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@po.state.ct.us
www.ct.gov/csc

January 26, 2006

Karina Fournier
Zoning Department
T-Mobile
100 Filley Street
Bloomfield, CT 06002

RE: **TS-T-MOBILE-164-051223** - Omnipoint Communications, Inc. (T-Mobile) request for an order to approve tower sharing at an existing telecommunications facility located at 419 Broad Street, Windsor, Connecticut.

Dear Ms. Fournier:

At a public meeting held January 25, 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. 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 December 22, 2005 and additional information dated January 4, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: The Honorable Donald Trinks, Mayor, Town of Windsor
Mario Zavarella, Town Planner, Town of Windsor
Michele G. Briggs, New Cingular Wireless PCS, LLC
Christopher B. Fisher, Esq., Cuddy & Feder LLP
Christine Farrell, T-Mobile

T · ·Mobile·

Omnipoint Holdings, Inc.
100 Filley Street, Bloomfield, CT. 06002
Telephone: (860) 692-7100 Fax: (860) 692-7159

RECEIVED
JAN - 4 2006
CONNECTICUT SITING COUNCIL

Recipient (s):	Phone Number (s):	Fax Number (s):
Mike Perrone		860-827-2950
Re: TS-T-Mobile-164-051223		

Date: 1/4/06 Pages: 2 (including cover sheet)

Please see attached revised page two of our application. Just to clarify T-Mobile is proposing to install nine antennas at the 419 Broad Street, Windsor tower.

Sender: Kenna Fournier Sender's Direct Dial: _____

SNET Tower

As shown on the enclosed plans prepared by Clough Harbour & Associates, including a site plan and tower elevation of the SNET Tower, 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 nine (9) antennas at the ninety four (94) 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 SNET 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 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 SNET Tower. (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:

ORIGINAL

T-Mobile
Get more from life®

100 Filley Street, Bloomfield, CT 06002
860-692-7118 fax 860-692-7159
Karina.Fournier@t-mobile.com

TS-T-MOBILE-164-051223

December 22, 2005

BY HAND

Pamela B. Katz, Chairman and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Tower Sharing Request by T-Mobile**
419 Broad Street Windsor, CT
Latitude: 41 50 52 / Longitude: 72 38 43

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 shared use of an existing communications tower, located at 419 Broad Street ("SNET Tower"), in Windsor, CT owned by Cingular. T-Mobile and Cingular have agreed to the shared use of the SNET Tower, as detailed below.

SNET Tower

The SNET Tower facility consists of a one hundred and one (101) foot high monopole ("Tower") owned and operated by Cingular. T-Mobile proposes to locate antennas at a centerline mounting height of ninety four (94) feet. The equipment will be located within a compound at the base of the tower.

SNET Tower

As shown on the enclosed plans prepared by Clough Harbour & Associates, including a site plan and tower elevation of the SNET Tower, 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) antennas at the ninety four (94) 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 SNET 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 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 SNET Tower. (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 SNET 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 21.3% of the standard. See Radio Frequency Memo dated December 13, 2005, prepared by Farid Marbouh, annexed hereto as Exhibit 3.

5.) The proposed shared use of the SNET 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 SNET 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 Windsor area through shared use of the SNET 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

As delineated above, the proposed shared use of the SNET 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 SNET Tower.

Respectfully submitted,

Karina Fournier
Zoning Dept.
T-Mobile
100 Filley St.
Bloomfield, CT 06002
(860) 692-7118

cc: Mayor, Donald S. Trinks

Exhibit 1

SNET TOWER

419 BROAD STREET
WINDSOR, CT 06095

SITE NUMBER: CTHA130A

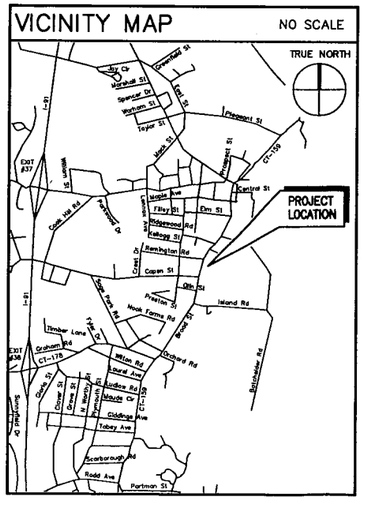
SITE TYPE: CO-LOCATE

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

NO SCALE



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	0
A-1	PLANS, ELEVATION, DETAILS & NOTES	0
S-1	STRUCTURAL NOTES, PLANS, SECTIONS & DETAILS	0
E-1	ELECTRICAL, GROUNDING NOTES, RISERS & DETAILS	0

PROJECT SUMMARY

SITE NUMBER:	CTHA130A
SITE NAME:	SNET TOWER
SITE ADDRESS:	419 BROAD STREET WINDSOR, CT 06095
ASSESSOR'S PARCEL NO.:	MAP: 77 BLOCK: 65 LOT: 19
SITE TYPE:	CO-LOCATE
STRUCTURE OWNER:	SOUTHERN NEW ENGLAND TELEPHONE COMPANY C/O SBC 1 SBC CENTER ROOM 36-M-01 ST LOUIS, MO 63101
PROPERTY OWNER:	SOUTHERN NEW ENGLAND TELEPHONE COMPANY C/O SBC 1 SBC CENTER ROOM 36-M-01 ST LOUIS, MO 63101
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 06067-2336
Main: (860) 257-4657 • www.cloughharbour.com

AS SEAL
STATE OF CONNECTICUT
JOHN P. SOBIECK
No. 17827
LICENSED
PROFESSIONAL ENGINEER

APPROVALS

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

PROJECT NO: 10585-1095

DRAWN BY: PAL

CHECKED BY: RJT

SUBMITTALS

0	11/16/05	CONSTRUCTION

CTHA130A
SNET TOWER
419 BROAD STREET
WINDSOR, CT 06095

SHEET TITLE

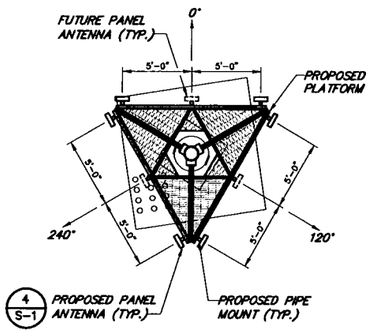
TITLE SHEET

SHEET NUMBER

T-1

SPECIAL LANDLORD NOTE:

LESSEE/LICENSEE "FUTURE" PANEL ANTENNAS ARE DEPICTED FOR THE PURPOSES OF DETERMINING TOWER/MONOPOLE STRUCTURAL CAPACITY, OBTAINING ZONING APPROVALS AND BUILDING PERMITS. SUBSEQUENT ENDORSEMENT OR ACCEPTANCE OF THIS DRAWING BY THE TOWER OWNER IS NOT TO BE CONSTRUED AS PERMISSION OR APPROVAL TO INSTALL "FUTURE" ANTENNAS THAT EXCEED "PROPOSED" OR ACTUAL EQUIPMENT LISTED IN THE LESSEE/LICENSEE LEASE AGREEMENT.



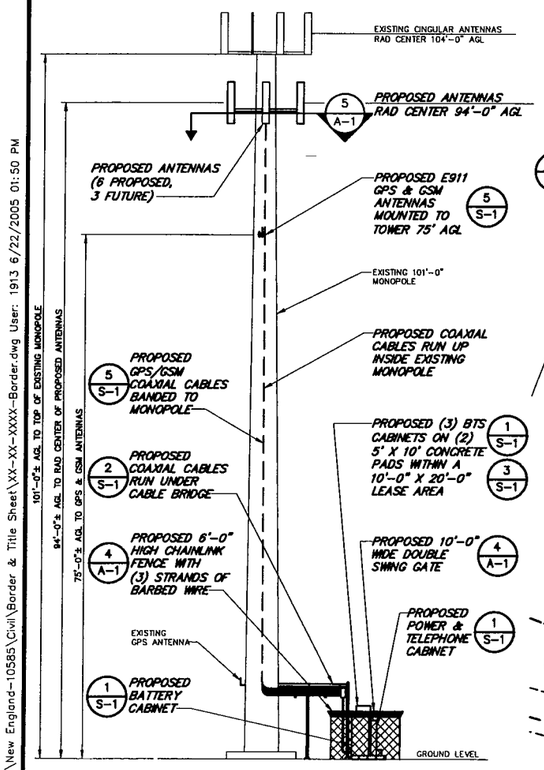
ANTENNA PLAN

SCALE: 1" = 5'

0 2.5 5 10 15

5 A-1

TRUE NORTH



NOTE:

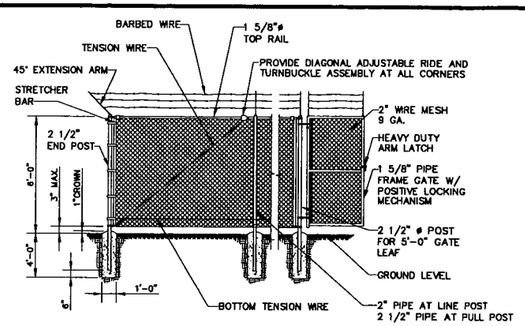
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A GLOBAL STRUCTURAL STABILITY ANALYSIS TO DETERMINE CAPACITY AND SUITABILITY OF EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY PROPOSED EQUIPMENT. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ALL REQUIRED STRUCTURAL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

ELEVATION

SCALE: 1" = 10'

0 5 10 20 30

3 A-1



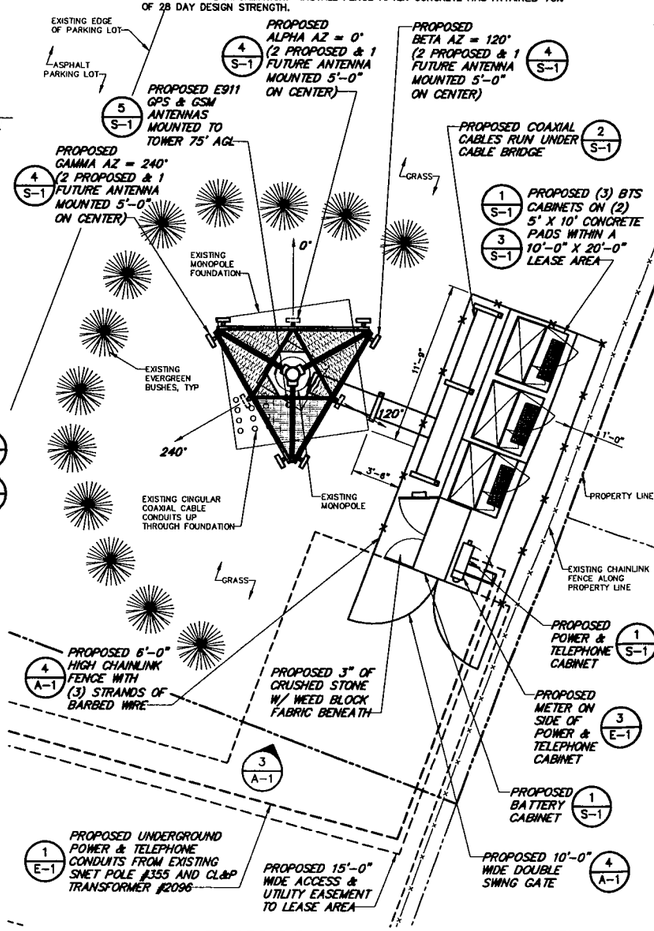
TYPICAL FENCE DETAIL

NO SCALE

4 A-1

FENCE NOTES:

1. INSTALL FENCING PER ASTM F-567, SWING GATE PER ASTM F-900.
2. ALL END POSTS, LINE POSTS, PULL POSTS, POSTS FOR GATE LEAF, PIPES FOR GATE FRAME AND TOP RAILS SHALL BE SCHEDULE 40 PIPE PER ASTM F-1083.
3. FABRIC SHALL BE 12 GA. CORE WIRE SIZE 2" MESH CONFORMING TO ASTM A-392.
4. TENSION WIRE SHALL BE 7 GA. GALV. STEEL.
5. TIE WIRE SHALL BE 11 GA. GALV. STEEL (MIN.) AT POSTS AND RAILS. A SINGLE WRAP FABRIC TIE AT TENSION WIRE BY HOG RINGS SPACED MAX. OF 24" INTERVALS
6. BARBED WIRE SHALL BE DOUBLE STRAND 12 1/2" O.D. TWISTED WIRE TO MATCH W/FABRIC 14 GA., 4 PT. BARBS SPACES AT APPROXIMATELY 5" O.C.
7. COMPLY WITH LOCAL ORDINANCES OF BARBED WIRE PERMIT REQUIREMENTS, IF REQUIRED.
8. STEEL FENCE SYSTEM SHALL INCLUDE THE FENCE POSTS, FABRIC, GATE SYSTEM AND ALL NECESSARY ERECTION ACCESSORIES, FITTINGS AND FASTENINGS. ALL FENCE SYSTEM COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. GATES SHALL BE SWING GATES WITH 5'-0" LEAFS. REFER TO TYPICAL FENCE DETAIL FOR ADDITIONAL INFORMATION. INSTALL FENCE AFTER CONCRETE HAS ATTAINED 75% OF 28 DAY DESIGN STRENGTH.



NOTE

DRAWINGS ARE BASED ON A SITE VISIT PERFORMED BY CLOUGH, HARBOUR & ASSOCIATES LLP ON NOVEMBER 2, 2005.

ENLARGED PARTIAL PLAN/ EQUIPMENT PLAN

SCALE: 1" = 5'

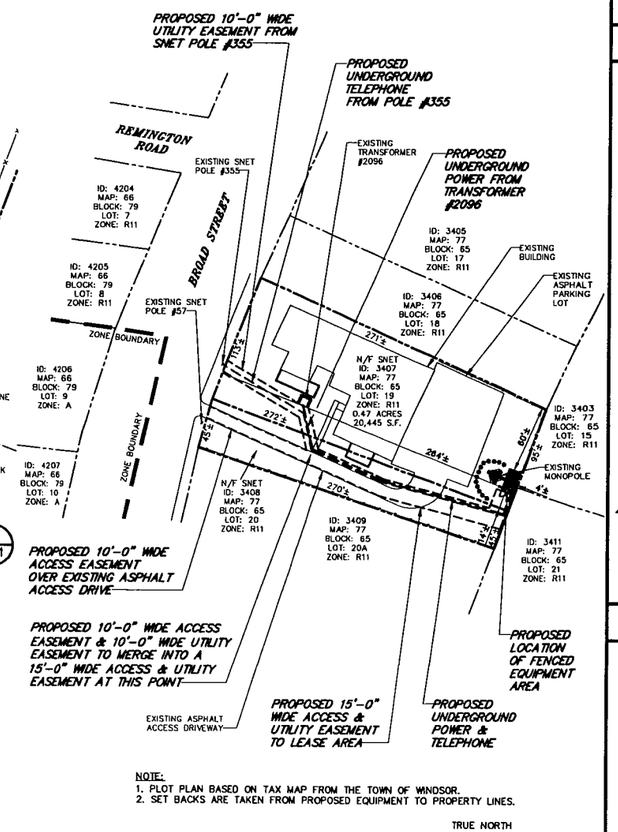
0 2.5 5 10 15

2 A-1

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)NACTIVE 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 WINDSOR.
2. SET BACKS ARE TAKEN FROM PROPOSED EQUIPMENT TO PROPERTY LINES.

PLOT PLAN

SCALE: 1" = 60'

0 30 60 120 180

1 A-1

TRUE NORTH

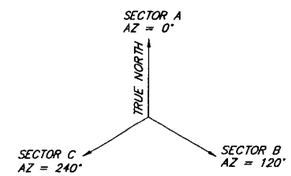
ABBREVIATIONS

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	LNA	LOW NOISE AMPLIFIER
(E)	EXISTING		
EXT	EXTERIOR	PCS	PERSONAL COMMUNICATIONS SERVICES
FCM	FIELD CONSTRUCTION MANAGER	A-1	ANTENNA MARK NO.
FF	FINISHED FLOOR	PL	PLATE
FG	FINISHED GRADE	&	AND
GA	GAUGE	@	AT
GALV	GALVANIZED		
GC	GENERAL CONTRACTOR		
LG	LONG		
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
DET. # SHT. # DETAIL REFERENCE	PROPERTY LINE
	STEPPED FOOTING
DET. # SHT. # ELEVATION	MATCH LINE
	WORK POINT
	G GROUND WIRE
DET. # SHT. # SECTIONS & DETAILS	COAXIAL CABLE

ANTENNA ORIENTATION KEY



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100 FILLEY STREET
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159

CHA
CLOUGH HARBOUR & ASSOCIATES LLP
2136 Silas Deane Highway, Suite 212, Rocky Hill, CT 06067-2336
Main: (860) 257-4557 • 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: 10585-1095

DRAWN BY: PAL

CHECKED BY: RJT

SUBMITTALS

0	11/16/05	CONSTRUCTION

CTHA130A
SNET TOWER
419 BROAD STREET
WINDSOR, CT 06095

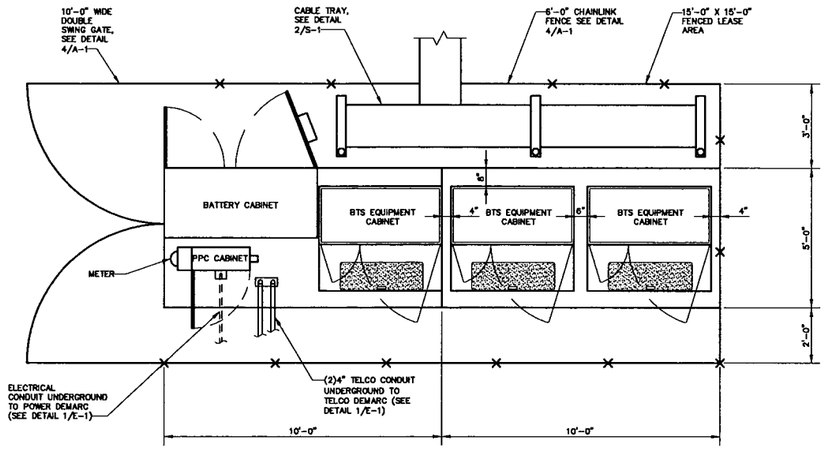
SHEET TITLE

PLANS, ELEVATION, DETAILS & NOTES

SHEET NUMBER

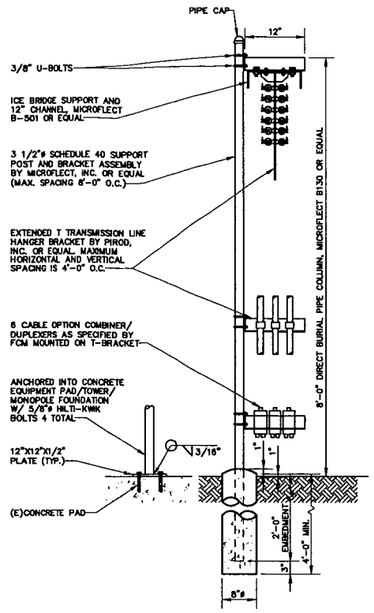
A-1

File: J:\1601 - COIN\Masters\T-Mobile\New England-10585\Civil\Border & Title Sheet\XX-XX-XXXX-Border.dwg User: 1913 6/22/2005 01:50 PM



NOTE:
PROPOSED ICE BRIDGE NOT SHOWN FOR CLARITY.

EQUIPMENT SLAB LAYOUT — 1 / S-1
NO SCALE



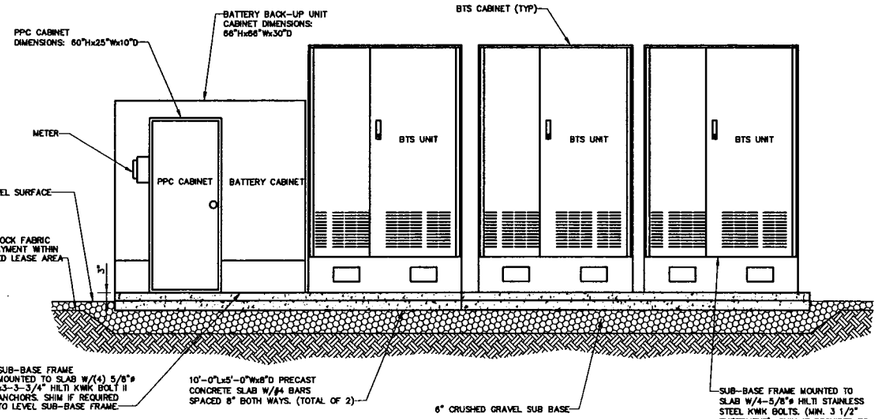
PROFILE AT CABLE BRIDGE — 2 / S-1
NO SCALE

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 FORTHE 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 UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZRP2 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 DLI. 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 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
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:

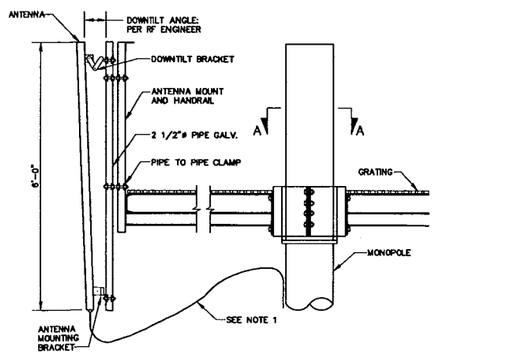
    CONCRETE CAST AGAINST EARTH ... 3 INCHES.
    CONCRETE EXPOSED TO EARTH OR WATER
    #6 AND LARGER .....2 INCHES
    #5 AND SMALLER .....1 1/2 INCHES

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

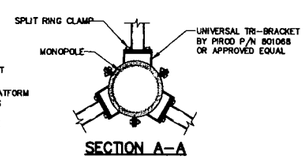


NOTE:
PROPOSED ICE BRIDGE NOT SHOWN FOR CLARITY.

EQUIPMENT SLAB LAYOUT — 3 / S-1
NO SCALE

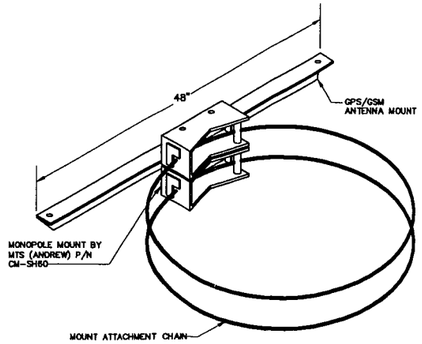


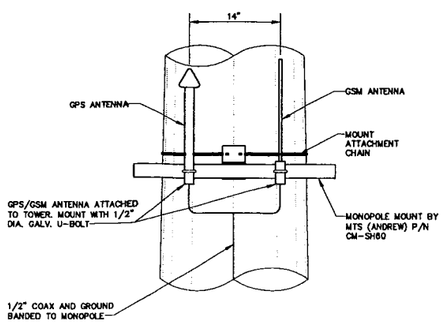
NOTES:
1. SECURE CABLES TO GRATING WITH TIE WRAPS AT 3'-0" O.C.
2. MONOPOLE WIRELESS ANTENNA LOW PROFILE PLATFORM MANUFACTURED BY PIROD/MICROFLECT WIRELESS INFRASTRUCTURE PRODUCTS P/N 852207 (OR APPROVED EQUAL). NOTE: MOUNTING PIPES ARE INCLUDED WITH PLATFORM.



SECTION A-A

ANTENNA MOUNTING DETAIL — 4 / S-1
NO SCALE





GPS/GSM MOUNTING DETAIL — 5 / S-1
NO SCALE

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

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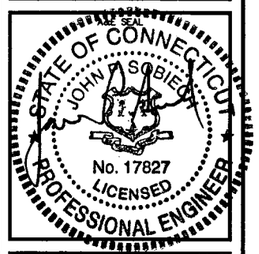

APPROVALS

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

PROJECT NO: 10585-1095

DRAWN BY: PAL

CHECKED BY: RJT

SUBMITTALS

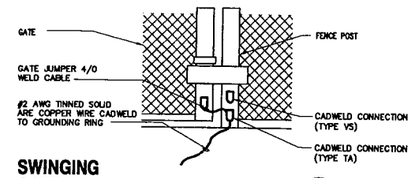
0	11/16/05	CONSTRUCTION

CTHA130A
SNET TOWER
419 BROAD STREET
WINDSOR, CT 06095

SHEET TITLE
STRUCTURAL NOTES, PLANS, SECTIONS & DETAILS

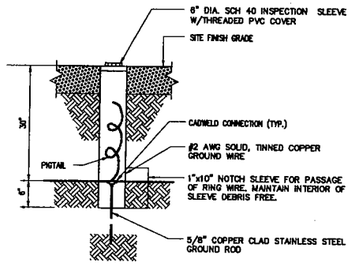
SHEET NUMBER
S-1

JRM 11/8/05



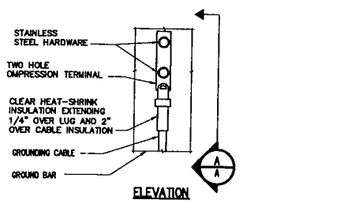
SWINGING GATE GROUNDING DETAIL

NO SCALE — 9 / E-1

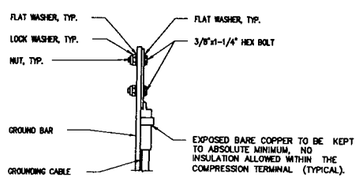


GROUND ROD TEST WELL DETAIL

NO SCALE — 8 / E-1



ELEVATION

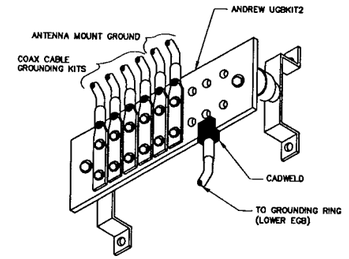


SECTION A-A

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.

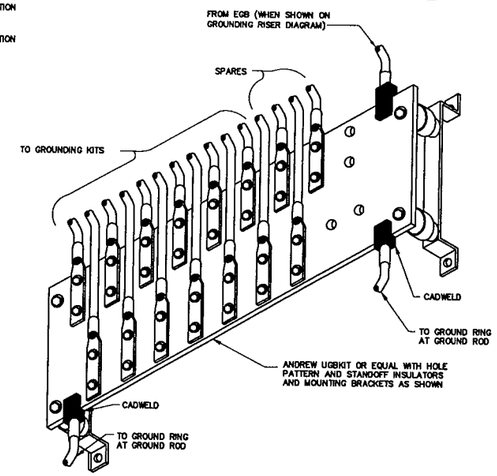
TYPICAL GROUND BAR CONNECTIONS DETAIL

NO SCALE — 7 / E-1



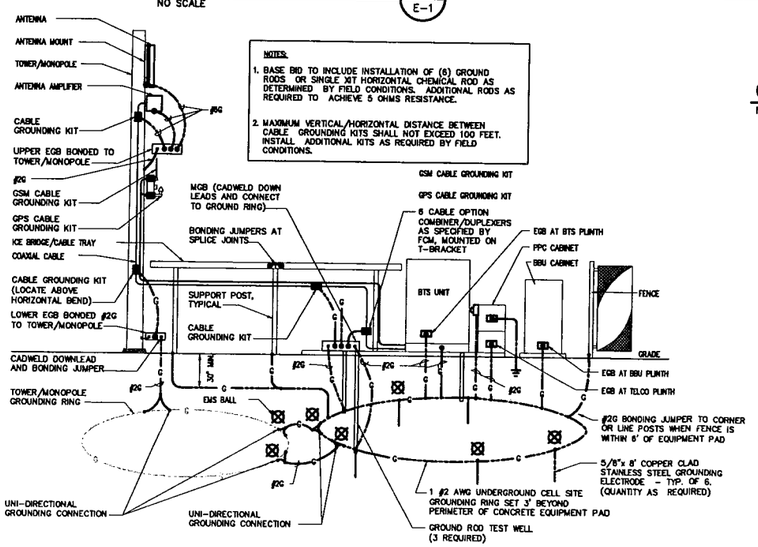
EQUIPMENT GROUND BAR (EGB)

NO SCALE — 6 / E-1



MASTER GROUND BAR (MGB)

NO SCALE — 5 / E-1

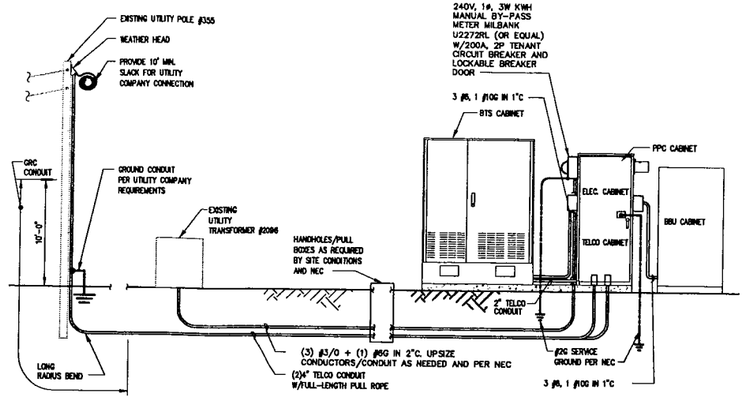


NOTES:
1. BASE BID TO INCLUDE INSTALLATION OF (6) GROUND RODS OR SINGLE 167 HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.

GROUNDING RISER DIAGRAM

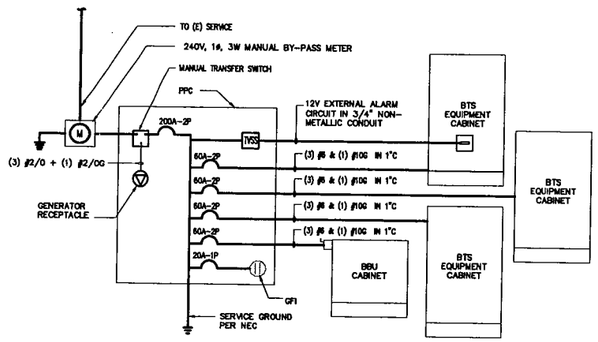
NO SCALE — 4 / E-1

MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS.



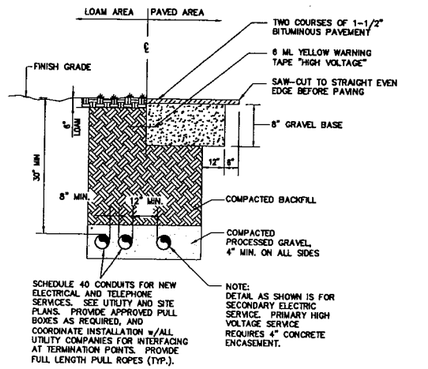
POWER RISER DIAGRAM

NO SCALE — 3 / E-1



ONE LINE DIAGRAM

NO SCALE — 2 / E-1



BURIED CONDUIT DETAIL

NO SCALE — 1 / E-1

ELECTRICAL LEGEND

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
M	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
J	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	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
MGB	MASTER GROUND BAR — ● MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR — ● MECHANICAL CONNECTION ● CADWELD CONNECTION
—G—	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8' COPPER CLAD STEEL GROUND ROD
	●EXOTHERMIC (CADWELD) OR ●MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONBIS 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 8" 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 OHMNS 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.

OMNIPOINT COMMUNICATIONS, INC.
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100 FILLEY STREET
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159

CHA
CLOUGH HARBOUR & ASSOCIATES LLP
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STATE OF CONNECTICUT ★ JOHN S. OBIEGO ★ No. 17827 ★ LICENSED PROFESSIONAL ENGINEER

APPROVALS

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

PROJECT NO: 10585-1095
DRAWN BY: JRM
CHECKED BY: CMM

SUBMITTALS

0	11/16/05	CONSTRUCTION

CTHA130A
SNET TOWER
419 BROAD STREET
WINDSOR, CT 06095

SHEET TITLE
ELECTRICAL, GROUNDING NOTES, RISERS & DETAILS

SHEET NUMBER
E-1

Exhibit 2

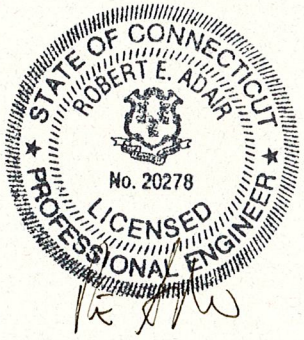
ALL-POINTS TECHNOLOGY CORPORATION, P.C.

STRUCTURAL ANALYSIS REPORT
100' MONOPOLE TOWER
WINDSOR, CONNECTICUT

T-Mobile Site #CTHA130A

Prepared for
T-Mobile USA, Inc.

December 14, 2005



APT Project #CT107850

☐ 3 SADDLEBROOK DRIVE • KILLINGWORTH, CONNECTICUT 06419 • PHONE: 860-663-1697 • FAX: 860-663-0935
☒ 150 OLD WESTSIDE ROAD • NORTH CONWAY, NEW HAMPSHIRE 03860 • PHONE/FAX: 603-356-5214

STRUCTURAL ANALYSIS REPORT
100' MONOPOLE TOWER
WINDSOR, CONNECTICUT
prepared for
T-Mobile USA

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 100-foot monopole tower located in Windsor, Connecticut. The analysis was performed for T-Mobile USA's proposed installation of nine DR65-19-00DPQ panel antennas and eighteen tower-mounted amplifiers (TMAs) on a 10' low-profile platform at 94', and one GPS antenna installed on a 3' standoff at 75'. Waveguide cables are to be twenty-four 1-5/8" cables and one ½" cable, assumed to be installed inside the pole.

Our analysis indicates the tower and foundation are adequate support the proposed antennas.

INTRODUCTION:

A structural analysis of this communications tower was performed by APT for T-Mobile USA. The tower is located at 419 Broad Street in Windsor, Connecticut.

APT did not visit the tower site. This analysis relied solely on information provided by others, which included a listing of proposed equipment, a structural opinion letter dated April 8, 2002 prepared by SpectraSite Communications, Inc., tower photographs, and Engineered Endeavors Incorporated (EEI) design drawings and calculations (EEI Job #13843-E01).

The structure is a 100-foot galvanized steel, 18-sided, three-section monopole manufactured by EEI.

The analysis was conducted for T-Mobile's proposed antenna installation using the following antenna inventory (proposed antennas shown in **bold** text):

Antenna	Elev.	Mount	Coax.
(12) CSS DUO1417-8686 panels[1]	100'	14' low-profile platform	(12) 1-5/8"
(9) DR65-19-00DPQ panels, (18) TMAs	**94'**	**10' low-profile platform**	**(24) 1-5/8"**
GPS	**75'**	**3' standoff**	**1/2"**

[1]Currently nine panels installed, twelve used for analysis purposes.

STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with TIA/EIA-222-F (EIA), Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition. The analysis was conducted using a wind speed of 80 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The TIA/EIA Standard requires a minimum of 80-mph wind load for Hartford County, Connecticut.

A P-delta analysis using RISA Tower© software was used to calculate loads of the tower and all appurtenances, radial ice loads, and the resultant wind loading. The maximum bending moments and axial loads were used to calculate combined axial and bending stresses on each section of the monopole, which were compared to allowable stresses according to AISC and TIA/EIA.

EIA requires two loading conditions to be evaluated to determine the tower's capacity. The higher stresses resulting from the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load (controls)
- Case 2 = **0.75** Wind Load (with ice) + Ice Load + Tower Dead Load

EIA permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third in computing the load capacity values indicated herein.

ANALYSIS RESULTS:

Our analysis indicates the tower is adequate to support the proposed antenna array. The following table summarizes the capacity of the pole with the proposed antennas:

Elevation	Capacity
87'-100'	41%
46'-87'	96%
0'-45'	100%

The base foundation was evaluated from reactions provided in EEI's design calculations. Reactions calculated with T-Mobile's proposed antennas were found to be less than design, indicating the foundation is adequate.

Base reactions imposed with current and proposed antennas were calculated to be as follows:

Compression:	17.1 kips
Total Shear:	9.1 kips
Overturning Moment:	753 ft-kips

CONCLUSIONS AND SUGGESTIONS:

As detailed above, our analysis indicates that the existing 100' EEI monopole tower in Windsor, Connecticut is adequate to support T-Mobile USA's proposed antenna array.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in new condition.
3. Tower is in plumb condition.
4. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
5. Record drawings accurately reflect tower dimensions and height.

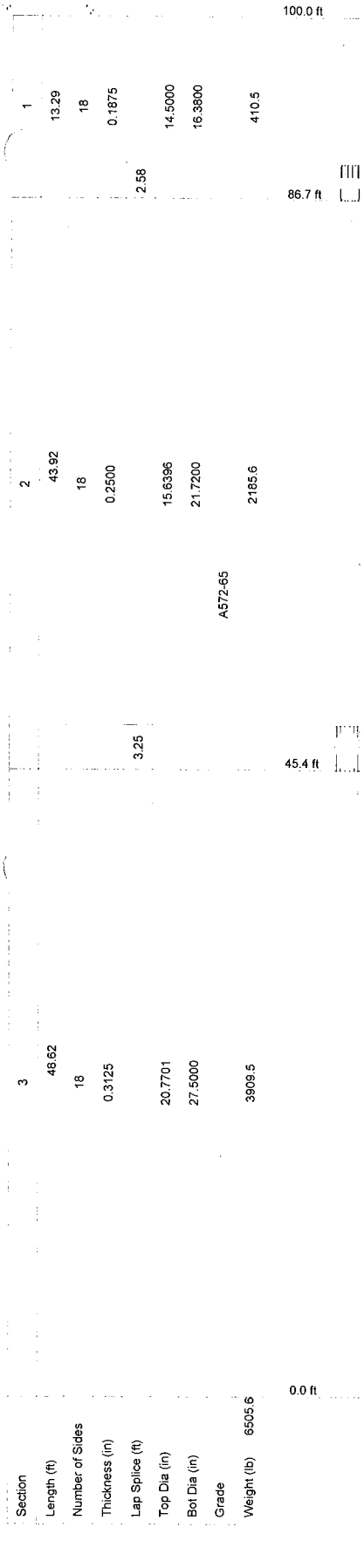
All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Adding or relocating antennas.
2. Installing antenna mounts or waveguide cables.
3. Reinforcing tower in any manner.
4. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Tower Schematic



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) DUO1417-8686	100	(3) DR65-19-00DPQ	94
(4) DUO1417-8686	100	14' low-profile platform	94
(4) DUO1417-8686	100	(6) G20057A1 TMA	94
14' low-profile platform	100	(6) G20057A1 TMA	94
(3) DR65-19-00DPQ	94	(6) G20057A1 TMA	94
(3) DR65-19-00DPQ	94	GPS on 3' standoff	75

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.

All-Points Technology Corp.
150 Old Westside Road
North Conway, NH 03860
Phone: 603-496-5853
FAX: 603-356-5214

Job: ***CT107850 Windsor***
Project: ***100' EEI Monopole***
Client: T-Mobile; Site #CTHA130A Drawn by: Robert E. Adair, P.E. App'd:
Code: TIA/EIA-222-F Date: 12/14/05 Scale: NTS
Path: C:\Documents and Settings\Robert Adair\My Documents\Jobs\CT107850 Windsor\CT107850 Windsor.eri Dwg No. E-1

Appendix B

Photograph

T-MOBILE USA
WINDSOR, CONNECTICUT
T-MOBILE SITE #CTHA130A; WINDSOR

Photo showing existing antennas on 100' monopole tower located in Windsor, Connecticut.

Photo provided by T-Mobile USA

Appendix C

Calculations

All-Points Technology Corp.
150 Old Westside Road
North Conway, NH 03860
Phone: 603-496-5853
FAX: 603-356-5214

Tower Input Data

This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	100.00-86.71	13.29	2.58	18	14.5000	16.3800	0.1875	0.7500	A572-65 (65 ksi)
L2	86.71-45.37	43.92	3.25	18	15.6396	21.7200	0.2500	1.0000	A572-65 (65 ksi)
L3	45.37-0.00	48.62		18	20.7701	27.5000	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.7237	8.5177	220.4409	5.0809	7.3660	29.9268	441.1718	4.2597	2.2220	11.851
	16.6327	9.6366	319.2180	5.7483	8.3210	38.3628	638.8560	4.8192	2.5529	13.615
L2	16.2440	12.2116	365.3955	5.4633	7.9449	45.9912	731.2719	6.1070	2.3126	9.25
	22.0551	17.0364	992.1573	7.6219	11.0338	89.9201	1985.6200	8.5198	3.3827	13.531
L3	21.5472	20.2913	1072.8915	7.2624	10.5512	101.6844	2147.1948	10.1476	3.1055	9.938
	27.9242	26.9666	2518.2696	9.6516	13.9700	180.2627	5039.8527	13.4859	4.2900	13.728

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 5/8	C	No	Inside Pole	100.00 - 6.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 5/8	C	No	Inside Pole	94.00 - 6.00	24	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft	°	ft		ft²	ft²	lb
(4) DUO1417-8686	A	From Face	5.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
(4) DUO1417-8686	B	From Face	5.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
(4) DUO1417-8686	C	From Face	5.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
14' low-profile platform	C	None		0.0000	100.00	No Ice 1/2" Ice	9.80 10.93	8.49 9.47	1200.00 2063.51
(3) DR65-19-00DPQ	A	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	8.40 8.95	3.53 3.97	32.00 73.77
(3) DR65-19-00DPQ	B	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	8.40 8.95	3.53 3.97	32.00 73.77
(3) DR65-19-00DPQ	C	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	8.40 8.95	3.53 3.97	32.00 73.77
14' low-profile platform	C	None		0.0000	94.00	No Ice 1/2" Ice	9.80 10.93	8.49 9.47	1200.00 2063.51
(6) G20057A1 TMA	A	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	10.00 15.41
(6) G20057A1 TMA	B	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	10.00 15.41
(6) G20057A1 TMA	C	From Face	5.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	10.00 15.41
GPS on 3' standoff	C	None		0.0000	75.00	No Ice 1/2" Ice	0.60 0.79	0.60 0.79	50.00 55.81

Solution Summary

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	100 - 86.71	90.530	4	7.7031	0.0000
L2	89.2933 - 45.3733	73.465	4	7.4816	0.0000
L3	48.6233 - 0	21.820	4	4.2042	0.0000

RISATower	Job	Page
	CT107850 Windsor	3 of 3
All-Points Technology Corp. 150 Old Westside Road North Conway, NH 03860 Phone: 603-496-5853 FAX: 603-356-5214	**Project** 100' EEI Monopole	**Date** 11:47:46 12/14/05
	Client T-Mobile; Site #CTHA130A	**Designed by** Robert E. Adair, P.E.

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	100 - 86.71 (1)	TP16.38x14.5x0.1875	13.29	100.00	213.6	3.274	9.4191	-5910.03	30835.80	0.192
L2	86.71 - 45.3733 (2)	TP21.72x15.6396x0.25	43.92	100.00	160.8	5.774	16.6794	-6490.75	96315.00	0.067
L3	45.3733 - 0 (3)	TP27.5x20.7701x0.3125	48.62	100.00	124.3	9.660	26.9666	-12471.30	260501.00	0.048

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	100 - 86.71 (1)	TP16.38x14.5x0.1875	41816.00	-13.695	39.000	0.351	0.00	0.000	39.000	0.000
L2	86.71 - 45.3733 (2)	TP21.72x15.6396x0.25	337844.17	-47.048	39.000	1.206	0.00	0.000	39.000	0.000
L3	45.3733 - 0 (3)	TP27.5x20.7701x0.3125	751681.67	-50.039	39.000	1.283	0.00	0.000	39.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 86.71 (1)	TP16.38x14.5x0.1875	0.192	0.351	0.000	0.543 ✔	1.333	H1-3 ✔
L2	86.71 - 45.3733 (2)	TP21.72x15.6396x0.25	0.067	1.206	0.000	1.274 ✔	1.333	H1-3 ✔
L3	45.3733 - 0 (3)	TP27.5x20.7701x0.3125	0.048	1.283	0.000	1.331 ✔	1.333	H1-3 ✔

Section Capacity Table

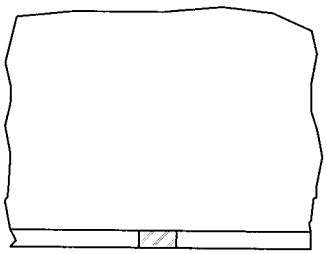
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	100 - 86.71	Pole	TP16.38x14.5x0.1875	1	-5910.03	41104.12	40.7	Pass
L2	86.71 - 45.3733	Pole	TP21.72x15.6396x0.25	2	-6490.75	128387.89	95.6	Pass
L3	45.3733 - 0	Pole	TP27.5x20.7701x0.3125	3	-12471.30	347247.82	99.8	Pass
							Summary	
						Pole (L3)	99.8	Pass
						RATING =	**99.8**	**Pass**

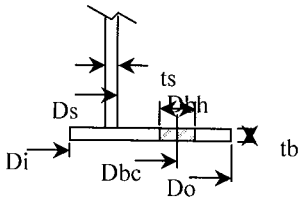
All-Points Technology Corp., P.C.
150 Old Westside Road
North Conway, NH 03860
(603) 356-5214

Client: **T-Mobile USA**
Job: **Windsor, CT**
Calculated By: **R. Adair**

Site No.: **CTHA130A**
APT Job No.: **CT107850**
Date: **14-Dec-05**

	General Parameters		
Ds	Diameter of Skirt	27.5	in
Do	Outer Diameter of Base Ring	59.5	in
Di	Inner Diameter of Base Ring	22.5	in
Dbc	Bolt Circle Diameter	53.0	in
Dbolt	Nominal Bolt Diameter	2.25	in
Nbolt	Number of Bolts	8	
Dbh	Diameter of Bolt Hole	2.3750	in
	Loadings		
OTM	Overturning Moment	753,000	ft-lbs
V	Vertical Load (+ is Compressive)	17,100	lbs
	Material Properties		
Es	Modulus of Elasticity of Steel	29,000,000	psi
Ec	Modulus of Easticity of Concrete	3,000,000	psi
u	Poissons Ratio for Steel	0.30	
Fc(ult)	Ultimate Compressive Strength	3,000	psi
Fc(allow)	Allowable Compressive Strength	3,000	psi
Fbolt	Allowable Bolt Stress	75,000	psi
Fy	Yield Stress of Top & Bottom Plates	60,000	psi
Increase	Increase for Wind or Seismic?	1.33	
Fb	Allow Bending Stress (Fy*0.6)	47,880	psi
	Program Output		
tb	Minimum Base Plate Thickness	2.294	in
Bolting	Actual Load/ Allowable Load	0.266	OK
Concrete	Actual Load / Allowable Load	0.276	OK





	Calculated Parameters		
n	Es / Ec	9.66666667	
Aroot	Root area of Bolt	3.02	in^2
tt1	Nbolt*Aroot/(3.14159*Dbc)	0.145	in
tt3	(Do-Di)/2	18.5	in
tt2	tt3-tt1	18.355	in

Iteratively Solve for Compressive and Tensile Loads on Compression Plate*

Iteration #	k	Cc	Ct	z	j	fc psi	fs psi	Ft lbs	Fc lbs
1	0.279	1.451	2.488	0.442	0.780	3,000	75,000	208,841	225,941
2	0.116	0.917	2.849	0.476	0.768	297	21,829	211,485	228,585
3	0.193	1.193	2.677	0.460	0.775	476	19,303	209,757	226,857
4	0.147	1.037	2.779	0.470	0.771	363	20,374	210,795	227,895
5	0.171	1.119	2.726	0.465	0.773	420	19,727	210,257	227,357
6	0.158	1.075	2.755	0.467	0.772	388	20,056	210,553	227,653
7	0.164	1.098	2.740	0.466	0.772	405	19,875	210,398	227,498
8	0.161	1.085	2.748	0.467	0.772	396	19,970	210,480	227,580
9	0.163	1.092	2.744	0.466	0.772	400	19,919	210,437	227,537
10	0.162	1.089	2.746	0.467	0.772	398	19,946	210,460	227,560

*Calculations in this table are based upon Ref. 1:

k = 1 / (1 + (fs/(n*fc))) [Eqn. 10.3]
fc = Fc / (tt2+n*tt1)*r*Cc [Eqn. 10.18]
fs = Ft / (tt1*r*Ct) [Eqn. 10.9]

Ft = (12*OTM - V * z * Dbc) / (j*Dbc) [Eqn. 10.24]
Fc = Ft + V [Eqn. 10.27]

Concrete Bearing Pressure:		==> Bearing Pressure Acceptable
fcmax	fc*(2*k*Dbc+tt3)/(2*k*Dbc) [Eqn. 10.30]	828 psi
FcAllow	Allowable Bearing Pressure	3000 psi

Check Bolting:		==> Bolting Acceptable
Pbolt	fs*Aroot	60,237 lbs
Pallow	Fbolt*Aroot	226,500 lbs

Check Bottom Plate - Single Baseplate no Gussets:		==> Baseplate Acceptable
Compressive Loading		
l	(Do-Ds)/2	16.000 in
tb1	l*(3*fcmax/Fb)^0.5 [Eqn. 10.32a]	2.294 in
Bolt Tensile Loading		
a	(Dbc - Ds) / 2	12.75 in
tb2	(Pbolt*a*Nbolt*12/(PI()*Ds*Fb))^0.3333	2.167 in
tbmin	Maximum of tb1 or tb2	2.294 in

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: Christine Farrell
From: Farid Marbouh - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTHA130A
Date: December 13, 2005

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 419 Broad St, Windsor, 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 3 antennas per sector.
3) The model number for each antenna is APX16PV-16PV-2.
4) The antenna center line height is 94 ft.
5) The maximum transmit power from any sector is 2017.99 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 419 Broad St, Windsor, CT, is 0.05717 mW/cm^2. This value represents 5.717% of the Maximum Permissible Exposure (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 15.56%. The combined Power Density for the site is 21.277% of the M.P.E. standard.

New England Market

Connecticut

Worst Case Power Density

Site:	**CTHA130A**
Site Address:	**419 Broad St**
Town:	**Windsor**
Tower Height:	**101 ft.**
Tower Style:	**Monopole**
Base Station TX output	20 W
Number of channels	8
Antenna Model	APX16PV-16PV-2
Cable Size	1 5/8 in.
Cable Length	120 ft.
Antenna Height	94.0 ft.
Ground Reflection	1.6
Frequency	1935.0 MHz
Jumper & Connector loss	4.50 dB
Antenna Gain	16.9 dBi
Cable Loss per foot	0.0116 dB
Total Cable Loss	1.3920 dB
Total Attenuation	5.8920 dB
Total EIRP per Channel	54.02 dBm
(In Watts)	252.25 W
Total EIRP per Sector	63.05 dBm
(In Watts)	2017.99 W
nsg	11.0080
Power Density (S) =	**0.057171 mW/cm^2**
T-Mobile Worst Case % MPE =	**5.7171%**

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	
Cingular	15.5600 %
Sprint PCS	
AT&T Wireless	
Nextel	
Total Excluding T-Mobile	**15.5600 %**
T-Mobile	5.7171
Total % MPE for Site	**21.2771%**