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

September 6, 2006

Karina Fournier
T-Mobile
30 Cold Springs Road
Rocky Hill, CT 06067

RE: **TS-T-MOBILE-014-060817** - Omnipoint Communications, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 405 Brushy Plain Road, Branford, Connecticut.

Dear Ms. Fournier:

At a public meeting held August 31, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the condition that the modifications recommended on page 2 of the structural analysis report sealed by Jaime Reyes, P.E. are performed prior to the antenna installation and that a signed letter from a Professional Engineer is submitted to the Council to certify that the modifications have been properly completed. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated August 17, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Colin C. Tait

Colin C. Tait
Vice Chairman

CCT/MP/laf

c: The Honorable Cheryl P. Morris, First Selectman, Town of Branford
Justine K. Gillen, Zoning Enforcement Officer, Town of Branford
American Tower Corporation
Christopher B. Fisher, Esq., Cuddy & Feder LLP
Michele G. Briggs, New Cingular Wireless PCS, LLC
Kenneth C. Baldwin, Esq., Robinson & Cole LLP

CSC
CONNECTICUT SITING COUNCIL

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August 22, 2006

The Honorable Cheryl P. Morris
First Selectman
Town of Branford
Town Hall
1019 Main Street
P. O. Box 150
Branford, CT 06405-0150

RE: **TS-T-MOBILE-014-060817** - Omnipoint Communications, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 405 Brushy Plain Road, Branford, Connecticut.

Dear Ms. Morris:

The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting scheduled for August 31, 2006 at 1:30 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by August 30, 2006.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/ap

Enclosure: Notice of Tower Sharing

c: Justine K. Gillen, Zoning Enforcement Officer, Town of Branford

T-Mobile®

ORIGINAL

30 Cold Springs Road
Rocky Hill, CT 06067

Karina.Fournier@T-mobile.com
860-796-3988

TS-T-MOBILE-014-060817

August 17, 2006

BY HAND
Colin C Tait, Esq., Chairman and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Tower Sharing Request by T-Mobile**
405 Brushy Plain Road Branford, CT
Latitude: 41 19 00 / Longitude: 72 49 13

Dear Ms. Katz and Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, Omnipoint Communications, Inc. a.k.a. T-Mobile (formerly Voicestream Wireless Corp.) hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed ("Branford American Tower"), in Branford, CT owned by American Tower. T-Mobile and American Tower have agreed to the shared use of Branford American Tower as detailed below.

Branford American Tower

The Branford American Tower facility consists of a one hundred fifty (150') foot monopole ("Tower") owned and operated by American Tower. T-Mobile proposes to locate antennas at a centerline mounting height of one hundred forty (140') feet. The equipment will be located within a compound at the base of the tower.

Branford American Tower

As shown on the enclosed plans prepared by including a site plan and tower elevation of the August 15, 2006, annexed hereto as Exhibit 1, T-Mobile proposes a shared use of the Facility by placing antennas on the tower and equipment needed to provide personal communications services ("PCS") within the existing site plan. T-Mobile will install six (6) antennas at the one hundred forty (140) foot level of the Tower. Three (3) associated unmanned equipment cabinets will be located at the base of the tower.

Connecticut General Statutes § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1).) Further, upon approval of such shared use, it is exclusive and no local zoning or land use approvals are required C.G.S. §16-50x. Shared use of the Branford American Tower satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. Technical Feasibility The existing Tower and compound were designed to accommodate multiple carriers. A structural analysis of the Tower with the proposed T-Mobile installation has been performed and is attached as Exhibit 2. The structural analysis concludes that, with structural modifications, the tower can safely accommodate the proposed T-Mobile antennas. The proposed shared use of this Tower is technically feasible. Further there is sufficient room at the base of the facility, thus the site plan will not have to be altered.

B. Legal Feasibility Pursuant to C.G.S. § 16-50aa, the Council has been authorized to issue an order approving shared use of the existing Spectrasite Hartford (C.G.S. § 16-50aa (C)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation.

C. Environmental Feasibility The proposed shared use would have a minimal environmental effect, for the following reasons:

1.) The proposed installation would have a de minimis visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing facility,

2.) The proposed installation by T-Mobile would not increase the height of the tower nor expand the site plan at the Branford American Tower and will be of minimal impact to the facility;

3.) The proposed installation would not increase the noise levels at the existing facility boundaries by six decibels or more;

4.) Operation of T-Mobile's antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The "worst case" exposure calculated for the operation of this facility for T-Mobile would be approximately 33.7% of the standard. See Radio Frequency Memo dated August 17, 2006, annexed hereto as Exhibit 3.

5.) The proposed shared use of the Branford American Tower will not require any water or sanitary facilities, or generate any air emissions or discharges to water bodies. Further, the installation will not generate any traffic other than for periodic maintenance visits.

D. Economic Feasibility The Applicant and the tower owner have agreed to share use of the Branford American Tower on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety As stated above and evidenced in the Radio Frequency Field Survey annexed hereto as Exhibit 3, the operation of T-Mobile's antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. Further, the addition of T-Mobile's telecommunications service in the Branford area through shared use of the Branford American Tower is expected to enhance the safety and welfare of local residents and travelers through the area resulting in an improvement to public safety in this area.

Conclusion

Branford American Tower satisfies the criteria set forth in C.G.S. § 16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of tower in the State of Connecticut. T-Mobile therefore requests the Siting Council issue an order approving the proposed shared use of the Branford American Tower.

Respectfully submitted,

Karina Fournier
Zoning Dept.
T-Mobile
30 Cold Spring Road
Rocky Hill, CT 06067
(860) 796-3988

cc: First Selectman, Cheryl P. Morris

Exhibit 1

BRANFORD AMERICAN TOWER

405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SITE NUMBER: CTNH102C

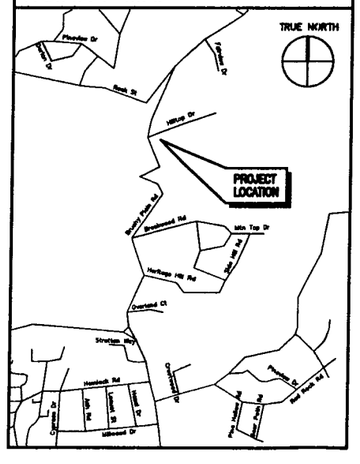
SITE TYPE: CO-LOCATE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION FROM THE PROJECT OWNER'S REPRESENTATIVE TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY:
DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233
CALL BEFORE YOU DIG (CT): 1-800-922-4455

VICINITY MAP

SCALE: 1" = 1,000'



DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE LESSEE/LICENSEE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
A-1	PLANS, ELEVATION, DETAILS & NOTES	1
S-1	STRUCTURAL NOTES, PLANS, SECTIONS & DETAILS	1
E-1	ELECTRICAL NOTES, RISERS & DETAILS	1
E-2	GROUNDING DETAILS	1

PROJECT SUMMARY

SITE NUMBER:	CTNH102C
SITE NAME:	BRANFORD AMERICAN TOWER
SITE ADDRESS:	405 BRUSHY PLAIN ROAD BRANFORD, CT 06405
ASSESSOR'S PARCEL NO.:	MAP: D02 BLOCK: 3 LOT: 1
ZONING DISTRICT:	R-4
SITE TYPE:	CO-LOCATE
STRUCTURE OWNER:	SPECTRASITE AAT 153 NORTHBOROUGH ROAD, SUITE 21 SOUTHBOROUGH, MA 01772 CONTACT: STEVE KINGWELL PHONE: (781) 928-4674
PROPERTY OWNER:	EDWARD & KRISTIN JACONETTE 405 BRUSHY PLAIN ROAD BRANFORD, CT 06405
APPLICANT, LESSEE/LICENSEE, PROJECT OWNER:	OMNIPOINT COMMUNICATIONS, INC. 100 FILLEY STREET BLOOMFIELD, CT 06002

OMNIPOINT COMMUNICATIONS, INC.
A WHOLLY-OWNED SUBSIDIARY OF T-MOBILE USA, INC.
100 FILLEY STREET
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159

CLOUGH HARBOUR & ASSOCIATES LLP
2139 Silas Deane Highway, Suite 212 - Rocky Hill, CT 06067-2338
Main: (860) 257-4667 - www.cloughharbour.com

STATE OF CONNECTICUT
JOHN P. SOBIECH
No. 17827
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A/E _____

PROJECT NO: 10585-1135

DRAWN BY: PAL

CHECKED BY: FM

SUBMITTALS

1	08/15/08	CONSTRUCTION FINAL
0	08/08/08	CONSTRUCTION

CTNH102C
BRANFORD AMERICAN TOWER
405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SHEET TITLE

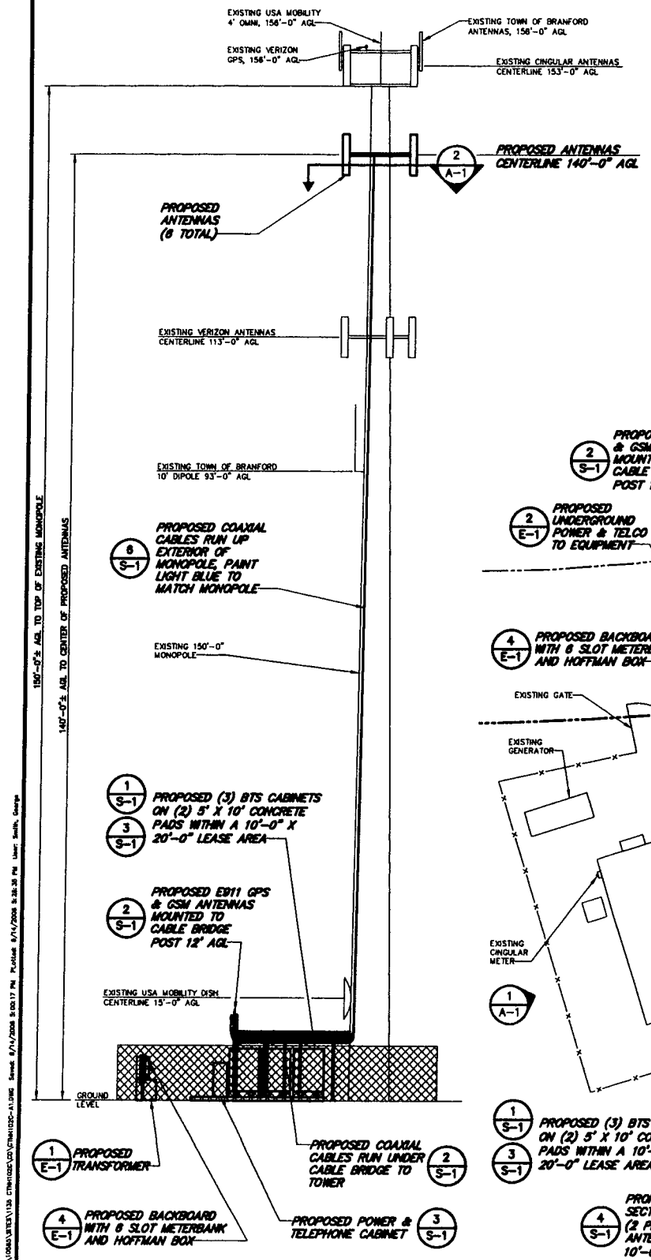
TITLE SHEET

SHEET NUMBER

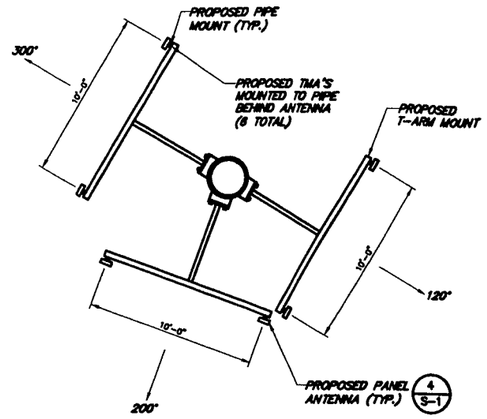
T-1

File: N:\T-MOBILE\WORK ORDERS\10585\UTILITY\1135 CTNH102C-T1.DWG Saved: 8/14/2008 8:33:17 PM Plotted: 8/14/2008 8:37:50 PM User: Smith, George

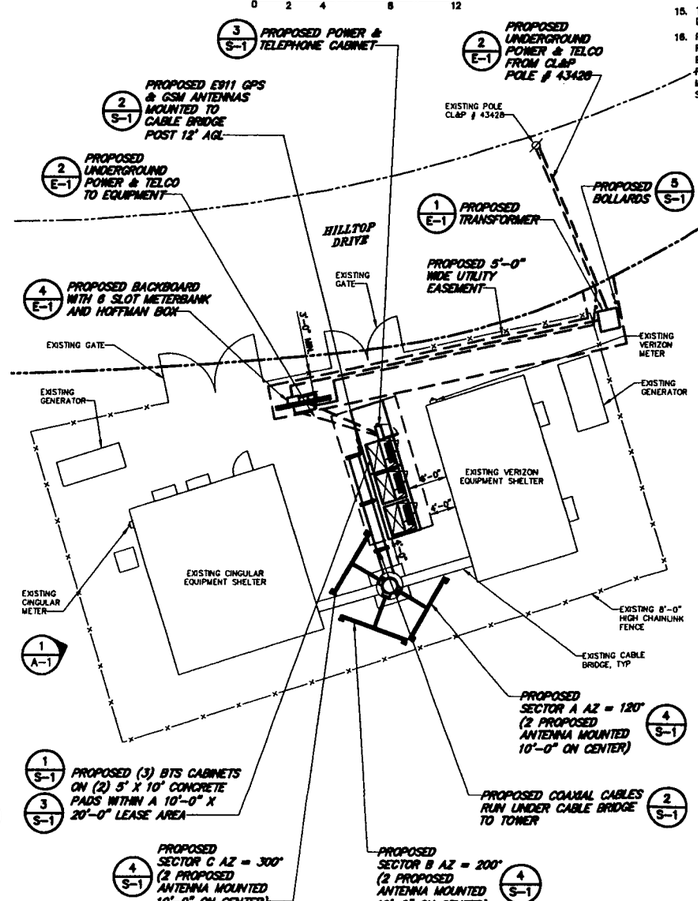
NOTE:
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A GLOBAL STRUCTURAL STABILITY ANALYSIS TO DETERMINE CAPACITY AND SUITABILITY OF EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY PROPOSED EQUIPMENT. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ALL REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



WEST ELEVATION
SCALE: 1" = 10'
1 A-1
0 5 10 20 30



ANTENNA PLAN
SCALE: 1/4" = 1'-0"
2 A-1
0 2 4 8 12
TRUE NORTH

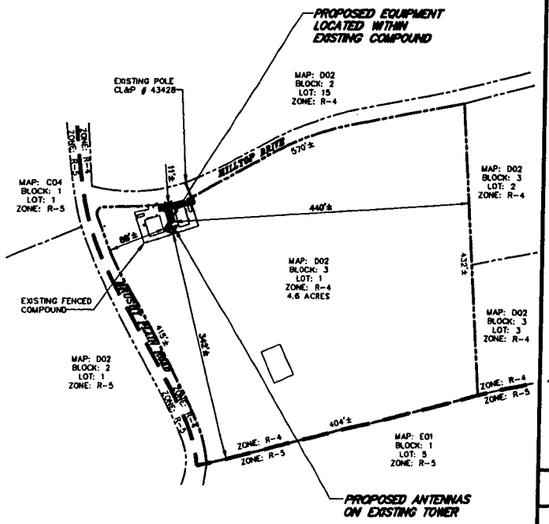


NOTE
DRAWINGS ARE BASED ON A SITE VISIT PERFORMED BY CLOUGH, HARBOUR & ASSOCIATES LLP ON JULY 25, 2008.

ENLARGED PARTIAL PLAN / EQUIPMENT PLAN
SCALE: 1" = 10'
3 A-1
0 5 10 20 30
TRUE NORTH

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.
2. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH OWNER PRIOR TO CONSTRUCTION.
3. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATION OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.
4. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
5. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.
6. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE ATTACHMENT K). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
7. ANTENNAS, SUPPORTS AND CABLE MOUNTS SHALL BE PAINTED TO MATCH EXISTING SURFACES TO WHICH IT IS ATTACHED. PAINT SHALL BE SHERWIN WILLIAMS, COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND LESSEE/LICENSEE GUIDELINES.
8. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
9. EQUIPMENT WILL BE INDEPENDENTLY POWERED WITH SEPARATE METER.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. PRIOR TO EXCAVATION NEAR (E)TOWER, CONTRACTOR TO CONTACT AND COORDINATE WITH PROPERTY OWNER.
12. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.
13. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING.
14. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH.
15. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES DURING CONSTRUCTION.
16. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS FOR WIRELESS COMMUNICATIONS SYSTEMS. LESSEE/LICENSEE IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. LESSEE/LICENSEE RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.



NOTE:
1. PLOT PLAN BASED ON TAX MAP FROM THE TOWN OF BRANFORD.
2. SET BACKS ARE TAKEN FROM PROPOSED EQUIPMENT TO PROPERTY LINES.

PLOT PLAN
SCALE: 1" = 100'
4 A-1
0 50 100 200 300
TRUE NORTH

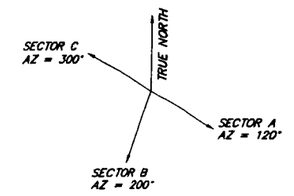
ABBREVIATIONS

ADJ	ADJUSTABLE	OC	ON CENTER
AGL	ABOVE GROUND LEVEL	OPP	OPPOSITE
ARL	ABOVE ROOF LEVEL	SF	SQUARE FOOT
APPROX	APPROXIMATE	SHT	SHEET
C	CONDUIT	SIM	SIMILAR
CONC	CONCRETE	STL	STEEL
CONT	CONTINUOUS	TOC	TOP OF CONCRETE
CJ	CONSTRUCTION JOINT	TOM	TOP OF MASONRY
DIA	DIAMETER	TYP	TYPICAL
DWG	DRAWING	VIF	VERIFY IN FIELD
EGB	EQUIPMENT GROUND BAR	UG	UNDERGROUND
EA	EACH	UON	UNLESS OTHERWISE NOTED
ELEC	ELECTRICAL	WWF	WELDED WIRE FABRIC
EL	ELEVATION	W/	WITH
EQ	EQUAL	BTS	BASE TRANSMISSION STATION
EQUIP	EQUIPMENT		
(E)	EXISTING	LNA	LOW NOISE AMPLIFIER
EXT	EXTERIOR		
FCM	FIELD CONSTRUCTION MANAGER	PCS	PERSONAL COMMUNICATIONS SERVICES
FF	FINISHED FLOOR		
FG	FINISHED GRADE	A-1	ANTENNA MARK NO.
GA	GAUGE		
GALV	GALVANIZED	PL	PLATE
GC	GENERAL CONTRACTOR	&	AND
LG	LONG	@	AT
MAX	MAXIMUM		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MGB	MASTER GROUND BAR		
MIN	MINIMUM		
MTL	METAL		
NIC	NOT IN CONTRACT		
NTS	NOT TO SCALE		

SYMBOLS AND MATERIALS

NEW ANTENNA	GROUT / PLASTER
EXISTING ANTENNA	BRICK
ASPHALT	MASONRY
NEW ACCESS EASEMENT	CONCRETE
CONCRETE	EARTH
ELECTRIC BOX	GRAVEL
LIGHT POLE	PLYWOOD
FND. MONUMENT	SAND
X100 SPOT ELEVATION	WOOD CONT.
SET POINT	WOOD BLOCKING
REVISION	STEEL
GRID REFERENCE	CENTER LINE
DETAIL REFERENCE (DET. 1 / SHT. 1)	PROPERTY LINE
	STEPPED FOOTING
ELEVATION (DET. 2 / SHT. 2)	MATCH LINE
	WORK POINT
SECTIONS & DETAILS (DET. 3 / SHT. 3)	GROUND WIRE
	COAXIAL CABLE

ANTENNA ORIENTATION KEY



OMNIPOINT COMMUNICATIONS, INC.
A WHOLLY-OWNED SUBSIDIARY OF T-MOBILE USA, INC.
100 FILLEY STREET
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159

CLOUGH HARBOUR & ASSOCIATES LLP
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Main: (860) 257-4667 · www.cloughharbour.com

STATE OF CONNECTICUT
JOHN P. SOBIECH
No. 17827
LICENSED PROFESSIONAL ENGINEER

APPROVALS

LANDLORD	
LEASING	
R.F.	
ZONING	
CONSTRUCTION	
A/E	

PROJECT NO:	10585-1135
DRAWN BY:	PAL
CHECKED BY:	FM

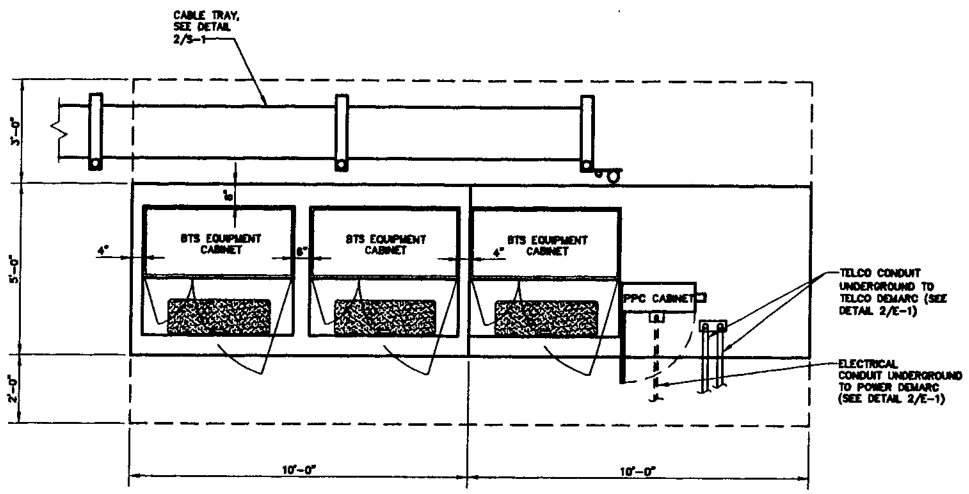
SUBMITTALS

1	08/15/08	CONSTRUCTION FINAL
0	08/08/08	CONSTRUCTION

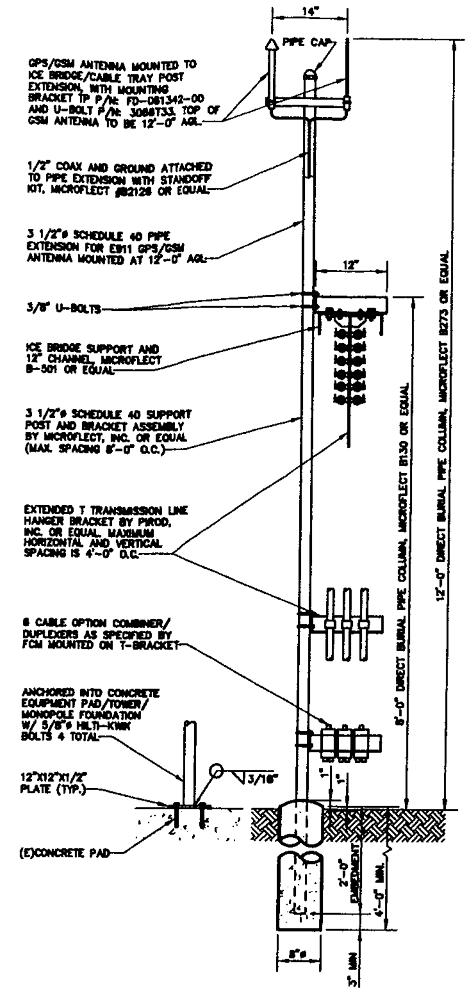
CTNH102C
BRANFORD
AMERICAN TOWER
405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SHEET TITLE
PLANS, ELEVATION, DETAILS & NOTES

SHEET NUMBER
A-1



EQUIPMENT SLAB LAYOUT
NO SCALE
1 S-1



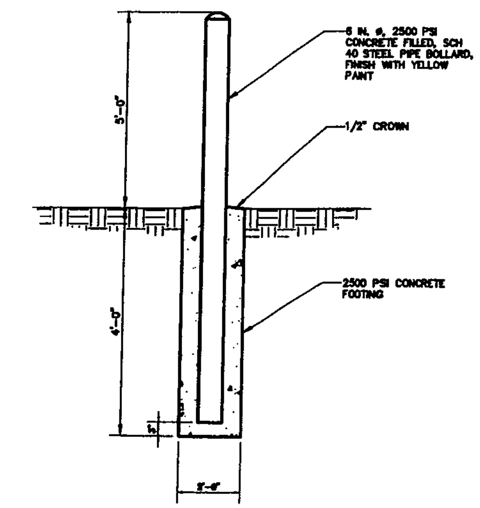
PROFILE AT CABLE BRIDGE
NO SCALE
2 S-1

STRUCTURAL NOTES:

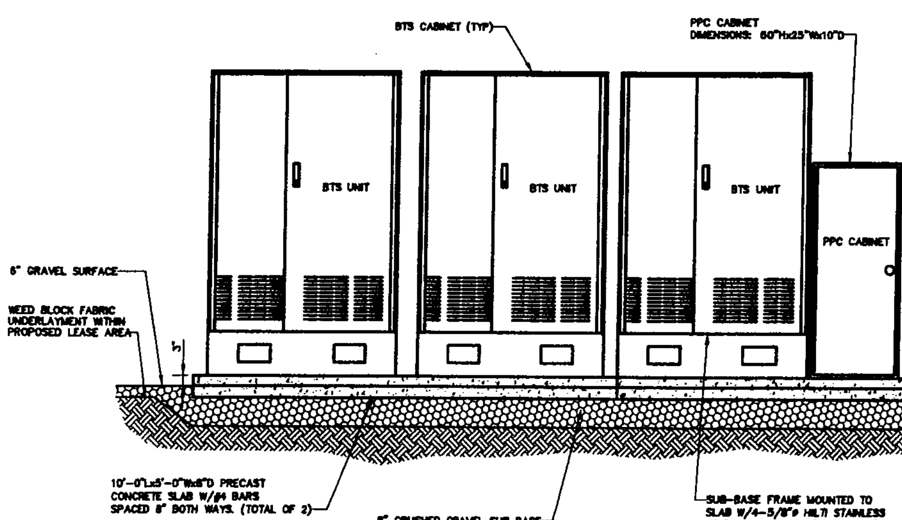
1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, ANSI/ASCE7, EIA/TIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER.
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 AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 STRUCTURAL STEEL UNLESS OTHERWISE NOTED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE A, 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 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 5/8" DIA UNLESS OTHERWISE NOTED.
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 "MANUAL OF STEEL CONSTRUCTION". 9TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING 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. UNISTRUTS 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 1/2" DIAMETER STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-20 AND OR HY-150 SYSYTEMS (AS SPECIFIED ON DWG.) OR ENGINEERS APPROVED EQUAL WITH 4-1/4" MIN. EMBEDMENT DEPTH, UNLESS NOTED OTHERWISE.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE AND ONE HALF (3 1/2) INCHES.
15. GRAVEL SUB BASE AND CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL.
16. CONCRETE FOR FENCE AND ICE BRIDGE SUPPORT SHALL BE 3000 PSI AIR ENTRAINED (4%-6%) NORMAL WEIGHT CONCRETE.
17. ALL CAST IN PLACE CONCRETE SHALL BE MIXED AND PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318 AND ACI 301.
18. THE FOLLOWING MINIMUM CONCRETE COVER OVER REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

    CONCRETE CAST AGAINST EARTH ... 3 INCHES.
    CONCRETE EXPOSED TO EARTH OR WATER
    #6 AND LARGER ....2 INCHES
    #5 AND SMALLER ....1 1/2 INCHES

    ALL EXPOSED EDGES SHALL BE PROVIDED WITH A 3/4"x3/4" CHAMFER UNLESS OTHERWISE NOTED.
19. 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.

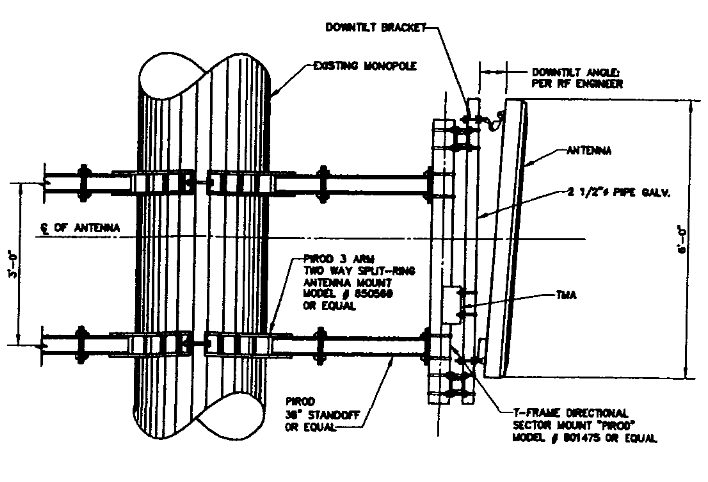


BOLLARD DETAIL
NO SCALE
5 S-1

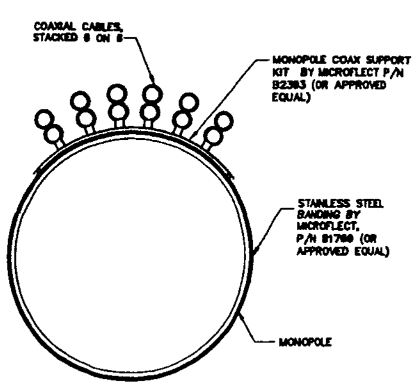


NOTE:
PROPOSED ICE BRIDGE NOT SHOWN FOR CLARITY.

EQUIPMENT SLAB LAYOUT
NO SCALE
3 S-1



ANTENNA MOUNTING DETAIL
NO SCALE
4 S-1



MONOPOLE CABLE MOUNT
NO SCALE
6 S-1

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STATE OF CONNECTICUT
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No. 17827
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

LANDLORD ______
LEASING ______
R.F. ______
ZONING ______
CONSTRUCTION ______
A/E ______

PROJECT NO: 10585-1135

DRAWN BY: PAL

CHECKED BY: PMP

SUBMITTALS

1	08/15/06	CONSTRUCTION FINAL
0	08/08/06	CONSTRUCTION

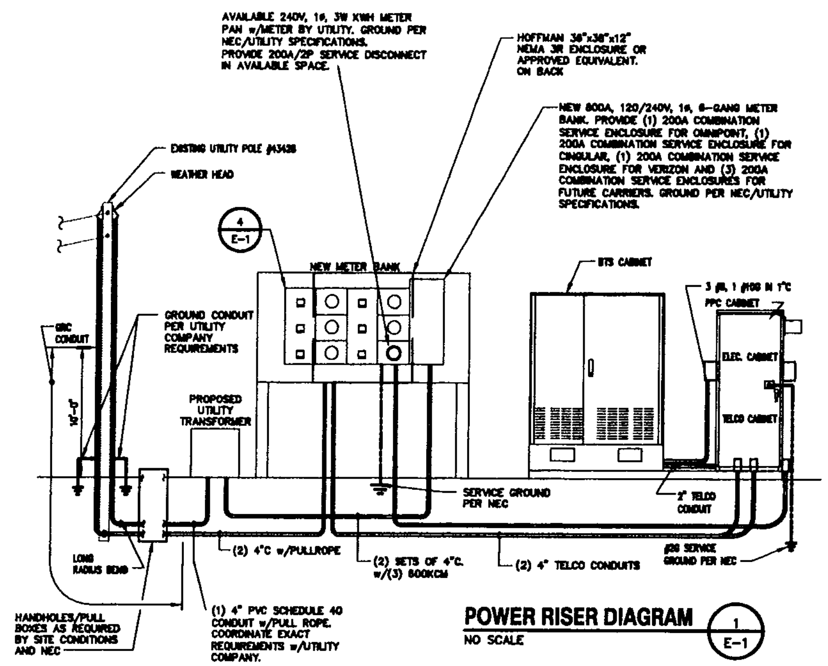
CTNH102C
BRANFORD
AMERICAN TOWER
405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SHEET TITLE

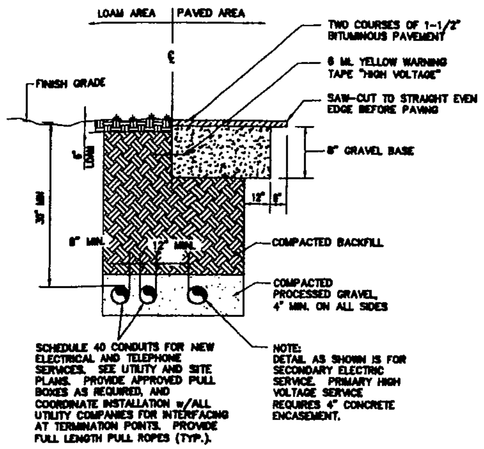
STRUCTURAL NOTES, PLANS, SECTIONS & DETAILS

SHEET NUMBER

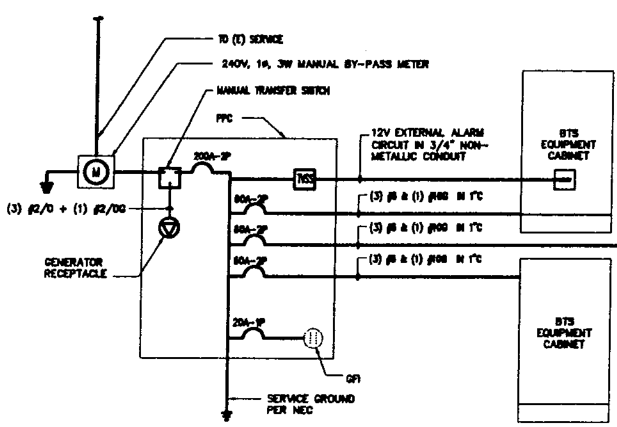
S-1



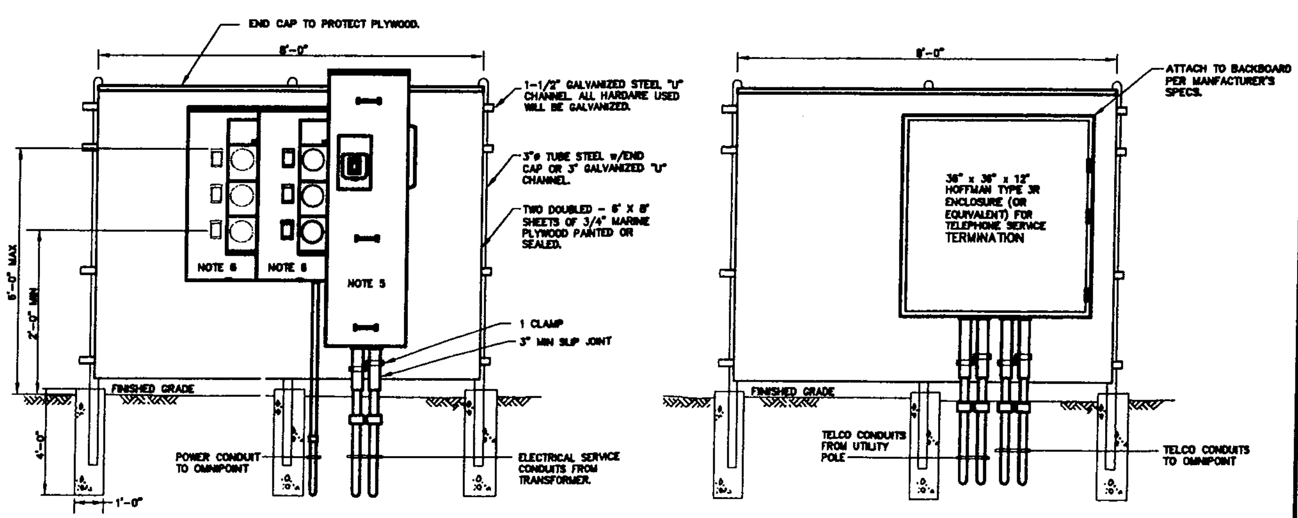
POWER RISER DIAGRAM (1/E-1)
NO SCALE



BURIED CONDUIT DETAIL (2/E-1)
NO SCALE



ONE LINE DIAGRAM (3/E-1)
NO SCALE



NOTES:

1. ALL UNUSED METERS TO BE BARREL LOCKED BY CLAP.
2. INDIVIDUAL METER SOCKETS WITH INDIVIDUAL BARRIERS AS WELL AS PROVISIONS FOR SEALS AND BARREL LOCKS.
3. SINGLE-PHASE 120/208 VOLT NETWORK, THREE-PHASE 208/102 VOLT NETWORK AND THREE-PHASE 480/277 VOLT SERVICES SHALL BE COLD SEQUENCED.
4. ALL METERS MUST BE PROPERLY IDENTIFIED 'UNIT #'.
5. SQUARE D MAIN LUG CATALOG #EZM1800CBU OR APPROVED EQUIVALENT.
6. SQUARE D METER PACK CATALOG #EZMR113225 OR APPROVED EQUIVALENT.

METERBANK - ELEVATION (4/E-1)
NO SCALE

ELECTRICAL LEGEND

Symbol	Description
(solid panel)	NEW PANEL BOARD, SURFACE MOUNTED
(hatched panel)	EXISTING PANEL BOARD, SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
M	METER
(arc)	CIRCUIT BREAKER
(switch)	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
(switch)	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
(outlet)	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
J	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
(curve)	EXPOSED WIRING
(curve)	HOME RUNS, MINIMUM (2)#10 + (1)#10G IN 3/4" CONDUIT U.O.N.
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER
A	AMPERE
V	VOLT
KWH	KILOWATT-HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
G	GROUND
(ground symbol)	GROUND
MGB	MASTER GROUND BAR ● MECHANICAL CONNECTION • CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR ● MECHANICAL CONNECTION • CADWELD CONNECTION
—G—	GROUND COPPER WIRE, SIZE AS NOTED
(line)	EXPOSED WIRING
(line)	COAXIAL CABLE
(circle)	5/8"x8" COPPER CLAD STEEL GROUND ROD
(line with dots)	● EXOTHERMIC (CADWELD) OR • MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
(ball)	OMNI-DIRECTIONAL ELECTRONICS MARKER SYSTEM (EMS) BALL

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL LAWS.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE A COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATERTIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND, WHERE REQUIRED, IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHNINSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE INSTALLED IN TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND, USE PVC, SCHEDULE 40 CONDUIT. ABOVE GROUND PORTIONS OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE A NEMA 3R ENCLOSURE.
12. PPC PROVIDED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ARTICLE 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURER'S COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THIS DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLES. ALWAYS MAKE AT LEAST 12" RADIUS BENDS, #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR.
18. CONNECTION TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
21. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

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APPROVALS

LANDLORD ______
LEASING ______
R.F. ______
ZONING ______
CONSTRUCTION ______
A/E ______

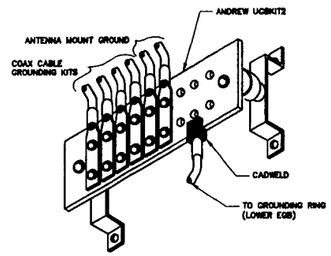
PROJECT NO: 10585-1135
DRAWN BY: AJM
CHECKED BY: CMM

SUBMITTALS		
1	08/15/06	CONSTRUCTION FINAL
0	08/08/06	CONSTRUCTION

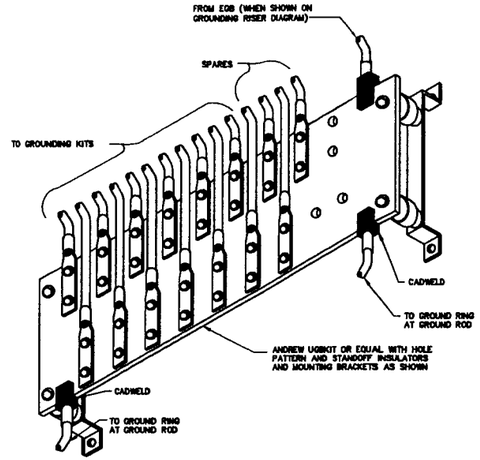
CTNH102C
BRANFORD
AMERICAN TOWER
405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SHEET TITLE
ELECTRICAL NOTES, RISERS & DETAILS

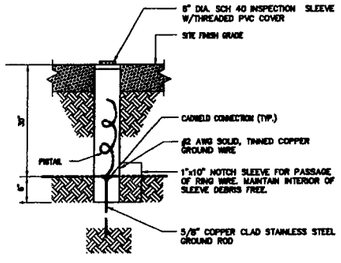
SHEET NUMBER
E-1



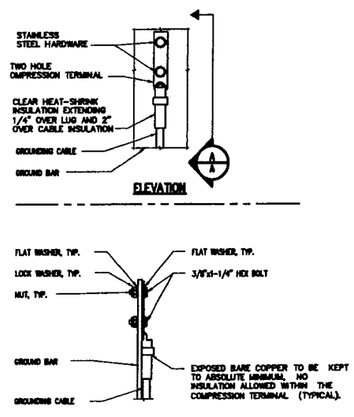
EQUIPMENT GROUND BAR (EGB) — 1 / E-2
NO SCALE



MASTER GROUND BAR (MGB) — 2 / E-2
NO SCALE

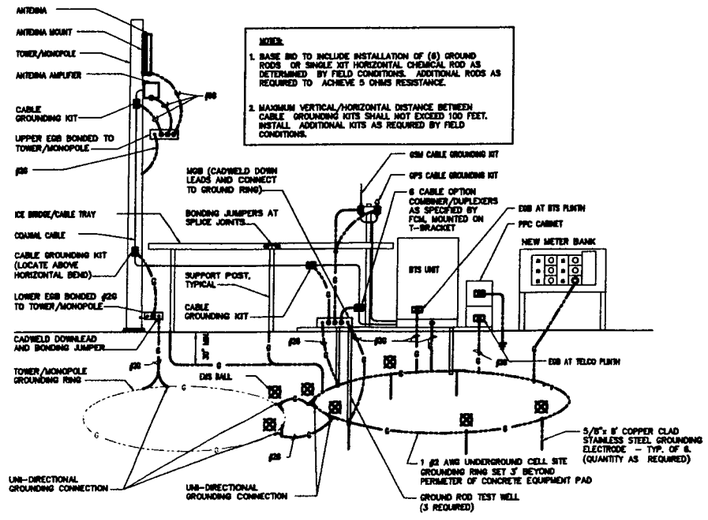


GROUND ROD TEST WELL DETAIL — 3 / E-2
NO SCALE



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTIONS DETAIL — 4 / E-2
NO SCALE



GROUNDING RISER DIAGRAM — 5 / E-2
NO SCALE

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STATE OF CONNECTICUT
JOHN P. SOBIECH
No. 17827
LICENSED PROFESSIONAL ENGINEER

APPROVALS
LANDLORD _____
LEASING _____
R.F. _____
ZONING _____
CONSTRUCTION _____
A/E _____

PROJECT NO: 10585-1135
DRAWN BY: AJM
CHECKED BY: CMM

SUBMITTALS

1	08/15/08	CONSTRUCTION FINAL
0	08/06/08	CONSTRUCTION

CTNH102C
BRANFORD AMERICAN TOWER
405 BRUSHY PLAIN ROAD
BRANFORD, CT 06405

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit 2

AMERICAN TOWER™
CORPORATION

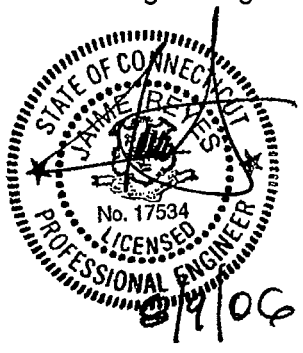
Structural Analysis Report

Structure	:	**150 ft. ITT Meyer monopole**
ATC Site Name	:	**Branford CT 6, CT**
ATC Site Number	:	**302484**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**Branford American Tower**
Carrier Site Number	:	**CTNH102C**
County	:	**New Haven**
Eng. Number	:	**26487323**
Date	:	**August 9, 2006**
Usage	:	**152.9% (Pole shaft)**

Submitted by:
Robert Keith
Project Engineer

American Tower Engineering Services
8505 Freeport Parkway
Suite 135
Irving, TX 75063
Phone: 972-999-8900

Reviewed by:
Jaime Reyes, P.E.
Director of Engineering



AMERICAN TOWER™
CORPORATION

Structural Analysis Report

Structure	:	**150 ft. ITT Meyer monopole**
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ATC Site Number	:	**302484**
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Submitted by:
Robert Keith
Project Engineer

Reviewed by:
Jaime Reyes, P.E.
Director of Engineering

American Tower Engineering Services
8505 Freeport Parkway
Suite 135
Irving, TX 75063
Phone: 972-999-8900

Introduction

The purpose of this report is to summarize results of the structural analysis performed on the 150 ft. ITT Meyer monopole located at Branford CT 6, CT, New Haven County (ATC site# 302484). The tower was originally designed by Paul J. Ford and Company (Job# 29297-629, dated Oct 2, 1997) and manufactured by ITT Meyer (Type "B" per AT&T Spec dated April 13, 1984). The pole base has been modified per SpectraSite Modification Drawing CT-0020 M1.

Analysis

The tower was analyzed using Semaan Engineering Solutions, Inc., Software. The analysis assumes that the tower is in good, undamaged, and non-corroded condition. A 5% overstress is allowed in the existing structural members to account for program variances.

Basic Wind Speed:	90.0 mph (Fastest Mile) / 110.0 mph (3-Second Gust)
Radial Ice:	77.9 mph (Fastest Mile) w/ ½" ice
Code:	TIA/EIA-222 Rev F / 2005 Connecticut Supplement to the International Building Code 2003

Antenna Loads

The following antenna loads were used in the tower analysis:

Existing Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
156.0	2	Decibel DB408	Platform w/ Rails	(2) 7/8	Town of Branford
	1	4' Omni		(1) 1 5/8	USA Mobility
	1	GPS		(1) 1/2	Verizon
153.0	6	CSS DUO1417-8686		(9) 1 1/4	Cingular
	6	Cleargain TMD1900		-	
113.0	6	Decibel DB844H90E	(3) T-Arm	(6) 1 1/4	Verizon
	3	DB932DG90E-M		(6) 1 1/4	
93.0	1	10' Dipole	(1) Standoff	(1) 7/8	Town of Branford
15.0	1	Channel Master 1.2 M Dish	Dish Mount	(1) RG6	USA Mobility

Proposed Antennas

Elev. (ft)	Qty	Antennas	Mount	Coax	Carrier
140.0	6	RFS APX16PV-16PVL-E	(3) T-Arm	(12) 1 5/8	T-Mobile
	6	Remec G20057A1 TMA		-	

Install proposed coax on outside of monopole, stacked in two rows 6-on-6.

Results

The existing 150 ft. ITT Meyer monopole with the existing and the proposed antennas is NOT structurally acceptable per TIA/EIA-222 Rev F standards. The following structural members are overstressed:

- Pole shaft from 0' to 115' – 52.9% maximum overstress
- Anchor bolts – 38.0% maximum overstress

The maximum structure usage is: 152.9 % (Pole shaft).

Additional exit and/or entry ports may be required to accommodate the running of the proposed lines to the proposed antennas. These additional ports **may not** be installed without installation drawings providing the location, size and welding requirements of each port.

To ensure compliance with all conditions of this structural analysis, port installation drawings shall be provided by American Tower's Engineering Department under a subsequent project.

Pole Reactions	Original Design Reactions	Current Analysis Reactions	% Of Design
Moment (ft-kips)	3101.5	2526.7	81.5
Shear (kips)	33.0	25.9	78.5

The structure base reactions resulting from this analysis are acceptable when compared to the original reactions.

Modifications

We recommend the following structural modifications:

- Reinforce the pole shaft from 0' to 115'.
- Install additional anchor bolts.

Final design and details of the required modifications will be a separate scope of work under a subsequent project.

Conclusion

Based on the analysis results, the structure does not meet the requirements per TIA/EIA-222 Rev F and 2005 Connecticut Supplement to the 2003 IBC standards. However, the tower and foundation can support the existing and proposed equipment after the modifications listed above are completed.

If you have any questions or require additional information, please call 972-999-8900.

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

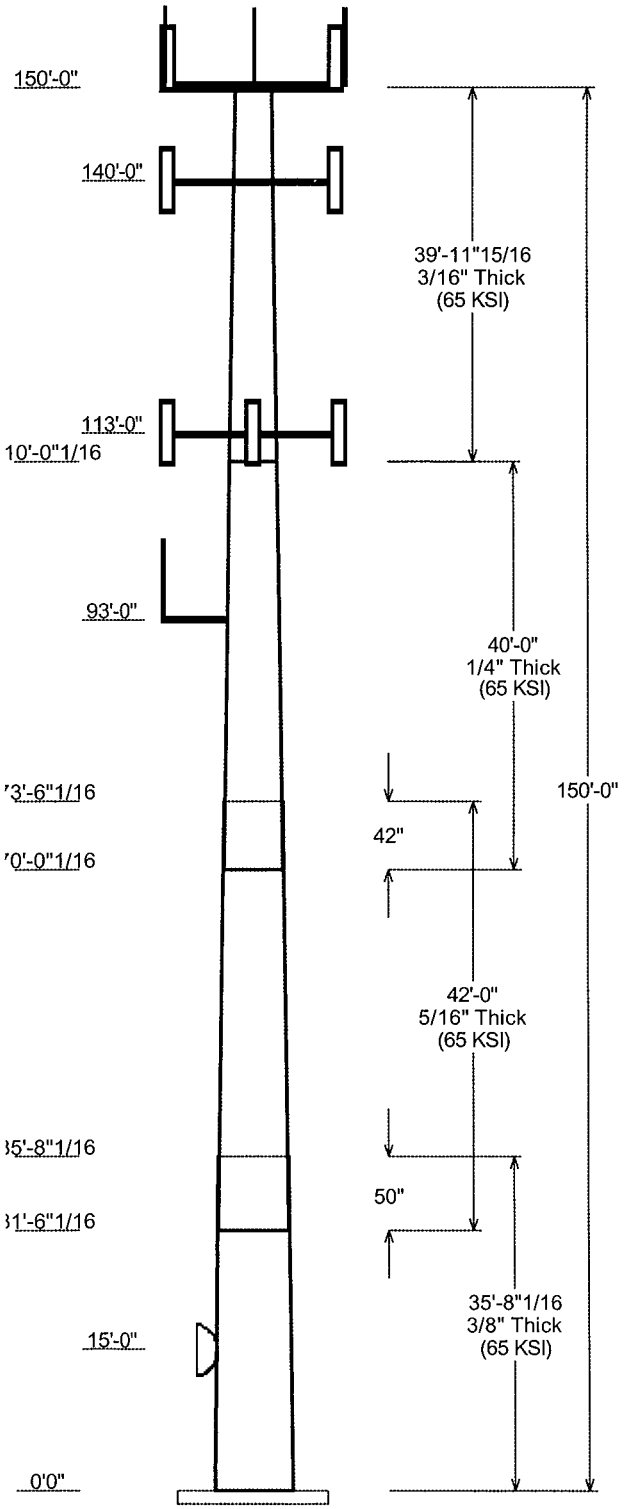
-- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated; and we, therefore, assume that their capacity has not significantly changed from the "as new" condition.

All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Job Information

Pole :	302484 Code: TIA/EIA-222 Rev F
Description :	150 ft. ITT Meyer monopole
Client :	T-Mobile
Location :	Branford CT 6, CT
Shape :	12 Sides Base Elev (ft): 0.00
Height :	150.00 (ft) Taper: 0.156705(in/ft)

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	35.670	31.79	37.38	0.375		0.000	0.156705	65
2	42.000	26.48	33.06	0.313	Slip Joint	50.000	0.156705	65
3	40.000	21.26	27.53	0.250	Slip Joint	42.000	0.156705	65
4	39.997	15.00	21.26	0.188	Butt Joint	0.000	0.156705	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.000	154.710	2	Decibel DB408
150.000	150.000	6	Cleargain TMD1900
150.000	153.000	6	CSS DUO1417-8686
150.000	156.000	1	GPS
150.000	156.000	1	4' Omni
150.000	150.000	1	Platform w/ Rails
140.000	140.000	3	T-Arm
140.000	140.000	6	Remec G20057A1 TMA
140.000	140.000	6	RFS APX16PV-16PVL-E
113.000	113.000	3	T-Arm
113.000	113.000	3	DB932DG90E-M
113.000	113.000	6	Decibel DB844H90E
93.000	93.000	1	Standoff
93.000	97.710	1	10' Dipole
15.000	15.000	1	Channel Master 1.2 M Dish

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	15.000	RG6	No
0.000	93.000	7/8" Coax	No
0.000	113.0	1 1/4" Coax	No
0.000	140.0	1 5/8" Coax	Yes
0.000	150.0	1 1/4" Coax	No
0.000	150.0	1 5/8" Coax	No
0.000	150.0	1/2" Coax	No
0.000	150.0	7/8" Coax	No

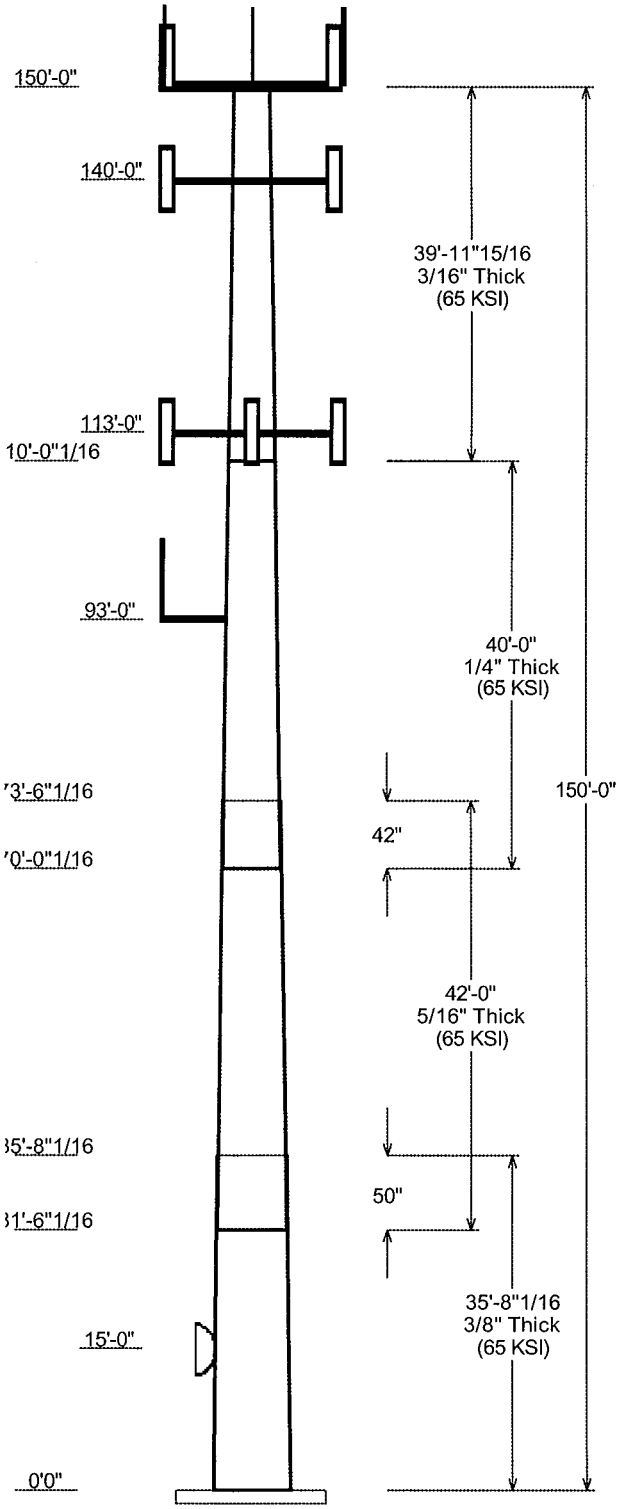
Load Cases

No Ice	90.00 mph Wind with No Ice
Ice	77.94 mph Wind with Ice
Twist/Sway	50.00 mph Wind with No Ice

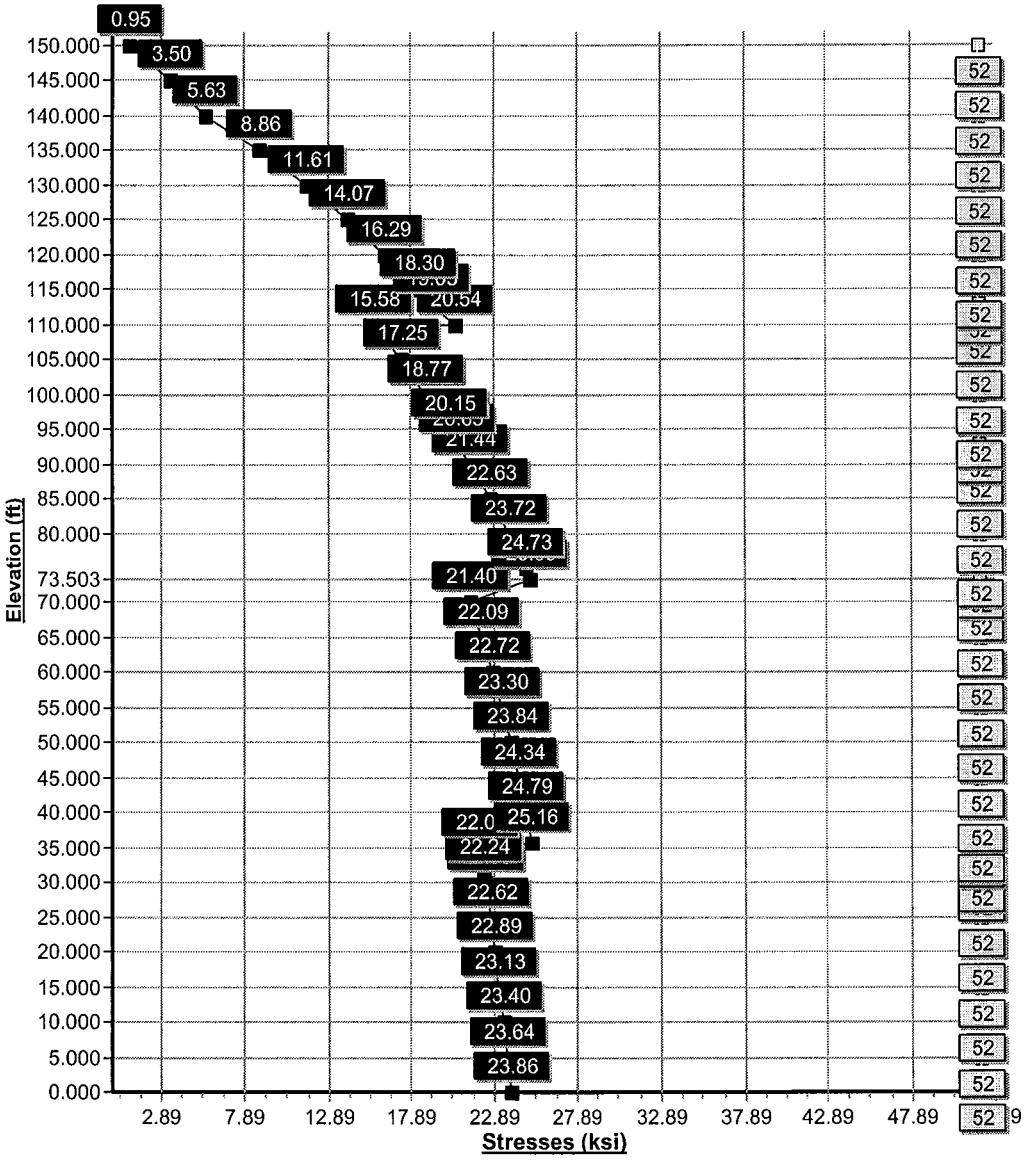
Reactions

Load Case	Moment (Kip-ft)	Shear (Kips)	Axial (Kips)
No Ice	2526.69	25.88	21.80
Ice	2310.18	22.35	29.49
Twist/Sway	785.94	7.99	21.89

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
Twist/Sway	15.00	0.666	0.423



Load Case : Twist/Sway
Max Stress 48.4% at 35.7ft



Height 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Shaft Section Properties

Sect Num	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (sqin)	Bottom Ix (in^4)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (sqin)	Top Ix (in^4)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1	35.670	0.3750	65		0.00	5,014	37.38	0.000	44.68	7810.1	24.57	99.68	31.79	35.67	37.93	4778.6	20.57	84.77	0.15671
2	42.000	0.3130	65	Slip Joint	50.00	4,244	33.06	31.50	33.01	4521.4	26.17	105.6	26.48	73.50	26.38	2306.9	20.53	84.62	0.15671
3	40.000	0.2500	65	Slip Joint	42.00	2,646	27.53	70.00	21.97	2087.4	27.37	110.1	21.26	110.0	16.92	954.0	20.65	85.07	0.15671
4	39.997	0.1880	65	Butt Joint	0.00	1,479	21.26	110.0	12.76	723.8	28.17	113.1	15.00	150.0	8.97	251.1	19.24	79.79	0.15671
				Shaft Weight		13,383													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Distance From Face (ft)	Vert Ecc (ft)
150.0	Decibel DB408	2	17.00	2.970	1.00	41.00	5.550	1.00	0.000	4.710
150.0	Cleargain TMD1900	6	15.00	1.340	0.67	25.00	1.540	0.67	0.000	0.000
150.0	CSS DUO1417-8686	6	42.50	6.588	0.75	85.01	7.204	0.75	0.000	3.000
150.0	GPS	1	1.50	0.600	1.00	3.50	0.800	1.00	0.000	6.000
150.0	4' Omni	1	5.00	1.500	1.00	12.00	2.000	1.00	0.000	6.000
150.0	Platform w/ Rails	1	1950.00	27.000	1.00	2800.00	38.000	1.00	0.000	0.000
140.0	T-Arm	3	333.00	6.000	0.75	433.00	8.100	0.75	0.000	0.000
140.0	Remec G20067A1 TMA	6	9.92	0.760	0.67	26.00	0.920	0.67	0.000	0.000
140.0	RFS APX16PV-16PVL-E	6	39.60	6.647	0.67	70.66	7.298	0.67	0.000	0.000
113.0	T-Arm	3	333.00	6.000	0.67	433.00	8.100	0.67	0.000	0.000
113.0	DB932DG90E-M	3	9.50	3.600	0.75	35.00	3.910	0.75	0.000	0.000
113.0	Decibel DB844H90E	6	14.00	3.970	0.75	41.00	4.630	0.75	0.000	0.000
93.00	Standoff	1	200.00	2.500	1.00	300.00	3.600	1.00	0.000	0.000
93.00	10' Dipole	1	28.00	2.700	1.00	60.00	4.860	1.00	0.000	4.710
15.00	Channel Master 1.2 M Dish	1	188.00	20.910	1.00	277.00	21.790	1.00	0.000	0.000
	Totals	47	5159.12			7713.41			Number of Loadings :	15

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	No Ice Weight (lb/ft)	No Ice CaAa (sf/ft)	Ice Weight (lb/ft)	Ice CaAa (sf/ft)	Exposed To Wind
0.00	150.00	(9) 1 1/4" Coax	5.67	0.00	0.00	0.00	N
0.00	150.00	(1) 1 5/8" Coax	0.82	0.00	0.00	0.00	N
0.00	150.00	(1) 1/2" Coax	0.15	0.00	0.00	0.00	N
0.00	150.00	(2) 7/8" Coax	0.66	0.00	0.00	0.00	N
0.00	140.00	(12) 1 5/8" Coax	9.84	0.40	28.56	0.60	Y
0.00	113.00	(12) 1 1/4" Coax	7.56	0.00	0.00	0.00	N
0.00	93.00	(1) 7/8" Coax	0.33	0.00	0.00	0.00	N
0.00	15.00	(1) RG6	0.08	0.03	0.16	0.14	N
		Total Weight	3,358.75 (lb)		4,000.79 (lb)		

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Hole Dia (in)	Linear Weight (lb/ft)	Thick (in)	Weight (lb)	Len (ft)
0.00	0.00	0		0	0.00	0.00	0.00	0.00	0.00	0.00
									0.00	

Height 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Segment Properties (Max Len : 5 ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.3750	37.380	44.684	7,810.1	24.57	99.68	65	52	0.0			
5.00		0.3750	36.596	43.737	7,324.4	24.01	97.59	65	52	752.2			
10.00		0.3750	35.813	42.791	6,859.3	23.45	95.50	65	52	736.1			
15.00		0.3750	35.029	41.845	6,414.3	22.89	93.41	65	52	720.0			
20.00		0.3750	34.246	40.899	5,989.0	22.33	91.32	65	52	703.9			
25.00		0.3750	33.462	39.953	5,582.9	21.77	89.23	65	52	687.8			
30.00		0.3750	32.679	39.007	5,195.6	21.21	87.14	65	52	671.7			
31.50	Bot - Section 2	0.3750	32.443	38.722	5,082.8	21.04	86.52	65	52	198.8			
35.00		0.3750	31.895	38.061	4,826.6	20.65	85.05	65	52	456.3			
35.67	Top - Section 1	0.3130	32.416	32.356	4,256.3	25.61	103.57	65	52	160.5			
40.00		0.3130	31.738	31.672	3,992.1	25.03	101.40	65	52	471.7			
45.00		0.3130	30.954	30.882	3,700.9	24.36	98.90	65	52	532.1			
50.00		0.3130	30.171	30.092	3,424.2	23.68	96.39	65	52	518.7			
55.00		0.3130	29.387	29.303	3,161.6	23.01	93.89	65	52	505.3			
60.00		0.3130	28.604	28.513	2,912.8	22.34	91.39	65	52	491.8			
65.00		0.3130	27.820	27.723	2,677.6	21.67	88.88	65	52	478.4			
70.00		0.3130	27.037	26.934	2,455.1	21.00	86.38	65	52	465.0			
70.00	Bot - Section 3	0.3130	27.036	26.933	2,455.0	21.00	86.38	65	52	0.3			
73.50	Top - Section 2	0.2500	26.988	21.524	1,964.0	26.78	107.95	65	52	576.4			
75.00		0.2500	26.753	21.335	1,912.8	26.53	107.01	65	52	109.1			
80.00		0.2500	25.970	20.704	1,748.1	25.69	103.88	65	52	357.6			
85.00		0.2500	25.186	20.074	1,593.2	24.85	100.74	65	52	346.9			
90.00		0.2500	24.403	19.443	1,447.7	24.01	97.61	65	52	336.2			
93.00		0.2500	23.932	19.064	1,364.9	23.51	95.73	65	52	196.5			
95.00		0.2500	23.619	18.812	1,311.3	23.17	94.48	65	52	128.9			
100.0		0.2500	22.836	18.181	1,183.8	22.33	91.34	65	52	314.7			
105.0		0.2500	22.052	17.551	1,064.8	21.49	88.21	65	52	304.0			
110.0		0.2500	21.268	16.920	954.1	20.65	85.07	65	52	293.2			
110.0	Top - Section 3	0.2500	21.268	16.919	954.0	20.65	85.07	65	52	0.2			
110.0	Bot - Section 4	0.1880	21.268	12.761	723.8	28.17	113.13	65	52				
113.0		0.1880	20.798	12.477	676.5	27.50	110.63	65	52	128.7			
115.0		0.1880	20.485	12.287	646.1	27.05	108.96	65	52	84.3			
120.0		0.1880	19.701	11.813	574.1	25.94	104.79	65	52	205.0			
125.0		0.1880	18.918	11.338	507.7	24.82	100.63	65	52	196.9			
130.0		0.1880	18.134	10.864	446.6	23.70	96.46	65	52	188.9			
135.0		0.1880	17.351	10.390	390.6	22.59	92.29	65	52	180.8			
140.0		0.1880	16.567	9.916	339.5	21.47	88.12	65	52	172.7			
145.0		0.1880	15.784	9.441	293.1	20.35	83.96	65	52	164.7			
150.0		0.1880	15.000	8.967	251.1	19.24	79.79	65	52	156.6			
										13,383.0			0.0

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: No Ice 90.00 mph Wind with No Ice 30 Iterations

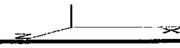
Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Shaft Segment Forces

Seg Top Elev (ft)	Description		Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	As (sf)	CfAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	20.736	35.04	280.35	1.030	0.00	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	20.736	35.04	274.47	1.030	0.00	5.00	15.412	15.87	556.3	0.0	752.2
10.00		0.00	1.00	20.736	35.04	268.59	1.030	0.00	5.00	15.085	15.54	544.5	0.0	736.1
15.00	Appertunance(s)	0.000	1.000	20.736	35.04	262.72	1.030	0.00	5.00	14.759	15.20	532.7	0.0	720.0
20.00		0.000	1.000	20.736	35.04	256.84	1.030	0.00	5.00	14.432	14.87	520.9	0.0	703.9
25.00		0.00	1.00	20.736	35.04	250.96	1.030	0.00	5.00	14.106	14.53	509.2	0.0	687.8
30.00		0.000	1.000	20.736	35.04	245.09	1.030	0.00	5.00	13.779	14.19	497.4	0.0	671.7
31.50	Bot - Section 2	0.000	1.000	20.736	35.04	243.32	1.030	0.00	1.50	4.079	4.20	147.2	0.0	198.8
35.00		0.00	1.01	21.088	35.63	241.23	1.030	0.00	3.50	9.556	9.84	350.6	0.0	646.3
35.67	Top - Section 1	0.000	1.02	21.202	35.83	241.09	1.030	0.00	0.67	1.813	1.87	66.9	0.0	160.5
40.00		0.000	1.05	21.908	37.02	244.66	1.030	0.00	4.33	11.574	11.92	441.4	0.0	471.7
45.00		0.00	1.09	22.657	38.29	242.67	1.030	0.00	5.00	13.061	13.45	515.1	0.0	532.1
50.00		0.000	1.12	23.350	39.46	240.11	1.030	0.00	5.00	12.734	13.12	517.6	0.0	518.7
55.00		0.00	1.15	23.994	40.55	237.09	1.030	0.00	5.00	12.408	12.78	518.2	0.0	505.3
60.00		0.000	1.18	24.598	41.57	233.65	1.030	0.00	5.00	12.081	12.44	517.3	0.0	491.8
65.00		0.00	1.21	25.167	42.53	229.86	1.030	0.00	5.00	11.755	12.11	515.0	0.0	478.4
70.00		0.000	1.24	25.706	43.44	225.77	1.030	0.00	5.00	11.429	11.77	511.4	0.0	465.0
70.00	Bot - Section 3	0.000	1.24	25.706	43.44	225.76	1.030	0.00	0.00	0.008	0.01	0.3	0.0	0.3
73.50	Top - Section 2	0.00	1.26	26.067	44.05	222.73	1.030	0.00	3.50	7.951	8.19	360.8	0.0	676.4
75.00		0.000	1.26	26.216	44.30	225.61	1.030	0.00	1.50	3.351	3.45	152.9	0.0	109.1
80.00		0.000	1.28	26.706	45.13	221.03	1.030	0.00	5.000	10.984	11.31	510.6	0.0	357.6
85.00		0.000	1.31	27.172	45.92	216.23	1.030	0.00	5.00	10.657	10.98	504.1	0.0	346.9
90.00		0.000	1.33	27.620	46.67	211.22	1.030	0.00	5.00	10.331	10.64	496.7	0.0	336.2
93.00	Appertunance(s)	0.000	1.34	27.880	47.11	208.12	1.030	0.00	3.00	6.042	6.22	293.2	0.0	196.5
95.00		0.000	1.35	28.050	47.40	206.02	1.030	0.00	2.00	3.963	4.08	193.5	0.0	128.9
100.0		0.000	1.37	28.464	48.10	200.65	1.030	0.00	5.00	9.678	9.97	479.5	0.0	314.7
105.0		0.000	1.39	28.863	48.77	195.12	1.030	0.00	5.00	9.352	9.63	469.8	0.0	304.0
110.0		0.000	1.41	29.250	49.43	189.45	1.030	0.00	5.00	9.025	9.30	459.5	0.0	293.2
110.0	Top - Section 3	0.000	1.41	29.250	49.43	189.44	1.030	0.00	0.00	0.006	0.01	0.3	0.0	0.2
113.0	Appertunance(s)	0.000	1.42	29.475	49.81	185.97	1.030	0.00	3.00	5.252	5.41	269.5	0.0	128.7
115.0		0.000	1.42	29.623	50.06	183.63	1.030	0.00	2.00	3.440	3.54	177.4	0.0	84.3
120.0		0.000	1.44	29.986	50.67	177.68	1.030	0.00	5.00	8.372	8.62	437.0	0.0	205.0
125.0		0.000	1.46	30.338	51.27	171.61	1.030	0.00	5.00	8.046	8.29	424.9	0.0	196.9
130.0		0.000	1.48	30.679	51.84	165.43	1.030	0.00	5.00	7.719	7.95	412.2	0.0	188.9
135.0		0.000	1.49	31.012	52.41	159.14	1.030	0.00	5.00	7.393	7.61	399.1	0.0	180.8
140.0	Appertunance(s)	0.000	1.51	31.336	52.96	152.74	1.030	0.00	5.00	7.066	7.28	385.4	0.0	172.7
145.0		0.00	1.52	31.652	53.49	146.25	1.030	0.00	5.00	6.740	6.94	371.3	0.0	164.7
150.0	Appertunance(s)	0.00	1.54	31.960	54.01	139.66	1.030	0.00	5.00	6.413	6.61	356.8	0.0	156.6
							Totals:		150.00			14,416.9	0.0	13,383.0

Height 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)



Load Case: No Ice — 90.00 mph Wind with No Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
15.00	Channel Master 1.2 M	1	20.736	35.044	1.000	20.91	0.000	0.000	732.78	0.00	0.00	188.00
93.00	Standoff	1	27.880	47.117	1.000	2.50	0.000	0.000	117.79	0.00	0.00	200.00
93.00	10' Dipole	1	28.276	47.786	1.000	2.70	0.000	4.710	129.02	0.00	607.70	28.00
113.0	T-Arm	3	29.475	49.813	0.670	12.06	0.000	0.000	600.75	0.00	0.00	999.00
113.0	DB932DG90E-M	3	29.475	49.813	0.750	7.88	0.000	0.000	392.28	0.00	0.00	28.80
113.0	Decibel DB844H90E	6	29.475	49.813	0.750	17.86	0.000	0.000	889.91	0.00	0.00	84.00
140.0	T-Arm	3	31.336	52.958	0.750	13.50	0.000	0.000	714.93	0.00	0.00	999.00
140.0	Remec G20067A1 TMA	6	31.336	52.958	0.670	3.06	0.000	0.000	161.80	0.00	0.00	59.52
140.0	RFS APX16PV-16PVL-	6	31.336	52.958	0.670	26.72	0.000	0.000	1,415.08	0.00	0.00	237.60
150.0	Decibel DB408	2	32.243	54.491	1.000	5.94	0.000	4.710	323.68	0.00	1,524.53	34.00
150.0	Cleargain TMD1900	6	31.960	54.012	0.670	5.39	0.000	0.000	290.95	0.00	0.00	90.00
150.0	CSS DUO1417-8686	6	32.141	54.319	0.750	29.65	0.000	3.000	1,610.33	0.00	4,830.98	255.00
150.0	GPS	1	32.320	54.621	1.000	0.60	0.000	6.000	32.77	0.00	196.63	1.80
150.0	4' Omni	1	32.320	54.621	1.000	1.50	0.000	6.000	81.93	0.00	491.59	5.00
150.0	Platform w/ Rails	1	31.960	54.012	1.000	27.00	0.000	0.000	1,458.33	0.00	0.00	1,950.00
									8,952.31			5,159.12

Height 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.155705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: No Ice — 90.00 mph Wind with No Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Linear Appurtenance Segment Forces

Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	F X (lb)	Dead Load (lb)
5.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
10.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
15.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
20.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
25.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
30.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	20.736	70.09	49.20
31.50	(12) 1 5/8" Coax	Yes	1.50	9.84	0.40	20.736	21.07	14.79
35.00	(12) 1 5/8" Coax	Yes	3.50	9.84	0.40	21.088	49.86	34.41
35.67	(12) 1 5/8" Coax	Yes	0.67	9.84	0.40	21.202	9.60	6.59
40.00	(12) 1 5/8" Coax	Yes	4.33	9.84	0.40	21.908	64.13	42.61
45.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	22.657	76.58	49.20
50.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	23.350	78.92	49.20
55.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	23.994	81.10	49.20
60.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	24.598	83.14	49.20
65.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	25.167	85.07	49.20
70.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	25.706	86.89	49.20
70.00	(12) 1 5/8" Coax	Yes	0.00	9.84	0.40	25.706	0.06	0.03
73.50	(12) 1 5/8" Coax	Yes	3.50	9.84	0.40	26.067	61.68	34.44
75.00	(12) 1 5/8" Coax	Yes	1.50	9.84	0.40	26.218	26.53	14.73
80.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	26.706	90.27	49.20
85.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	27.172	91.84	49.20
90.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	27.620	93.35	49.20
93.00	(12) 1 5/8" Coax	Yes	3.00	9.84	0.40	27.880	56.54	29.52
95.00	(12) 1 5/8" Coax	Yes	2.00	9.84	0.40	28.050	37.92	19.68
100.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	28.464	96.21	49.20
105.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	28.863	97.56	49.20
110.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	29.250	98.86	49.20
110.0	(12) 1 5/8" Coax	Yes	0.00	9.84	0.40	29.250	0.07	0.03
113.0	(12) 1 5/8" Coax	Yes	3.00	9.84	0.40	29.476	59.71	29.49
115.0	(12) 1 5/8" Coax	Yes	2.00	9.84	0.40	29.623	40.05	19.68
120.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	29.986	101.35	49.20
125.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	30.338	102.54	49.20
130.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	30.679	103.70	49.20
135.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	31.012	104.82	49.20
140.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	31.336	105.92	49.20
						Totals:	2,425.84	1,377.60

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: No Ice — 90.00 mph Wind with No Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	626.38	877.74	0.00	0.00
10.000	614.59	861.64	0.00	0.00
15.00	1,335.67	1,033.55	0.00	0.00
20.000	591.03	829.05	0.00	0.00
25.000	579.24	812.95	0.00	0.00
30.00	567.46	796.86	0.00	0.00
31.50	168.31	236.44	0.00	0.00
35.00	400.63	933.84	0.00	0.00
35.67	76.61	177.29	0.00	0.00
40.00	505.51	580.07	0.00	0.00
45.00	591.70	657.29	0.00	0.00
50.000	596.51	643.86	0.00	0.00
55.000	599.34	630.42	0.00	0.00
60.000	600.45	616.99	0.00	0.00
65.000	600.04	603.55	0.00	0.00
70.000	598.27	590.11	0.00	0.00
70.000	0.39	0.39	0.00	0.00
73.500	422.47	664.05	0.00	0.00
75.00	179.47	146.90	0.00	0.00
80.000	600.87	482.78	0.00	0.00
85.000	595.93	472.04	0.00	0.00
90.000	590.04	461.31	0.00	0.00
93.000	596.57	499.64	0.00	607.70
95.000	231.40	178.28	0.00	0.00
100.0	575.72	438.20	0.00	0.00
105.0	567.40	427.47	0.00	0.00
110.0	558.37	416.74	0.00	0.00
110.0	0.37	0.27	0.00	0.00
113.0	2,212.14	1,314.19	0.00	0.00
115.0	217.48	118.54	0.00	0.00
120.0	538.35	290.71	0.00	0.00
125.0	527.42	282.64	0.00	0.00
130.0	515.93	274.57	0.00	0.00
135.0	503.90	266.50	0.00	0.00
140.0	2,783.17	1,554.56	0.00	0.00
145.0	371.34	201.15	0.00	0.00
150.0	4,154.78	2,628.59	0.00	7,043.73
Totals:	25,795.03	21,900.91	0.00	7,651.43

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: No Ice — 90.00 mph Wind with No Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Elev (ft)	Lateral Force (kips)	Axial (+/-) (kips)	Lateral Shear (kips)	Moment (ft-kips)	Torsion (ft-kips)	Moment (ft-kips)	X Deflect (in)	Y Deflect (in)	Total Deflect (in)	Rotation (deg)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
80.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
90.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 16.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: No Ice — 90.00 mph Wind with No Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Sec Elev (ft)	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Applied Stresses Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)		Stress Ratio
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
20.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
30.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
40.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
50.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
60.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
70.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
80.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
90.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
110.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
120.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
130.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
140.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
150.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Ice — 77.94 mph Wind with Ice — 30 Iterations

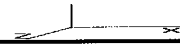
Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Shaft Segment Forces

Seg Top Elev (ft)	Description		Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	15.551	26.28	242.78	1.030	0.50	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	15.551	26.28	237.69	1.030	0.50	5.00	15.828	16.30	428.5	116.1	868.3
10.00		0.00	1.00	15.551	26.28	232.60	1.030	0.50	5.00	15.502	15.97	419.6	113.7	849.8
15.00	Appertunance(s)	0.00	1.00	15.551	26.28	227.51	1.030	0.50	5.00	15.175	15.63	410.8	111.2	831.2
20.00		0.00	1.00	15.551	26.28	222.42	1.030	0.50	5.00	14.849	15.29	402.0	108.8	812.7
25.00		0.00	1.00	15.551	26.28	217.33	1.030	0.50	5.00	14.523	14.96	393.1	106.3	794.1
30.00		0.00	1.00	15.551	26.28	212.24	1.030	0.50	5.00	14.196	14.62	384.3	103.9	775.6
31.50	Bot - Section 2	0.00	1.00	15.551	26.28	210.71	1.030	0.50	1.50	4.204	4.33	113.8	31.0	229.8
35.00		0.00	1.01	15.815	26.72	208.90	1.030	0.50	3.50	9.848	10.14	271.1	72.3	918.6
35.67	Top - Section 1	0.00	1.02	15.901	26.87	208.78	1.030	0.50	0.67	1.869	1.92	51.7	13.8	174.3
40.00		0.00	1.05	16.430	27.76	211.88	1.030	0.50	4.33	11.935	12.29	341.3	87.4	559.1
45.00		0.00	1.09	16.992	28.71	210.15	1.030	0.50	5.00	13.478	13.88	398.6	98.5	630.6
50.00		0.00	1.12	17.511	29.59	207.94	1.030	0.50	5.00	13.151	13.55	400.9	96.0	614.7
55.00		0.00	1.15	17.995	30.41	205.31	1.030	0.50	5.00	12.825	13.21	401.7	93.6	598.8
60.00		0.00	1.18	18.448	31.17	202.34	1.030	0.50	5.00	12.498	12.87	401.3	91.1	582.9
65.00		0.00	1.21	18.874	31.89	199.08	1.030	0.50	5.00	12.172	12.54	399.9	88.7	567.1
70.00		0.00	1.24	19.278	32.58	195.51	1.030	0.50	5.00	11.845	12.20	397.5	86.2	551.2
70.00	Bot - Section 3	0.00	1.24	19.279	32.58	195.51	1.030	0.50	0.00	0.008	0.01	0.3	0.1	0.4
73.50	Top - Section 2	0.00	1.25	19.549	33.03	192.88	1.030	0.50	3.50	8.243	8.49	280.5	60.2	636.7
75.00		0.00	1.26	19.662	33.22	195.38	1.030	0.50	1.50	3.476	3.58	119.0	25.5	134.7
80.00		0.00	1.28	20.028	33.84	191.41	1.030	0.50	5.00	11.401	11.74	397.5	82.9	440.5
85.00		0.00	1.31	20.378	34.43	187.25	1.030	0.50	5.00	11.074	11.41	392.8	80.4	427.3
90.00		0.00	1.33	20.714	35.00	182.92	1.030	0.50	5.00	10.748	11.07	387.5	78.0	414.1
93.00	Appertunance(s)	0.00	1.34	20.908	35.33	180.23	1.030	0.50	3.00	6.292	6.48	229.0	45.9	242.4
95.00		0.00	1.35	21.036	35.55	178.41	1.030	0.50	2.00	4.129	4.25	151.2	30.2	159.1
100.0		0.00	1.37	21.347	36.07	173.76	1.030	0.50	5.00	10.095	10.40	375.1	73.1	387.8
105.0		0.00	1.39	21.646	36.58	168.98	1.030	0.50	5.00	9.768	10.06	368.1	70.6	374.6
110.0		0.00	1.41	21.936	37.07	164.06	1.030	0.50	5.00	9.442	9.73	360.5	68.1	361.4
110.0	Top - Section 3	0.00	1.41	21.936	37.07	164.06	1.030	0.50	0.00	0.006	0.01	0.2	0.0	0.2
113.0	Appertunance(s)	0.00	1.42	22.105	37.36	161.05	1.030	0.50	3.00	5.502	5.67	211.7	40.0	168.6
115.0		0.00	1.42	22.216	37.54	159.02	1.030	0.50	2.00	3.607	3.72	139.5	26.3	110.5
120.0		0.00	1.44	22.488	38.00	153.87	1.030	0.50	5.00	8.789	9.05	344.0	63.2	268.3
125.0		0.00	1.46	22.752	38.45	148.62	1.030	0.50	5.00	8.462	8.72	335.1	60.8	257.7
130.0		0.00	1.48	23.008	38.88	143.26	1.030	0.50	5.00	8.136	8.38	325.8	58.3	247.2
135.0		0.00	1.49	23.258	39.30	137.81	1.030	0.50	5.00	7.809	8.04	316.2	55.9	236.7
140.0	Appertunance(s)	0.00	1.51	23.501	39.71	132.27	1.030	0.50	5.00	7.483	7.71	306.1	53.4	226.2
145.0		0.00	1.52	23.737	40.11	126.65	1.030	0.50	5.00	7.156	7.37	295.7	51.0	215.6
150.0	Appertunance(s)	0.00	1.54	23.968	40.50	120.95	1.030	0.50	5.00	6.830	7.03	285.0	48.5	205.1
							Totals:		150.00			11,237.0	2,491.0	15,874.0

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)



Load Case: Ice — 77.94 mph Wind with Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
15.00	Channel Master 1.2 M	1	15.551	26.281	1.000	21.79	0.000	0.000	572.67	0.00	0.00	277.00
93.00	Standoff	1	20.908	35.335	1.000	3.50	0.000	0.000	123.67	0.00	0.00	300.00
93.00	10' Dipole	1	21.206	35.838	1.000	4.86	0.000	4.710	174.17	0.00	820.34	50.00
113.0	T-Arm	3	22.105	37.358	0.667	16.21	0.000	0.000	605.50	0.00	0.00	1,299.00
113.0	DB932DG90E-M	3	22.105	37.358	0.750	8.80	0.000	0.000	328.65	0.00	0.00	105.00
113.0	Decibel DB844H90E	6	22.105	37.358	0.750	20.39	0.000	0.000	761.53	0.00	0.00	246.00
140.0	T-Arm	3	23.501	39.716	0.750	18.23	0.000	0.000	723.82	0.00	0.00	1,299.00
140.0	Remec G20057A1 TMA	6	23.501	39.716	0.670	3.70	0.000	0.000	146.89	0.00	0.00	156.00
140.0	RFS APX16PV-16PVL-	6	23.501	39.716	0.670	29.34	0.000	0.000	1,165.18	0.00	0.00	423.88
150.0	Decibel DB408	2	24.181	40.866	1.000	11.10	0.000	4.710	453.61	0.00	2,136.51	82.00
150.0	Cleargain TMD1900	6	23.968	40.507	0.670	6.19	0.000	0.000	250.77	0.00	0.00	150.00
150.0	CSS DUO1417-8686	6	24.104	40.736	0.750	32.42	0.000	3.000	1,320.59	0.00	3,961.78	510.04
150.0	GPS	1	24.238	40.963	1.000	0.80	0.000	6.000	32.77	0.00	196.62	3.50
150.0	4' Omni	1	24.238	40.963	1.000	2.00	0.000	6.000	81.93	0.00	491.56	12.00
150.0	Platform w/ Rails	1	23.968	40.507	1.000	38.00	0.000	0.000	1,539.25	0.00	0.00	2,800.00
									8,281.01			7,713.41

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Ice — 77.84 mph Wind with Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Linear Appurtenance Segment Forces

Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	F X (lb)	Dead Load (lb)
5.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
10.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
15.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
20.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
25.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
30.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.661	78.84	142.80
31.50	(12) 1 5/8" Coax	Yes	1.50	28.56	0.60	16.661	23.71	42.84
35.00	(12) 1 5/8" Coax	Yes	3.50	28.56	0.60	15.816	56.07	99.96
35.67	(12) 1 5/8" Coax	Yes	0.67	28.56	0.60	15.901	10.80	19.14
40.00	(12) 1 5/8" Coax	Yes	4.33	28.56	0.60	16.430	72.14	123.66
45.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	16.992	86.16	142.80
50.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	17.511	88.78	142.80
55.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	17.998	91.23	142.80
60.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	18.448	93.53	142.80
65.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	18.874	95.69	142.80
70.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	19.278	97.74	142.80
70.00	(12) 1 5/8" Coax	Yes	0.00	28.56	0.60	19.279	0.07	0.10
73.50	(12) 1 5/8" Coax	Yes	3.50	28.56	0.60	19.649	69.38	99.96
75.00	(12) 1 5/8" Coax	Yes	1.50	28.56	0.60	19.662	29.84	42.84
80.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	20.028	101.54	142.80
85.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	20.378	103.32	142.80
90.00	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	20.714	105.02	142.80
93.00	(12) 1 5/8" Coax	Yes	3.00	28.56	0.60	20.908	63.80	85.68
95.00	(12) 1 5/8" Coax	Yes	2.00	28.56	0.60	21.038	42.66	57.12
100.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	21.347	108.23	142.80
105.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	21.646	109.76	142.80
110.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	21.936	111.21	142.80
110.0	(12) 1 5/8" Coax	Yes	0.00	28.56	0.60	21.936	0.07	0.10
113.0	(12) 1 5/8" Coax	Yes	3.00	28.56	0.60	22.106	67.17	85.68
115.0	(12) 1 5/8" Coax	Yes	2.00	28.56	0.60	22.218	45.05	57.12
120.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	22.488	114.01	142.80
125.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	22.752	115.35	142.80
130.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	23.008	116.65	142.80
135.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	23.258	117.92	142.80
140.0	(12) 1 5/8" Coax	Yes	5.00	28.56	0.60	23.501	119.16	142.80
						Totals:	2,728.90	3,998.39

Height : 150.0 (ft)
Sheps : 15 Sides
Base Dia : 37.938 (in)
Top Dia : 15.00 (in)
Taper : 0.1507705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Ice 77.84 mph Wind with Ice 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.000
Wind Load Factor : 1.00

Applied Segment Forces Summary

Segment Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.000	0.00	0.00	0.00	0.00
10.000	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00
30.000	0.00	0.00	0.00	0.00
40.000	0.00	0.00	0.00	0.00
50.000	0.00	0.00	0.00	0.00
60.000	0.00	0.00	0.00	0.00
70.000	0.00	0.00	0.00	0.00
80.000	0.00	0.00	0.00	0.00
90.000	0.00	0.00	0.00	0.00
100.000	0.00	0.00	0.00	0.00
110.000	0.00	0.00	0.00	0.00
120.000	0.00	0.00	0.00	0.00
130.000	0.00	0.00	0.00	0.00
140.000	0.00	0.00	0.00	0.00
150.000	0.00	0.00	0.00	0.00
160.000	0.00	0.00	0.00	0.00
170.000	0.00	0.00	0.00	0.00
180.000	0.00	0.00	0.00	0.00
190.000	0.00	0.00	0.00	0.00
200.000	0.00	0.00	0.00	0.00
210.000	0.00	0.00	0.00	0.00
220.000	0.00	0.00	0.00	0.00
230.000	0.00	0.00	0.00	0.00
240.000	0.00	0.00	0.00	0.00
250.000	0.00	0.00	0.00	0.00
260.000	0.00	0.00	0.00	0.00
270.000	0.00	0.00	0.00	0.00
280.000	0.00	0.00	0.00	0.00
290.000	0.00	0.00	0.00	0.00
300.000	0.00	0.00	0.00	0.00
310.000	0.00	0.00	0.00	0.00
320.000	0.00	0.00	0.00	0.00
330.000	0.00	0.00	0.00	0.00
340.000	0.00	0.00	0.00	0.00
350.000	0.00	0.00	0.00	0.00
360.000	0.00	0.00	0.00	0.00
370.000	0.00	0.00	0.00	0.00
380.000	0.00	0.00	0.00	0.00
390.000	0.00	0.00	0.00	0.00
400.000	0.00	0.00	0.00	0.00
410.000	0.00	0.00	0.00	0.00
420.000	0.00	0.00	0.00	0.00
430.000	0.00	0.00	0.00	0.00
440.000	0.00	0.00	0.00	0.00
450.000	0.00	0.00	0.00	0.00
460.000	0.00	0.00	0.00	0.00
470.000	0.00	0.00	0.00	0.00
480.000	0.00	0.00	0.00	0.00
490.000	0.00	0.00	0.00	0.00
500.000	0.00	0.00	0.00	0.00
510.000	0.00	0.00	0.00	0.00
520.000	0.00	0.00	0.00	0.00
530.000	0.00	0.00	0.00	0.00
540.000	0.00	0.00	0.00	0.00
550.000	0.00	0.00	0.00	0.00
560.000	0.00	0.00	0.00	0.00
570.000	0.00	0.00	0.00	0.00
580.000	0.00	0.00	0.00	0.00
590.000	0.00	0.00	0.00	0.00
600.000	0.00	0.00	0.00	0.00
610.000	0.00	0.00	0.00	0.00
620.000	0.00	0.00	0.00	0.00
630.000	0.00	0.00	0.00	0.00
640.000	0.00	0.00	0.00	0.00
650.000	0.00	0.00	0.00	0.00
660.000	0.00	0.00	0.00	0.00
670.000	0.00	0.00	0.00	0.00
680.000	0.00	0.00	0.00	0.00
690.000	0.00	0.00	0.00	0.00
700.000	0.00	0.00	0.00	0.00
710.000	0.00	0.00	0.00	0.00
720.000	0.00	0.00	0.00	0.00
730.000	0.00	0.00	0.00	0.00
740.000	0.00	0.00	0.00	0.00
750.000	0.00	0.00	0.00	0.00
760.000	0.00	0.00	0.00	0.00
770.000	0.00	0.00	0.00	0.00
780.000	0.00	0.00	0.00	0.00
790.000	0.00	0.00	0.00	0.00
800.000	0.00	0.00	0.00	0.00
810.000	0.00	0.00	0.00	0.00
820.000	0.00	0.00	0.00	0.00
830.000	0.00	0.00	0.00	0.00
840.000	0.00	0.00	0.00	0.00
850.000	0.00	0.00	0.00	0.00
860.000	0.00	0.00	0.00	0.00
870.000	0.00	0.00	0.00	0.00
880.000	0.00	0.00	0.00	0.00
890.000	0.00	0.00	0.00	0.00
900.000	0.00	0.00	0.00	0.00
910.000	0.00	0.00	0.00	0.00
920.000	0.00	0.00	0.00	0.00
930.000	0.00	0.00	0.00	0.00
940.000	0.00	0.00	0.00	0.00
950.000	0.00	0.00	0.00	0.00
960.000	0.00	0.00	0.00	0.00
970.000	0.00	0.00	0.00	0.00
980.000	0.00	0.00	0.00	0.00
990.000	0.00	0.00	0.00	0.00
1000.000	0.00	0.00	0.00	0.00
1010.000	0.00	0.00	0.00	0.00
1020.000	0.00	0.00	0.00	0.00
1030.000	0.00	0.00	0.00	0.00
1040.000	0.00	0.00	0.00	0.00
1050.000	0.00	0.00	0.00	0.00
1060.000	0.00	0.00	0.00	0.00
1070.000	0.00	0.00	0.00	0.00
1080.000	0.00	0.00	0.00	0.00
1090.000	0.00	0.00	0.00	0.00
1100.000	0.00	0.00	0.00	0.00
1110.000	0.00	0.00	0.00	0.00
1120.000	0.00	0.00	0.00	0.00
1130.000	0.00	0.00	0.00	0.00
1140.000	0.00	0.00	0.00	0.00
1150.000	0.00	0.00	0.00	0.00
1160.000	0.00	0.00	0.00	0.00
1170.000	0.00	0.00	0.00	0.00
1180.000	0.00	0.00	0.00	0.00
1190.000	0.00	0.00	0.00	0.00
1200.000	0.00	0.00	0.00	0.00
1210.000	0.00	0.00	0.00	0.00
1220.000	0.00	0.00	0.00	0.00
1230.000	0.00	0.00	0.00	0.00
1240.000	0.00	0.00	0.00	0.00
1250.000	0.00	0.00	0.00	0.00
1260.000	0.00	0.00	0.00	0.00
1270.000	0.00	0.00	0.00	0.00
1280.000	0.00	0.00	0.00	0.00
1290.000	0.00	0.00	0.00	0.00
1300.000	0.00	0.00	0.00	0.00
1310.000	0.00	0.00	0.00	0.00
1320.000	0.00	0.00	0.00	0.00
1330.000	0.00	0.00	0.00	0.00
1340.000	0.00	0.00	0.00	0.00
1350.000	0.00	0.00	0.00	0.00
1360.000	0.00	0.00	0.00	0.00
1370.000	0.00	0.00	0.00	0.00
1380.000	0.00	0.00	0.00	0.00
1390.000	0.00	0.00	0.00	0.00
1400.000	0.00	0.00	0.00	0.00
1410.000	0.00	0.00	0.00	0.00
1420.000	0.00	0.00	0.00	0.00
1430.000	0.00	0.00	0.00	0.00
1440.000	0.00	0.00	0.00	0.00
1450.000	0.00	0.00	0.00	0.00
1460.000	0.00	0.00	0.00	0.00
1470.000	0.00	0.00	0.00	0.00
1480.000	0.00	0.00	0.00	0.00
1490.000	0.00	0.00	0.00	0.00
1500.000	0.00	0.00	0.00	0.00
Totals:	22,240.80	29,000.00	0.00	7,908.82

Height 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Ice   77.94 mph Wind with Ice   30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Sec Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-22.354	-29.485	0.000	0.000	0.000	-2,310.176	0.000	0.000	0.000	0.000
5.00	-22.047	-28.241	0.000	0.000	0.000	-2,198.411	-0.219	0.000	0.219	-0.411
10.00	-21.735	-27.020	0.000	0.000	0.000	-2,088.180	-0.871	0.000	0.871	-0.827
15.00	-20.839	-25.558	0.000	0.000	0.000	-1,979.508	-1.961	0.000	1.961	-1.249
20.00	-20.515	-24.386	0.000	0.000	0.000	-1,876.317	-3.497	0.000	3.497	-1.676
25.00	-20.188	-23.236	0.000	0.000	0.000	-1,772.743	-5.483	0.000	5.483	-2.109
30.00	-19.795	-22.163	0.000	0.000	0.000	-1,671.807	-7.925	0.000	7.925	-2.548
31.50	-19.731	-21.796	0.000	0.000	0.000	-1,642.049	-8.749	0.000	8.749	-2.685
35.00	-19.418	-20.679	0.000	0.000	0.000	-1,573.059	-10.832	0.000	10.832	-2.999
35.67	-19.427	-20.402	0.000	0.000	0.000	-1,560.049	-11.257	0.000	11.257	-3.061
40.00	-19.126	-19.528	0.000	0.000	0.000	-1,475.933	-14.212	0.000	14.212	-3.452
45.00	-18.753	-18.545	0.000	0.000	0.000	-1,380.307	-18.097	0.000	18.097	-3.961
50.00	-18.362	-17.586	0.000	0.000	0.000	-1,286.644	-22.615	0.000	22.615	-4.474
55.00	-17.954	-16.651	0.000	0.000	0.000	-1,194.737	-27.470	0.000	27.470	-4.989
60.00	-17.531	-15.740	0.000	0.000	0.000	-1,104.969	-32.964	0.000	32.964	-5.507
65.00	-17.094	-14.854	0.000	0.000	0.000	-1,017.317	-38.997	0.000	38.997	-6.025
70.00	-16.580	-14.069	0.000	0.000	0.000	-931.850	-45.571	0.000	45.571	-6.543
70.00	-16.625	-14.015	0.000	0.000	0.000	-931.795	-45.575	0.000	45.575	-6.543
73.50	-16.245	-13.198	0.000	0.000	0.000	-873.608	-50.498	0.000	50.498	-6.909
75.00	-16.160	-12.909	0.000	0.000	0.000	-849.295	-52.684	0.000	52.684	-7.068
80.00	-15.709	-12.156	0.000	0.000	0.000	-768.495	-60.387	0.000	60.387	-7.670
85.00	-15.246	-11.429	0.000	0.000	0.000	-689.953	-68.711	0.000	68.711	-8.263
90.00	-14.752	-10.758	0.000	0.000	0.000	-613.726	-77.644	0.000	77.644	-8.846
93.00	-14.106	-10.065	0.000	0.000	0.000	-568.651	-83.291	0.000	83.291	-9.194
95.00	-13.943	-9.758	0.000	0.000	0.000	-540.440	-87.175	0.000	87.175	-9.426
100.0	-13.450	-9.117	0.000	0.000	0.000	-470.728	-97.293	0.000	97.293	-9.973
105.0	-12.951	-8.505	0.000	0.000	0.000	-403.478	-107.965	0.000	107.965	-10.499
110.0	-12.414	-7.972	0.000	0.000	0.000	-338.723	-119.163	0.000	119.163	-10.995
110.0	-12.433	-7.941	0.000	0.000	0.000	-338.681	-119.171	0.000	119.171	-10.995
113.0	-10.149	-6.363	0.000	0.000	0.000	-301.423	-126.121	0.000	126.121	-11.281
115.0	-9.977	-6.150	0.000	0.000	0.000	-281.125	-130.868	0.000	130.868	-11.526
120.0	-9.491	-5.718	0.000	0.000	0.000	-231.243	-143.158	0.000	143.158	-12.090
125.0	-9.003	-5.310	0.000	0.000	0.000	-183.790	-156.001	0.000	156.001	-12.604
130.0	-8.512	-4.931	0.000	0.000	0.000	-138.778	-169.338	0.000	169.338	-13.056
135.0	-8.021	-4.580	0.000	0.000	0.000	-96.218	-183.098	0.000	183.098	-13.430
140.0	-5.103	-2.918	0.000	0.000	0.000	-56.115	-197.190	0.000	197.190	-13.708
145.0	-4.763	-2.732	0.000	0.000	0.000	-30.599	-211.511	0.000	211.511	-13.889
150.0	-3.964	0.000	0.000	0.000	0.000	-6.786	-225.972	0.000	225.972	-13.980

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Ice — 77.94 mph Wind with Ice — 30 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)		Stress Ratio
0.00	0.66	1.02	0.00	0.00	0.00	68.69	69.36	52.0	0.0	1.334
[illegible]	0.66	1.02	0.00	0.00	0.00	68.23	68.90	52.0	0.0	[illegible]
[illegible]	[illegible]	1.03	0.00	0.00	0.00	67.72	68.38	[illegible]	0.0	[illegible]
[illegible]	0.61	1.01	0.00	0.00	0.00	67.15	67.78	[illegible]	0.0	[illegible]
[illegible]	0.60	1.03	0.00	0.00	0.00	66.61	67.23	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	0.57	[illegible]	0.00	0.00	0.00	[illegible]	65.91	[illegible]	0.0	[illegible]
31.50	0.55	1.01	0.00	0.00	0.00	65.11	65.63	[illegible]	0.0	[illegible]
[illegible]	0.54	1.04	0.00	0.00	0.00	64.67	65.14	[illegible]	0.0	[illegible]
[illegible]	0.63	[illegible]	0.00	0.00	0.00	73.80	74.46	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	1.414
[illegible]	0.60	[illegible]	0.00	0.00	0.00	71.71	72.34	[illegible]	0.0	1.391
[illegible]	0.59	1.31	0.00	0.00	0.00	70.41	71.03	[illegible]	0.0	[illegible]
[illegible]	0.57	1.34	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	0.55	[illegible]	0.00	0.00	0.00	67.40	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	0.61	[illegible]	0.00	0.00	0.00	73.76	74.44	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	70.92	[illegible]	[illegible]	0.0	[illegible]
[illegible]	0.57	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	64.67	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	60.47	61.04	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
110.00	0.47	1.49	0.00	0.00	0.00	46.90	47.44	52.0	0.0	0.912
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
[illegible]	[illegible]	[illegible]	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.0	[illegible]
120.00	0.48	1.63	0.00	0.00	0.00	49.29	49.86	52.0	0.0	0.959
125.00	0.47	1.61	0.00	0.00	0.00	42.64	43.10	52.0	0.0	0.829
130.00	0.46	1.59	0.00	0.00	0.00	35.00	35.56	52.0	0.0	0.684
135.00	0.44	1.57	0.00	0.00	0.00	26.68	27.12	52.0	0.0	0.522
140.00	[illegible]	[illegible]	0.00	0.00	0.00	17.21	[illegible]	52.0	0.0	[illegible]
145.00	[illegible]	1.02	0.00	0.00	0.00	10.24	10.67	52.0	0.0	[illegible]
150.00	0.00	0.90	0.00	0.00	0.00	2.52	2.96	52.0	0.0	0.057

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway — 60.00 mph Wind with No Ice — 29 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Shaft Segment Forces

Seg Top Elev (ft)	Description		Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	As (sf)	CfAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.81	155.78	1.030	0.00	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.81	152.48	1.030	0.00	5.00	15.412	15.87	171.7	0.0	752.2
10.00		0.00	1.00	6.400	10.81	149.22	1.030	0.00	5.00	15.085	15.54	168.1	0.0	736.1
15.00	Appurtenance(s)	0.00	1.00	6.400	10.81	145.95	1.030	0.00	5.00	14.759	15.20	164.4	0.0	720.0
20.00		0.00	1.00	6.400	10.81	142.69	1.030	0.00	5.00	14.432	14.87	160.8	0.0	703.9
25.00		0.00	1.00	6.400	10.81	139.42	1.030	0.00	5.00	14.106	14.53	157.1	0.0	687.8
30.00		0.00	1.00	6.400	10.81	136.16	1.030	0.00	5.00	13.779	14.19	153.5	0.0	671.7
31.50	Bot - Section 2	0.00	1.00	6.400	10.81	135.18	1.030	0.00	1.50	4.079	4.20	45.4	0.0	198.8
35.00	Top - Section 1	0.00	1.01	6.509	10.99	134.01	1.030	0.00	3.50	9.556	9.84	108.3	0.0	846.3
36.67		0.00	1.02	6.544	11.05	133.94	1.030	0.00	0.67	1.813	1.87	20.6	0.0	160.5
40.00		0.00	1.05	6.762	11.42	135.92	1.030	0.00	4.33	11.574	11.92	136.2	0.0	471.7
45.00		0.00	1.09	6.993	11.81	134.81	1.030	0.00	5.00	13.061	13.45	159.0	0.0	532.1
50.00		0.00	1.12	7.207	12.17	133.40	1.030	0.00	5.00	12.734	13.12	159.7	0.0	518.7
55.00		0.00	1.15	7.406	12.51	131.71	1.030	0.00	5.00	12.408	12.78	160.0	0.0	505.3
60.00		0.00	1.18	7.592	12.83	129.80	1.030	0.00	5.00	12.081	12.44	159.7	0.0	491.8
65.00		0.00	1.21	7.768	13.12	127.70	1.030	0.00	5.00	11.755	12.11	158.9	0.0	478.4
70.00		0.00	1.24	7.934	13.40	125.42	1.030	0.00	5.00	11.429	11.77	157.8	0.0	465.0
70.00	Bot - Section 3	0.00	1.24	7.934	13.40	125.42	1.030	0.00	0.00	0.008	0.01	0.1	0.0	0.3
73.50	Top - Section 2	0.00	1.25	8.046	13.59	123.74	1.030	0.00	3.50	7.951	8.19	111.4	0.0	578.4
75.00		0.00	1.26	8.092	13.67	125.34	1.030	0.00	1.50	3.361	3.45	47.2	0.0	109.1
80.00		0.00	1.28	8.242	13.93	122.79	1.030	0.00	5.00	10.984	11.31	157.6	0.0	357.6
85.00		0.00	1.31	8.387	14.17	120.13	1.030	0.00	5.00	10.657	10.98	156.6	0.0	346.9
90.00		0.00	1.33	8.525	14.40	117.34	1.030	0.00	5.00	10.331	10.64	153.3	0.0	336.2
93.00	Appurtenance(s)	0.00	1.34	8.605	14.54	115.62	1.030	0.00	3.00	6.042	6.22	90.5	0.0	195.5
95.00		0.00	1.35	8.657	14.63	114.46	1.030	0.00	2.00	3.963	4.08	59.7	0.0	128.9
100.0		0.00	1.37	8.785	14.84	111.47	1.030	0.00	5.00	9.678	9.97	148.0	0.0	314.7
105.0		0.00	1.39	8.908	15.05	108.40	1.030	0.00	5.00	9.352	9.63	145.0	0.0	304.0
110.0		0.00	1.41	9.028	15.25	105.25	1.030	0.00	5.00	9.025	9.30	141.8	0.0	293.2
110.0	Top - Section 3	0.00	1.41	9.028	15.25	105.24	1.030	0.00	0.00	0.006	0.01	0.1	0.0	0.2
113.0	Appurtenance(s)	0.00	1.42	9.097	15.37	103.32	1.030	0.00	3.00	5.252	5.41	83.2	0.0	128.7
115.0		0.00	1.42	9.143	15.45	102.01	1.030	0.00	2.00	3.440	3.54	54.8	0.0	84.3
120.0		0.00	1.44	9.255	15.64	98.715	1.030	0.00	5.00	8.372	8.62	134.9	0.0	205.0
125.0		0.00	1.46	9.363	15.82	95.343	1.030	0.00	5.00	8.046	8.29	131.1	0.0	196.9
130.0		0.00	1.48	9.469	16.00	91.908	1.030	0.00	5.00	7.719	7.95	127.2	0.0	188.9
135.0		0.00	1.49	9.572	16.17	88.412	1.030	0.00	5.00	7.393	7.61	123.2	0.0	180.8
140.0	Appurtenance(s)	0.00	1.51	9.672	16.34	84.859	1.030	0.00	5.00	7.066	7.28	119.0	0.0	172.7
145.0		0.00	1.52	9.769	16.51	81.252	1.030	0.00	5.00	6.740	6.94	114.6	0.0	164.7
150.0	Appurtenance(s)	0.00	1.54	9.864	16.67	77.594	1.030	0.00	5.00	6.413	6.61	110.1	0.0	156.6
							Totals:		150.00			4,449.7	0.0	13,383.0

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 29 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
15.00	Channel Master 1.2 M	1	6.400	10.816	1.000	20.91	0.000	0.000	226.16	0.00	0.00	188.00
93.00	Standoff	1	8.605	14.542	1.000	2.50	0.000	0.000	36.36	0.00	0.00	200.00
93.00	10' Dipole	1	8.727	14.749	1.000	2.70	0.000	4.710	39.82	0.00	187.56	28.00
113.0	T-Arm	3	9.097	15.374	0.670	12.06	0.000	0.000	185.42	0.00	0.00	999.00
113.0	DB932DG90E-M	3	9.097	15.374	0.750	7.88	0.000	0.000	121.07	0.00	0.00	28.50
113.0	Decibel DB844H90E	6	9.097	15.374	0.750	17.86	0.000	0.000	274.66	0.00	0.00	84.00
140.0	T-Arm	3	9.672	16.345	0.750	13.50	0.000	0.000	220.66	0.00	0.00	999.00
140.0	Remec G20057A1 TMA	6	9.672	16.345	0.670	3.06	0.000	0.000	49.94	0.00	0.00	59.62
140.0	RFS APX16PV-16PVL-	6	9.672	16.345	0.670	26.72	0.000	0.000	436.75	0.00	0.00	237.60
150.0	Decibel DB408	2	9.952	16.818	1.000	5.94	0.000	4.710	99.90	0.00	470.53	34.00
150.0	Cleargain TMD1900	6	9.864	16.670	0.670	5.39	0.000	0.000	89.80	0.00	0.00	90.00
150.0	CSS DUO1417-8686	6	9.920	16.765	0.750	29.65	0.000	3.000	497.01	0.00	1,491.04	255.00
150.0	GPS	1	9.975	16.858	1.000	0.60	0.000	6.000	10.11	0.00	60.69	1.50
150.0	4' Omni	1	9.975	16.858	1.000	1.50	0.000	6.000	25.29	0.00	151.72	5.00
150.0	Platform w/ Rails	1	9.864	16.670	1.000	27.00	0.000	0.000	450.10	0.00	0.00	1,950.00
									2,763.06			5,159.12

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156706 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway   50.00 mph Wind with No Ice   29 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Linear Appurtenance Segment Forces

Seg Top Elev (ft)	Description	Exposed To Wind	Length (ft)	Weight (lb/ft)	CaAa (sf/ft)	qz (psf)	F X (lb)	Dead Load (lb)
5.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
10.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
15.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
20.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
25.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
30.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.400	21.63	49.20
31.50	(12) 1 5/8" Coax	Yes	1.50	9.84	0.40	6.400	6.50	14.79
35.00	(12) 1 5/8" Coax	Yes	3.50	9.84	0.40	6.609	15.38	34.41
35.67	(12) 1 5/8" Coax	Yes	0.67	9.84	0.40	6.644	2.86	6.59
40.00	(12) 1 5/8" Coax	Yes	4.33	9.84	0.40	6.762	19.79	42.61
45.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	6.993	23.64	49.20
50.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	7.207	24.36	49.20
55.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	7.406	25.03	49.20
60.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	7.592	25.66	49.20
65.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	7.768	26.25	49.20
70.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	7.934	26.82	49.20
70.00	(12) 1 5/8" Coax	Yes	0.00	9.84	0.40	7.934	0.02	0.03
73.50	(12) 1 5/8" Coax	Yes	3.50	9.84	0.40	8.045	19.04	34.44
75.00	(12) 1 5/8" Coax	Yes	1.50	9.84	0.40	8.092	8.19	14.73
80.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	8.242	27.86	49.20
85.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	8.387	28.36	49.20
90.00	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	8.526	28.81	49.20
93.00	(12) 1 5/8" Coax	Yes	3.00	9.84	0.40	8.605	17.45	29.52
95.00	(12) 1 5/8" Coax	Yes	2.00	9.84	0.40	8.657	11.70	19.68
100.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	8.785	29.69	49.20
105.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	8.908	30.11	49.20
110.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.028	30.51	49.20
110.0	(12) 1 5/8" Coax	Yes	0.00	9.84	0.40	9.028	0.02	0.03
113.0	(12) 1 5/8" Coax	Yes	3.00	9.84	0.40	9.097	18.43	29.49
115.0	(12) 1 5/8" Coax	Yes	2.00	9.84	0.40	9.143	12.36	19.68
120.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.255	31.28	49.20
125.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.363	31.65	49.20
130.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.469	32.01	49.20
135.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.572	32.35	49.20
140.0	(12) 1 5/8" Coax	Yes	5.00	9.84	0.40	9.672	32.69	49.20
						Totals:	748.72	1,377.60

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.148705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 29 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)		Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		193.33	877.74	0.00	0.00
10.00		189.69	861.64	0.00	0.00
15.00		412.21	1,033.55	0.00	0.00
20.00		182.42	829.05	0.00	0.00
25.00		178.78	812.95	0.00	0.00
30.00		175.14	796.86	0.00	0.00
31.50		51.95	236.44	0.00	0.00
35.00		123.65	933.84	0.00	0.00
35.67		23.61	177.29	0.00	0.00
40.00		156.02	580.07	0.00	0.00
45.00		182.62	657.29	0.00	0.00
50.00		184.11	643.88	0.00	0.00
55.00		184.98	630.42	0.00	0.00
60.00		185.32	616.99	0.00	0.00
65.00		185.20	603.55	0.00	0.00
70.00		184.65	590.11	0.00	0.00
70.00		0.12	0.39	0.00	0.00
73.50		130.35	664.05	0.00	0.00
75.00		55.39	145.60	0.00	0.00
80.00		185.45	482.78	0.00	0.00
85.00		183.93	472.04	0.00	0.00
90.00		182.11	461.31	0.00	0.00
93.00		184.13	499.64	0.00	187.56
95.00		71.42	178.28	0.00	0.00
100.0		177.69	438.20	0.00	0.00
105.0		175.12	427.47	0.00	0.00
110.0		172.34	416.74	0.00	0.00
110.0		0.11	0.27	0.00	0.00
113.0		682.76	1,314.19	0.00	0.00
115.0		87.11	118.54	0.00	0.00
120.0		166.16	290.71	0.00	0.00
125.0		162.78	282.64	0.00	0.00
130.0		159.24	274.57	0.00	0.00
135.0		155.53	266.50	0.00	0.00
140.0		859.00	1,554.55	0.00	0.00
145.0		114.61	201.16	0.00	0.00
150.0		1,282.34	2,628.59	0.00	2,173.99
	Totals:	7,961.43	21,900.91	0.00	2,361.55

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway 50.00 mph Wind with No Ice 29 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Sec Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-7.988	-21.891	0.000	0.000	0.000	-785.936	0.000	0.000	0.000	0.000
5.00	-7.845	-20.994	0.000	0.000	0.000	-745.997	-0.074	0.000	0.074	-0.140
10.00	-7.702	-20.114	0.000	0.000	0.000	-706.772	-0.296	0.000	0.296	-0.281
15.00	-7.331	-19.065	0.000	0.000	0.000	-668.263	-0.666	0.000	0.666	-0.423
20.00	-7.188	-18.220	0.000	0.000	0.000	-631.608	-1.186	0.000	1.186	-0.567
25.00	-7.044	-17.391	0.000	0.000	0.000	-595.670	-1.858	0.000	1.858	-0.713
30.00	-6.886	-16.585	0.000	0.000	0.000	-560.449	-2.683	0.000	2.683	-0.860
31.50	-6.852	-16.340	0.000	0.000	0.000	-550.097	-2.961	0.000	2.961	-0.906
35.00	-6.730	-15.401	0.000	0.000	0.000	-526.138	-3.664	0.000	3.664	-1.011
35.67	-6.723	-15.215	0.000	0.000	0.000	-521.629	-3.808	0.000	3.808	-1.032
40.00	-6.594	-14.621	0.000	0.000	0.000	-492.519	-4.804	0.000	4.804	-1.163
45.00	-6.439	-13.949	0.000	0.000	0.000	-459.547	-6.112	0.000	6.112	-1.332
50.00	-6.279	-13.291	0.000	0.000	0.000	-427.353	-7.598	0.000	7.598	-1.503
55.00	-6.114	-12.648	0.000	0.000	0.000	-395.960	-9.264	0.000	9.264	-1.674
60.00	-5.946	-12.019	0.000	0.000	0.000	-365.390	-11.108	0.000	11.108	-1.845
65.00	-5.774	-11.405	0.000	0.000	0.000	-335.661	-13.131	0.000	13.131	-2.016
70.00	-5.684	-10.814	0.000	0.000	0.000	-305.790	-15.334	0.000	15.334	-2.187
70.00	-5.596	-10.808	0.000	0.000	0.000	-306.771	-15.336	0.000	15.336	-2.187
73.50	-5.454	-10.141	0.000	0.000	0.000	-287.187	-16.984	0.000	16.984	-2.308
75.00	-5.415	-9.985	0.000	0.000	0.000	-279.024	-17.715	0.000	17.715	-2.360
80.00	-5.242	-9.493	0.000	0.000	0.000	-251.949	-20.292	0.000	20.292	-2.557
85.00	-5.066	-9.013	0.000	0.000	0.000	-225.741	-23.073	0.000	23.073	-2.752
90.00	-4.884	-8.548	0.000	0.000	0.000	-200.409	-26.056	0.000	26.056	-2.942
93.00	-4.687	-8.051	0.000	0.000	0.000	-185.570	-27.941	0.000	27.941	-3.056
95.00	-4.624	-7.867	0.000	0.000	0.000	-176.196	-29.236	0.000	29.236	-3.131
100.0	-4.446	-7.426	0.000	0.000	0.000	-153.076	-32.610	0.000	32.610	-3.310
105.0	-4.265	-6.997	0.000	0.000	0.000	-130.852	-36.166	0.000	36.166	-3.480
110.0	-4.076	-6.586	0.000	0.000	0.000	-109.529	-39.898	0.000	39.898	-3.641
110.0	-4.081	-6.582	0.000	0.000	0.000	-109.515	-39.899	0.000	39.899	-3.641
113.0	-3.323	-5.310	0.000	0.000	0.000	-97.285	-42.212	0.000	42.212	-3.733
115.0	-3.261	-5.189	0.000	0.000	0.000	-90.639	-43.792	0.000	43.792	-3.812
120.0	-3.090	-4.901	0.000	0.000	0.000	-74.336	-47.881	0.000	47.881	-3.994
125.0	-2.920	-4.622	0.000	0.000	0.000	-58.887	-52.160	0.000	52.160	-4.159
130.0	-2.751	-4.354	0.000	0.000	0.000	-44.288	-56.582	0.000	56.582	-4.304
135.0	-2.583	-4.095	0.000	0.000	0.000	-30.534	-61.152	0.000	61.152	-4.423
140.0	-1.609	-2.611	0.000	0.000	0.000	-17.619	-65.829	0.000	65.829	-4.510
145.0	-1.480	-2.418	0.000	0.000	0.000	-9.576	-70.581	0.000	70.581	-4.567
150.0	-1.282	0.000	0.000	0.000	0.000	-2.174	-75.378	0.000	75.378	-4.596

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)

Load Case: Twist/Sway — 50.00 mph Wind with No Ice — 29 Iterations

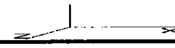
Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Sec Elev (ft)	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)		Stress Ratio
0.00	0.49	0.36	0.00	0.00	0.00	23.37	23.86	52.0	0.0	0.459
5.00	0.48	0.36	0.00	0.00	0.00	23.15	23.64	52.0	0.0	0.455
10.00	0.47	0.37	0.00	0.00	0.00	22.92	23.40	52.0	0.0	0.450
15.00	0.46	0.36	0.00	0.00	0.00	22.67	23.13	52.0	0.0	0.445
20.00	0.45	0.36	0.00	0.00	0.00	22.43	22.89	52.0	0.0	0.440
25.00	0.44	0.36	0.00	0.00	0.00	22.18	22.62	52.0	0.0	0.435
30.00	0.43	0.36	0.00	0.00	0.00	21.90	22.33	52.0	0.0	0.429
31.50	0.42	0.36	0.00	0.00	0.00	21.81	22.24	52.0	0.0	0.428
35.00	0.40	0.36	0.00	0.00	0.00	21.60	22.01	52.0	0.0	0.423
35.67	0.47	0.42	0.00	0.00	0.00	24.68	25.16	52.0	0.0	0.484
40.00	0.46	0.42	0.00	0.00	0.00	24.32	24.79	52.0	0.0	0.477
45.00	0.45	0.42	0.00	0.00	0.00	23.86	24.34	52.0	0.0	0.468
50.00	0.44	0.42	0.00	0.00	0.00	23.30	23.84	52.0	0.0	0.459
55.00	0.43	0.42	0.00	0.00	0.00	22.86	23.30	52.0	0.0	0.448
60.00	0.42	0.42	0.00	0.00	0.00	22.29	22.72	52.0	0.0	0.437
65.00	0.41	0.42	0.00	0.00	0.00	21.66	22.09	52.0	0.0	0.425
70.00	0.40	0.42	0.00	0.00	0.00	20.99	21.40	52.0	0.0	0.412
70.00	0.40	0.42	0.00	0.00	0.00	20.99	21.40	52.0	0.0	0.412
73.50	0.47	0.51	0.00	0.00	0.00	24.51	25.00	52.0	0.0	0.481
75.00	0.47	0.52	0.00	0.00	0.00	24.24	24.73	52.0	0.0	0.476
80.00	0.46	0.51	0.00	0.00	0.00	23.25	23.72	52.0	0.0	0.456
85.00	0.45	0.51	0.00	0.00	0.00	22.17	22.63	52.0	0.0	0.435
90.00	0.44	0.51	0.00	0.00	0.00	20.98	21.44	52.0	0.0	0.412
93.00	0.42	0.50	0.00	0.00	0.00	20.21	20.65	52.0	0.0	0.397
95.00	0.42	0.50	0.00	0.00	0.00	19.71	20.15	52.0	0.0	0.388
100.00	0.41	0.50	0.00	0.00	0.00	18.34	18.77	52.0	0.0	0.361
105.00	0.40	0.49	0.00	0.00	0.00	16.83	17.25	52.0	0.0	0.332
110.00	0.39	0.49	0.00	0.00	0.00	15.17	15.58	52.0	0.0	0.300
110.00	0.39	0.49	0.00	0.00	0.00	15.17	15.58	52.0	0.0	0.300
110.00	0.52	0.65	0.00	0.00	0.00	19.99	20.54	52.0	0.0	0.395
113.00	0.43	0.54	0.00	0.00	0.00	18.58	19.03	52.0	0.0	0.366
115.00	0.42	0.54	0.00	0.00	0.00	17.85	18.30	52.0	0.0	0.352
120.00	0.41	0.53	0.00	0.00	0.00	15.85	16.29	52.0	0.0	0.313
125.00	0.41	0.52	0.00	0.00	0.00	13.63	14.07	52.0	0.0	0.271
130.00	0.40	0.51	0.00	0.00	0.00	11.17	11.61	52.0	0.0	0.223
135.00	0.39	0.51	0.00	0.00	0.00	8.42	8.86	52.0	0.0	0.170
140.00	0.26	0.33	0.00	0.00	0.00	5.34	5.63	52.0	0.0	0.108
145.00	0.26	0.32	0.00	0.00	0.00	3.20	3.50	52.0	0.0	0.067
150.00	0.00	0.29	0.00	0.00	0.00	0.81	0.95	52.0	0.0	0.018

Height : 150.0 (ft)
Shape : 12 Sides
Base Dia : 37.38 (in)
Top Dia : 15.00 (in)
Taper : 0.156705 (in/ft)

Base Elev : 0.000 (ft)



Analysis Summary

Load Case	Reactions: Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Stresses: Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
No Ice	25.9	0.00	21.80	0.00	0.00	2526.69	79.51	52.0	35.67	1.529
Ice	22.4	0.00	29.49	0.00	0.00	2310.18	75.23	52.0	73.50	1.447
Twist/Sway	8.0	0.00	21.89	0.00	0.00	785.94	25.16	52.0	35.67	0.484

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Description	Len (in)	Stitch Weld Spacing (in)	Size (in)	Fu (ksi)	Upper Terminal Weld Moment (ft-kips)	Q (in^3)	Tot I (in^4)	Len (in)	Lower Terminal Weld Moment (ft-kips)	Q (in^3)	Tot I (in^4)	Len (in)	Max Stresses fb (ksi)	Fb (ksi)	Ratio
0.00	0.00		0.00	0.00	0.000	0	0.00	0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.0	0.0	0.0

Exhibit 3

T-Mobile

T-Mobile USA Inc.
100 Filley St, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Karina Fournier
From: Farid Marbouh - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTNH102C
Date: August 17, 2006

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile PCS antenna installation on a Monopole at 405 Brushy Plain Rd, Branford, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from T-Mobile transmitters are in the 1935-1945 MHz frequency band.
2) The antenna array consists of three sectors, with 2 antennas per sector.
3) The model number for each antenna is RFS-APX16PV-16PVL-E.
4) The antenna center line height is 140 ft.
5) The maximum transmit power from any sector is 2353.53 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
8) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile PCS antenna installation on a Monopole at 405 Brushy Plain Rd, Branford, CT, is 0.02634 mW/cm^2. This value represents 2.634% of the Maximum Permissible Emission (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.

The combined Power Density from other carriers is 31.06%. The combined Power Density for the site is 33.694% of the M.P.E. standard.

New England Market

Connecticut

Worst Case Power Density

Site:	**CTNH102C**
Site Address:	**405 Brushy Plain Rd**
Town:	**Branford**
Tower Height:	**150 ft.**
Tower Style:	**Monopole**
Base Station TX output	20 W
Number of channels	8
Antenna Model	RFS-APX16PV-16PVL-E
Cable Size	1 5/8 in.
Cable Length	140 ft.
Antenna Height	140.0 ft.
Ground Reflection	1.6
Frequency	1935.0 MHz
Jumper & Connector loss	4.50 dB
Antenna Gain	17.8 dBi
Cable Loss per foot	0.0116 dB
Total Cable Loss	1.6240 dB
Total Attenuation	6.1240 dB
Total EIRP per Channel	54.69 dBm
(In Watts)	294.19 W
Total EIRP per Sector	63.72 dBm
(In Watts)	2353.53 W
nsg	11.6760
Power Density (S) =	**0.026344 mW/cm^2**
T-Mobile Worst Case % MPE =	**2.6344%**

Equation Used :

$$S = \frac{(1000)(grf)^2 (Power) * 10^{(nsg/10)}}{4\pi (R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	% of Standard
Verizon	11.0200 %
Cingular	7.1000 %
Town Police Department	2.7500 %
Pagenet	10.1900 %
Total Excluding T-Mobile	**31.0600 %**
T-Mobile	2.6344
Total % MPE for Site	**33.6944%**