	47	0.3852	0.0694
T4	240 - 220	9.749	47	0.3651	0.0662
T5	220 - 210	8.232	47	0.3277	0.0571
T6	210 - 200	7.521	47	0.3149	0.0505
T7	200 - 180	6.830	47	0.2996	0.0460
T8	180 - 160	5.563	47	0.2697	0.0394
T9	160 - 140	4.440	43	0.2404	0.0327
T10	140 - 120	3.439	43	0.2057	0.0265
T11	120 - 100	2.592	43	0.1730	0.0224
T12	100 - 80	1.872	43	0.1428	0.0184
T13	80 - 60	1.267	43	0.1151	0.0148
T14	60 - 40	0.776	43	0.0852	0.0111
T15	40 - 20	0.406	43	0.0583	0.0074
T16	20 - 0	0.132	43	0.0296	0.0037

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	FAA L-864 Beacon	47	13.014	0.3891	0.0707	249972
279.00	Kreco CO-35A	47	12.932	0.3891	0.0707	249972
276.00	PAL8	47	12.686	0.3892	0.0708	249972
266.00	PAL8	47	11.862	0.3878	0.0703	641173
261.00	10' 8-Bay Dipole	47	11.449	0.3857	0.0695	146015
260.00	DB589-Y	47	11.366	0.3852	0.0694	124120
255.00	DB212-C	47	10.956	0.3821	0.0687	84368
241.00	SD110-SFXPASNM	47	9.828	0.3667	0.0664	50019
240.00	PADX6-59AC	47	9.749	0.3651	0.0662	48587
235.17	SE419-SF3P4LDF w/ Mount Pipe	47	9.371	0.3563	0.0647	42605
230.00	PAL8	47	8.975	0.3460	0.0626	37622
220.00	PAL8	47	8.232	0.3277	0.0571	33453
216.00	ANT450F10	47	7.944	0.3224	0.0544	45444
205.50	PA10-59	47	7.207	0.3083	0.0482	47898
204.00	SC479-HF1LDF	47	7.103	0.3060	0.0476	39353
200.00	SC479-HF1LDF	47	6.830	0.2996	0.0460	28469
197.00	PAL6-59	47	6.630	0.2948	0.0449	27505
195.00	PA10-59	47	6.498	0.2917	0.0442	28238
175.00	SC479-HF1LDF	43	5.270	0.2627	0.0378	38633
168.00	ANT450F6	43	4.875	0.2526	0.0354	40691
163.00	RFS PAD6-65AC	43	4.601	0.2451	0.0337	42217
153.50	(4) DB980H90E-M w/Mount Pipe	43	4.100	0.2294	0.0305	36325
150.00	(2) NHH-65C-R2B w/ Mount Pipe	43	3.922	0.2233	0.0294	33417
145.00	(2) NHH-65C-R2B w/ Mount Pipe	43	3.676	0.2145	0.0278	29987
140.00	FAA L-810 Sidelight	43	3.439	0.2057	0.0265	27987
130.00	CO-36A	43	2.997	0.1890	0.0243	32119
128.00	ANT450F6	43	2.913	0.1857	0.0239	33326
126.00	PRF-950	43	2.831	0.1825	0.0235	34627
123.00	SBX4-W60AC2	43	2.710	0.1777	0.0230	36744
117.00	PRF-950	43	2.476	0.1683	0.0218	39451

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
116.00	BR6155	43	2.438	0.1667	0.0216	39580
104.00	RFS PAD6-65AC	43	2.007	0.1485	0.0192	40721
97.00	BR6155	43	1.774	0.1386	0.0178	41433
55.00	V-1500	43	0.674	0.0783	0.0102	40443
50.00	Telewave ANT790-S2	43	0.579	0.0716	0.0093	47966

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 270	21.692	18	0.6482	0.1180
T2	270 - 260	20.323	18	0.6477	0.1181
T3	260 - 240	18.947	18	0.6417	0.1158
T4	240 - 220	16.253	18	0.6082	0.1104
T5	220 - 210	13.724	18	0.5461	0.0954
T6	210 - 200	12.540	18	0.5248	0.0844
T7	200 - 180	11.388	18	0.4993	0.0767
T8	180 - 160	9.287	10	0.4496	0.0658
T9	160 - 140	7.413	10	0.4007	0.0545
T10	140 - 120	5.742	10	0.3430	0.0442
T11	120 - 100	4.327	10	0.2884	0.0374
T12	100 - 80	3.125	10	0.2382	0.0307
T13	80 - 60	2.115	10	0.1922	0.0246
T14	60 - 40	1.296	10	0.1423	0.0185
T15	40 - 20	0.677	10	0.0974	0.0124
T16	20 - 0	0.220	10	0.0495	0.0062

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	FAA L-864 Beacon	18	21.692	0.6482	0.1180	150458
279.00	Kreco CO-35A	18	21.555	0.6482	0.1180	150458
276.00	PAL8	18	21.145	0.6484	0.1182	150458
266.00	PAL8	18	19.773	0.6460	0.1174	394418
261.00	10' 8-Bay Dipole	18	19.085	0.6426	0.1161	86693
260.00	DB589-Y	18	18.947	0.6417	0.1158	73840
255.00	DB212-C	18	18.264	0.6365	0.1147	50797
241.00	SD110-SFXPASNM	18	16.385	0.6109	0.1109	30057
240.00	PADX6-59AC	18	16.253	0.6082	0.1104	29199
235.17	SE419-SF3P4LDF w/ Mount Pipe	18	15.624	0.5937	0.1080	25632
230.00	PAL8	18	14.962	0.5765	0.1045	22661
220.00	PAL8	18	13.724	0.5461	0.0954	20177
216.00	ANT450F10	18	13.246	0.5372	0.0909	27382
205.50	PA10-59	18	12.016	0.5139	0.0805	28644
204.00	SC479-HF1LDF	18	11.843	0.5100	0.0794	23598
200.00	SC479-HF1LDF	18	11.388	0.4993	0.0767	17082
197.00	PAL6-59	18	11.054	0.4914	0.0749	16508
195.00	PA10-59	18	10.835	0.4862	0.0737	16952
175.00	SC479-HF1LDF	10	8.800	0.4379	0.0630	23226
168.00	ANT450F6	10	8.139	0.4211	0.0591	24423
163.00	RFS PAD6-65AC	10	7.681	0.4086	0.0563	25308
153.50	(4) DB980H90E-M w/Mount Pipe	10	6.845	0.3825	0.0509	21787
150.00	(2) NHH-65C-R2B w/ Mount Pipe	10	6.548	0.3723	0.0490	20053
145.00	(2) NHH-65C-R2B w/ Mount Pipe	10	6.137	0.3576	0.0465	18007
140.00	FAA L-810 Sidelight	10	5.742	0.3430	0.0442	16812
130.00	CO-36A	10	5.004	0.3151	0.0405	19274

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
128.00	ANT450F6	10	4.864	0.3097	0.0399	19992
126.00	PRF-950	10	4.726	0.3043	0.0393	20766
123.00	SBX4-W60AC2	10	4.524	0.2963	0.0383	22024
117.00	PRF-950	10	4.134	0.2806	0.0364	23643
116.00	BR6155	10	4.070	0.2780	0.0361	23724
104.00	RFS PAD6-65AC	10	3.350	0.2477	0.0320	24455
97.00	BR6155	10	2.962	0.2312	0.0298	24880
55.00	V-1500	10	1.125	0.1307	0.0170	24301
50.00	Telewave ANT790-S2	10	0.966	0.1196	0.0155	28733

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	280	Diagonal	A325N	1.0000	1	3.41	19.47	0.175 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	1	0.44	7.95	0.055 ✔	1	Bolt Shear
T2	270	Leg	A325N	1.0000	6	1.25	53.01	0.024 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	5.79	19.47	0.297 ✔	1	Member Block Shear
T3	260	Leg	A325N	1.0000	6	4.96	53.01	0.094 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7.77	19.47	0.399 ✔	1	Member Block Shear
T4	240	Leg	A325N	1.0000	6	9.71	53.01	0.183 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	12.84	18.30	0.702 ✔	1	Member Block Shear
T5	220	Diagonal	A325N	1.0000	1	15.32	18.30	0.837 ✔	1	Member Block Shear
T6	210	Leg	A325N	1.0000	12	8.18	53.01	0.154 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	15.66	18.30	0.856 ✔	1	Member Block Shear
T7	200	Leg	A325N	1.0000	12	10.97	53.01	0.207 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	23.86	29.58	0.807 ✔	1	Gusset Bearing
T8	180	Leg	A325N	1.0000	12	15.17	53.01	0.286 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	25.54	29.58	0.863 ✔	1	Gusset Bearing
T9	160	Leg	A325N	1.0000	12	19.29	53.01	0.364 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	29.44	29.58	0.995 ✔	1	Gusset Bearing
T10	140	Leg	A325N	1.0000	12	24.03	53.01	0.453 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	34.45	43.50	0.792 ✔	1	Gusset Bearing
T11	120	Leg	A325N	1.0000	12	29.07	53.01	0.548 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	17.84	39.15	0.456 ✔	1	Gusset Bearing
T12	100	Leg	A325N	1.2500	12	34.08	82.83	0.411 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	18.80	39.15	0.480 ✔	1	Gusset Bearing
T13	80	Leg	A325N	1.2500	12	39.05	82.83	0.471 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	19.50	39.15	0.498 ✔	1	Gusset Bearing
T14	60	Leg	A325N	1.2500	12	43.92	82.83	0.530 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	20.22	39.15	0.516 ✔	1	Gusset Bearing
T15	40	Leg	A325N	1.2500	12	48.83	82.83	0.590 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	20.72	39.15	0.529 ✔	1	Gusset Bearing
T16	20	Diagonal	A325N	0.8750	2	21.27	39.15	0.543 ✔	1	Gusset Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $P_u / \phi P_n$
T1	280 - 270	Valmont 207628 (12x1.25)	10.02	10.02	45.4 K=1.00	3.6816	-4.70	142.49	0.033 [1] ✓
T2	270 - 260	Valmont 207628 (12x1.25)	10.02	10.02	45.4 K=1.00	3.6816	-11.68	142.49	0.082 [1] ✓
T3	260 - 240	Valmont 207628 (12x1.25)	20.03	10.02	45.4 K=1.00	3.6816	-38.39	142.49	0.269 [1] ✓
T4	240 - 220	Valmont 207628 (12x1.25)	20.03	10.02	45.4 K=1.00	3.6816	-73.69	142.49	0.517 [1] ✓
T5	220 - 210	Valmont 195557 (12x1.75)	10.02	10.02	31.9 K=1.00	7.2158	-96.41	301.49	0.320 [1] ✓
T6	210 - 200	Valmont 195557 (12x1.75)	10.02	10.02	31.9 K=1.00	7.2158	-119.40	301.49	0.396 [1] ✓
T7	200 - 180	Valmont 211843 (12x2)	20.03	20.03	48.8 K=1.00	9.4248	-159.37	356.29	0.447 [1] ✓
T8	180 - 160	Valmont 208334 (12x2.25)	20.03	20.03	48.8 K=1.00	11.928 2	-218.79	451.15	0.485 [1] ✓
T9	160 - 140	Valmont 208334 (12x2.25)	20.03	20.03	48.8 K=1.00	11.928 2	-279.14	451.15	0.619 [1] ✓
T10	140 - 120	Valmont 208335 (12x2.5)	20.03	20.03	48.7 K=1.00	14.726 2	-347.98	557.27	0.624 [1] ✓
T11	120 - 100	Valmont 208337 (12x2.75)	20.03	20.03	48.6 K=1.00	17.818 7	-419.10	674.68	0.621 [1] ✓
T12	100 - 80	Valmont 208338 (12x3)	20.03	20.03	48.5 K=1.00	21.205 7	-490.44	803.44	0.610 [1] ✓
T13	80 - 60	Valmont 208338 (12x3)	20.03	20.03	48.5 K=1.00	21.205 7	-562.67	803.44	0.700 [1] ✓
T14	60 - 40	Valmont 208339 (12x3.25)	20.03	20.03	48.4 K=1.00	24.887 3	-634.68	943.57	0.673 [1] ✓
T15	40 - 20	Valmont 208339 (12x3.25)	20.03	20.03	48.4 K=1.00	24.887 3	-710.30	943.57	0.753 [1] ✓
T16	20 - 0	Valmont 208339 (12x3.25)	20.03	20.03	48.4 K=1.00	24.887 3	-780.81	943.57	0.828 [1] ✓

[1] $P_u / \phi P_n$ controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	280 - 270	0.5	1.48	121.0	165.67	0.1963	0.84	3.29	0.256 ✓
T2	270 - 260	0.5	1.48	121.0	165.67	0.1963	0.67	3.29	0.204

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T3	260 - 240	0.5	1.48	121.0	165.67	0.1963	0.60	3.29	0.181
T4	240 - 220	0.5	1.48	121.0	165.67	0.1963	1.49	3.29	0.451
T5	220 - 210	0.5	1.44	117.6	324.71	0.1963	1.67	3.62	0.461
T6	210 - 200	0.5	1.44	117.6	324.71	0.1963	1.70	3.62	0.470
T7	200 - 180	0.5	1.39	113.2	424.12	0.1963	2.33	3.76	0.619
T8	180 - 160	0.5	1.38	112.2	536.77	0.1963	1.48	3.80	0.389
T9	160 - 140	0.5	1.38	112.2	536.77	0.1963	3.33	3.80	0.874
T10	140 - 120	0.5	1.36	111.2	662.68	0.1963	1.29	3.85	0.334
T11	120 - 100	0.625	1.35	88.2	801.84	0.3068	1.28	7.66	0.167
T12	100 - 80	0.625	1.34	87.4	954.26	0.3068	0.87	7.71	0.112
T13	80 - 60	0.625	1.34	87.4	954.26	0.3068	0.93	7.71	0.120
T14	60 - 40	0.625	1.33	86.7	1119.93	0.3068	1.15	7.77	0.149
T15	40 - 20	0.625	1.33	86.7	1119.93	0.3068	1.30	7.77	0.167
T16	20 - 0	0.625	1.33	86.7	1119.93	0.3068	1.28	7.77	0.165

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 270	L 3 x 3 x 5/16	16.01	7.48	152.3 K=1.00	1.7800	-3.66	17.33	0.211 [1]
T2	270 - 260	L 3 x 3 x 5/16	16.80	7.88	160.6 K=1.00	1.7800	-6.08	15.59	0.390 [1]
T3	260 - 240	L 3 x 3 x 5/16	18.45	8.72	177.6 K=1.00	1.7800	-7.92	12.75	0.622 [1]
T4	240 - 220	L 4 x 4 x 1/4	20.16	9.58	144.6 K=1.00	1.9400	-13.05	20.95	0.623 [1]
T5	220 - 210	L 4 x 4 x 1/4	21.03	10.02	151.3 K=1.00	1.9400	-15.45	19.15	0.807 [1]
T6	210 - 200	L 4 x 4 x 1/4	21.92	10.47	158.0 K=1.00	1.9400	-15.34	17.55	0.874 [1]
T7	200 - 180	2L 3.5 x 3.5 x 1/4 (3/8)	29.01	14.29	164.1 K=1.00	3.3800	-24.43	28.37	0.861 [1]
T8	180 - 160	2L 'a' > 81.9131 in - 89 2L 3.5 x 3.5 x 1/4 (3/8)	30.49	15.03	172.5 K=1.00	3.3800	-25.61	25.65	0.999 [1]
T9	160 - 140	2L 'a' > 86.1510 in - 98 2L 4 x 4 x 1/4 (3/8)	32.02	15.80	159.5 K=1.00	3.8800	-30.31	34.45	0.880 [1]
T10	140 - 120	2L 'a' > 90.4521 in - 107 2L 4 x 4 x 3/8 (1/2)	33.61	16.64	166.2 K=1.00	5.7188	-35.07	46.79	0.750 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$ ✔
T11	120 - 100	2L 'a' > 95.5100 in - 116 2L 4 x 4 x 3/8 (1/2)	35.23	17.34	173.2 K=1.00	5.7188	-36.12	43.07	0.839 [1] ✔
T12	100 - 80	2L 'a' > 92.7523 in - 125 2L 5 x 5 x 5/16 (1/2)	36.90	18.17	146.4 K=1.00	6.0547	-38.40	63.83	0.602 [1] ✔
T13	80 - 60	2L 'a' > 100.4316 in - 134 2L 5 x 5 x 5/16 (1/2)	38.59	19.02	153.2 K=1.00	6.0547	-39.52	58.27	0.678 [1] ✔
T14	60 - 40	2L 'a' > 104.1226 in - 143 2L 5 x 5 x 5/16 (1/2)	40.32	19.88	160.2 K=1.00	6.0547	-41.38	53.32	0.776 [1] ✔
T15	40 - 20	2L 'a' > 107.8743 in - 152 2L 5 x 5 x 5/16 (1/2)	42.06	20.76	167.2 K=1.00	6.0547	-41.77	48.93	0.854 [1] ✔
T16	20 - 0	2L 'a' > 111.6793 in - 161 2L 5 x 5 x 5/16 (1/2)	43.83	21.64	174.3 K=1.00	6.0547	-44.14	45.01	0.981 [1] ✔
		2L 'a' > 115.5312 in - 170							

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$ ✔
T1	280 - 270	L 2.5 x 2.5 x 5/16	12.48	11.48	157.3 K=0.87	1.4600	-1.93	13.33	0.145 [1] ✔
T2	270 - 260	L 2.5 x 2.5 x 5/16	13.48	12.48	167.0 K=0.85	1.4600	-0.92	11.83	0.078 [1] ✔
T6	210 - 200	L 5 x 5 x 3/8	19.49	18.49	133.9 K=0.94	3.6100	-2.07	45.50	0.046 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$ ✔
T1	280 - 270	L 3.5 x 3.5 x 5/16	12.00	10.79	187.7 K=1.00	2.0900	-0.44	13.40	0.033 [1] ✔
T4	240 - 220	L 5 x 5 x 3/8	16.00	15.00	158.0 K=0.87	3.6100	-1.59	32.66	0.049 [1] ✔

[1] $P_u / \phi P_n$ controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	240 - 220	L 5 x 5 x 3/8	17.00	16.00	165.5 K=0.85	3.6100	-2.31	29.78	0.078 [1] ✔

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 270	Valmont 207628 (12x1.25)	10.02	10.02	45.4	3.6816	0.92	165.67	0.006 [1] ✔
T2	270 - 260	Valmont 207628 (12x1.25)	10.02	10.02	45.4	3.6816	7.50	165.67	0.045 [1] ✔
T3	260 - 240	Valmont 207628 (12x1.25)	20.03	10.02	45.4	3.6816	29.79	165.67	0.180 [1] ✔
T4	240 - 220	Valmont 207628 (12x1.25)	20.03	10.02	45.4	3.6816	58.29	165.67	0.352 [1] ✔
T5	220 - 210	Valmont 195557 (12x1.75)	10.02	10.02	31.9	7.2158	78.21	324.71	0.241 [1] ✔
T6	210 - 200	Valmont 195557 (12x1.75)	10.02	10.02	31.9	7.2158	98.14	324.71	0.302 [1] ✔
T7	200 - 180	Valmont 211843 (12x2)	20.03	20.03	48.8	9.4248	131.66	424.12	0.310 [1] ✔
T8	180 - 160	Valmont 208334 (12x2.25)	20.03	20.03	48.8	11.928 2	182.08	536.77	0.339 [1] ✔
T9	160 - 140	Valmont 208334 (12x2.25)	20.03	20.03	48.8	11.928 2	231.46	536.77	0.431 [1] ✔
T10	140 - 120	Valmont 208335 (12x2.5)	20.03	20.03	48.7	14.726 2	288.39	662.68	0.435 [1] ✔
T11	120 - 100	Valmont 208337 (12x2.75)	20.03	20.03	48.6	17.818 7	348.79	801.84	0.435 [1] ✔
T12	100 - 80	Valmont 208338 (12x3)	20.03	20.03	48.5	21.205 7	408.93	954.26	0.429 [1] ✔
T13	80 - 60	Valmont 208338 (12x3)	20.03	20.03	48.5	21.205 7	468.56	954.26	0.491 [1] ✔
T14	60 - 40	Valmont 208339 (12x3.25)	20.03	20.03	48.4	24.887 3	527.06	1119.93	0.471 [1] ✔
T15	40 - 20	Valmont 208339 (12x3.25)	20.03	20.03	48.4	24.887 3	586.01	1119.93	0.523 [1] ✔
T16	20 - 0	Valmont 208339 (12x3.25)	20.03	20.03	48.4	24.887 3	640.98	1119.93	0.572 [1] ✔

[1] $P_u / \phi P_n$ controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in^2	V_u K	ϕV_n K	Stress Ratio
T1	280 - 270	0.5	1.48	121.0	165.67	0.1963	0.84	3.29	0.256 ✓
T2	270 - 260	0.5	1.48	121.0	165.67	0.1963	0.67	3.29	0.204 ✓
T3	260 - 240	0.5	1.48	121.0	165.67	0.1963	0.60	3.29	0.181 ✓
T4	240 - 220	0.5	1.48	121.0	165.67	0.1963	1.49	3.29	0.451 ✓
T5	220 - 210	0.5	1.44	117.6	324.71	0.1963	1.67	3.62	0.461 ✓
T6	210 - 200	0.5	1.44	117.6	324.71	0.1963	1.70	3.62	0.470 ✓
T7	200 - 180	0.5	1.39	113.2	424.12	0.1963	2.33	3.76	0.619 ✓
T8	180 - 160	0.5	1.38	112.2	536.77	0.1963	1.48	3.80	0.389 ✓
T9	160 - 140	0.5	1.38	112.2	536.77	0.1963	3.33	3.80	0.874 ✓
T10	140 - 120	0.5	1.36	111.2	662.68	0.1963	1.29	3.85	0.334 ✓
T11	120 - 100	0.625	1.35	88.2	801.84	0.3068	1.28	7.66	0.167 ✓
T12	100 - 80	0.625	1.34	87.4	954.26	0.3068	0.87	7.71	0.112 ✓
T13	80 - 60	0.625	1.34	87.4	954.26	0.3068	0.93	7.71	0.120 ✓
T14	60 - 40	0.625	1.33	86.7	1119.93	0.3068	1.15	7.77	0.149 ✓
T15	40 - 20	0.625	1.33	86.7	1119.93	0.3068	1.30	7.77	0.167 ✓
T16	20 - 0	0.625	1.33	86.7	1119.93	0.3068	1.28	7.77	0.165 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 270	L 3 x 3 x 5/16	16.01	7.48	100.1	1.0713	3.41	46.60	0.073 [1] ✓
T2	270 - 260	L 3 x 3 x 5/16	16.80	7.88	105.4	1.0713	5.79	46.60	0.124 [1] ✓
T3	260 - 240	L 3 x 3 x 5/16	18.45	8.72	116.3	1.0713	7.77	46.60	0.167 [1] ✓
T4	240 - 220	L 4 x 4 x 1/4	20.16	9.58	93.9	1.2441	12.84	54.12	0.237 [1] ✓
T5	220 - 210	L 4 x 4 x 1/4	21.03	10.02	98.1	1.2441	15.32	54.12	0.283 [1] ✓
T6	210 - 200	L 4 x 4 x 1/4	21.92	10.47	102.4	1.2441	15.66	54.12	0.289 [1] ✓
T7	200 - 180	2L 3.5 x 3.5 x 1/4 (3/8)	29.01	14.29	159.7	2.1600	23.86	93.96	0.254 [1] ✓
T8	180 - 160	2L 'a' > 81.9131 in - 88 2L 3.5 x 3.5 x 1/4 (3/8)	30.49	15.03	167.8	2.1600	25.54	93.96	0.272 [1] ✓
T9	160 - 140	2L 'a' > 86.1510 in - 97 2L 4 x 4 x 1/4 (3/8)	32.02	15.80	153.7	2.5350	29.44	110.27	0.267 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	140 - 120	2L 'a' > 90.4521 in - 106 2L 4 x 4 x 3/8 (1/2)	33.61	16.64	163.3	3.7266	34.45	162.10	0.213 [1]
T11	120 - 100	2L 'a' > 95.5100 in - 115 2L 4 x 4 x 3/8 (1/2)	35.23	17.34	171.2	3.7266	35.69	162.10	0.220 [1]
T12	100 - 80	2L 'a' > 92.7523 in - 124 2L 5 x 5 x 5/16 (1/2)	36.90	18.17	141.4	4.0723	37.60	177.14	0.212 [1]
T13	80 - 60	2L 'a' > 100.4316 in - 133 2L 5 x 5 x 5/16 (1/2)	38.59	19.02	147.9	4.0723	39.00	177.14	0.220 [1]
T14	60 - 40	2L 'a' > 104.1226 in - 142 2L 5 x 5 x 5/16 (1/2)	40.32	19.88	154.5	4.0723	40.43	177.14	0.228 [1]
T15	40 - 20	2L 'a' > 107.8743 in - 151 2L 5 x 5 x 5/16 (1/2)	42.06	20.76	161.2	4.0723	41.45	177.14	0.234 [1]
T16	20 - 0	2L 'a' > 111.6793 in - 160 2L 5 x 5 x 5/16 (1/2) 2L 'a' > 115.5312 in - 169	43.83	21.64	168.0	4.0723	42.55	177.14	0.240 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 270	L 2.5 x 2.5 x 5/16	12.48	11.48	180.7	1.4600	1.66	47.30	0.035 [1]
T2	270 - 260	L 2.5 x 2.5 x 5/16	13.48	12.48	196.4	1.4600	0.95	47.30	0.020 [1]
T6	210 - 200	L 5 x 5 x 3/8	19.49	18.49	142.6	3.6100	2.07	116.96	0.018 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 270	L 3.5 x 3.5 x 5/16	12.00	10.79	122.2	1.4210	0.37	61.81	0.006 [1]
T4	240 - 220	L 5 x 5 x 3/8	16.00	15.00	115.7	3.6100	1.93	116.96	0.017 [1]

[1] $P_u / \phi P_n$ controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	240 - 220	L 5 x 5 x 3/8	17.00	16.00	123.4	3.6100	2.65	116.96	0.023 [1] ✔

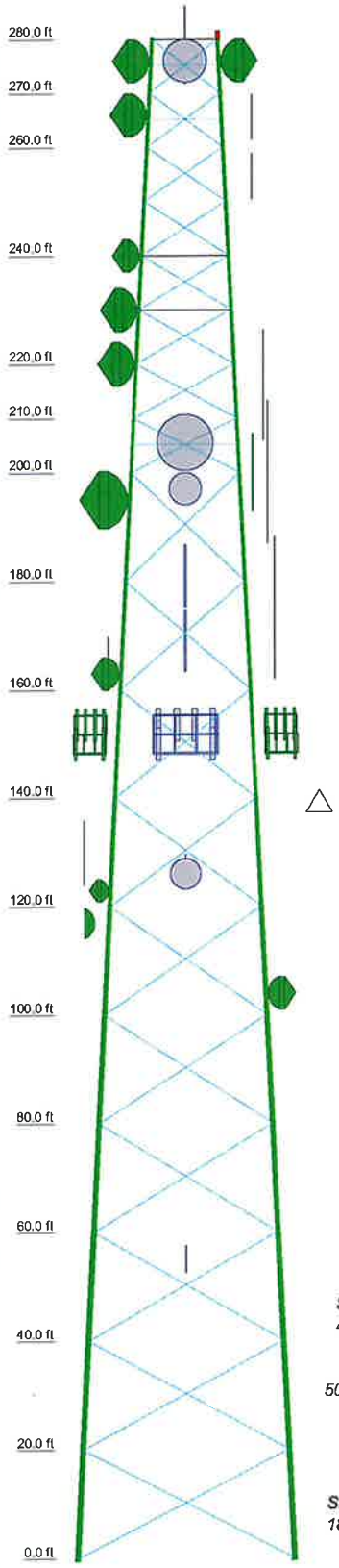
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	280 - 270	Leg	Valmont 207628 (12x1.25)	2	-4.70	142.49	25.6	Pass
T2	270 - 260	Leg	Valmont 207628 (12x1.25)	18	-11.34	142.49	20.4	Pass
T3	260 - 240	Leg	Valmont 207628 (12x1.25)	28	-38.39	142.49	26.9	Pass
T4	240 - 220	Leg	Valmont 207628 (12x1.25)	43	-73.69	142.49	51.7	Pass
T5	220 - 210	Leg	Valmont 195557 (12x1.75)	64	-96.41	301.49	46.1	Pass
T6	210 - 200	Leg	Valmont 195557 (12x1.75)	73	-119.40	301.49	47.0	Pass
T7	200 - 180	Leg	Valmont 211843 (12x2)	85	-159.37	356.29	61.9	Pass
T8	180 - 160	Leg	Valmont 208334 (12x2.25)	94	-218.79	451.15	48.5	Pass
T9	160 - 140	Leg	Valmont 208334 (12x2.25)	103	-279.14	451.15	87.4	Pass
T10	140 - 120	Leg	Valmont 208335 (12x2.5)	112	-347.98	557.27	62.4	Pass
T11	120 - 100	Leg	Valmont 208337 (12x2.75)	121	-419.10	674.68	62.1	Pass
T12	100 - 80	Leg	Valmont 208338 (12x3)	130	-490.44	803.44	61.0	Pass
T13	80 - 60	Leg	Valmont 208338 (12x3)	139	-562.67	803.44	70.0	Pass
T14	60 - 40	Leg	Valmont 208339 (12x3.25)	149	-634.68	943.57	67.3	Pass
T15	40 - 20	Leg	Valmont 208339 (12x3.25)	158	-710.30	943.57	75.3	Pass
T16	20 - 0	Leg	Valmont 208339 (12x3.25)	167	-780.81	943.57	82.8	Pass
T1	280 - 270	Diagonal	L 3 x 3 x 5/16	7	-3.66	17.33	21.1	Pass
T2	270 - 260	Diagonal	L 3 x 3 x 5/16	20	-6.08	15.59	39.0	Pass
T3	260 - 240	Diagonal	L 3 x 3 x 5/16	32	-7.92	12.75	62.2	Pass
T4	240 - 220	Diagonal	L 4 x 4 x 1/4	53	-13.05	20.95	62.3	Pass
T5	220 - 210	Diagonal	L 4 x 4 x 1/4	68	-15.45	19.15	80.7	Pass
T6	210 - 200	Diagonal	L 4 x 4 x 1/4	77	-15.34	17.55	87.4	Pass
T7	200 - 180	Diagonal	2L 3.5 x 3.5 x 1/4 (3/8)	89	-24.43	28.37	86.1	Pass
T8	180 - 160	Diagonal	2L 3.5 x 3.5 x 1/4 (3/8)	98	-25.61	25.65	99.9	Pass
T9	160 - 140	Diagonal	2L 4 x 4 x 1/4 (3/8)	107	-30.31	34.45	88.0	Pass
T10	140 - 120	Diagonal	2L 4 x 4 x 3/8 (1/2)	116	-35.07	46.79	75.0	Pass
T11	120 - 100	Diagonal	2L 4 x 4 x 3/8 (1/2)	125	-36.12	43.07	83.9	Pass
T12	100 - 80	Diagonal	2L 5 x 5 x 5/16 (1/2)	134	-38.40	63.83	60.2	Pass
T13	80 - 60	Diagonal	2L 5 x 5 x 5/16 (1/2)	143	-39.52	58.27	67.8	Pass
T14	60 - 40	Diagonal	2L 5 x 5 x 5/16 (1/2)	152	-41.38	53.32	77.6	Pass
T15	40 - 20	Diagonal	2L 5 x 5 x 5/16 (1/2)	161	-41.77	48.93	85.4	Pass
T16	20 - 0	Diagonal	2L 5 x 5 x 5/16 (1/2)	170	-44.14	45.01	98.1	Pass
T1	280 - 270	Secondary Horizontal	L 2.5 x 2.5 x 5/16	14	-1.93	13.33	14.5	Pass
T2	270 - 260	Secondary Horizontal	L 2.5 x 2.5 x 5/16	27	-0.92	11.83	7.8	Pass
T6	210 - 200	Secondary Horizontal	L 5 x 5 x 3/8	82	-2.07	45.50	4.6	Pass
T1	280 - 270	Top Girt	L 3.5 x 3.5 x 5/16	6	-0.44	13.40	3.3	Pass
T4	240 - 220	Top Girt	L 5 x 5 x 3/8	47	-1.59	32.66	4.9	Pass
T4	240 - 220	Mid Girt	L 5 x 5 x 3/8	50	-2.31	29.78	7.8	Pass
						Summary		
						Leg (T9)	87.4	Pass
						Diagonal (T8)	99.9	Pass
						Secondary Horizontal (T1)	14.5	Pass
						Top Girt (T4)	4.9	Pass
						Mid Girt	7.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						(T4) Bolt Checks	99.5	Pass
						RATING =	**99.9**	**Pass**

Section	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Valmont 208339 (12x3.25)			Valmont 208338 (12x3)			Valmont 208334 (12x2.25)			Valmont 207628 (12x1.25)						
Leg Grade	A572-50															
Diagonals	2L 5 x 5 x 5/16 (1/2)					2L 4 x 4 x 3/8 (1/2)		E	2L 3.5 x 3.5 x 1/4 (3/8)	B	A	L 4 x 4 x 1/4		L 3 x 3 x 5/16		
Diagonal Grade	A36															
Top Girts	N.A.											L 5 x 5 x 3/8		N.A.	F	
Mid Girts	N.A.											L 5 x 5 x 3/8		N.A.		
Sec. Horizontals	N.A.										G	N.A.			L 2.5 x 2.5 x 5/16	
Face Width (ft)	40	36	34	32	30	28	26	24	22	20	19	18	16	14	13	12
# Panels @ (ft)	10 @ 20												8 @ 10			
Weight (K)	112.0	128	124	119	111	98	85	84	56	53	29	21	45	29	16	19



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Valmont 195557 (12x1.75)	E	2L 4 x 4 x 1/4 (3/8)
B	Valmont 211843 (12x2)	F	L 3.5 x 3.5 x 5/16
C	Valmont 208335 (12x2.5)	G	L 5 x 5 x 3/8
D	Valmont 208337 (12x2.75)		

MATERIAL STRENGTH

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

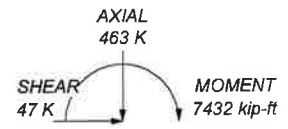
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 140 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 108 mph wind.
6. Tower Risk Category III and IV.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.9%

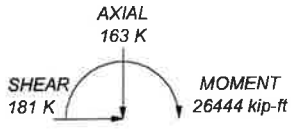
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 818 K
SHEAR: 109 K

UPLIFT: -668 K
SHEAR: 92 K



TORQUE 85 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 268 kip-ft
REACTIONS - 140 mph WIND

PJFLogo
Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: **280-ft Self Support Tower Haddam, CT**			
Project: **00019-0111**			
Client: Hudson Design Group	Drawn by: Matthew Buske	App'd:	
Code: TIA-222-G	Date: 03/04/20	Scale: NTS	
Path:		Dwg No. E-1	

APPENDIX B

ADDITIONAL CALCULATIONS

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Page 1 of 1
By MRB Date 3/4/2020
Project # 00019-0111.003.8700

Self-Support Tower Anchor Rod Capacity - TIA-G

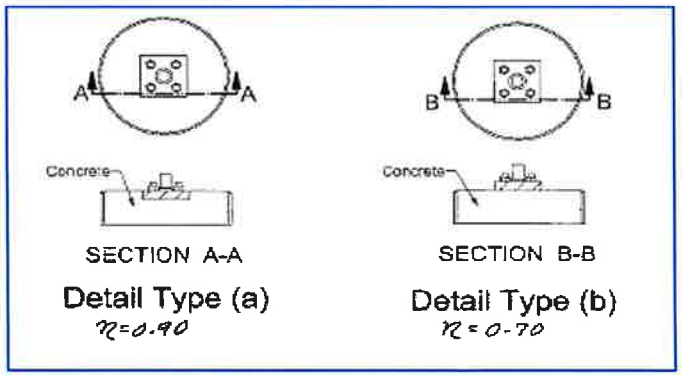
Loads

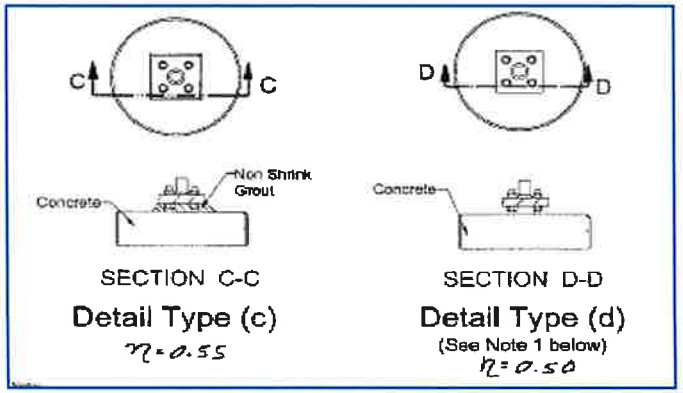
Compression:	818	kips	1.00	Maximum Ratio
Shear :	109	kips		

Existing Anchor Rods

Anchor Rod Condition (n) :	0.5	
Anchor Rod ø :	1 1/4	in
Anchor Rod Quantity :	12	
Anchor Rod Grade :	F1554 Gr. 105	
F_y :	105	ksi
F_u :	125	ksi
Threads per Inch	7	
Total Net Tensile Area	11.63	in^2
ϕ :	0.8	
Total Anchor Rod Capacity ϕR_{nt} :	1162.93	kip
Anchor Rod Ratio :	0.891	

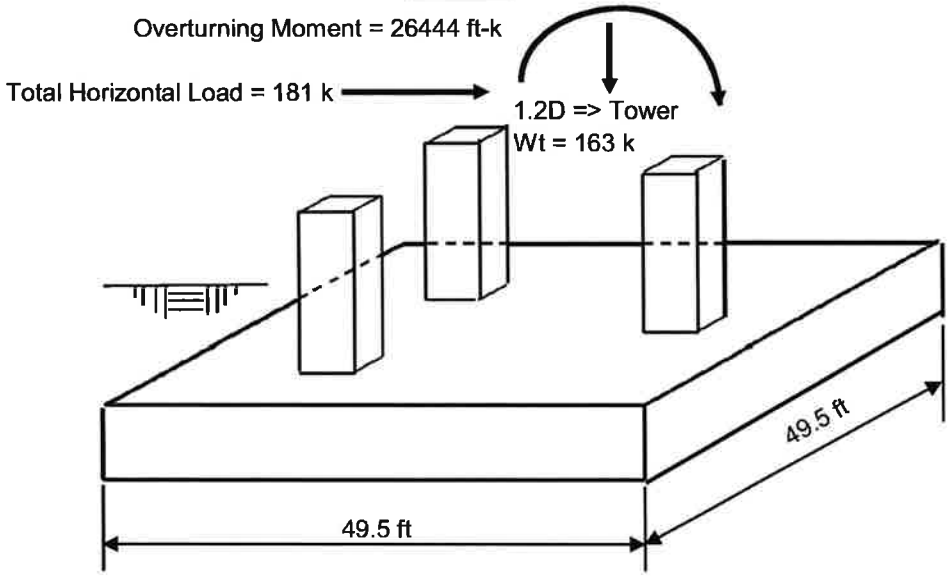
l_{ar} : inches
Moment : k-in

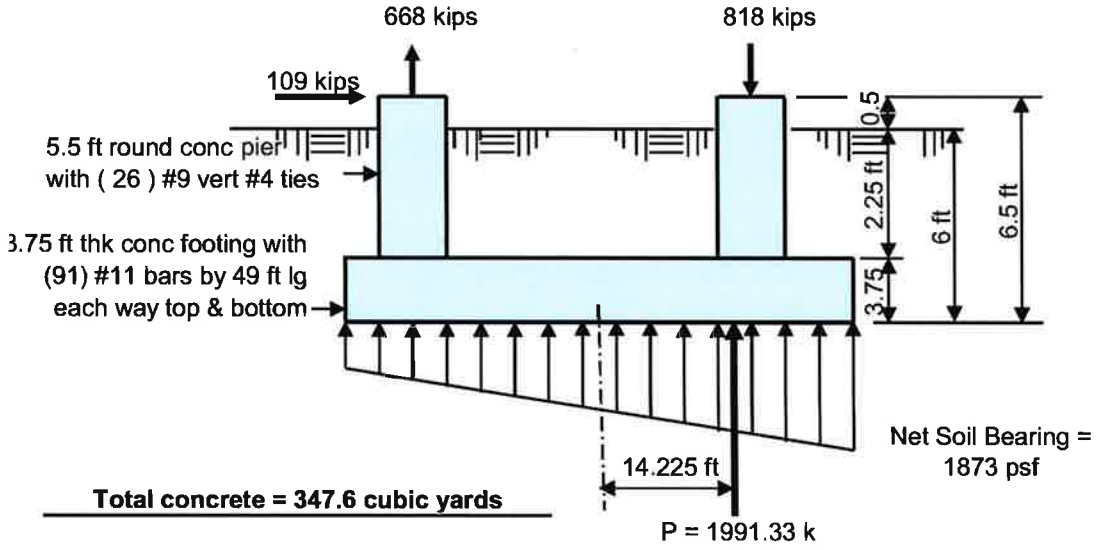




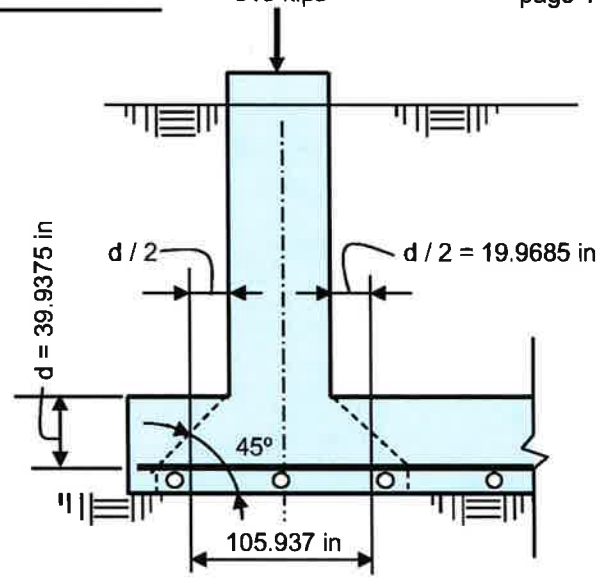
Combined Footing Foundation

Concrete strength F'c =	4	(ksi)
Rebar Strength Fy =	60	(ksi)
Soil Density =	125	(pcf)
Depth to Water Table =	9	(ft)
minimum cover over vert rebar =	3	inches





Total concrete = 347.6 cubic yards



Ftg Overturning Resistance = 49285.4 ft-kips
Total Overturning Moment = 28326.6 ft-kips
Required Overturning Safety Factor = 1
Overturning Safety Factor = 1.74
Ratio = 0.57 OK

Maximum Net Soil Bearing = 2.623 ksf
Ultimate Net Soil Bearing = 9 ksf
Soil Bearing Stress Ratio = 0.29 OK

Ult Punching Shear Capacity = 253 psi
Ult Punching Shear Force = 102 psi
Punching Shear Stress Ratio = 0.41 OK

Pad Bending Moment Capacity= 12627 ft-k
Pad Bending Moment = 3339 ft-k
Bending Moment Stress Ratio = 0.26 OK

Pier Rebar Capacity = -1404 kips
Pier Rebar Required = -668 kips
Pier Rebar Stress Ratio = 0.48 OK

Pad Bending Shear Capacity= 2251 ft-k
Pad Bending Shear = 116 ft-k
Bending Shear Stress Ratio = 0.05 OK

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not performed a site visit to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.

2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.

3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

4) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard ANSI/TIA-222-G. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.

5) The attached sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.

6) Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

ATTACHMENT 5

HUDSON
Design Group LLC

February 25, 2019
May 6, 2019 (Rev.1)

verizon

20 Alexander Drive
Wallingford, CT 06492

RE: Site Name: HIGGANUM SOUTH CT
Site Address: 330 Pokorny Road
Haddam, CT 06441

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Verizon to perform a mount analysis on the existing Verizon antenna mounts to determine their capability of supporting the following equipment loading:

- (3) HBXX-6517DS-A2M Antennas (75.0"x12.0"x6.5" – Wt. = 41 lbs. /each)
- (3) LNX-6515DS-A1M Antennas (96.6"x11.9"x7.1" – Wt. = 44 lbs. /each)
- (3) RC3DC-3315-PF-48 Junction Boxes (28.9"x15.7"x10.3" – Wt. 32 lbs. /each)
- **(6) NHH 65C R2B Antennas (96.0"x11.9"x7.1" – Wt. = 52 lbs. /each)**
- **(3) B2/B66 RRH-BR049 RRH's (15.0"x15.0"x10.0" – Wt. = 85 lbs. /each)**
- **(3) B5/B13 RRH-BR04C RRH's (15.0"x15.0"x8.1" – Wt. = 82 lbs. /each)**

**Proposed equipment shown in bold.*

A survey climb and mapping of the antenna mount was not performed at this site. Mount fabrication drawings prepared by SitePro1 (P/N VFA12-RRU) dated April 7, 2014 were used to perform this analysis.

Based on our analysis, we have determined that the existing antenna mounts **ARE NOT CAPABLE** of supporting the proposed antenna installation. HDG recommends the following modifications:

- **Install new Sector Frame Stabilizer Kit, SitePro1 SFS-V (or approved equal) (typ. of 1 per sector, total of 3).**
- **Install new 2" std. (2.38" O.D.) pipe brace secured to existing mount and tower (typ. of 1 per sector, total of 3).**
- **Install new 2-1/2" std. (2.88" O.D.) pipe masts behind new NHH 65C R2B antennas (typ. of 1 per sector, total of 3).**

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	37	LC3	171%	FAIL
Modified Mount Rating	37	LC1	86%	PASS

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Dr., N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2015 with 2018 Connecticut State Building Code Amendments (See the attached analysis).

Reference Documents:

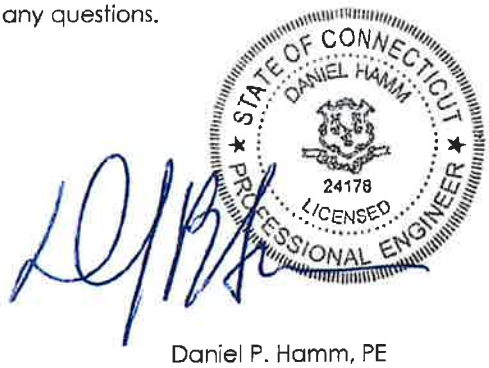
- Fabrication drawings prepared by SitePro1, P/N VFA12-RRU, dated April 7, 2014.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities. Contractor to perform pre-inspection prior to construction.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mounts have been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to Verizon's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 5/6/2019
Project Name: HIGGANUM SOUTH CT
Designed By: JP **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

K_z= **1.107**

z= 149 (ft)
z_g= 1200 (ft)
α= 7.0

$K_{zmin} \le K_z \le 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= **#DIV/0!**

(If Category 1 then K_{zt} =1.0)

Category= **1**

K_h= #DIV/0!
K_e= 0.9 (from Table 2-4)
K_t= 0 (from Table 2-5)
f= 0 (from Table 2-5)
z= 149
H= 0 (Ht. of the crest above surrounding
K_{zt}= 1.00
K_{iz} = 1.16 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness =

t_i = 0.75 in

$t_{iz} = 2.0*t_i*I*K_{iz}*(Kzt)^{0.35}$

t_{iz} = 1.74 in

Date: 5/6/2019
Project Name: HIGGANUM SOUTH CT
Designed By: JP Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h= 200 Gh= 0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh= 1.35 Gh= 1.00

2.6.9.2 Design Wind Force on Appurtenances

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

q_z= 34.70
$q_{z\,(ice)}$= 6.02

K_z= 1.107
K_{zt}= 1.0
K_d= 0.85
V_{max} = 120 mph
$V_{max\,(ice)}$= 50 mph
I= 1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 5/6/2019
Project Name: HIGGANUM SOUTH CT
Designed By: JP Checked By: MSC

HDG HUDS Design G

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.74 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)
HBXX-6517DS-A2M Antenna	75.0	12.0	6.5	6.25	6.25	1.37	296	70
NHH 65C R2B Antenna	96.0	11.9	7.1	7.93	8.07	1.44	395	92
LNX-6515DS-A1M Antenna	96.6	11.9	7.1	7.98	8.12	1.44	398	93
B2/B66 RRH-BR049 RRH	15.0	15.0	10.0	1.56	1.00	1.20	65	17
B5/B13 RRH-BR04C RRH	15.0	15.0	8.1	1.56	1.00	1.20	65	17
RC3DC-3315-PF-48 Junction Box	28.9	15.7	10.3	3.15	1.84	1.20	131	31

Date: 5/6/2019
Project Name: HIGGANUM SOUTH CT
Designed By: JP **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.74 in.
Density of ice: 56 pcf

HBXX-6517DS-A2M Antenna

Weight of ice based on total radial SF area:

Height (in):	75.0	
Width (in):	12.0	
Depth (in):	6.5	
Total weight of ice on object:		204 lbs
Weight of object:	41.0 lbs	
Combined weight of ice and object:		245 lbs

LNX-6515DS-A1M Antenna

Weight of ice based on total radial SF area:

Height (in):	96.6	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		267 lbs
Weight of object:	44.0 lbs	
Combined weight of ice and object:		311 lbs

B5/B13 RRH-BR04C RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	8.1	
Total weight of ice on object:		50 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		132 lbs

1-1/4" Pipe

Per foot weight of ice:

diameter (in):	1.66	
Per foot weight of ice on object:		7 plf

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		10 plf

5/8" Round Bar

Per foot weight of ice:

diameter (in):	0.625	
Per foot weight of ice on object:		5 plf

NHH 65C R2B Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		265 lbs
Weight of object:	52.0 lbs	
Combined weight of ice and object:		317 lbs

B2/B66 RRH-BR049 RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	10.0	
Total weight of ice on object:		53 lbs
Weight of object:	85.0 lbs	
Combined weight of ice and object:		138 lbs

RC3DC-3315-PF-48 Junction Box

Weight of ice based on total radial SF area:

Height (in):	28.9	
Width (in):	15.7	
Depth (in):	10.3	
Total weight of ice on object:		105 lbs
Weight of object:	32.0 lbs	
Combined weight of ice and object:		137 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		9 plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		11 plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		11 plf

HUDSON
Design Group LLC

ANTMO 2019 Mount Calculations
(Existing Conditions)

Bentley

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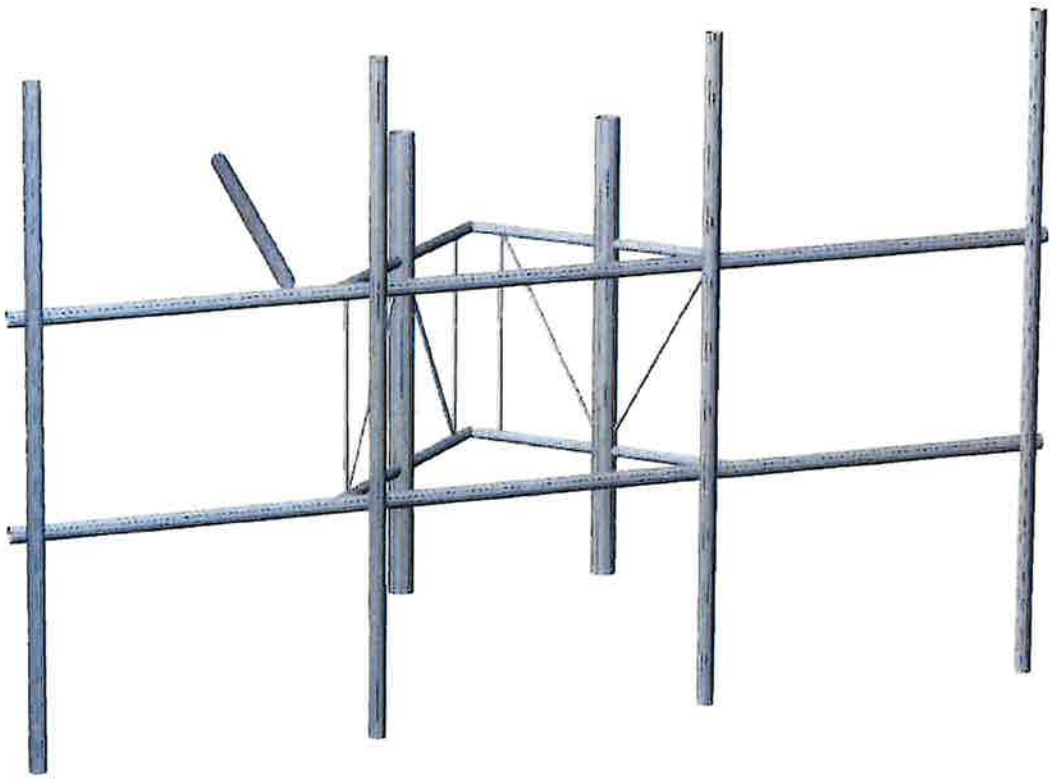

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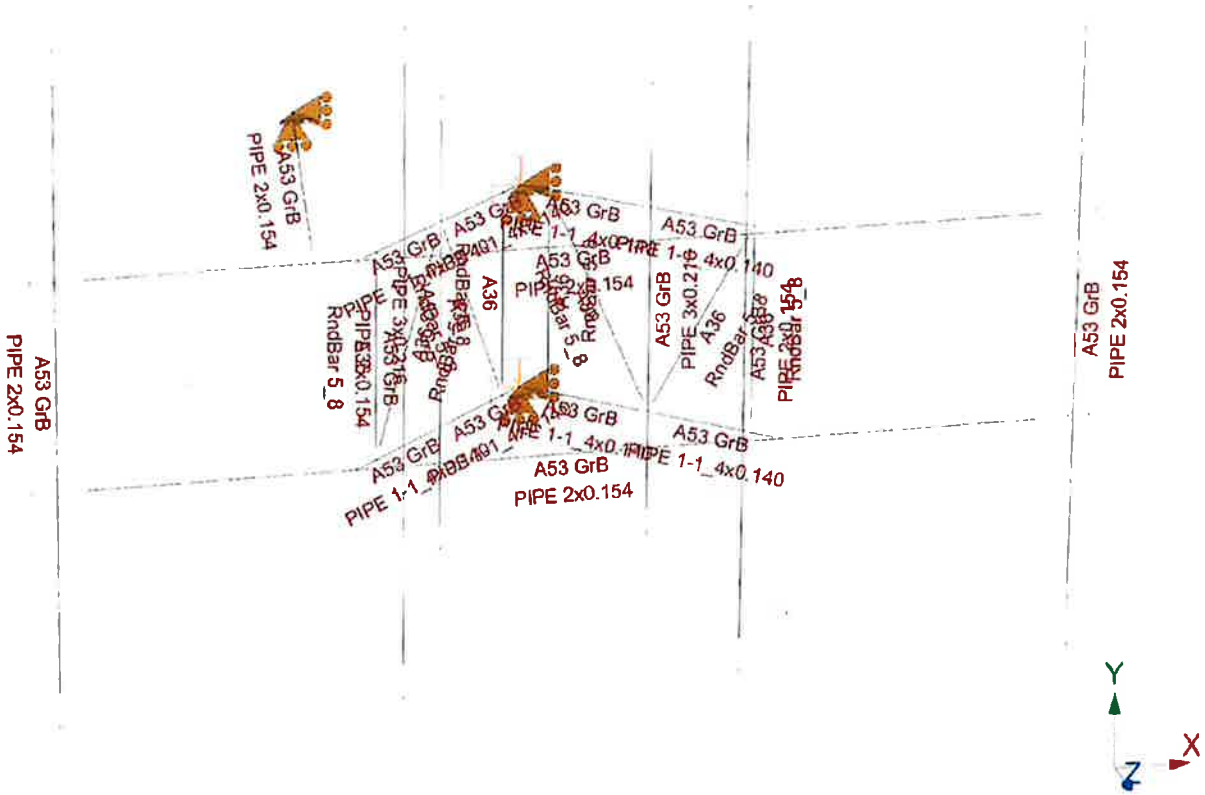

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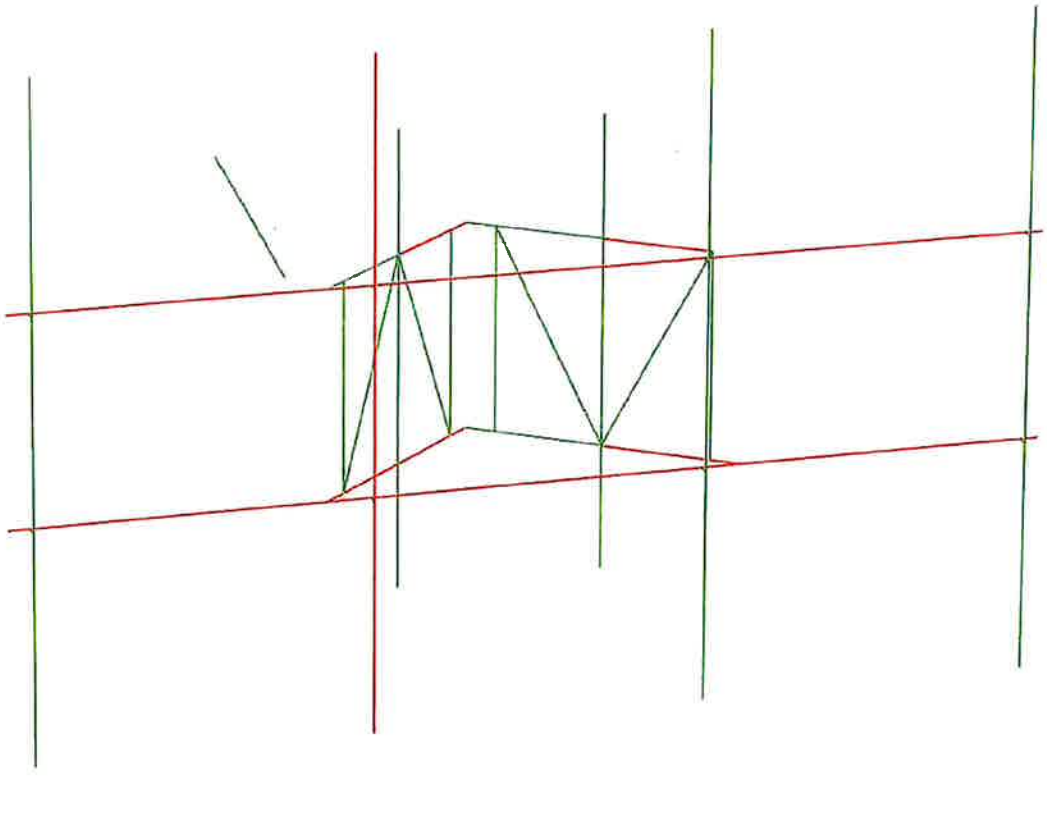
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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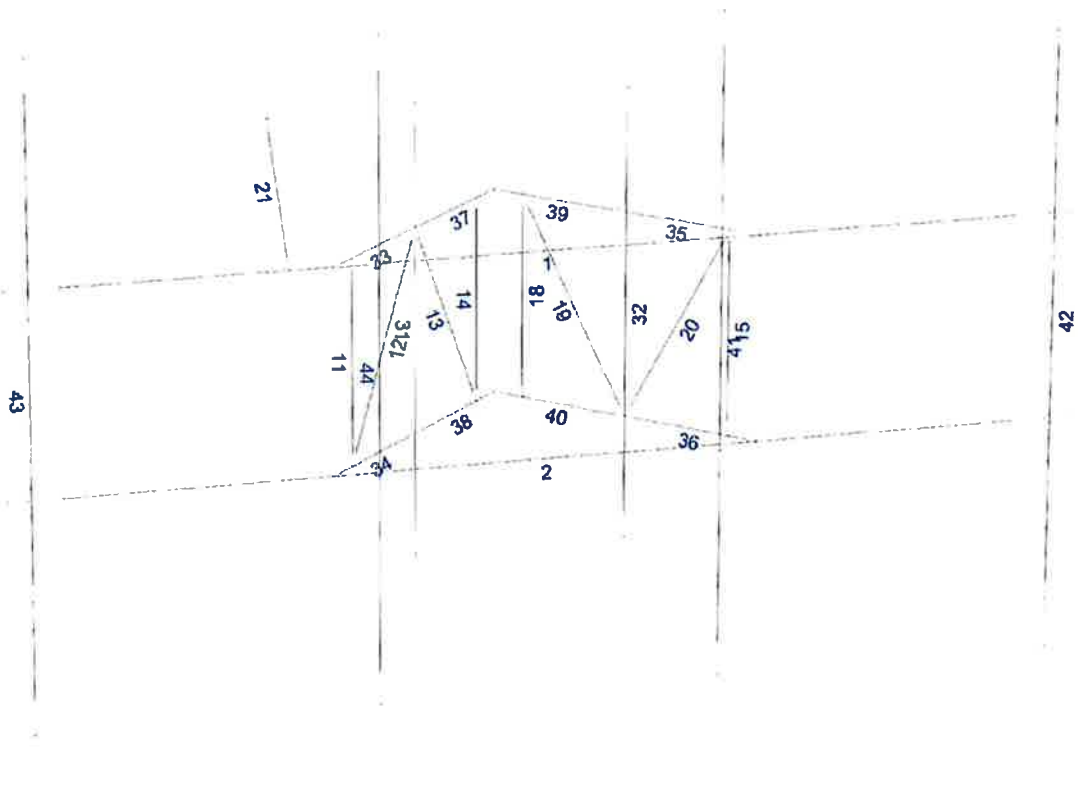

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Load data

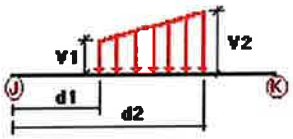
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

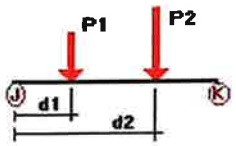
Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Di	1	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	2	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	11	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	13	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	14	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	15	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	19	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	20	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	21	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	31	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	32	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	41	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	42	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	43	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	44	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	31	y	-0.032	0.50	No
		y	-0.085	2.00	No
		y	-0.082	4.00	No
	32	y	-0.085	2.00	No
		y	-0.082	4.00	No
	42	y	-0.022	0.50	No
		y	-0.022	7.50	No
	43	y	-0.021	0.50	No
		y	-0.021	7.50	No
	44	y	-0.052	0.50	No
		y	-0.052	7.50	No
		y	-0.026	4.00	No
Wo	31	z	-0.131	0.50	No
		z	-0.065	2.00	No
		z	-0.065	4.00	No
	32	z	-0.065	2.00	No
		z	-0.065	4.00	No
	42	z	-0.20	0.50	No
		z	-0.20	7.50	No
	43	z	-0.149	0.50	No
		z	-0.149	7.50	No
	44	z	-0.396	0.50	No
		z	-0.396	7.50	No
Wi	31	z	-0.031	0.50	No
		z	-0.017	2.00	No
		z	-0.017	4.00	No
	32	z	-0.017	2.00	No
		z	-0.017	4.00	No
	42	z	-0.047	0.50	No
		z	-0.047	7.50	No
	43	z	-0.035	0.50	No
		z	-0.035	7.50	No
	44	z	-0.092	0.50	No
		z	-0.092	7.50	No
Di	14	y	-0.105	2.00	No
	31	y	-0.105	0.50	No
		y	-0.053	2.00	No
		y	-0.05	4.00	No
	32	y	-0.053	2.00	No
		y	-0.05	4.00	No
	42	y	-0.133	0.50	No
		y	-0.133	7.50	No
	43	y	-0.102	0.50	No
		y	-0.102	7.50	No
	44	y	-0.265	0.50	No
		y	-0.265	7.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_4x0.140	**33**	LC2 at 0.00%	0.84	OK	Eq. H1-1b
		34	LC2 at 0.00%	1.26	N.G.	Eq. H1-1b
		35	LC3 at 100.00%	1.08	N.G.	Eq. H1-1b
		36	LC1 at 0.00%	1.57	N.G.	Eq. H1-1b
		37	LC3 at 100.00%	**1.71**	**N.G.**	Eq. H1-1b
		38	LC3 at 100.00%	1.68	N.G.	Eq. H1-1b
		39	LC3 at 100.00%	0.84	OK	Eq. H1-1b
		40	LC1 at 0.00%	0.43	OK	Eq. H1-1b
	PIPE 2x0.154	**1**	LC2 at 30.47%	1.09	N.G.	Eq. H3-6
		2	LC2 at 70.54%	1.19	N.G.	Eq. H1-1b
		21	LC1 at 0.00%	0.31	OK	Eq. H1-1b
		41	LC1 at 64.58%	0.65	OK	Eq. H1-1b
		42	LC1 at 64.58%	0.73	OK	Eq. H1-1b
		43	LC1 at 35.42%	0.59	OK	Eq. H1-1b
		44	LC1 at 33.33%	**1.56**	**N.G.**	Eq. H1-1b
	PIPE 3x0.216	**31**	LC3 at 29.17%	**0.24**	**OK**	Eq. H1-1b
		32	LC3 at 70.83%	0.15	OK	Eq. H1-1b
	RndBar 5_8	**11**	LC3 at 100.00%	0.26	OK	Eq. H1-1b
		12	LC3 at 0.00%	0.41	OK	Eq. H1-1a
		13	LC3 at 100.00%	0.11	OK	Eq. H1-1b
		14	LC3 at 100.00%	0.54	OK	Eq. H1-1b
		15	LC3 at 100.00%	**0.80**	**OK**	Eq. H1-1b
		18	LC3 at 0.00%	0.09	OK	Eq. H1-1b
		19	LC3 at 100.00%	0.30	OK	Eq. H1-1a
		20	LC3 at 100.00%	0.27	OK	Eq. H1-1b

Bentley

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	-2.60	0
2	-6.25	0.00	0.00	0
3	6.25	0.00	0.00	0
5	2.00	2.75	0.20	0
6	-6.25	-2.50	0.00	0
7	0.00	-2.50	-2.60	0
8	6.25	-2.50	0.00	0
9	-2.50	0.00	0.00	0
10	-2.50	-2.50	0.00	0
11	2.50	0.00	0.00	0
12	2.50	-2.50	0.00	0
13	-2.00	2.75	0.20	0
14	6.00	2.75	0.20	0
16	2.00	-5.25	0.20	0
17	-2.00	-5.25	0.20	0
18	6.00	-5.25	0.20	0
19	-0.2778	0.00	-2.3111	0
26	-2.2222	0.00	-0.2889	0
27	-1.25	0.00	-1.30	0
28	-2.2222	-2.50	-0.2889	0
29	-0.2778	-2.50	-2.3111	0

30	2.2222	-2.50	-0.2889	0
32	1.25	0.00	-1.30	0
33	0.2778	-2.50	-2.3111	0
34	0.2778	0.00	-2.3111	0
35	-2.00	0.00	-6.2889	0
51	1.25	-2.50	-1.30	0
52	-1.25	-2.50	-1.30	0
53	-6.00	2.75	0.20	0
54	-6.00	-5.25	0.20	0
59	-1.25	1.50	-1.30	0
60	1.25	1.50	-1.30	0
61	-1.25	-4.00	-1.30	0
62	1.25	-4.00	-1.30	0
63	-3.00	0.00	0.00	0
31	2.2222	0.00	-0.2889	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
7	1	1	1	1	1	1
35	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	6	8		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	26	28		RndBar 5_8	A36	0.00	0.00	0.00
12	28	27		RndBar 5_8	A36	0.00	0.00	0.00
13	27	29		RndBar 5_8	A36	0.00	0.00	0.00
14	19	29		RndBar 5_8	A36	0.00	0.00	0.00
15	31	30		RndBar 5_8	A36	0.00	0.00	0.00
18	34	33		RndBar 5_8	A36	0.00	0.00	0.00
19	34	51		RndBar 5_8	A36	0.00	0.00	0.00
20	51	31		RndBar 5_8	A36	0.00	0.00	0.00
21	63	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	59	61		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
32	60	62		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
33	9	27		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
34	10	52		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
35	31	32		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
36	12	51		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
37	27	1		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
38	52	7		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
39	32	1		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
40	51	7		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
41	5	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	14	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	53	54		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

44	13	17	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
31	45.00	0	0.00	0.00	0.00
32	45.00	0	0.00	0.00	0.00
41	45.00	0	0.00	0.00	0.00
43	45.00	0	0.00	0.00	0.00
44	45.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
21	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
11	0	0	0	0	0	0	0	0	0	0	Tension only
12	0	0	0	0	0	0	0	0	0	0	Tension only
13	0	0	0	0	0	0	0	0	0	0	Tension only
14	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
18	0	0	0	0	0	0	0	0	0	0	Tension only
19	0	0	0	0	0	0	0	0	0	0	Tension only
20	0	0	0	0	0	0	0	0	0	0	Tension only

HUDSON
Design Group LLC

ANTMO 2019 Mount Calculations
(Modified Conditions)

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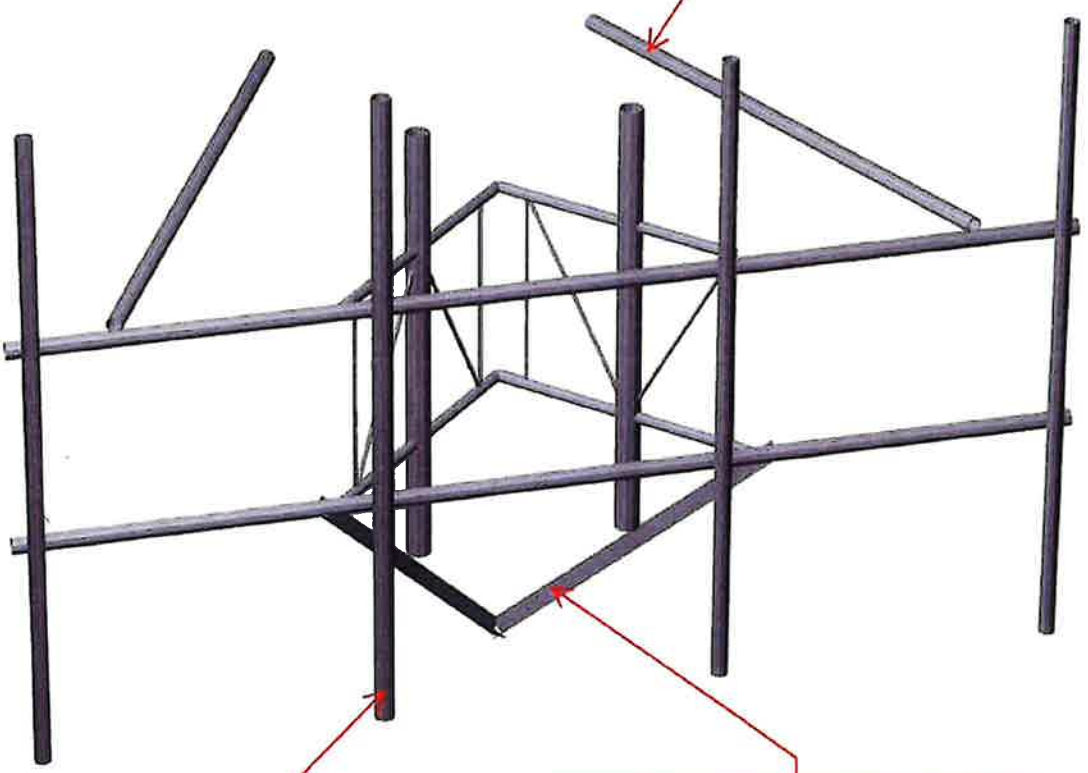

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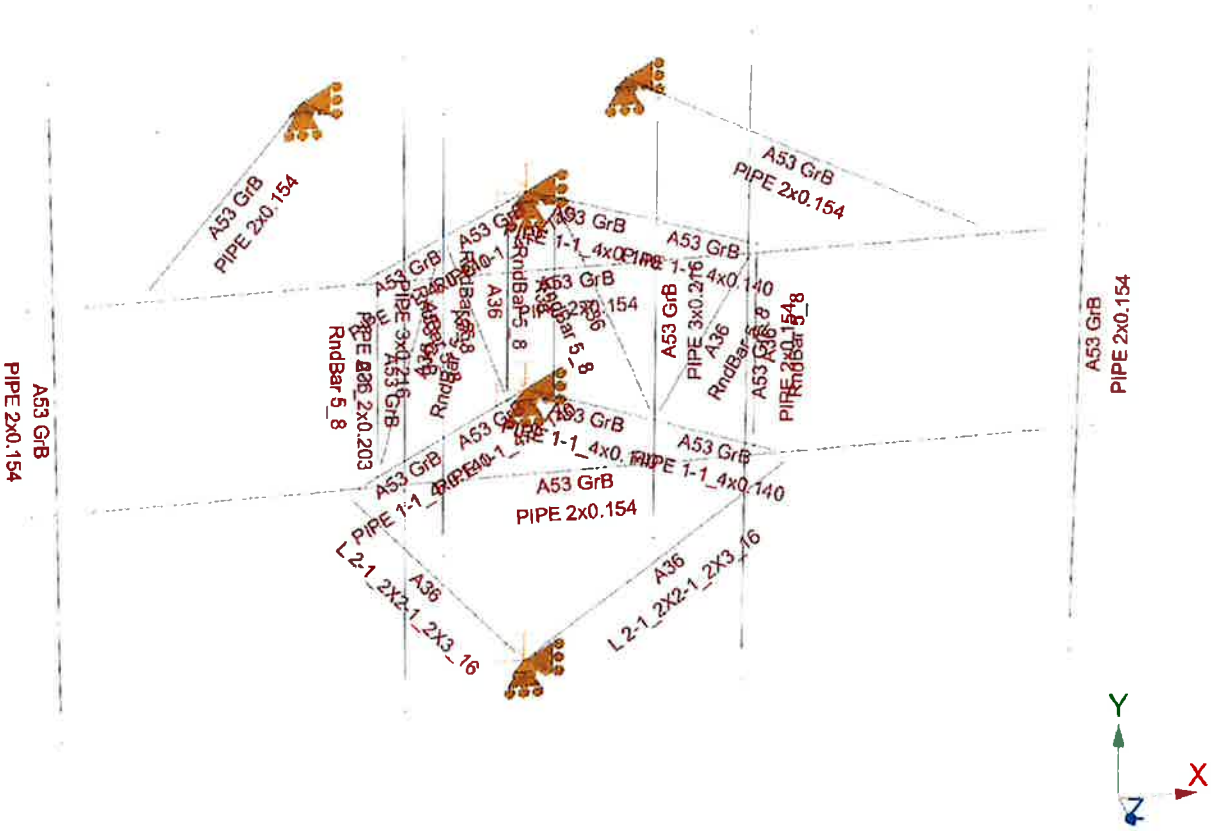

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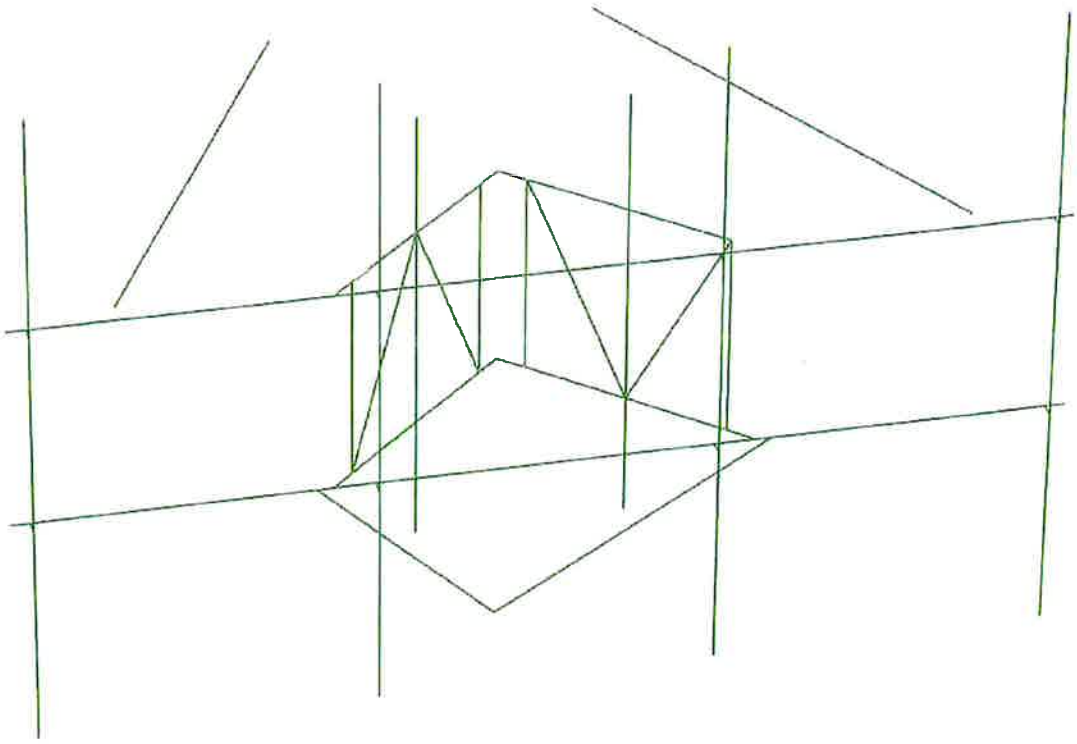
Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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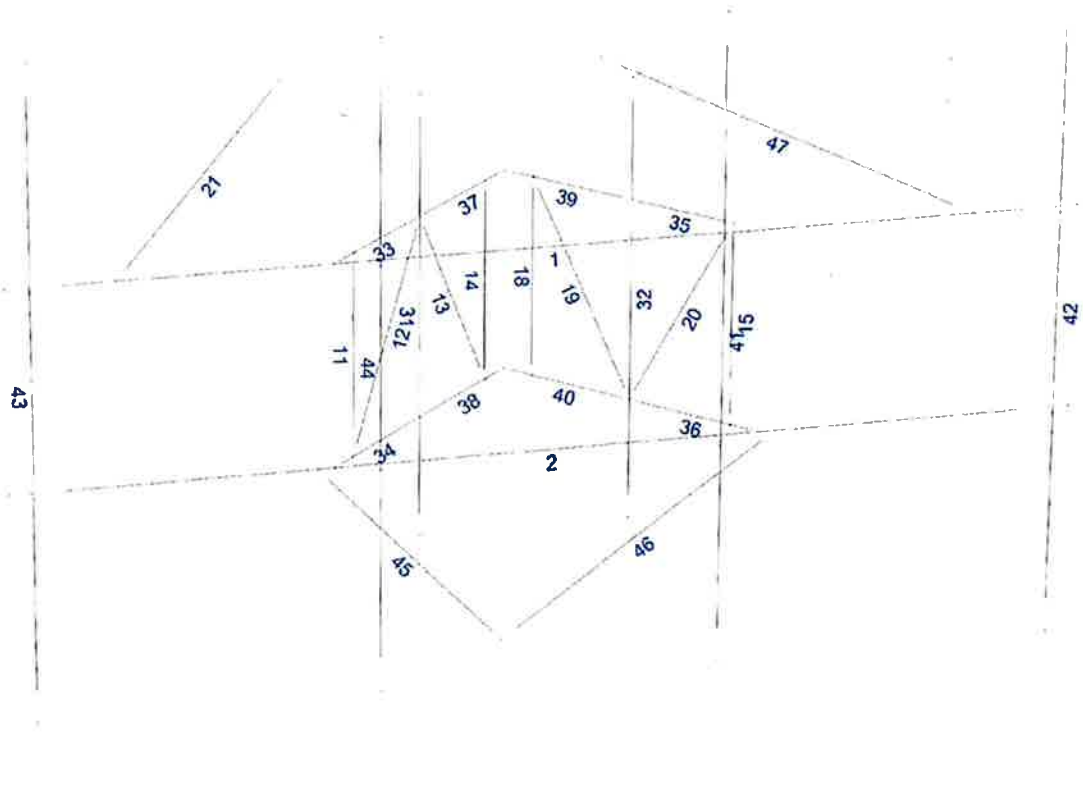

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Load data

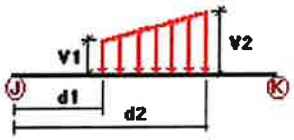
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

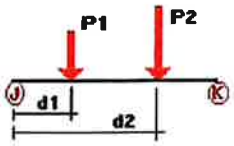
Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Di	1	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	2	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	11	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	12	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	13	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	14	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	15	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	18	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	19	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	20	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	21	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	31	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	32	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	41	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	42	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	43	Y	-0.009	-0.009	0.00	Yes	100.00	Yes
	44	Y	-0.01	-0.01	0.00	Yes	100.00	Yes
	45	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	46	Y	-0.011	-0.011	0.00	Yes	100.00	Yes
	47	Y	-0.009	-0.009	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	31	y	-0.032	0.50	No
		y	-0.085	2.00	No
		y	-0.082	4.00	No
	32	y	-0.085	2.00	No
		y	-0.082	4.00	No
	42	y	-0.022	0.50	No
		y	-0.022	7.50	No
	43	y	-0.021	0.50	No
		y	-0.021	7.50	No
	44	y	-0.052	0.50	No
		y	-0.052	7.50	No
		y	-0.026	4.00	No
Wo	31	z	-0.131	0.50	No
		z	-0.065	2.00	No
		z	-0.065	4.00	No
	32	z	-0.065	2.00	No
		z	-0.065	4.00	No
	42	z	-0.20	0.50	No
		z	-0.20	7.50	No
	43	z	-0.149	0.50	No
		z	-0.149	7.50	No
	44	z	-0.396	0.50	No
		z	-0.396	7.50	No
Wi	31	z	-0.031	0.50	No
		z	-0.017	2.00	No
		z	-0.017	4.00	No
	32	z	-0.017	2.00	No
		z	-0.017	4.00	No
	42	z	-0.047	0.50	No
		z	-0.047	7.50	No
	43	z	-0.035	0.50	No
		z	-0.035	7.50	No
	44	z	-0.092	0.50	No
		z	-0.092	7.50	No
DI	31	y	-0.053	2.00	No
		y	-0.05	4.00	No
		y	-0.105	0.50	No
	32	y	-0.053	2.00	No
		y	-0.05	4.00	No
	42	y	-0.133	0.50	No
		y	-0.133	7.50	No
	43	y	-0.102	0.50	No
		y	-0.102	7.50	No
	44	y	-0.265	0.50	No
		y	-0.265	7.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
DI	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
WI	0.00	0.00	0.00
DI	0.00	0.00	0.00

Bentley

Current Date: 2/22/2019 5:43 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Higganum South CT\ANTMO 2019\Higganum South CT (MOD).etz\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 2-1_2X2-1_2X3_16	**45**	LC1 at 0.00%	**0.38**	**OK**	Eq. H2-1
		46	LC3 at 100.00%	0.30	OK	Eq. H2-1
	PIPE 1-1_4x0.140	**33**	LC2 at 0.00%	0.60	OK	Eq. H1-1b
		34	LC1 at 0.00%	0.46	OK	Eq. H1-1b
		35	LC3 at 100.00%	0.04	OK	Eq. H1-1b
		36	LC2 at 0.00%	0.69	OK	Eq. H1-1b
		37	LC1 at 100.00%	**0.86**	**OK**	Eq. H1-1b
		38	LC3 at 100.00%	0.48	OK	Eq. H1-1b
		39	LC3 at 100.00%	0.25	OK	Eq. H1-1b
		40	LC1 at 100.00%	0.33	OK	Eq. H1-1b
	PIPE 2-1_2x0.203	**44**	LC1 at 33.33%	**0.81**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**1**	LC1 at 90.28%	0.46	OK	Eq. H1-1b
		2	LC1 at 72.22%	0.65	OK	Eq. H1-1b
		21	LC2 at 100.00%	0.14	OK	Eq. H1-1b
		41	LC1 at 64.58%	0.25	OK	Eq. H1-1b
		42	LC1 at 35.42%	0.62	OK	Eq. H1-1b
		43	LC1 at 35.42%	**0.70**	**OK**	Eq. H1-1b
		47	LC2 at 0.00%	0.22	OK	Eq. H1-1b
	PIPE 3x0.216	**31**	LC1 at 27.08%	**0.08**	**OK**	Eq. H1-1b
		32	LC2 at 70.83%	0.03	OK	Eq. H1-1b
	RndBar 5_8	**11**	LC3 at 0.00%	0.10	OK	Eq. H1-1b
		12	LC2 at 0.00%	0.08	OK	Eq. H1-1b
		13	LC1 at 100.00%	0.05	OK	Eq. H1-1b
		14	LC3 at 0.00%	0.12	OK	Eq. H1-1b
		15	LC2 at 100.00%	**0.12**	**OK**	Eq. H1-1b
		18	LC3 at 0.00%	0.03	OK	Eq. H1-1b
		19	LC3 at 100.00%	0.08	OK	Eq. H1-1b
		20	LC3 at 100.00%	0.04	OK	Eq. H1-1b

Bentley

Current Date: 2/22/2019 5:43 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Higganum South CT\ANTMO 2019\Higganum South CT (MOD).etz\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	-2.60	0
2	-6.25	0.00	0.00	0
3	6.25	0.00	0.00	0
5	2.00	2.75	0.20	0
6	-6.25	-2.50	0.00	0
7	0.00	-2.50	-2.60	0
8	6.25	-2.50	0.00	0
9	-2.50	0.00	0.00	0
10	-2.50	-2.50	0.00	0
11	2.50	0.00	0.00	0
12	2.50	-2.50	0.00	0
13	-2.00	2.75	0.20	0
14	6.00	2.75	0.20	0
16	2.00	-5.25	0.20	0
17	-2.00	-5.25	0.20	0
18	6.00	-5.25	0.20	0
19	-0.2778	0.00	-2.3111	0
26	-2.2222	0.00	-0.2889	0
27	-1.25	0.00	-1.30	0
28	-2.2222	-2.50	-0.2889	0
29	-0.2778	-2.50	-2.3111	0

30	2.2222	-2.50	-0.2889	0
32	1.25	0.00	-1.30	0
33	0.2778	-2.50	-2.3111	0
34	0.2778	0.00	-2.3111	0
35	-2.00	0.00	-6.2889	0
51	1.25	-2.50	-1.30	0
52	-1.25	-2.50	-1.30	0
53	-6.00	2.75	0.20	0
54	-6.00	-5.25	0.20	0
59	-1.25	1.50	-1.30	0
60	1.25	1.50	-1.30	0
61	-1.25	-4.00	-1.30	0
62	1.25	-4.00	-1.30	0
63	-5.00	0.00	0.00	0
64	0.00	-6.00	-2.60	0
65	-2.70	-2.50	0.00	0
66	2.70	-2.50	0.00	0
67	5.00	0.00	0.00	0
68	2.00	0.00	-6.2889	0
31	2.2222	0.00	-0.2889	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
7	1	1	1	1	1	1
35	1	1	1	0	0	0
64	1	1	1	1	1	1
68	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	6	8		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	26	28		RndBar 5_8	A36	0.00	0.00	0.00
12	28	27		RndBar 5_8	A36	0.00	0.00	0.00
13	27	29		RndBar 5_8	A36	0.00	0.00	0.00
14	19	29		RndBar 5_8	A36	0.00	0.00	0.00
15	31	30		RndBar 5_8	A36	0.00	0.00	0.00
18	34	33		RndBar 5_8	A36	0.00	0.00	0.00
19	34	51		RndBar 5_8	A36	0.00	0.00	0.00
20	51	31		RndBar 5_8	A36	0.00	0.00	0.00
21	63	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	59	61		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
32	60	62		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
33	9	27		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
34	10	52		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
35	31	32		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
36	12	51		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00

37	27	1	PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
38	52	7	PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
39	32	1	PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
40	51	7	PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
41	5	16	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	14	18	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	53	54	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
44	13	17	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	64	65	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
46	64	66	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
47	67	68	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
31	45.00	0	0.00	0.00	0.00
32	45.00	0	0.00	0.00	0.00
41	45.00	0	0.00	0.00	0.00
43	45.00	0	0.00	0.00	0.00
44	45.00	0	0.00	0.00	0.00
45	270.00	0	0.00	0.00	0.00

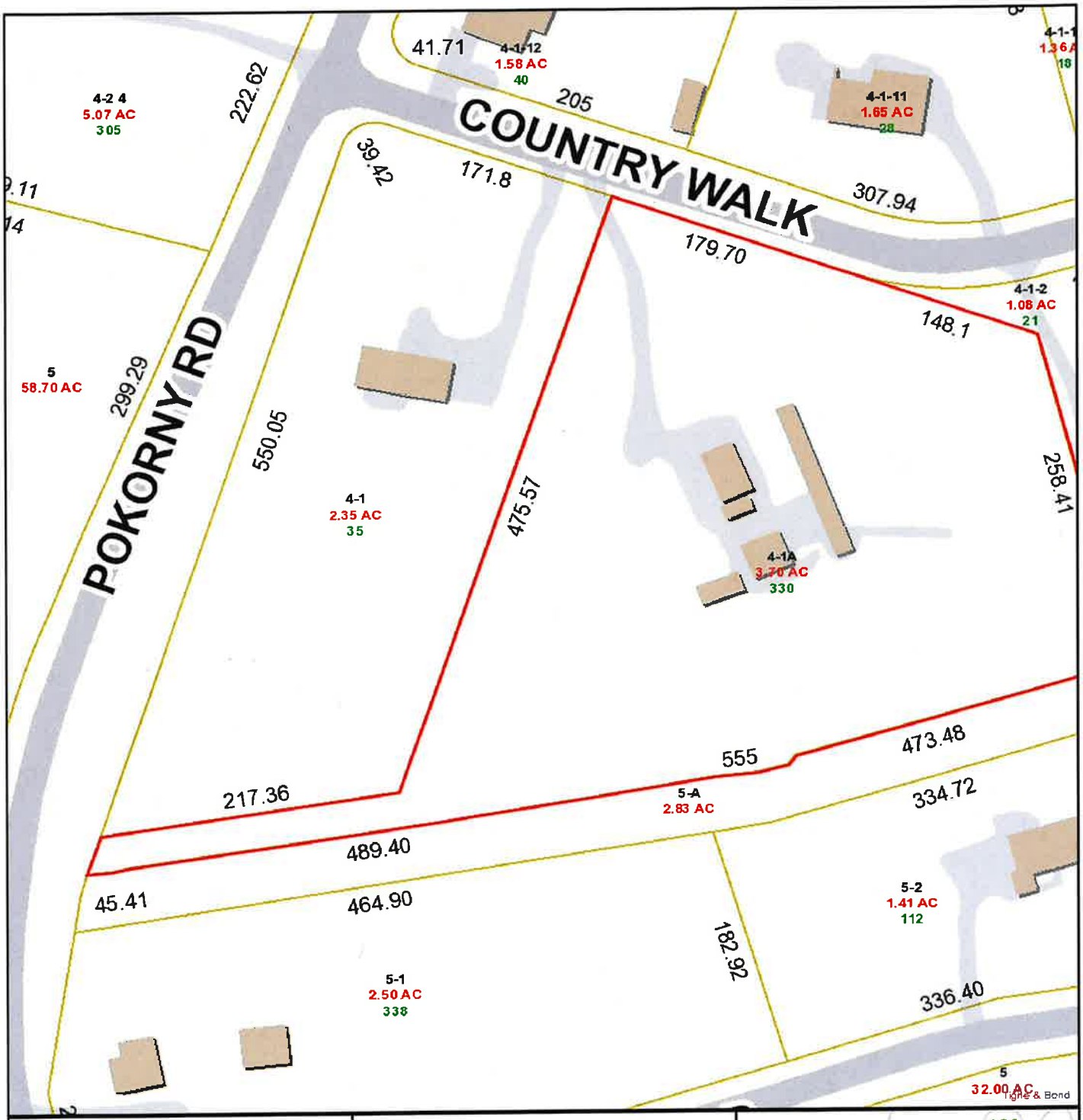
Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
21	0.00	2.00	0.00	0.00	2.00	0.00
47	0.00	2.00	0.00	0.00	2.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
11	0	0	0	0	0	0	0	0	0	0	Tension only
12	0	0	0	0	0	0	0	0	0	0	Tension only
13	0	0	0	0	0	0	0	0	0	0	Tension only
14	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
18	0	0	0	0	0	0	0	0	0	0	Tension only
19	0	0	0	0	0	0	0	0	0	0	Tension only
20	0	0	0	0	0	0	0	0	0	0	Tension only

ATTACHMENT 6



330 POKORNY RD

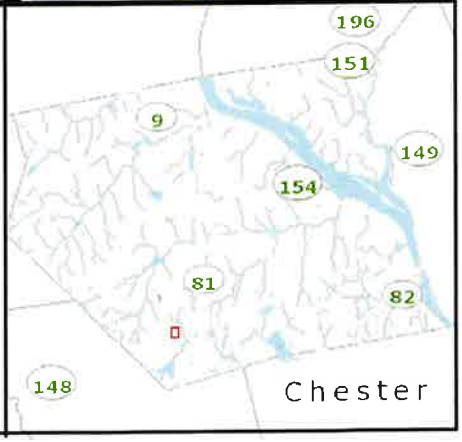
10/3/2019 10:04:07

1"=100'

Property Information

Parcel_ID	55 004 1A
Street Address	330 POKORNY RD
Sale Price	null

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.



Property Location: 330 POKORNY RD | **MAP ID:** 55/ 004/ 1A/ / | **Bldg Name:** | **State Use:** 350

Vision ID: 2699 | **Account #** P0506400 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 08/09/2018 14:02

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
CONN LIGHT + POWER CO	10	6	1	2 Suburban
TAX DEPT	03 Rolling	7		
PO BOX 270				
HARTFORD, CT 06141				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:			
Dev Lot			3.7
Census Tract	5901		R-2A
490 Penalty		Town Line?	
Section	2	Callback Ltr	
GIS ID:		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
UTL LAND	4-1	227,950	159,570
UTL OUTBL	4-3	5,740	4,020
	Total	233,690	163,590

6061
HADDAM, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
CONN LIGHT + POWER CO	132/ 86	08/29/1977	U	V		29

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2017	4-1	159,570	2016	4-1	89,570	2015	4-1	89,570
2017	4-3	4,020	2016	4-3	4,020	2015	4-3	4,020
	Total:	163,590		Total:	93,590		Total:	93,590

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

CELL TOWER LOT AND T-MOBILE AS TENANTS
VACANT W/OB -R2010 GATED
2014 I&E: NA
2017-BP TO ADD VERIZON ANTENNA; ADDED LA
ND LINE TO BE IN LINE W/ OTHER C-TOWERS
SITING COUNCIL INDICATES SPRINT, VERIZON

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	5,740
Appraised Land Value (Bldg)	227,950
Special Land Value	0
Total Appraised Parcel Value	233,690
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	233,690

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
13480		BP	Permit	85,000		100	09/25/2017	ADD VZW ANTENNA,

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
08/17/2015			VA	20	Field Review
09/10/2010			NFB	99	Vacant Land - Inspected

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	350	Cell Tower	R-2A				2.00	AC	113,750.00	0.5385	C	1.00	CELI	1.00				1.00		122,510
1	350	Cell Tower					1.70	AC	3,200.00	1.0000	0	1.00		0.00				1.00		5,440
1	350	Cell Tower					1.00	BL	100,000.00	1.0000	0	1.00	CELI	1.00	LAND LEASE			1.00		100,000

Total Card Land Units: 3.70 AC | Parcel Total Land Area: 3.7 AC | Total Land Value: 227,950

Property Location: 330 POKORNY RD **MAP ID:** 55/ 004/ 1A/ / **Bldg Name:** **State Use:** 350

Vision ID: 2699 **Account #** P0506400 **Bldg #:** 1 of 1 **Sec #:** 1 of 1 **Card** 1 of 1 **Print Date:** 08/09/2018 14:02

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Model	00		Vacant

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
350	Cell Tower	100

COST/MARKET VALUATION

Adj. Base Rate:	0.00
Replace Cost	0
AYB	
Dep Code	
Remodel Rating	
Year Remodeled	
Dep %	
Functional Obsinc	
External Obsinc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	
Apprais Val	
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
SHD1	Shed	FR	Frame	L	638	12.00	1986		0		75	5,740

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0			

No Photo On Record

ATTACHMENT 7

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here ***Postmark with Date of Receipt.***
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		3	neopost 04/23/2020 US POSTAGE $002.84 ZIP 06103 041L1220[illegible]
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Robert McGarry, First Selectman Town of Haddam 30 Field Park Drive Haddam, CT 06348				
2.	Bill Warner, Zoning Enforcement Officer Town of Haddam 30 Field Park Drive Haddam, CT 06348				
3.	The Connecticut Light & Power Company (Eversource) 107 Seldon Street Berlin, Connecticut 06037				
4.					
5.					
6.					

OLD STATE HOUSE STATION 06103
APR 23 2020
USPS