



# 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](mailto:siting.council@ct.gov)

Internet: [ct.gov/csc](http://ct.gov/csc)

Daniel F. Caruso

Chairman

March 2, 2007

H. Karina Fournier  
Zoning Department  
T-Mobile  
35 Griffin Road South  
Bloomfield, CT 06002

RE: **EM-T-MOBILE-044-070208** - Omnipoint Communications, Inc. (T-Mobile) notice of intent to modify an existing telecommunications facility located at 259 Commerce Street, East Haven, Connecticut.

Dear Ms. Fournier:

At a public meeting held on February 27, 2007, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated February 8, 2007, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. 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. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such 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.

Thank you for your attention and cooperation.

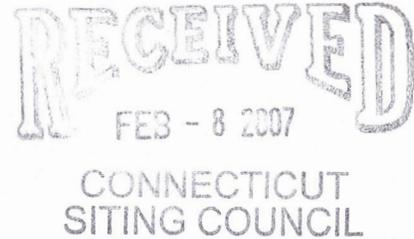
Very truly yours,

Daniel F. Caruso

Chairman

DFC/MP/laf

c: The Honorable Joseph Maturo, Jr., Mayor, Town of East Haven  
George Mingione, Zoning Enforcement Officer, Town of East Haven  
Michele G. Briggs, New Cingular Wireless PCS, LLC  
Christopher B. Fisher, Esq., Cuddy & Feder LLP



---

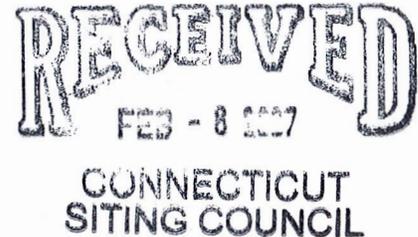
35 Griffin Road South  
Bloomfield, CT 06002  
[Karina.Fournier@T-mobile.com](mailto:Karina.Fournier@T-mobile.com)  
860-796-3988

ORIGINAL

February 8, 2007

**BY HAND**

Daniel F. Caruso, Chairman and  
Members of the Siting Council  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051



RE:           **Notice of Exempt Modification**  
                  **259 Commerce Street East Haven, CT**  
                  **Latitude: 41 15 22.86 / Longitude: 72 15 32.8**

Dear Chairman Caruso and Members of the Siting Council:

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 ("East Haven AT&T MP"), in East Haven, CT owned by New Cingular Wireless.

Please accept this letter as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b) (2).

East Haven AT&T MP

The East Haven AT&T Monopole facility consists of a fifty seven (57') foot monopole ("Tower") owned and operated by Cingular. T-Mobile proposes to locate antennas at a centerline mounting height of forty seven (47') feet. The equipment will be located within the compound at the base of the tower.

East Haven AT&T MP

As shown on the enclosed plans prepared by including a site plan and tower elevation of the February 23, 2004, 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 three (3) flush mounted antennas at the forty seven (47') foot level of the Tower. Three (3) associated unmanned equipment cabinets will be located at the base of the tower.

The proposed modification is structurally feasible. A structural analysis of the tower is attached as Exhibit 2. The structural analysis shows that the tower can safely accommodate the proposed T-Mobile installation.

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

1. The proposed modification will not result in any increase in the overall height of the existing structure.
2. The proposed modification will not affect ground-mounted equipment and will not require the extension of the site boundaries.
3. The proposed modification will not increase noise levels at the facility 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 65.581% of the standard. See Radio Frequency Memo annexed hereto as Exhibit 3.

Conclusion

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

Respectfully submitted,



Karina Fournier  
Zoning Dept.  
T-Mobile  
35 Griffin Road South  
Bloomfield, CT 06002  
(860) 796-3988

cc: Mayor, Joseph Maturo, Jr.  
Zoning Enforcement Officer, George Mingione

# Exhibit 1

OMNIPPOINT 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

**Westcott and Mapes, Inc.**  
 Consulting Engineers and Architects since 1916  
 142 Temple Street  
 New Haven, CT 06510  
 TEL (203) 789-1260 • FAX (203) 789-8261



# EAST HAVEN AT&T MP

259 COMMERCE STREET  
 EAST HAVEN, CT 06512

## SITE NUMBER: CT11-623-B

SITE TYPE: CO-LOCATE

APPROVALS

LANDLORD \_\_\_\_\_

LEASING \_\_\_\_\_

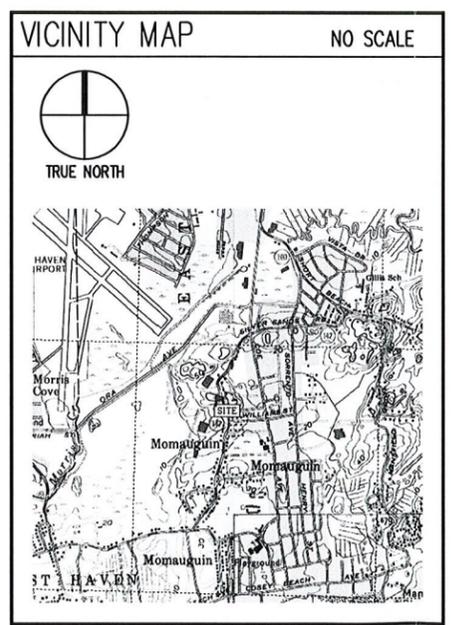
R.F. \_\_\_\_\_

ZONING \_\_\_\_\_

CONSTRUCTION \_\_\_\_\_

A/E \_\_\_\_\_

- ### GENERAL NOTES
- 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - THE CONTRACTOR SHALL MAKE NECESSARY PROMSIONS 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.
  - 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.
  - THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
  - 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.
  - THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
  - 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: 1-888-344-7233 DIG SAFE SYSTEM (MA, ME, NH, RI, VT); 1-888-344-7233 CALL BEFORE YOU DIG (CT); 1-800-922-4455



**DO NOT SCALE DRAWINGS**

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S 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	0
A-1	PLANS, DETAILS, ELEVATION AND NOTES	0
S-1	STRUCT. NOTES, PLANS, SECTIONS & DETAILS	0
E-1	ELEC. & GROUNDING NOTES, RISERS & DETAILS	0

### PROJECT SUMMARY

SITE NUMBER: CT11-623-B

SITE NAME: EAST HAVEN AT&T MP

SITE ADDRESS: 259 COMMERCE STREET  
EAST HAVEN, CT 06512

ASSESSOR'S PARCEL NO.: MAP #90, BLOCK # 1013, LOT #005

SITE TYPE: CO-LOCATE

STRUCTURE OWNER: AT&T  
15 EAST MIDLAND AVENUE  
PARAMUS, NJ 07652

PROPERTY OWNER: AT&T  
15 EAST MIDLAND AVENUE  
PARAMUS, NJ 07652

APPLICANT, LESSEE/LICENSEE, PROJECT OWNER: OMNIPPOINT COMMUNICATIONS, INC.  
100 FILLEY STREET  
BLOOMFIELD, CT 06002

PROJECT NO: 02125.64

DRAWN BY: MJE

CHECKED BY: CMM

### SUBMITTALS

DATE	DESCRIPTION
0 2/23/04	CONSTRUCTION

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF OMNIPPOINT COMMUNICATIONS, INC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

**CT11-623-B**

**EAST HAVEN AT&T MP**

259 COMMERCE STREET  
EAST HAVEN, CT 06512

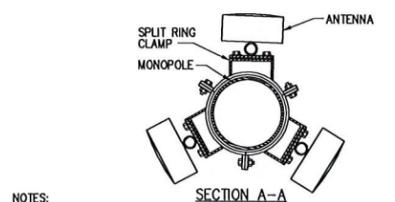
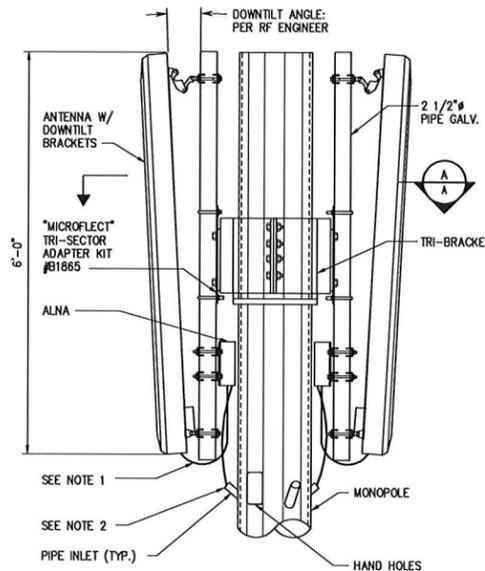
SHEET TITLE

TITLE SHEET

SHEET NUMBER

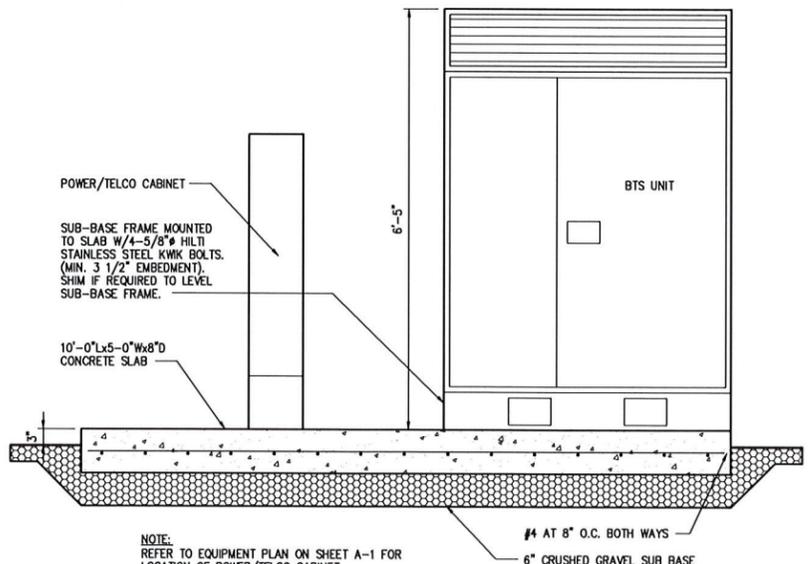
**T-1**



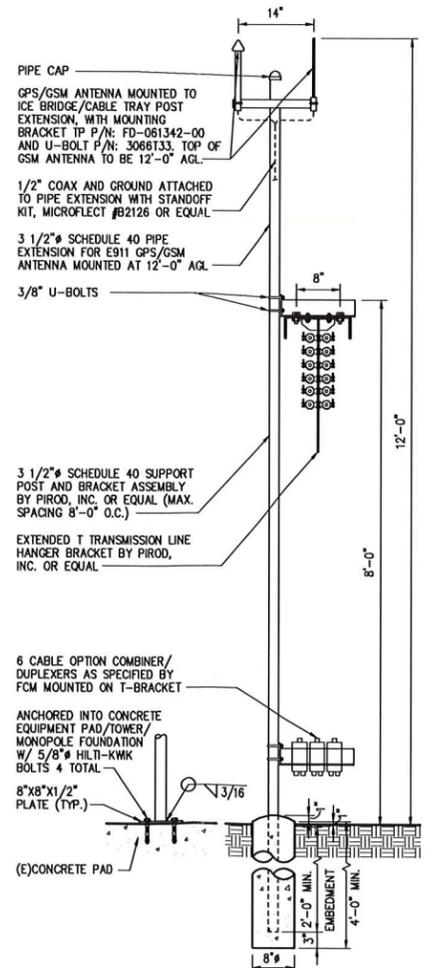


- NOTES:**
1. SECURE CABLES TO GRATING WITH TIE WRAPS AT 3'-0" O.C.
  2. PROVIDE KELLOMS GRIP AROUND CABLES AND FASTEN TO EXISTING J-HOOKS INSIDE MONOPOLE.
  3. MONOPOLE WIRELESS ANTENNA PLATFORM MANUFACTURED BY MICROFLECT WIRELESS INFRASTRUCTURE PRODUCTS (OR EQUAL).

**ANTENNA MOUNTING DETAIL** 4  
SCALE: 3/4"=1'-0" S-1



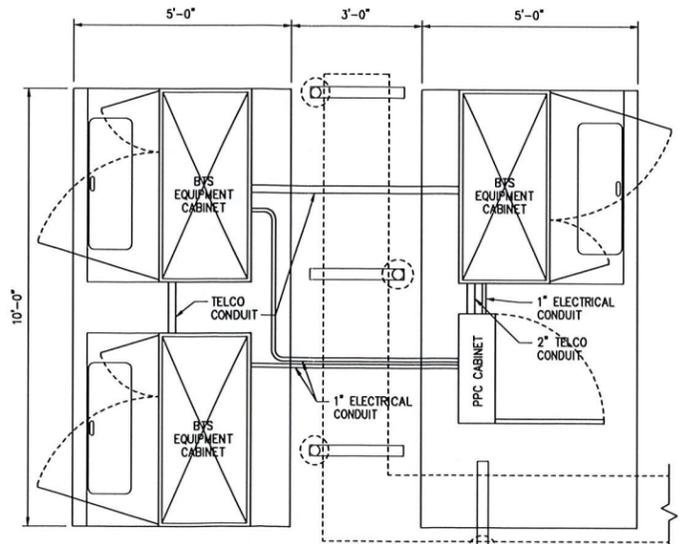
**SECTION AT EQUIPMENT PAD** 3  
SCALE: 3/4"=1'-0" S-1



**SECTION AT ICE BRIDGE/CABLE TRAY** 2  
SCALE: 3/4"=1'-0" 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 INDICATED.
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 UNON.
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 55 PERCENT ZINC BY WEIGHT. ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE 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 70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. 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 SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-20 AND OR HY-150 SYSTEMS (AS SPECIFIED AN DWG.) OR ENGINEERS APPROVED EQUAL WITH 4-1/4" MIN. EMBEDMENT DEPTH.
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 #8 AND LARGER ..... 2 INCHES  
#5 AND SMALLER ..... 1 1/2 INCHES
19. ALL EXPOSED EDGES SHALL BE PROVIDED WITH A 3/4"x3/4" CHAMFER UNLESS NOTED OTHERWISE.
20. 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.



**PLAN AT EQUIPMENT PAD** 1  
SCALE: 1/2"=1'-0" S-1



OMNIPONT 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

**Westcott and Mapes, Inc.**  
Consulting Engineers and Architects since 1910  
142 Temple Street  
New Haven, CT 06510  
TEL (203) 789-1260 • FAX (203) 789-8261

LANDLORD \_\_\_\_\_  
LEASING \_\_\_\_\_  
R.F. \_\_\_\_\_  
ZONING \_\_\_\_\_  
CONSTRUCTION \_\_\_\_\_  
A/E \_\_\_\_\_

PROJECT NO: 02125.64

DRAWN BY: MJE

CHECKED BY: CMM

SUBMITTALS	
0	2/23/04 CONSTRUCTION

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF OMNIPONT COMMUNICATIONS, INC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

CT11-623-B  
EAST HAVEN AT&T MP  
259 COMMERCE STREET  
EAST HAVEN, CT 06512

STRUCTURAL NOTES, PLAN SECTIONS AND DETAILS

SHEET NUMBER  
**S-1**



## Exhibit 2



January 16, 2007

Bryan Bakis, P.E.  
T-Mobile  
50 Vision Blvd.  
E. Providence, RI 02914

Ref.: 58-Ft Monopole at CT11623B, CT  
(Bechtel Site: East Heaven, CT)  
Job # J060608002, design # M06-0650, R1

Dear Bryan Bakis:

The above mentioned monopole was previously designed in 2002, under job no: J030902001. It was designed for a basic wind speed of 85 mph no ice and 73 mph with 1/2" radial ice in accordance with the TIA/EIA-222-F Standard.

A structural analysis was performed using FWT's comprehensive "Monopole Design Program" to investigate the adequacy of the existing 58-ft. monopole to support the proposed loading (see attached profile).

The program models the structure as a cantilevered beam subject to transverse (wind) and axial (dead weight) loads. Deflections and secondary moments are calculated and applied to the pole. In one case a basic wind speed of 90 mph with no ice, and in the second case a basic wind speed of 77 mph wind with 1/2" ice.

The results of the analyses showed that the monopole is adequate to support the proposed loading. The existing **Pad & Pier Foundation** designed by FWT (14'x14' with 5'-0"Ø pier) is found to be capable to support the proposed loading.

Based on the preceding results, it is concluded that the tower is adequate to retain the fastest mile basic wind speed rating of 90 mph (or equivalent to 110-mph 3-second gust wind speed per 2003 International Building Code) for the proposed loading condition.

If you have any questions or if we can be of further assistance, please do not hesitate to contact us.

Submitted by:

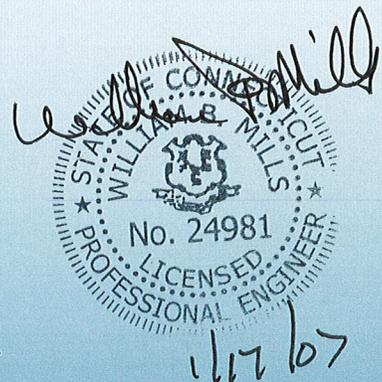
FWT, Inc.

Sincerely,

Ta-Wen Lee, PhD, PE  
Engineering Manager

Reviewed By

William B. Mills, PE  
Director of Engineering



**STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY FWT, INC.**

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

- Information from fields and/or drawings in the possession of FWT, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to FWT, Inc. 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/ASCE 10-90 & ANSI/EIA-222.
- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. FWT, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

JOB DATA			
Page 1 of 1	Job No.	J060608002	
By TWL	Design No.	M06-0650, R1	
Chk'd By <i>tw</i>	Date	5/31/2002 1:51:19 PM	
	Rev. No. 1	Rev. Date 1/9/2007	
Pole	58-FT MONOPOLE		
Site	EAST HEAVEN, CT		
Owner	BECHTEL CORPORATION		
Ref. No.			
Standard	ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND ACCORDING TO TIA/EIA-222-F 1996		

1 REV 1: GENERAL REVISION

FOR STRESS ANALYSIS ONLY

LOAD CASES			
CASE 1	90 MPH WITH NO ICE		DESIGN WIND
CASE 2	77 MPH WITH 1/2" RADIAL ICE		REDUCED WIND WITH ICE
CASE 3	50 MPH WITH NO ICE		OPERATIONAL WIND

\* THE WIND SPEEDS LISTED ARE FASTEST-MILE WIND SPEEDS.

POLE SPECIFICATIONS	
Pole Shape Type:	18-SIDED POLYGON
Taper:	0.224690 IN/FT
Shaft Steel:	ASTM A572 GRADE 65
Base PL Steel:	ASTM A633 GR. E (60 KSI)
Anchor Bolts:	2 1/4" x 7'-0" LONG #18J ASTM A615 GRADE 75

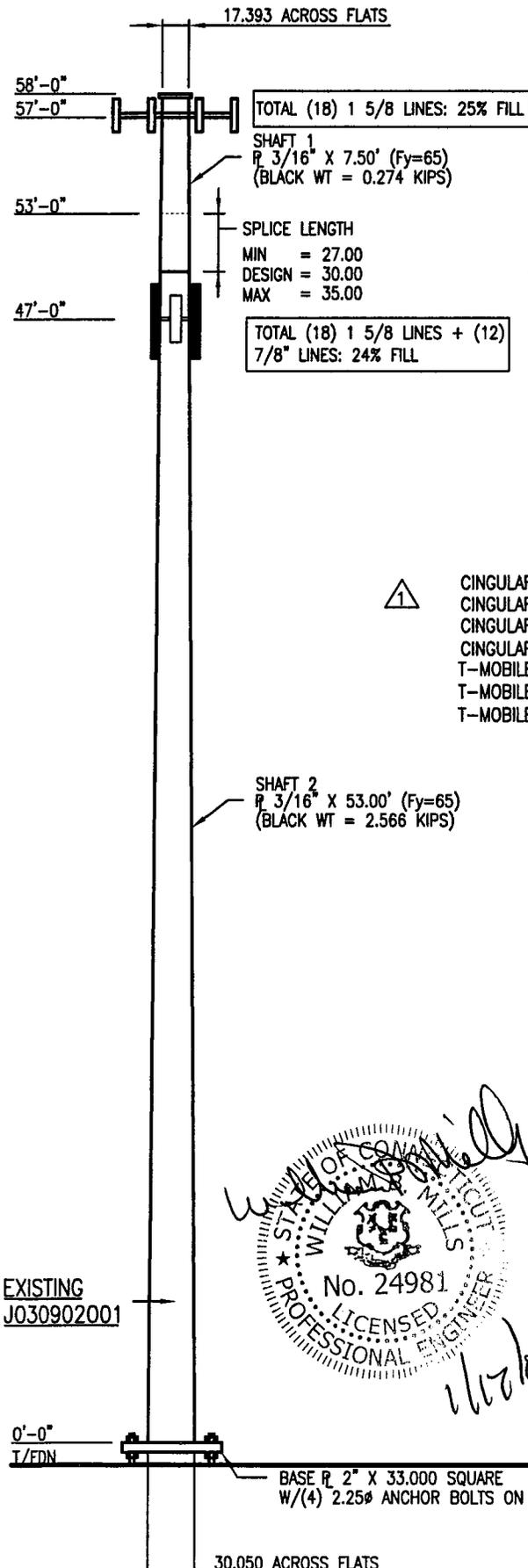
\*\* SHALL MEET CHARPY V-NOTCH TEST: 15 FT.LBS @ -20F

ANTENNA LIST			
No.	Elev.	Description	
-	TOP	3/4" LIGHTNING ROD	
1-3	57.00	(3) 6' X 1' X 2" PANEL ANTENNA (ASSUMED)	
4-12	57.00	(9) 6' X 1' X 2" PANEL ANTENNA	
13-24	57.00	(12) TMA/DIPLEXER	
-	57.00	(1) 10-FT LPS MOUNT (P) W/ SERVICE GRATING	
25-27	47.00	(3) APX16PV-16PVL-E PANEL (L=4.4')	
28-39	47.00	(12) TMA/DIPLEXER	
-	47.00	(3) ANTENNA CLOSE CONTACT MOUNT	

E=EXISTING; F=FUTURE; P=PROPOSED  
 STEP BOLTS FULL HEIGHT FROM 9'-6" ABOVE BASE PLATE.  
 ANTENNA FEED LINES RUN INSIDE OF POLE.

Elevation	90 MPH WIND		50 MPH WIND	
	Lateral Deflection (Inches)	Rotation (sway) (degrees)	Lateral Deflection (Inches)	Rotation (sway) (degrees)
TOP	18.2	2.419	5.6	0.747

SHAFT SECTION DATA					
Shaft Section	Section Length (feet)	Plate Thickness (in.)	Lap Splice (in.)	Diameter Across Flats (inches)	
				@ Top	@ Bottom
1	7.50	0.1875	30.00	17.393	19.078
2	53.00	0.1875		18.141	30.050



TOTAL (18) 1 5/8 LINES: 25% FILL

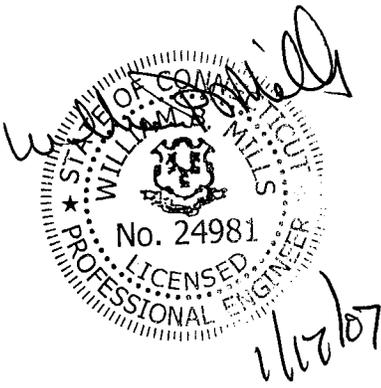
SHAFT 1  
 R 3/16" X 7.50' (Fy=65)  
 (BLACK WT = 0.274 KIPS)

SPLICE LENGTH  
 MIN = 27.00  
 DESIGN = 30.00  
 MAX = 35.00

TOTAL (18) 1 5/8 LINES + (12) 7/8" LINES: 24% FILL

- 1 CINGULAR E
- CINGULAR F
- CINGULAR F
- CINGULAR F
- T-MOBILE P
- T-MOBILE P
- T-MOBILE P

SHAFT 2  
 R 3/16" X 53.00' (Fy=65)  
 (BLACK WT = 2.566 KIPS)



EXISTING  
 J030902001

UNFACTORED BASE REACTIONS  
 MOMENT = 389 ft-kips  
 SHEAR = 8.3 kips  
 AXIAL = 7.4 kips

BASE R 2" X 33.000 SQUARE  
 W/(4) 2.25" ANCHOR BOLTS ON 37.000 B.C.

30.050 ACROSS FLATS

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090 Tue Jan 16, 2007 - 3:08:10 pm  
 (c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio  
 Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002 Design No: M06-0650, R1 Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design.....: ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner.....: BECHTEL CORPORATION Client: T-Mobile  
 Status.....: Design Alternate Revision: 1 Rev. Date : 1/9/2007  
 -----

-----  
 M O N O P O L E B A S E P L A T E D E S I G N D E T A I L S  
 -----

Shaft Shape .....: 18 Sided Polygon Stress Increase ...: 1.333 Factor  
 Base Dia, DF .....: 30.050 Inches Base Plate Shape ...: Square  
 PT-to-PT, DP .....: 30.514 Inches  
 Min Bolt Circle ..: 37.050 Inches Use Bolt Circle ...: 37.000 Inches  
 -----

Base Reactions : DESIGN USER

Moment .....: 388.754 Ft-Kips 389 Ft-Kips  
 Axial Load .....: 7.431 Kips 7.5 Kips  
 -----

Anchor Bolt Details : DESIGN USER

Number of Bolts .....: 4 4  
 Bolt Diameter .....: 2.250 Inches 2.250 Inches  
 Bolt Type .....: #18J ASTM A615 #18J ASTM A615  
 Y-Distance .....: 0 0  
 Mom. of Inertia .....: 686.35 In^4 684.50 In^4  
 Bolt Tension, T .....: 125.91 Kips 126.16 Kips  
 Allowable Tension ...: 194.81 Kips 194.81 Kips  
 Bolt Compression, C ..: 127.77 Kips 128.04 Kips  
 -----

Base Plate Details : DESIGN USER

Plate Moment, MPL ...: 447.19 In-Kips 444.93 In-Kips  
 Bend Plane, W .....: 15.93 Inches 16.62 Inches  
 Plate Thickness, t ...: 1.676 Inches 2.000 Inches  
 Plate Width .....: 32.514 Inches 33.000 Inches  
 Plate Steel .....: ASTM A633 GR. E (60 KSI) ASTM A633 GR. E (60 KSI)  
 Gross Weight .....: 502.50 Lbs 617.60 Lbs  
 Net Weight .....: 372.70 Lbs 462.80 Lbs  
 Allowable Stress .....: 59.98 Ksi 59.98 Ksi  
 Actual Stress .....: 59.98 Ksi 40.16 Ksi  
 Act./Allow Ratio .....: 1.00 0.67  
 -----

-----  
 B A S E P L A T E D E S I G N S U M M A R Y  
 -----

USE FOLLOWING SPECIFICATIONS:

Plate Thickness .....: 2.000 Inches Number of Bolts ...: 4  
 Plate Width/Diameter : 33.000 Inches (Square) Bolt Circle .....: 37.00 Inches  
 Plate Weight .....: 0.618 Kips Bolt Diameter .....: 2.25 Inches  
 Bolt Type .....: #18J ASTM A615

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090 Tue Jan 16, 2007 - 3:08:10 pm  
 (c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio  
 Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002 Design No: M06-0650, R1 Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION Client: T-Mobile  
 Status..... : Design Alternate Revision: 1 Rev. Date : 1/9/2007  
 -----

S U M M A R Y O F A N A L Y S I S R E S U L T S

-----  
 Pole Height.....: 58.00 ft  
 Top Diameter.....: 17.393 in  
 Bottom Diameter.....: 30.050 in  
 Pole Shape.....: 18-Sided Polygon  
 Splice Joint Type...: Taper shaft - Slip Joint Splice  
 Shaft Taper.....: 0.224690 (in/ft)  
 Shaft Steel Weight...: 2.840 kips  
 -----

POLE SHAFT PROPERTIES:

Shaft Section Number	Section Length (ft)	Wall Thickness [t] (in)	Steel Yield [Fy] (ksi)	Top Diameter [Dt] (in)	Bottom Diameter [Db] (in)	Slip Joint Overlap (in)
1.	7.500	0.18750	65	17.393	19.078	30.00
2.	53.000	0.18750	65	18.141	30.050	

POLE SHAFT SECTION MAXIMUM FORCES AND MOMENTS:

Shaft Section Number	Wind Load No.	Wind Speed (mph)	Radial Ice (in)	----- At Base of Section -----				Max. Ratio Actual/ Allowable [Ftot/Fb]
				Sect. Elev. (ft)	Axial Load (kips)	Horiz. Shear (kips)	Bending Moment (ft-kips)	
1.	1	90.0	0.00	53.00	3.835	4.476	18.413	0.1012
2.	1	90.0	0.00	0.00	7.431	8.318	388.754	0.7125

>> MAXIMUM BASE REACTIONS : 7.431 8.318 388.754 <<

POLE DEFLECTION AND ROTATION AT TOP AND AT HIGHEST MICROWAVE DISH ELEVATION:

Wind Load No.	Wind Speed (mph)	Radial Ice (in)	Location	Elev (ft)	Deflection (in)	Rotation (deg)	Max. Allowable Rotation Limit (deg)
1.	90.0	0.00	Top	58.00	18.215	2.419	
2.	77.9	0.50	Top	58.00	15.826	2.104	
3.	50.0	0.00	Top	58.00	5.620	0.747	

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1          Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND
Owner.....  : BECHTEL CORPORATION          Client: T-Mobile
Status..... : Design Alternate             Revision: 1   Rev. Date : 1/9/2007
-----

```

```

-----
Pole Height : 58 ft
Pole Shape  : 18-Sided Polygon
Pole Type   : Taper shaft - Slip Joint Splice
Pole Taper  : 0.224690 (in/ft)
-----

```

## INPUT TUBE PROPERTIES:

Tube Sect No.	Top / Splice Elev (ft)	Bot Tube Elev (ft)	Tube Length (ft)	Wall Thick [t] (in)	Steel [Fy] (ksi)	Top Diam [Dt] (in)	Bot Diam [Db] (in)	Slip Joint Overlap (in)
1.	58.00	50.50	7.500	0.18750	65	17.393	19.078	30.00
2.	53.00	0.00	53.000	0.18750	65	18.141	30.050	

## TUBE SECTION PROPERTIES:

Tube Sect No.	Section Weight (kips)	Location	Elev (ft)	Diam. Across Flats (in)	Wall Thick [t] (in)	[W/t] Ratio	Diam/Thick [D/t] Ratio	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )
1	0.274	@Top	58.0	17.393	0.1875	14.59	92.76	10.24	382.9
		@Splice	53.0	18.516		15.65	98.75	10.91	462.8
		@Bot	50.5	19.078		16.18	101.75	11.24	506.7
2	2.566	@Top	53.0	18.141	0.1875	15.30	96.75	10.68	435.0
		@Bot	0.0	30.050		26.50	160.27	17.77	2001.6

```

-----
Total Shaft Steel Weight = 2.840 kips
-----

```

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc.; Fort Worth, Texas

-----

Job No.....: J060608002                      Design No: M06-0650, R1                      Engineer : TWL  
Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
Owner..... : BECHTEL CORPORATION                      Client: T-Mobile  
Status..... : Design Alternate                      Revision: 1    Rev. Date : 1/9/2007

-----

## Segment Properties:

(@ Max Segment = 5 ft )

Tube Segmt No.	Segment Feature Location	Segment Elev. (ft)	Diam. Across Flats (in)	Wall Thick [t] (in)	[W/t] Ratio	Diam/ Thick [D/t] Ratio	Area (in^2)	Ix (in^4)
1.	top	58.000	17.393	0.18750	14.59	92.76	10.24	382.9
2.	<arm [1]>	58.000	17.393	0.18750	14.59	92.76	10.24	382.9
3.	<arm [2]>	57.000	17.618	0.18750	14.80	93.96	10.37	398.0
4.	<arm [3]>	57.000	17.618	0.18750	14.80	93.96	10.37	398.0
5.	<arm [4]>	57.000	17.618	0.18750	14.80	93.96	10.37	398.0
6.	<arm [5]>	57.000	17.618	0.18750	14.80	93.96	10.37	398.0
7.		55.000	18.067	0.18750	15.23	96.36	10.64	429.6
8.	top sec(2)	53.000	18.516	0.18750	15.65	98.75	10.91	462.8
9.	bot sec(1)	50.500	18.703	0.18750	15.83	99.75	11.02	477.1
10.		50.000	18.815	0.18750	15.93	100.35	11.09	485.9
11.	<arm [6]>	47.000	19.490	0.18750	16.56	103.94	11.49	540.5
12.	<arm [7]>	47.000	19.490	0.18750	16.56	103.94	11.49	540.5
13.	<arm [8]>	47.000	19.490	0.18750	16.56	103.94	11.49	540.5
14.		45.000	19.939	0.18750	16.99	106.34	11.75	579.2
15.		40.000	21.062	0.18750	18.04	112.33	12.42	683.7
16.		35.000	22.186	0.18750	19.10	118.32	13.09	800.2
17.		30.000	23.309	0.18750	20.16	124.32	13.76	929.1
18.		25.000	24.433	0.18750	21.21	130.31	14.43	1071.2
19.		20.000	25.556	0.18750	22.27	136.30	15.10	1227.1
20.		15.000	26.680	0.18750	23.33	142.29	15.77	1397.5
21.		10.000	27.803	0.18750	24.38	148.28	16.43	1582.9
22.		5.000	28.927	0.18750	25.44	154.27	17.10	1784.1
23.	base	0.000	30.050	0.18750	26.50	160.27	17.77	2001.6

-----

Total Number of Antennas / Arms = 8

-----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090 Tue Jan 16, 2007 - 3:08:10 pm  
 (c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio  
 Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002 Design No: M06-0650, R1 Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design.....: ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner.....: BECHTEL CORPORATION Client: T-Mobile  
 Status.....: Design Alternate Revision: 1 Rev. Date : 1/9/2007  
 -----

ANTENNA AND ARM PROPERTIES AND LOAD DATA:

LOAD CASE 1: BASIC WIND VELOCITY = 90.00 mph

Ant Arm No.	Arm Mount. Elev. (ft)	Load Applic. Elev. (ft)	Arm Length (ft)	Ice Load Case	Antenna Area [CaAa] (sf)	Antenna Force [qzGhCaAa] (lbs)	Antenna Weight (lbs)
[1]	58.000	62.000	2.0000	No Ice:	0.60	25.18	15.00
Description: 3/4" Lightning Rod					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.197		No Ice:	24.830	41.963	
[2]	57.000	57.000	0.0000	No Ice:	20.33	832.85	90.00
Description: (3) 6' X 1' X 2" PANEL ANTENNA (ASSUMED)					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.169		No Ice:	24.241	40.967	
[3]	57.000	57.000	0.0000	No Ice:	12.57	514.95	2847.00
Description: (1) 10-Ft LPS MOUNT (P) W/ SERVICE GRATING					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.169		No Ice:	24.241	40.967	
[4]	57.000	57.000	0.0000	No Ice:	9.60	393.28	240.00
Description: (12) TMA/Diplexer					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.169		No Ice:	24.241	40.967	
[5]	57.000	57.000	0.0000	No Ice:	60.33	2471.51	270.00
Description: (9) 6' X 1' X 2" PANEL ANTENNA					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.169		No Ice:	24.241	40.967	
[6]	47.000	47.000	0.0000	No Ice:	6.50	252.00	200.00
Description: (3) ANTENNA CLOSE CONTACT MOUNT					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.106		No Ice:	22.941	38.770	
[7]	47.000	47.000	0.0000	No Ice:	9.60	372.19	240.00
Description: (12) TMA/Diplexer					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] [ Kz ] 1.69 1.106		No Ice:	22.941	38.770	
[8]	47.000	47.000	0.0000	No Ice:	19.95	773.46	120.00
Description: (3) APX16PV-16PVL-E Panel (L=4.4')							

[ Gh ]	[ Kz ]		[ qz ]	[qz][Gh]
1.69	1.106	No Ice:	(psf)	(psf)
			22.941	38.770

---

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1          Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND
Owner.....  : BECHTEL CORPORATION          Client: T-Mobile
Status..... : Design Alternate            Revision: 1   Rev. Date : 1/9/2007
-----
    
```

POLE SHAFT LOADS:

LOAD CASE 1: BASIC WIND VELOCITY = 90.00 mph

Design Loads per TIA/EIA-222-F Standard; Gust Factor ..... Gh = 1.69

Pole DL Overload Factor = 1.2

Per TIA/EIA Table 1: Note 3: For all cross sectional shapes,  
 Force Coefficient [Cf] need not exceed 1.2  
 for any value of C. (Where C=sqrt(Kz)\*V\*D.)

Top of Segment Elev. (ft)	Expos Coeff [Kz]	Veloc Press [qz] (psf)	Pole Veloc Coeff [C]	Force Coeff [Cf]	Projected Area Shaft [Ae] (sf)	Segment [Cf Ae] (sf)	Wind Force (lbs)	Shaft Weight (lbs)
58.000	1.175	24.36	141.39	0.650	0.000	0.000	0.00	0.00
58.000	1.175	24.36	141.39	0.650	1.459	0.948	39.04	42.08
57.000	1.169	24.24	142.86	0.650	0.000	0.000	0.00	0.00
57.000	1.169	24.24	142.86	0.650	0.000	0.000	0.00	0.00
57.000	1.169	24.24	142.86	0.650	0.000	0.000	0.00	0.00
57.000	1.169	24.24	142.86	0.650	1.478	0.960	39.34	42.63
55.000	1.157	23.99	145.76	0.650	3.011	1.957	79.57	86.89
53.000	1.145	23.74	148.60	0.650	3.070	1.996	80.29	201.68
50.500	1.129	23.42	149.06	0.650	3.098	2.014	80.09	89.44
50.000	1.126	23.35	149.75	0.650	1.577	1.025	40.46	45.54
47.000	1.106	22.94	153.75	0.650	3.211	2.087	81.64	92.72
47.000	1.106	22.94	153.75	0.650	0.000	0.000	0.00	0.00
47.000	1.106	22.94	153.75	0.650	1.633	1.062	41.16	47.18
45.000	1.093	22.66	156.32	0.650	3.323	2.160	82.97	95.99
40.000	1.057	21.91	162.37	0.650	8.636	5.613	210.68	249.54
35.000	1.017	21.09	167.80	0.650	9.104	5.917	214.19	263.19
30.000	1.000	20.74	174.82	0.650	9.572	6.222	218.40	276.84
25.000	1.000	20.74	183.25	0.650	10.040	6.526	228.69	290.49
20.000	1.000	20.74	191.67	0.650	10.508	6.830	239.36	304.14
15.000	1.000	20.74	200.10	0.650	10.976	7.134	250.02	317.79
10.000	1.000	20.74	208.52	0.650	11.444	7.439	260.68	331.44
5.000	1.000	20.74	216.95	0.650	11.912	7.743	271.34	345.08
1.000	1.000	20.74	223.69	0.650	9.867	6.413	224.75	285.90

Summation TOTAL = 2682.68 3408.53

----- ( END LOAD CASE 1 -- POLE SHAFT LOADS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1          Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND...
Owner.....  : BECHTEL CORPORATION          Client: T-Mobile
Status..... : Design Alternate             Revision: 1   Rev. Date : 1/9/2007
-----

```

POLE SHAFT SEGMENTS -- AXIAL AND SHEAR FORCES:

LOAD CASE 1: BASIC WIND VELOCITY = 90.00 mph

Tube Segment No.	Segment Elevation (ft)	Axial Load (kips)	Cumulative Axial Load (kips)	Horiz. Shear (kips)	Cumulative Horiz. Shear (kips)
1.	58.000	0.000	0.000	0.000	0.000
2.	58.000	0.057	0.057	0.064	0.064
3.	57.000	0.090	0.147	0.833	0.897
4.	57.000	2.847	2.994	0.515	1.412
5.	57.000	0.240	3.234	0.393	1.805
6.	57.000	0.313	3.547	2.511	4.316
7.	55.000	0.087	3.634	0.080	4.396
8.	53.000	0.202	3.835	0.080	4.476
9.	50.500	0.089	3.925	0.080	4.556
10.	50.000	0.046	3.970	0.040	4.597
11.	47.000	0.293	4.263	0.334	4.930
12.	47.000	0.240	4.503	0.372	5.302
13.	47.000	0.167	4.670	0.815	6.117
14.	45.000	0.096	4.766	0.083	6.200
15.	40.000	0.250	5.016	0.211	6.411
16.	35.000	0.263	5.279	0.214	6.625
17.	30.000	0.277	5.556	0.218	6.843
18.	25.000	0.290	5.846	0.229	7.072
19.	20.000	0.304	6.150	0.239	7.311
20.	15.000	0.318	6.468	0.250	7.561
21.	10.000	0.331	6.800	0.261	7.822
22.	5.000	0.345	7.145	0.271	8.093
23.	1.000	0.286	7.431	0.225	8.318
Base	0.000		7.431		8.318

```

----- ( END LOAD CASE 1 -- AXIAL AND SHEAR FORCE ) -----

```

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002      Design No: M06-0650, R1      Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION      Client: T-Mobile  
 Status..... : Design Alternate      Revision: 1      Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- MOMENTS and DEFLECTIONS:

LOAD CASE 1: BASIC WIND VELOCITY = 90.00 mph

Segment Elev (ft)	[----- MOMENTS (ft-kips) -----]				[--DEFLECTIONS (inch)-----]		
	From Ant/ Arm	From Shaft Wind	From P-Delta Effects	Total Moment	No P-Delta Effects	Total W/ P-Delta Effects	Total Rotation (deg)
58.00	0.101	0.000	0.000	0.101	17.755	18.215	2.419
58.00	0.101	0.000	0.000	0.101	17.262	17.708	2.419
57.00	0.126	0.039	0.000	0.165	17.262	17.708	2.419
57.00	0.126	0.039	0.000	0.165	17.262	17.708	2.419
57.00	0.126	0.039	0.000	0.165	17.262	17.708	2.419
57.00	0.126	0.039	0.137	0.302	16.769	17.201	2.419
55.00	8.601	0.235	0.438	9.275	15.784	16.189	2.412
53.00	17.077	0.592	0.745	18.413	14.803	15.181	2.395
50.50	27.671	1.257	1.066	29.994	13.833	14.183	2.357
50.00	29.790	1.416	1.227	32.434	13.353	13.691	2.348
47.00	42.504	2.615	1.553	46.671	12.401	12.713	2.282
47.00	42.504	2.615	1.553	46.671	12.401	12.713	2.282
47.00	42.504	2.615	1.732	46.851	11.936	12.234	2.282
45.00	53.774	3.620	2.102	59.496	11.015	11.289	2.228
40.00	81.951	6.862	3.014	91.827	8.825	9.039	2.059
35.00	110.128	11.166	3.888	125.182	6.826	6.988	1.851
30.00	138.306	16.546	4.704	159.556	5.053	5.170	1.617
25.00	166.483	23.038	5.442	194.963	3.528	3.608	1.365
20.00	194.660	30.696	6.084	231.439	2.266	2.316	1.101
15.00	222.837	39.571	6.612	269.020	1.277	1.305	0.829
10.00	251.014	49.717	7.010	307.741	0.568	0.580	0.554
5.00	279.191	61.189	7.261	347.640	0.142	0.145	0.277
0.00	307.368	74.038	7.348	388.754	0.000	0.000	0.000

----- ( END LOAD CASE 1 -- MOMENTS AND DEFLECTIONS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                      Design No: M06-0650, R1                      Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design.....: ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner.....: BECHTEL CORPORATION                      Client: T-Mobile  
 Status.....: Design Alternate                      Revision: 1                      Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- ACTUAL VS. ALLOWABLE STRESSES:

LOAD CASE 1: BASIC WIND VELOCITY = 90.00 mph

Note: Per TIA/EIA Sec. 3.1.1.1: Allow a 1/3 stress increase for poles under  
 700 feet in height. The allowable stresses  
 shown include the factor of 1.333

Segmnt Elev (ft)	[----- ACTUAL STRESSES -----]					Allow. Stress [Fb] (ksi)	Actual/ Allowable [Ftot/Fb] Ratio
	Bending [fb] (ksi)	Axial [fa] (ksi)	Torsion [ft] (ksi)	Shear [fv] (ksi)	Combined [Ftot] (ksi)		
58.00	0.028	0.000	0.000	0.000	0.028	52.00	0.0005
58.00	0.028	0.006	0.007	0.013	0.047	52.00	0.0009
57.00	0.044	0.014	0.087	0.173	0.453	52.00	0.0087
57.00	0.044	0.289	0.136	0.272	0.781	52.00	0.0150
57.00	0.044	0.312	0.174	0.347	0.971	52.00	0.0187
57.00	0.081	0.342	0.412	0.830	2.192	52.00	0.0422
55.00	2.376	0.341	0.391	0.824	3.438	52.00	0.0661
53.00	4.488	0.352	0.372	0.819	5.261	52.00	0.1012
50.50	7.163	0.356	0.365	0.825	7.797	52.00	0.1499
50.00	7.652	0.358	0.361	0.827	8.270	52.00	0.1590
47.00	10.252	0.371	0.358	0.856	10.829	52.00	0.2083
47.00	10.252	0.392	0.390	0.921	10.884	52.00	0.2093
47.00	10.292	0.407	0.457	1.063	11.017	52.00	0.2119
45.00	12.479	0.405	0.437	1.052	13.140	52.00	0.2527
40.00	17.234	0.404	0.391	1.030	17.809	52.00	0.3425
35.00	21.146	0.403	0.352	1.010	21.678	52.00	0.4169
30.00	24.388	0.404	0.319	0.992	24.895	52.00	0.4788
25.00	27.092	0.405	0.290	0.978	27.585	52.00	0.5305
20.00	29.365	0.407	0.265	0.966	29.849	52.00	0.5740
15.00	31.290	0.410	0.243	0.957	31.769	52.00	0.6109
10.00	32.932	0.414	0.223	0.950	33.407	52.00	0.6425
5.00	34.341	0.418	0.206	0.944	34.816	51.46	0.6765
0.00	35.559	0.418	0.191	0.934	36.029	50.57	0.7125

----- ( END LOAD CASE 1 -- ACTUAL VS. ALLOWABLE STRESSES ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                    Design No: M06-0650, R1                    Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION                    Client: T-Mobile  
 Status..... : Design Alternate                    Revision: 1    Rev. Date : 1/9/2007  
 -----

ANTENNA AND ARM PROPERTIES AND LOAD DATA:

LOAD CASE 2: WIND VELOCITY = 77.94 mph + 0.50 inches Radial Ice.

Ant Arm No.	Arm Mount. Elev. (ft)	Load Applic. Elev. (ft)	Arm Length (ft)	Ice Load Case	Antenna Area [CaAa] (sf)	Antenna Force [qzGhCaAa] (lbs)	Antenna Weight (lbs)
[1]	58.000	62.000	2.0000	W/ Ice:	1.14	35.88	21.00
Description: 3/4" Lightning Rod					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.197	W/ Ice:	18.622	31.472	
[2]	57.000	57.000	0.0000	W/ Ice:	22.33	686.09	201.00
Description: (3) 6' X 1' X 2" PANEL ANTENNA (ASSUMED)					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.169	W/ Ice:	18.180	30.725	
[3]	57.000	57.000	0.0000	W/ Ice:	15.16	465.79	3703.00
Description: (1) 10-Ft LPS MOUNT (P) W/ SERVICE GRATING					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.169	W/ Ice:	18.180	30.725	
[4]	57.000	57.000	0.0000	W/ Ice:	13.20	405.57	360.00
Description: (12) TMA/Diplexer					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.169	W/ Ice:	18.180	30.725	
[5]	57.000	57.000	0.0000	W/ Ice:	66.33	2037.98	603.00
Description: (9) 6' X 1' X 2" PANEL ANTENNA					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.169	W/ Ice:	18.180	30.725	
[6]	47.000	47.000	0.0000	W/ Ice:	10.00	290.77	250.00
Description: (3) ANTENNA CLOSE CONTACT MOUNT					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.106	W/ Ice:	17.206	29.077	
[7]	47.000	47.000	0.0000	W/ Ice:	13.20	383.82	360.00
Description: (12) TMA/Diplexer					[ qz ] (psf)	[qz][Gh] (psf)	
		[ Gh ] 1.69	[ Kz ] 1.106	W/ Ice:	17.206	29.077	
[8]	47.000	47.000	0.0000	W/ Ice:	21.90	636.79	216.00
Description: (3) APX16PV-16PVL-E Panel (L=4.4')							

[ Gh ]	[ Kz ]		[ qz ]	[qz][Gh]
1.69	1.106	W/ Ice:	(psf)	(psf)
			17.206	29.077

---

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                      Design No: M06-0650, R1                      Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION                      Client: T-Mobile  
 Status..... : Design Alternate                      Revision: 1      Rev. Date : 1/9/2007  
 -----

POLE SHAFT LOADS:

LOAD CASE 2: WIND VELOCITY = 77.94 mph with 0.50 inches Radial Ice.

Design Loads per TIA/EIA-222-F Standard; Gust Factor ..... Gh = 1.69

Pole DL Overload Factor = 1.2

Per TIA/EIA Table 1: Note 3: For all cross sectional shapes,

Force Coefficient [Cf] need not exceed 1.2

for any value of C. (Where C=sqrt(Kz)\*V\*D.)

Top of Segment Elev. (ft)	Expos Coeff [Kz]	Veloc Press [qz] (psf)	Pole Veloc Coeff [C]	Force Coeff [Cf]	Projected Area Shaft [Ae] (sf)	Segment [Cf Ae] (sf)	Wind Force (lbs)	Shaft Segment Weight (lbs)
58.000	1.175	18.27	122.45	0.650	0.000	0.000	0.00	0.00
58.000	1.175	18.27	122.45	0.650	1.542	1.002	30.95	53.19
57.000	1.169	18.18	123.72	0.650	0.000	0.000	0.00	0.00
57.000	1.169	18.18	123.72	0.650	0.000	0.000	0.00	0.00
57.000	1.169	18.18	123.72	0.650	1.561	1.015	31.17	53.88
55.000	1.157	18.00	126.23	0.650	3.178	2.066	62.98	109.81
53.000	1.145	17.81	128.69	0.650	3.237	2.104	63.49	254.81
50.500	1.129	17.56	129.09	0.650	3.265	2.122	63.30	113.00
50.000	1.126	17.51	129.68	0.650	1.661	1.079	31.95	57.53
47.000	1.106	17.21	133.15	0.650	3.377	2.195	64.41	117.11
47.000	1.106	17.21	133.15	0.650	0.000	0.000	0.00	0.00
47.000	1.106	17.21	133.15	0.650	1.717	1.116	32.45	59.58
45.000	1.093	16.99	135.37	0.650	3.490	2.268	65.35	121.22
40.000	1.057	16.43	140.62	0.650	9.052	5.884	165.64	315.03
35.000	1.017	15.82	145.32	0.650	9.520	6.188	168.00	332.15
30.000	1.000	15.55	151.40	0.650	9.988	6.492	170.93	349.26
25.000	1.000	15.55	158.70	0.650	10.457	6.797	178.64	366.38
20.000	1.000	15.55	165.99	0.650	10.925	7.101	186.64	383.50
15.000	1.000	15.55	173.29	0.650	11.393	7.405	194.63	400.61
10.000	1.000	15.55	180.59	0.650	11.861	7.710	202.63	417.73
5.000	1.000	15.55	187.88	0.650	12.329	8.014	210.63	434.85
1.000	1.000	15.55	193.72	0.650	10.200	6.630	174.26	360.20

Summation TOTAL = 2098.03 4299.85

----- ( END LOAD CASE 2 -- POLE SHAFT LOADS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                      Design No: M06-0650, R1                      Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design.....: ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/ANDAS  
 Owner.....: BECHTEL CORPORATION                      Client: T-Mobile  
 Status.....: Design Alternate                      Revision: 1      Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- AXIAL AND SHEAR FORCES:

LOAD CASE 2: WIND VELOCITY = 77.94 mph with 0.50 inches Radial Ice.

Tube Segment No.	Segment Elevation (ft)	Axial Load (kips)	Cumulative Axial Load (kips)	Horiz. Shear (kips)	Cumulative Horiz. Shear (kips)
1.	58.000	0.000	0.000	0.000	0.000
2.	58.000	0.074	0.074	0.067	0.067
3.	57.000	0.201	0.275	0.686	0.753
4.	57.000	3.703	3.978	0.466	1.219
5.	57.000	0.360	4.338	0.406	1.624
6.	57.000	0.657	4.995	2.069	3.693
7.	55.000	0.110	5.105	0.063	3.756
8.	53.000	0.255	5.360	0.063	3.820
9.	50.500	0.113	5.473	0.063	3.883
10.	50.000	0.058	5.530	0.032	3.915
11.	47.000	0.367	5.897	0.355	4.270
12.	47.000	0.360	6.257	0.384	4.654
13.	47.000	0.276	6.533	0.669	5.323
14.	45.000	0.121	6.654	0.065	5.389
15.	40.000	0.315	6.969	0.166	5.554
16.	35.000	0.332	7.301	0.168	5.722
17.	30.000	0.349	7.651	0.171	5.893
18.	25.000	0.366	8.017	0.179	6.072
19.	20.000	0.383	8.400	0.187	6.259
20.	15.000	0.401	8.801	0.195	6.453
21.	10.000	0.418	9.219	0.203	6.656
22.	5.000	0.435	9.654	0.211	6.866
23.	1.000	0.360	10.014	0.174	7.041
Base	0.000		10.014		7.041

----- ( END LOAD CASE 2 -- AXIAL AND SHEAR FORCE ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                      Design No: M06-0650, R1                      Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION                      Client: T-Mobile  
 Status..... : Design Alternate                      Revision: 1    Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- MOMENTS and DEFLECTIONS:

LOAD CASE 2: WIND VELOCITY = 77.94 mph with 0.50 inches Radial Ice.

Segmnt Elev (ft)	[----- MOMENTS (ft-kips) -----]				[--DEFLECTIONS (inch)-----]		
	From Ant/ Arm	From Shaft Wind	From P-Delta Effects	Total Moment	No P-Delta Effects	Total W/ P-Delta Effects	Total Rotation (deg)
58.00	0.144	0.000	0.000	0.144	15.271	15.826	2.104
58.00	0.144	0.000	0.000	0.144	14.847	15.385	2.104
57.00	0.179	0.031	0.000	0.210	14.847	15.385	2.104
57.00	0.179	0.031	0.000	0.210	14.847	15.385	2.104
57.00	0.179	0.031	0.159	0.370	14.423	14.944	2.104
55.00	7.442	0.187	0.528	8.157	13.575	14.063	2.098
53.00	14.705	0.469	0.903	16.076	12.732	13.187	2.083
50.50	23.783	0.995	1.293	26.071	11.897	12.319	2.050
50.00	25.599	1.121	1.488	28.208	11.485	11.891	2.042
47.00	36.492	2.069	1.882	40.444	10.666	11.040	1.985
47.00	36.492	2.069	1.882	40.444	10.666	11.040	1.985
47.00	36.492	2.069	2.099	40.661	10.265	10.624	1.985
45.00	46.378	2.863	2.549	51.790	9.473	9.802	1.938
40.00	71.091	5.424	3.654	80.169	7.587	7.845	1.790
35.00	95.805	8.817	4.708	109.330	5.868	6.063	1.609
30.00	120.518	13.055	5.687	139.260	4.342	4.483	1.404
25.00	145.232	18.162	6.568	169.962	3.031	3.126	1.184
20.00	169.945	24.178	7.330	201.454	1.946	2.006	0.954
15.00	194.659	31.144	7.955	233.757	1.096	1.129	0.718
10.00	219.372	39.098	8.423	266.893	0.488	0.502	0.479
5.00	244.085	48.082	8.717	300.884	0.122	0.125	0.239
0.00	268.799	58.135	8.819	335.753	0.000	0.000	0.000

----- ( END LOAD CASE 2 -- MOMENTS AND DEFLECTIONS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1          Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND
Owner.....  : BECHTEL CORPORATION          Client: T-Mobile
Status..... : Design Alternate             Revision: 1   Rev. Date : 1/9/2007
-----

```

## POLE SHAFT SEGMENTS -- ACTUAL VS. ALLOWABLE STRESSES:

LOAD CASE 2: WIND VELOCITY = 77.94 mph with 0.50 inches Radial Ice.  
 Note: Per TIA/EIA Sec. 3.1.1.1: Allow a 1/3 stress increase for poles under  
 700 feet in height. The allowable stresses  
 shown include the factor of 1.333

Segmnt Elev (ft)	[----- ACTUAL STRESSES -----]					Allow. Stress [Fb] (ksi)	Actual/ Allowable [Ftot/Fb] Ratio
	Bending [fb] (ksi)	Axial [fa] (ksi)	Torsion [ft] (ksi)	Shear [fv] (ksi)	Combined [Ftot] (ksi)		
58.00	0.040	0.000	0.000	0.000	0.040	52.00	0.0008
58.00	0.040	0.007	0.010	0.013	0.061	52.00	0.0012
57.00	0.057	0.027	0.075	0.145	0.390	52.00	0.0075
57.00	0.057	0.384	0.120	0.234	0.756	52.00	0.0145
57.00	0.057	0.418	0.159	0.312	0.945	52.00	0.0182
57.00	0.100	0.482	0.355	0.710	1.935	52.00	0.0372
55.00	2.090	0.480	0.338	0.704	3.140	52.00	0.0604
53.00	3.918	0.491	0.321	0.699	4.750	52.00	0.0914
50.50	6.226	0.497	0.315	0.703	6.950	52.00	0.1337
50.00	6.655	0.499	0.311	0.705	7.367	52.00	0.1417
47.00	8.884	0.513	0.315	0.742	9.574	52.00	0.1841
47.00	8.884	0.545	0.348	0.808	9.640	52.00	0.1854
47.00	8.932	0.569	0.403	0.925	9.775	52.00	0.1880
45.00	10.863	0.566	0.385	0.915	11.648	52.00	0.2240
40.00	15.046	0.561	0.345	0.892	15.754	52.00	0.3030
35.00	18.469	0.558	0.311	0.872	19.136	52.00	0.3680
30.00	21.285	0.556	0.281	0.855	21.930	52.00	0.4217
25.00	23.618	0.556	0.256	0.840	24.248	52.00	0.4663
20.00	25.561	0.556	0.234	0.827	26.182	52.00	0.5035
15.00	27.189	0.558	0.214	0.817	27.805	52.00	0.5347
10.00	28.561	0.561	0.197	0.808	29.174	52.00	0.5610
5.00	29.722	0.564	0.182	0.801	30.334	51.46	0.5894
0.00	30.711	0.563	0.169	0.791	31.318	50.57	0.6193

----- ( END LOAD CASE 2 -- ACTUAL VS. ALLOWABLE STRESSES ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1          Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND
Owner.....  : BECHTEL CORPORATION          Client: T-Mobile
Status..... : Design Alternate             Revision: 1   Rev. Date : 1/9/2007
-----
    
```

ANTENNA AND ARM PROPERTIES AND LOAD DATA:

LOAD CASE 3: BASIC WIND VELOCITY = 50.00 mph

Ant Arm No.	Arm Mount. Elev. (ft)	Load Applic. Elev. (ft)	Arm Length (ft)	Ice Load Case	Antenna Area [CaAa] (sf)	Antenna Force [qzGhCaAa] (lbs)	Antenna Weight (lbs)
[1]	58.000	62.000	2.0000	No Ice:	0.60	7.77	15.00
Description: 3/4" Lightning Rod							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.197	No Ice:	7.664	12.951	
[2]	57.000	57.000	0.0000	No Ice:	20.33	257.05	90.00
Description: (3) 6' X 1' X 2" PANEL ANTENNA (ASSUMED)							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.169	No Ice:	7.482	12.644	
[3]	57.000	57.000	0.0000	No Ice:	12.57	158.93	2847.00
Description: (1) 10-Ft LPS MOUNT (P) W/ SERVICE GRATING							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.169	No Ice:	7.482	12.644	
[4]	57.000	57.000	0.0000	No Ice:	9.60	121.38	240.00
Description: (12) TMA/Diplexer							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.169	No Ice:	7.482	12.644	
[5]	57.000	57.000	0.0000	No Ice:	60.33	762.81	270.00
Description: (9) 6' X 1' X 2" PANEL ANTENNA							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.169	No Ice:	7.482	12.644	
[6]	47.000	47.000	0.0000	No Ice:	6.50	77.78	200.00
Description: (3) ANTENNA CLOSE CONTACT MOUNT							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.106	No Ice:	7.080	11.966	
[7]	47.000	47.000	0.0000	No Ice:	9.60	114.87	240.00
Description: (12) TMA/Diplexer							
		[ Gh ]	[ Kz ]		[ qz ] (psf)	[qz][Gh] (psf)	
		1.69	1.106	No Ice:	7.080	11.966	
[8]	47.000	47.000	0.0000	No Ice:	19.95	238.72	120.00
Description: (3) APX16PV-16PVL-E Panel (L=4.4')							

[ Gh ]	[ Kz ]		[ qz ]	[qz] [Gh]
1.69	1.106	No Ice:	(psf)	(psf)
			7.080	11.966

---

PJF\_Pole (tm) - Monopole Design Program  
 Windows Version 1.28.0090 Tue Jan 16, 2007 - 3:08:10 pm  
 (c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio  
 Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002 Design No: M06-0650, R1 Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION Client: T-Mobile  
 Status..... : Design Alternate Revision: 1 Rev. Date : 1/9/2007  
 -----

POLE SHAFT LOADS:

LOAD CASE 3: BASIC WIND VELOCITY = 50.00 mph

Design Loads per TIA/EIA-222-F Standard; Gust Factor ..... Gh = 1.69  
 Pole DL Overload Factor = 1.2

Per TIA/EIA Table 1: Note 3: For all cross sectional shapes,  
 Force Coefficient [Cf] need not exceed 1.2  
 for any value of C. (Where C=sqrt(Kz)\*V\*D.)

Top of Segment Elev. (ft)	Expos Coeff [Kz]	Veloc Press [qz] (psf)	Pole Veloc Coeff [C]	Force Coeff [Cf]	Projected Area Shaft Segment [Ae] (sf)	Segment [Cf Ae] (sf)	Segment Wind Force (lbs)	Shaft Segment Weight (lbs)
58.000	1.175	7.52	78.55	0.650	0.000	0.000	0.00	0.00
58.000	1.175	7.52	78.55	0.650	1.459	0.948	12.05	42.08
57.000	1.169	7.48	79.37	0.650	0.000	0.000	0.00	0.00
57.000	1.169	7.48	79.37	0.650	0.000	0.000	0.00	0.00
57.000	1.169	7.48	79.37	0.650	0.000	0.000	0.00	0.00
57.000	1.169	7.48	79.37	0.650	1.478	0.960	12.14	42.63
55.000	1.157	7.41	80.98	0.650	3.011	1.957	24.56	86.89
53.000	1.145	7.33	82.55	0.650	3.070	1.996	24.78	201.68
50.500	1.129	7.23	82.81	0.650	3.098	2.014	24.72	89.44
50.000	1.126	7.21	83.19	0.650	1.577	1.025	12.49	45.54
47.000	1.106	7.08	85.41	0.650	3.211	2.087	25.20	92.72
47.000	1.106	7.08	85.41	0.650	0.000	0.000	0.00	0.00
47.000	1.106	7.08	85.41	0.650	1.633	1.062	12.71	47.18
45.000	1.093	6.99	86.84	0.650	3.323	2.160	25.61	95.99
40.000	1.057	6.76	90.21	0.650	8.636	5.613	65.02	249.54
35.000	1.017	6.51	93.22	0.650	9.104	5.917	66.11	263.19
30.000	1.000	6.40	97.12	0.650	9.572	6.222	67.41	276.84
25.000	1.000	6.40	101.80	0.650	10.040	6.526	70.58	290.49
20.000	1.000	6.40	106.48	0.650	10.508	6.830	73.88	304.14
15.000	1.000	6.40	111.17	0.650	10.976	7.134	77.17	317.79
10.000	1.000	6.40	115.85	0.650	11.444	7.439	80.46	331.44
5.000	1.000	6.40	120.53	0.650	11.912	7.743	83.75	345.08
1.000	1.000	6.40	124.27	0.650	9.867	6.413	69.37	285.90

Summation TOTAL = 827.99 3408.53

----- ( END LOAD CASE 3 -- POLE SHAFT LOADS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

```

-----
Job No.....: J060608002          Design No: M06-0650, R1      Engineer : TWL
Description : 58-FT MONOPOLE - EAST HEAVEN, CT
Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND
Owner.....  : BECHTEL CORPORATION      Client: T-Mobile
Status..... : Design Alternate         Revision: 1   Rev. Date : 1/9/2007
-----

```

POLE SHAFT SEGMENTS -- AXIAL AND SHEAR FORCES:

LOAD CASE 3: BASIC WIND VELOCITY = 50.00 mph

Tube Segment No.	Segment Elevation (ft)	Axial Load (kips)	Cumulative Axial Load (kips)	Horiz. Shear (kips)	Cumulative Horiz. Shear (kips)
1.	58.000	0.000	0.000	0.000	0.000
2.	58.000	0.057	0.057	0.020	0.020
3.	57.000	0.090	0.147	0.257	0.277
4.	57.000	2.847	2.994	0.159	0.436
5.	57.000	0.240	3.234	0.121	0.557
6.	57.000	0.313	3.547	0.775	1.332
7.	55.000	0.087	3.634	0.025	1.357
8.	53.000	0.202	3.835	0.025	1.381
9.	50.500	0.089	3.925	0.025	1.406
10.	50.000	0.046	3.970	0.012	1.419
11.	47.000	0.293	4.263	0.103	1.522
12.	47.000	0.240	4.503	0.115	1.637
13.	47.000	0.167	4.670	0.251	1.888
14.	45.000	0.096	4.766	0.026	1.914
15.	40.000	0.250	5.016	0.065	1.979
16.	35.000	0.263	5.279	0.066	2.045
17.	30.000	0.277	5.556	0.067	2.112
18.	25.000	0.290	5.846	0.071	2.183
19.	20.000	0.304	6.150	0.074	2.257
20.	15.000	0.318	6.468	0.077	2.334
21.	10.000	0.331	6.800	0.080	2.414
22.	5.000	0.345	7.145	0.084	2.498
23.	1.000	0.286	7.431	0.069	2.567
Base	0.000		7.431		2.567

```

----- ( END LOAD CASE 3 -- AXIAL AND SHEAR FORCE ) -----

```

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                    Design No: M06-0650, R1                    Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design.....: ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION                    Client: T-Mobile  
 Status..... : Design Alternate                    Revision: 1                    Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- MOMENTS and DEFLECTIONS:

LOAD CASE 3: BASIC WIND VELOCITY = 50.00 mph

Segmnt Elev (ft)	[----- MOMENTS (ft-kips) -----]				[--DEFLECTIONS (inch)-----]		
	From Ant/ Arm	From Shaft Wind	From P-Delta Effects	Total Moment	No P-Delta Effects	Total W/ P-Delta Effects	Total Rotation (deg)
58.00	0.031	0.000	0.000	0.031	5.478	5.620	0.747
58.00	0.031	0.000	0.000	0.031	5.326	5.464	0.747
57.00	0.039	0.012	0.000	0.051	5.326	5.464	0.747
57.00	0.039	0.012	0.000	0.051	5.326	5.464	0.747
57.00	0.039	0.012	0.042	0.093	5.174	5.307	0.747
55.00	2.655	0.073	0.135	2.862	4.870	4.995	0.745
53.00	5.271	0.183	0.230	5.683	4.568	4.684	0.739
50.50	8.541	0.388	0.329	9.257	4.268	4.376	0.728
50.00	9.195	0.437	0.379	10.010	4.120	4.224	0.725
47.00	13.118	0.807	0.479	14.404	3.827	3.923	0.704
47.00	13.118	0.807	0.479	14.404	3.827	3.923	0.704
47.00	13.118	0.807	0.534	14.460	3.683	3.775	0.704
45.00	16.597	1.117	0.648	18.363	3.399	3.483	0.688
40.00	25.294	2.118	0.930	28.341	2.723	2.789	0.635
35.00	33.990	3.446	1.199	38.636	2.107	2.157	0.571
30.00	42.687	5.107	1.451	49.245	1.559	1.596	0.499
25.00	51.384	7.111	1.679	60.173	1.089	1.113	0.421
20.00	60.080	9.474	1.877	71.431	0.699	0.715	0.340
15.00	68.777	12.213	2.040	83.030	0.394	0.403	0.256
10.00	77.473	15.345	2.163	94.981	0.175	0.179	0.171
5.00	86.170	18.885	2.240	107.296	0.044	0.045	0.085
0.00	94.867	22.851	2.267	119.985	0.000	0.000	0.000

----- ( END LOAD CASE 3 -- MOMENTS AND DEFLECTIONS ) -----

PJF\_Pole (tm) - Monopole Design Program

Windows Version 1.28.0090

Tue Jan 16, 2007 - 3:08:10 pm

(c) 1993 to 1997 PAUL J. FORD AND COMPANY, Columbus, Ohio

Licensed to FWT, Inc., Fort Worth, Texas

-----  
 Job No.....: J060608002                    Design No: M06-0650, R1                    Engineer : TWL  
 Description : 58-FT MONOPOLE - EAST HEAVEN, CT  
 Design..... : ALSO MEETS 110-MPH 3-SECOND GUST WIND SPEED PER 2003 IBC/AND  
 Owner..... : BECHTEL CORPORATION                    Client: T-Mobile  
 Status..... : Design Alternate                    Revision: 1    Rev. Date : 1/9/2007  
 -----

POLE SHAFT SEGMENTS -- ACTUAL VS. ALLOWABLE STRESSES:

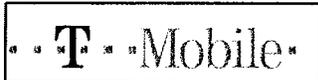
LOAD CASE 3: BASIC WIND VELOCITY = 50.00 mph

Note: Per TIA/EIA Sec. 3.1.1.1: Allow a 1/3 stress increase for poles under 700 feet in height. The allowable stresses shown include the factor of 1.333

Segmnt Elev (ft)	[----- ACTUAL STRESSES -----]					Allow. Stress [Fb] (ksi)	Actual/ Allowable [Ftot/Fb] Ratio
	Bending [fb] (ksi)	Axial [fa] (ksi)	Torsion [ft] (ksi)	Shear [fv] (ksi)	Combined [Ftot] (ksi)		
58.00	0.009	0.000	0.000	0.000	0.009	52.00	0.0002
58.00	0.009	0.006	0.002	0.004	0.018	52.00	0.0003
57.00	0.014	0.014	0.027	0.053	0.141	52.00	0.0027
57.00	0.014	0.289	0.042	0.084	0.373	52.00	0.0072
57.00	0.014	0.312	0.054	0.107	0.429	52.00	0.0082
57.00	0.025	0.342	0.127	0.256	0.759	52.00	0.0146
55.00	0.733	0.341	0.121	0.254	1.256	52.00	0.0242
53.00	1.385	0.352	0.115	0.253	1.850	52.00	0.0356
50.50	2.211	0.356	0.113	0.255	2.645	52.00	0.0509
50.00	2.362	0.358	0.111	0.255	2.793	52.00	0.0537
47.00	3.164	0.371	0.110	0.264	3.594	52.00	0.0691
47.00	3.164	0.392	0.120	0.284	3.625	52.00	0.0697
47.00	3.176	0.407	0.141	0.328	3.674	52.00	0.0707
45.00	3.851	0.405	0.135	0.325	4.331	52.00	0.0833
40.00	5.319	0.404	0.121	0.318	5.773	52.00	0.1110
35.00	6.527	0.403	0.109	0.312	6.968	52.00	0.1340
30.00	7.527	0.404	0.098	0.306	7.962	52.00	0.1531
25.00	8.362	0.405	0.089	0.302	8.793	52.00	0.1691
20.00	9.063	0.407	0.082	0.298	9.494	52.00	0.1826
15.00	9.657	0.410	0.075	0.295	10.088	52.00	0.1940
10.00	10.164	0.414	0.069	0.293	10.596	52.00	0.2038
5.00	10.599	0.418	0.064	0.291	11.034	51.46	0.2144
0.00	10.975	0.418	0.059	0.288	11.409	50.57	0.2256

----- ( END LOAD CASE 3 -- ACTUAL VS. ALLOWABLE STRESSES ) -----

## Exhibit 3



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: Alex Murillo  
cc: Jason Overbey  
Subject: Power Density Report for CT11623B  
Date: February 1, 2007

### 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 259 Commerce Street, East Haven, 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 1 antenna per sector.
- 3) The model number for each antenna is APX16PV-16PVL-E.
- 4) The antenna center line height is 47 ft.
- 5) The maximum transmit power from any sector is 2480.96 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 259 Commerce Street, East Haven, CT, is 0.323797 mW/cm<sup>2</sup>. This value represents 32.3797% of the Maximum Permissible Emission (MPE) standard of 1 milliwatt per square centimeter (mW/cm<sup>2</sup>) 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 33.20098%. The combined Power Density for the site is 65.581% of the M.P.E. standard.

## New England Market

Connecticut

### Worst Case Power Density



<b>Site:</b>	<b>CT11623B</b>
<b>Site Address:</b>	<b>259 Commerce Street</b>
<b>Town:</b>	<b>East Haven</b>
<b>Tower Height:</b>	<b>60 ft.</b>
<b>Tower Style:</b>	<b>Monopole</b>
<b>Base Station TX output</b>	20 W
<b>Number of channels</b>	8
<b>Antenna Model</b>	APX16PV-16PVL-E
<b>Cable Size</b>	7/8 in.
<b>Cable Length</b>	75 ft.
<b>Antenna Height</b>	47.0 ft.
<b>Ground Reflection</b>	1.6
<b>Frequency</b>	1935.0 MHz
<b>Jumper &amp; Connector loss</b>	4.50 dB
<b>Antenna Gain</b>	17.8 dBi
<b>Cable Loss per foot</b>	0.0186 dB
<b>Total Cable Loss</b>	1.3950 dB
<b>Total Attenuation</b>	5.8950 dB
<b>Total EIRP per Channel</b>	54.92 dBm
<b>(In Watts)</b>	310.12 W
<b>Total EIRP per Sector</b>	63.95 dBm
<b>(In Watts)</b>	2480.96 W
<b>nsg</b>	11.9050
<b>Power Density (S) =</b>	<b>0.323797 mW/cm<sup>2</sup></b>
<b>T-Mobile Worst Case % MPE =</b>	<b>32.3797%</b>
<b>Equation Used :</b>	$S = \frac{(1000)(grf)^2 (Power)^{10}}{4\pi (R)^2}$

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

Co-Location Total	
Carrier	% of Standard
Verizon	
Cingular	
Sprint PCS	
AT&T Wireless	33.2010 %
Nextel	
<b>Total Excluding T-Mobile</b>	<b>33.2010 %</b>
T-Mobile	32.3797
<b>Total % MPE for Site</b>	<b>65.5807%</b>