STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

December 9, 2011

Karina Fournier
Real Estate Consultant
New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021

RE: **EM-CING-015-111107** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 2 Kaechele Place, Bridgeport, Connecticut.

Dear Ms. Fournier:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The tower and its foundation be modified in accordance with recommendations made in the Structural Analysis Report prepared by GDP Group dated September 23, 2011 and stamped by David Granger; and

- Prior to antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation will not exceed 100 percent of the post-construction structural rating.

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;

- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

- The validity of this action shall expire one year from the date of this letter; and

- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 3, 2011. 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. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Bill Finch, Mayor, City of Bridgeport
Michael Nidoh, Planning Director, City of Bridgeport

New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021
Phone: (860) 796-3988
Fax: (617) 249-0819

H. Karina Fournier
Real Estate Consultant

November 18, 2011

Honorable Robert Stein, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing Tower located at 2 Kaechele Place Bridgeport, CT

Dear Chairman Stein and Members of the Council:

Pursuant to Connecticut General Statutes Section 16-50aa, Cingular has requested an order approving shared use of the tower from the Connecticut Siting Council. The request should have been for an exempt modification pursuant to R.C.S.A 16-50j-73.

Please accept this letter as a request for the proper review. If you have any questions please contact me at 860-796-3988.

Sincerely,

H. Karina Fournier
Real Estate Consultant

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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

November 9, 2011

The Honorable Bill Finch
Mayor
City of Bridgeport
City Hall Annex
999 Broad Street
Bridgeport, CT 06604

RE: **TS-CING-015-111107** – New Cingular Wireless PCS, LLC Request for Approval of the Shared Use of an Existing tower at 2 Kaechele Place, Bridgeport, Connecticut.

Dear Mayor Finch:

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

The Council will consider this item at the next meeting scheduled for December 1, 2011, at 1:00 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by November 30, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Tower Sharing

c: Michael Nidoh, Planning Director, City of Bridgeport

EM-CING-015-111107

New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021
Phone: (860) 796-3988
Fax: (617) 249-0819

Karina Fournier
Real Estate Consultant

November 3, 2011

Honorable Robert Stein, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing tower at 2 Kaechele Place Bridgeport, CT.

Dear Chairman Stein and Members of the Council:

In order to accommodate technological changes, implement Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A Section 16-50j-72(b)(2). In compliance with R.C.S.A Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations of the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General Statues ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments
3. The proposed changes will not increase the noise level at the existing facility by six

decibels or more.

4. LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section 16-50j-72(b)(2).

Please feel free to contact me at 860-796-3988 with questions concerning this matter. Thank you for your consideration.

Sincerely,

H. Karina Fournier
Real Estate Consultant

Attachments

WIRELESS COMMUNICATIONS FACILITY

CT2106
BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06806

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT **TO:** 2 KAECHELE PLACE, BRIDGEPORT, CT 06606

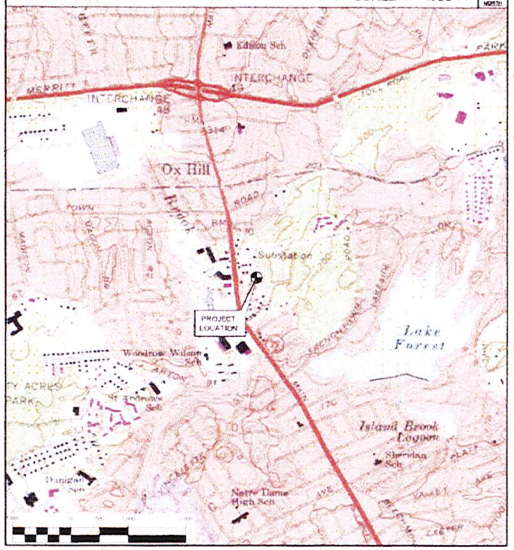
1. Depart Enterprise Dr toward Capitol Blvd	0.3 mi
2. Turn left onto Capitol Blvd	0.2 mi
3. Turn left onto West St	0.3 mi
4. Take ramp left for I-91 South	9.7 mi
5. At exit 17, take ramp right for SR-15 South / Wilbur Cross Pkwy toward E. Main St	34.1 mi
6. At exit 48, take ramp right and follow signs for Main St / SR-111	0.1 mi
7. Turn left onto SR-111 / Main St	0.4 mi
8. Road name changes to Main St	0.2 mi
9. Turn left onto Kaechele Pl	0.1 mi
10. Arrive at 2 Kaechele Pl, Bridgeport, CT 06606 on the right	

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2005 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES" 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS. COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO "EXTRA" WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK GENERALLY CONSISTS OF THE INSTALLATION OF ONE (1) LTE ANTENNA PER SECTOR FOR A TOTAL OF (3) LTE ANTENNAS TO THE EXISTING AT&T ANTENNA ARRAY. AN LTE BASEBAND EQUIPMENT UNIT (RBS) WILL BE INSTALLED WITHIN THE EXISTING AT&T EQUIPMENT SHELTER.
2. ADDITIONALLY, (2) REMOTE RADIO UNITS (RRUs) PER SECTOR WILL BE INSTALLED. SURGE ARRESTORS WILL BE INSTALLED AT BOTH AT&T RRU AND EQUIPMENT LOCATIONS. REFER TO THESE ACCOMPANYING DRAWINGS FOR FURTHER INFORMATION.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2106
AT&T SITE NAME:	BRIDGEPORT NORTH
SITE ADDRESS:	2 KAECHELE PLACE BRIDGEPORT, CT 06606
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-13'-24.11" N LONGITUDE: 73°-12'-29.94" W GROUND ELEVATION: ±230' AMSL

SHEET INDEX

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C-2	LTE SYSTEM EQUIPMENT PLANS & DETAILS	1
1	ELECTRICAL DETAILS AND NOTES	1
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DESIGNED BY:	CPC
DRAWN BY:	DCB
CHK'D BY:	CPC

REV.	DATE	DRAWN BY	CHK'D BY	
1	03/24/11	DCB	CPC	CONSTRUCTION
0	2/27/11	DCB	CPC	CONSTRUCTION - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

at&t

SAI COMMUNICATIONS

CENTEK engineering

(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405

www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SITE NUMBER: CT2106
SITE NAME: BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06606

DATE:	2/27/11
SCALE:	AS NOTED
JOB NO:	11021.0012

TITLE SHEET

T-1

Sheet No. 1 of 9

STRUCTURAL SPECIFICATIONS

DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   - WIND LOAD: PER EIA/TIA 222 F-96 (ANTENNA MOUNTS): 90 MPH (FASTEST MILE), EQUIVALENT TO 110 MPH (3 SECOND GUST).
   - BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
   - BASIC WIND SPEED (OTHER STRUCTURE): 110 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT & 2009 AMENDMENT.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-95 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES

1. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
2. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST THE PRE MANUFACTURED EQUIPMENT BUILDING SHOP DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
4. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKM

CONDITION. RIGINAL

8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSSES OF COMPACTOR PER LIFT.
3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40-70
No. 100	5-20
No. 200	4-8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90-100
⅜"	0-15
#4	0-5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 8" MAX. LIFTS, COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

FOUNDATION CONSTRUCTION NOTES

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.
2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE COMPACTED FILL, BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.
3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.
5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.

CONCRETE CONSTRUCTION NOTES

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

   ACI 211 – STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.

   ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.

   ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION.

   ACI 304 – RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.

   ACI 306.1 STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING.

   ACI 318 – BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

   SLABS ON GRADE 4,000 PSI
   ALL OTHER CONCRETE 3,000 PSI

   - PORTLAND CEMENT: ASTM C150, TYPE II, (540 LBS/CUBIC YARD)
   - AGGREGATE: ASTM C33, No. 67, TYPICAL
   - WATER: POTABLE WITH MAXIMUM WATER CEMENT RATIO OF .55
   - SLUMP: 3" TO 4"
   - ADMIXTURES: USE AIR ENTRAINING AGGENT CONFORMING TO ASTM C260 WITH 4 TO 6% TOTAL AIR. USE WATER REDUCING AGENT CONFORMING TO ASTM C494, TYPE A, IN ALL CONCRETE. CALCIUM CHLORIDE MAY NOT BE USED TO ACCELERATE THE CONCRETE SETTING TIME.

3. REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM- A-185.
5. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
6. CONCRETE COVER OVER REINFORCING SHALL CONFORM TO THE FOLLOWING, UNLESS OTHERWISE SHOWN:

   BOTTOM OF FOOTINGS: 3 INCHES

   SURFACES NOT EXPOSED TO EARTH OR WEATHER 1-1/2 INCHES

7. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.
8. ALL REINFORCEMENT SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. SPLICES SHALL BE WELL STAGGERED. ADDITIONAL BARS AND SPECIAL BENDING DETAILS ARE REQUIRED AT INTERSECTING WALLS AND AT JOINTS. SUCH DETAILS SHALL COMPLY WITH ACI 315 RECOMMENDATIONS UNLESS OTHERWISE SHOWN.
9. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.
10. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1% CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.
11. UNLESS OTHERWISE NOTED, ALL LAP SPLICES SHALL BE 48 BAR DIAMETERS.
12. SLAB ON GRADE FINISHES:

    EXTERIOR SLAB: NON-SLIP BROOM FINISH
    INTERIOR SLAB: STEEL TROWEL FINISH

GENERAL NOTES (REFERENCE)

CONTRACTOR TO REFER TO THE GENERAL NOTES ON SHEET T-1 FOR ADDITIONAL INFORMATION.

DESIGNED BY:	CFC
DRAWN BY:	DEB
CHK'D BY:	CFC

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	12/23/11	DEB	CFC	CONSTRUCTION - CLIENT REVIEW
0	2/27/11	DEB	CFC	CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

SAI

CENTEK engineering

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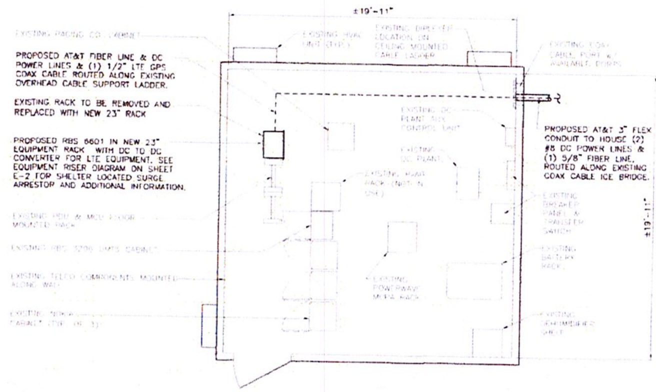
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SITE NUMBER: CT2106
SITE NAME: BRIDGEPORT NORTH
1 MECHELE PLACE
BRIDGEPORT, CT 06606

DATE: 2/27/11
SCALE: AS NOTED
JOB NO: 11021.0012

NOTES AND SPECIFICATIONS

N-1

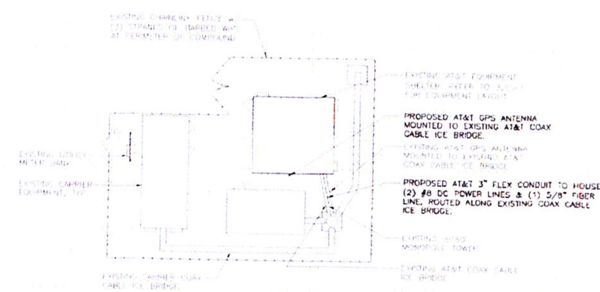
Sheet No. 2 of 5



3 / C-1 **EQUIPMENT SHELTER PLAN**
SCALE: 1/4" = 1'-0"

TRUE NORTH

GRAPHIC SCALE



1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 15'

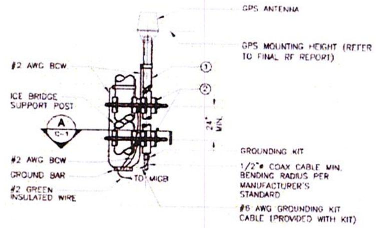
TRUE NORTH

GRAPHIC SCALE

REFER TO FINAL AT&T RF ENGINEER'S RF RADIO PLAN PRIOR TO INSTALLATION OF ANTENNAS AND COAX

BILL OF MATERIALS

ITEM	DESCRIPTION	QUANTITY
1	2-1/2"⌀ SCH. 40 x 8'-0" LG. MAX SS OR GALV. PIPE	1
2	UNIVERSAL CLAMP SET	2



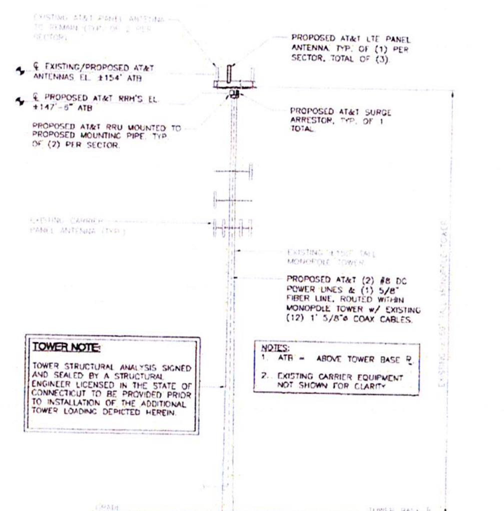
GPS ANTENNA MOUNTING BRACKET

4 / C-1 **GPS GROUNDING/MOUNTING BRACKET DETAILS**
NOT TO SCALE

A / C-1 **SECTION**
NOT TO SCALE

NOTES:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT AND COORDINATED WITH AT&T CONSTRUCTION MANAGER.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
3. ATTACH TO ICE BRIDGE POST NEAREST ANTENNA CABLE PORT AT EQUIPMENT.
4. PRIOR TO INSTALLATION CONTRACTOR SHALL TEST GPS LOCATION WITH HAND HELD AND MOVE GPS ANTENNA TO OTHER ICE BRIDGE POSTS AS REQUIRED TO ACHIEVE ADEQUATE SIGNAL. FAILURE TO ACHIEVE ADEQUATE SIGNAL WITH A HAND HELD GPS SHALL BE REPORTED TO CONSTRUCTION MANAGER AND ENGINEER TO DETERMINE ALTERNATE INSTALLATION LOCATION FOR GPS ANTENNA.



TOWER NOTE:
TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.

NOTES:
1. ATB = ABOVE TOWER BASE ℞
2. EXISTING CARRIER EQUIPMENT NOT SHOWN FOR CLARITY.

2 / C-1 **TOWER ELEVATION**
SCALE: 1" = 20'

GRAPHIC SCALE

DESIGNED BY:	CFC
DRAWN BY:	FLO
CHK'D BY:	CFC

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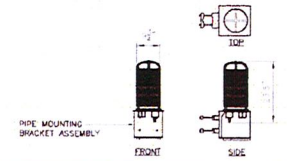
DATE:	2/27/11
SCALE:	AS NOTED
JOB NO.	11021.0012

PLANS AND ELEVATION

C-1

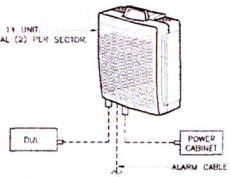
Sheet No. 2 of 5



SURGE ARRESTOR				
SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
TOWER	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	**TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.**	20 LBS. (WITHOUT MOUNT)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL RRU SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.

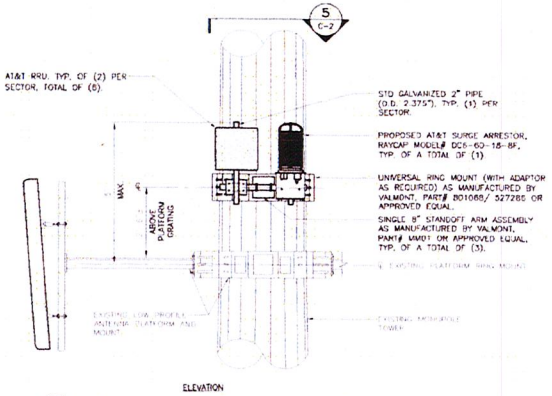
9 / C-2 **SURGE ARRESTOR DETAIL**
NOT TO SCALE



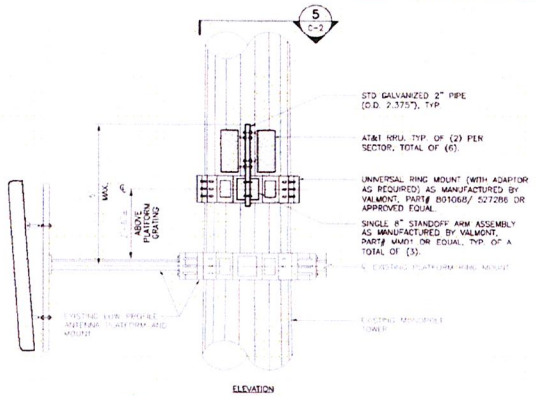
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 11	17.8"L x 17.3"W x 7.2"D	BAND 4: 44 LBS. BAND 12: 50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. SIDE: 0" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

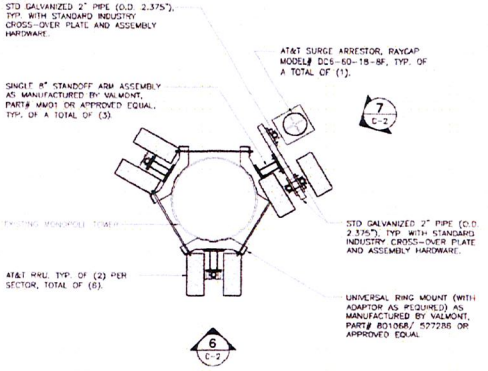
8 / C-2 **RRU DETAIL**
NOT TO SCALE



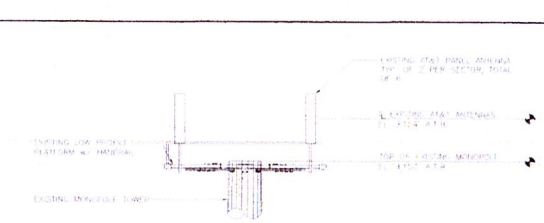
7 / C-2 **RRU AND SURGE ARRESTOR MOUNTING DETAIL**
SCALE: 1/2" = 1'- 0"



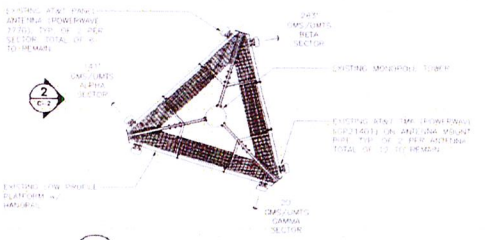
6 / C-2 **RRU MOUNTING DETAIL**
SCALE: 1/2" = 1'- 0"



5 / C-2 **RRU AND SURGE ARRESTOR MOUNTING PLAN**
SCALE: 1/2" = 1'- 0"

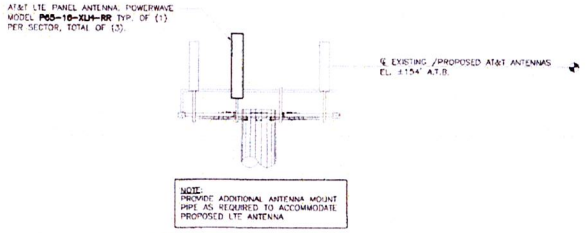


2 / C-2 **EXISTING ANTENNA SECTOR ELEVATION**
SCALE: 3/16" = 1'-0"



1 / C-2 **EXISTING ANTENNA PLAN**
SCALE: 3/16" = 1'-0"

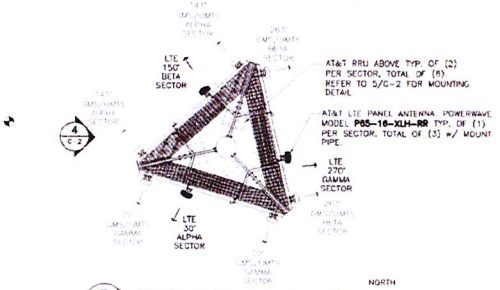
NORTH



NOTE:
PROVIDE ADDITIONAL ANTENNA MOUNT PIPE AS REQUIRED TO ACCOMMODATE PROPOSED LTE ANTENNA

4 / C-2 **PROPOSED ANTENNA SECTOR ELEVATION**
SCALE: 3/16" = 1'-0"

REFER TO FINAL AT&T RF ENGINEER'S RF RADIO PLAN PRIOR TO INSTALLATION OF ANTENNAS AND COAX



3 / C-2 **PROPOSED ANTENNA PLAN**
SCALE: 3/16" = 1'-0"

NORTH

DESIGNED BY:	CFC
DRAWN BY:	DEB
CHK'D BY:	CFC

REV	DATE	DRAWN BY	CHK'D BY
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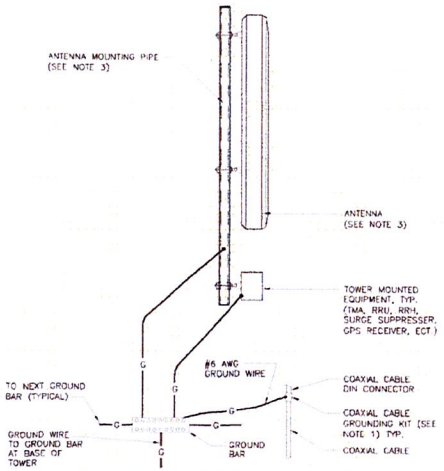
JOB NO:	11021.C012

LTE SYSTEM EQUIPMENT PLANS AND DETAILS

C-2

Sheet No. 4 of 6

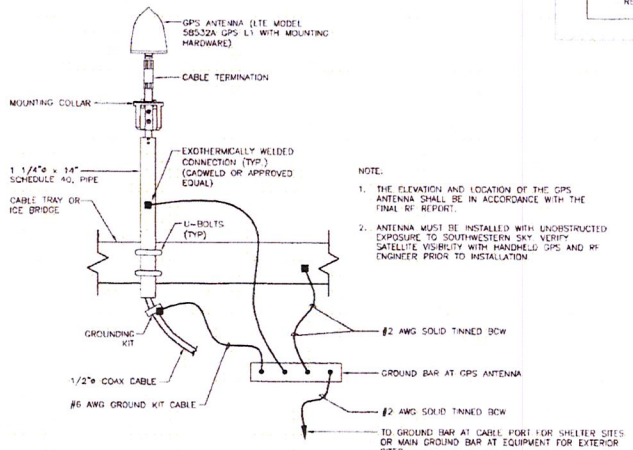


NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 E-1 TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

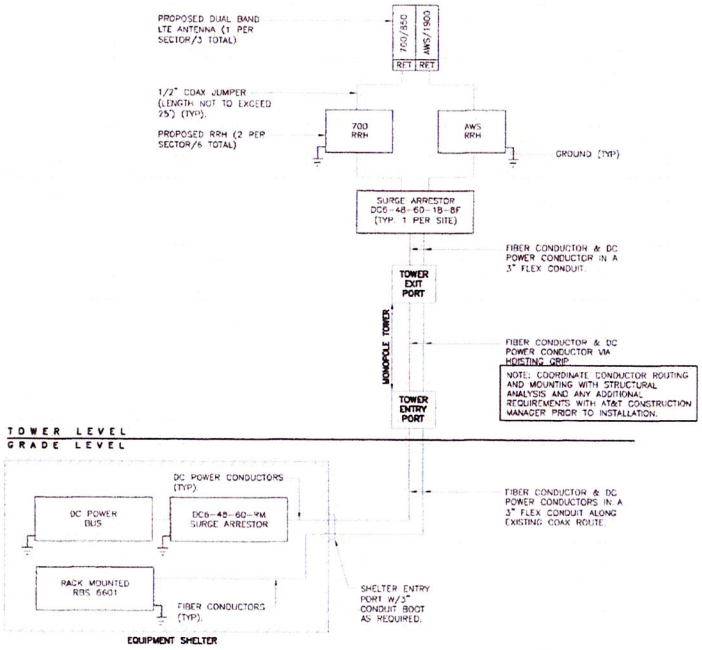


NOTE:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. ANTENNA MUST BE INSTALLED WITH UNOBSTRUCTED EXPOSURE TO SOUTHWESTERN SKY. VERIFY SATELLITE VISIBILITY WITH HANDHELD GPS AND RF ENGINEER PRIOR TO INSTALLATION.

3 E-1 GPS MOUNTED TO CABLE TRAY / ICE BRIDGE

NOT TO SCALE



NOTES:

1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURERS RECOMMENDATIONS.

2 E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY, AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960)

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

DESIGNED BY:	CKD
DRAWN BY:	TJB
CHK'D BY:	CKD

REV.	DATE	DRAWN BY	CHK'D BY	
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AT&T MOBILITY

SITE NUMBER: CT2106

SITE NAME: BRIDGEPORT NORTH

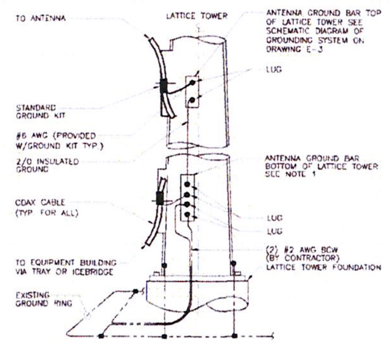
1 KAECHELE PLACE
BRIDGEPORT, CT 06606

DATE:	2/27/11
SCALE:	AS NOTED
JOB NO:	11021.C012

ELECTRICAL DETAILS AND NOTES

E-1

Sheet No. 5 of 5

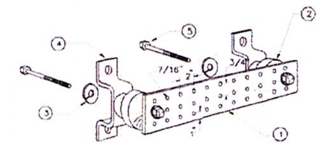


NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

1 (E-2) ANTENNA CABLE GROUNDING - MONOPOLE

NOT TO SCALE

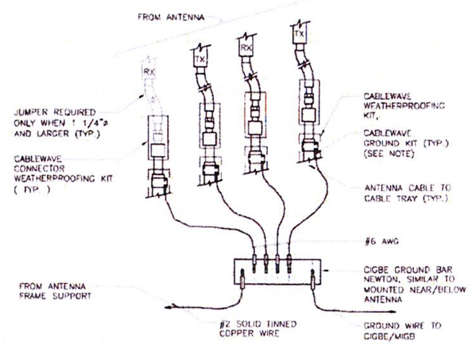


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

2 (E-2) GROUND BAR DETAIL

NOT TO SCALE

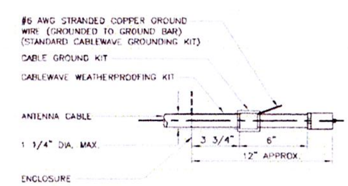


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

3 (E-2) CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

4 (E-2) ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

DESIGNED BY:	CKD
DRAWN BY:	TJB
CHK'D BY:	CKD

REV.	DATE	DRAWN BY	CHK'D BY	
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DATE:	2/27/11
SCALE:	AS NOTED
JOB NO.	11021.C012

ELECTRICAL DETAILS

E-2

Sheet No. 5 of 6

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kclements@gpdgroup.com

GPD# 2011261.96
September 23, 2011

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	Site USID:	60393
	Site FA:	10034977
	Site Name:	BRIDGEPORT NORTH
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F & 2003 IBC with 2005 CBC supplement** **90-mph with 0" ice** **78-mph with 1/2" ice**
SITE DATA:		**2 Kaechele Place, Bridgeport, CT 06606, Fairfield County** **Latitude 41° 13' 23.97" N, Longitude 73° 13' 0.397" W** **150' Modified Monopole**

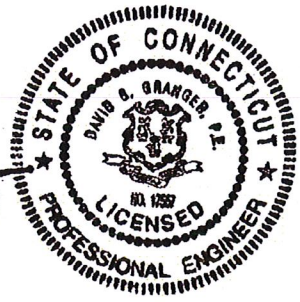
Mr. Jelleme,

GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower in its modified state with the existing and reserved loadings as referenced in Appendix A.

Based on our analysis we have determined the **modified tower and its foundation will be sufficient** for the existing and reserved loadings as referenced in Appendix A **once the modifications designed by GPD Group (Job #: 2011261.96, dated 9/23/11) are properly installed**.

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T. If you have any questions please do not hesitate to call.

Respectfully submitted,



David B. Granger, P.E.
Connecticut #: 17557

SUMMARY & RESULTS

The purpose of this analysis was to verify the existing structure. This report was commissioned by Mr. Marty Jelleme of AT&T.

The tower has been previously modified with (8) 2-1/2" diameter threaded rods from 0' – 50', (4) 2-1/2" diameter threaded rods from 50' – 95' and (3) 5" x 3/4" mod plates from 95' – 115'. In addition, triangular stiffener plates have been installed on the base plate and bridge stiffeners on the flange plate at 109'. Additional concrete has also been poured atop the existing foundation.

Modifications designed by GPD Group (Job #: 2011261.96, dated 9/23/11) consisted of reinforcing the pole from 94' – 109.75 and 110' – 123', adding bridge stiffeners around the flange connection at 109.75', and adding concrete to the existing foundation. These modifications were considered in this analysis. Refer to Appendix H for specific details.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	99.8%	Pass
Flange Plates	44.8%	Pass
Flange Bolts	33.9%	Pass
Bridge Stiffeners	69.0%	Pass
Base Plate	71.1%	Pass
Anchor Rods	86.3%	Pass
Foundation	68.4%	Pass

ANALYSIS METHOD

RISA Tower (Version 5.4.2.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Tower Mapping	GPD & MTSI, dated 2/23/11	Siterra
Foundation Exploration	FDH Project #: 08-09065E N1, dated 9/23/08	Siterra
Geotechnical Report	FDH Project #: 08-09065E G1, dated 9/23/08	Siterra
Modification Drawings	GPD Job #: 2008264.38, dated 10/16/08	Siterra
Previous Structural Analysis	GPD Group Job #: 2011267.22, dated 8/30/11	Siterra
Modification Drawings	GPD Job #: 2011261.96, dated 9/23/11	GPD

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the monopole. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The monopole shaft sizes and shape are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations. If no data is available, the foundation system is not verified. In the case of absent foundation data, it is the tower owner's responsibility to insure that the foundation system is adequate to support the structure with its new reactions.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
8. Tower Mounted Amplifiers are assumed to be installed behind the antennas.
9. All existing loading was obtained from the tower mapping by GPD & MTSI, dated 2/23/11, site photos and is assumed to be accurate.
10. No steel grade information was provided, therefore, steel grades are assumed based on previous engineering experience.
11. The threaded rod modifications are assumed to be installed through the base plate into the foundation, carrying forces directly into the foundation.
12. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
13. The existing loading elevation found in the mapping by GPD & MTSI, dated 2/23/11 was found to vary from the listed elevation within the provided NOCF. The existing and future elevations have been modeled based on the elevation reflected within the mapping.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD GROUP should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

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

GPD GROUP makes no warranties, expressed and/or implied in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	BRIDGEPORT NORTH
Site Number	60393
FA Number	10034977
Date of Analysis	9/23/2011
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	150'	
Tower Manufacturer	n/a	
Tower Model	n/a	
Tower Design	n/a	
Foundation Investigation	FDH Engineering Project #: 08-090656.S01	9/23/2008
Geotech Report	FDH Engineering Project #: 08-090656.S01	9/23/2008
Modification Drawings	GPD Job #: 2008264.38	10/16/2008
Modification Drawings	GPD Group Job #: 2011261.56	9/23/2011
Previous Structural Analysis	GPD Group Job #: 2011257.22	8/30/2011
Tower Mapping	GPD & MTSI	2/23/2011

Design Parameters

Design Code Used	TIA/EIA-222-F & 2003 IBC with 2005 CBC supplement
Location of Tower (County, State)	Fairfield, Connecticut
Basic Wind Speed (mph)	90-Fastest
Ice Thickness (in)	0.5
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved	
Tower (%)	99.8%
Tower Base (%)	86.3%
Foundation (%)	68.4%
Foundation Adequate?	Yes

NOTE: THE PROPOSED MODIFICATIONS BY GPD WERE CONSIDERED IN THIS ANALYSIS.

Steel Yield Strength (ksi)

Pole	65
Anchor Rods	75
Base Plate	50
Modification Rods	60

Note: Steel grades were taken from previous analyses.

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External
AT&T Mobility	153	156	1	Omni	Unknown	12' Omni		1	Unknown	10'-8" Platform w/ Rails	1	Unknown	1-1/4"	Internal
AT&T Mobility	153	153	6	Panel	Powerwave	RA21.7770.00	30/150/270			on the same mount	12	Unknown	1-5/8"	Internal
AT&T Mobility	153	153	12	TMA	Powerwave	TT19-08BP111-001				behind the antennas				
AT&T Mobility	153	150.5	6	RET	Powerwave	7020				below the antennas	1	RET Line	1/2"	Internal
Clearwire	138	144	1	Dish	Andrew	VHLP2-18	264	1	Unknown	12' LP Platform	1	Unknown	1/2"	Internal
Clearwire	138	144	1	Dish	Andrew	VHLP2-23	188			on the same mount	1	Unknown	1/2"	Internal
Clearwire	138	142	1	Power Box	Unknown	Power Box (2'x2'x8")				on the same mount	2	Conduit	2"	External
Clearwire	138	141	3	Panel	Argus	LLPX310R-V1	25/145/265			on the same mount	6	Unknown	5/16"	within conduit
Clearwire	138	141	3	RRH	Motorola	RRH-2WB0				behind the antennas				
Metro PCS	119	119	3	Panel	Kathrein	800 10504	60/180/300	3	Unknown	12' T-Arms	6	Unknown	1-5/8"	External
Metro PCS	119	119	3	RET	Kathrein	860 10025				below the antennas	1	RET Line	1/2"	External
Metro PCS	119	119									1	Ground Line	1/2"	External
Verizon Wireless	99	101	1	GPS	Unknown	GPS		3	Unknown	12' T-Arms	1	Unknown	1/2"	Internal
Verizon Wireless	99	99	6	Panel	Antel	LPD-6513	60/180/300			on the same mounts	6	Unknown	1-5/8"	Internal
Verizon Wireless	99	99	6	Panel	Antel	BSA-185065/10CF	60/180/300			on the same mounts	6	Unknown	1-5/8"	External
Verizon Wireless (reserved)	99	99	6	Panel	Antel	LPD-6513	60/180/300			on the same mounts				
Verizon Wireless (reserved)	99	99	3	Panel	Powerwave	P65-16-XL-2	60/180/300			on the same mounts				
Verizon Wireless (reserved)	99	99	1	Panel	Rymsa	MG 03-860TO	60/180/300			on the same mounts				
Verizon Wireless (reserved)	99	99	6	TMA	RFS	FD9R6004				behind the antennas				

Note: The reserved loading at 99' shall replace the existing loading at the same elevation. The existing mounts and coax shall be reuse. Both the existing and reserved loadings were considered at 99' and in this case the reserved loading controls.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External

APPENDIX B

RISA Tower Output File

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 78 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

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
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	150.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	144.00 - 8.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
9207 (5/16")	A	No	CaAa (Out Of Face)	141.00 - 8.00	6	No Ice	0.00	0.06
						1/2" Ice	0.00	0.57
2" Flex Conduit	A	No	CaAa (Out Of Face)	141.00 - 98.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
2" Flex Conduit	A	No	CaAa (Out Of Face)	141.00 - 98.00	1	No Ice	0.20	0.32
						1/2" Ice	0.30	1.85
2" Flex Conduit	A	No	CaAa (Out Of Face)	98.00 - 8.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF4-50A (1/2 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF4-50A (1/2 FOAM)	B	No	Inside Pole	101.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
2.5" threaded rod	A	No	CaAa (Out Of Face)	98.00 - 0.00	1	No Ice	0.25	0.00
						1/2" Ice	0.35	0.00
2.5" threaded rod	A	No	CaAa (Out Of Face)	98.00 - 52.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	A	No	CaAa (Out Of Face)	52.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	B	No	CaAa (Out Of Face)	98.00 - 52.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	B	No	CaAa (Out Of	52.00 - 0.00	3	No Ice	0.00	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
			Face)			1/2" Ice	0.00	0.00
2.5" threaded rod	C	No	CaAa (Out Of Face)	98.00 - 52.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	C	No	CaAa (Out Of Face)	52.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5" x 0.75" mod plate	B	No	CaAa (Out Of Face)	115.00 - 95.00	1	No Ice	0.00	12.73
						1/2" Ice	0.00	13.52
5" x 0.75" mod plate	C	No	CaAa (Out Of Face)	115.00 - 95.00	1	No Ice	0.00	12.73
						1/2" Ice	0.00	13.52
5"x1.75" Mod Plate	A	No	CaAa (Out Of Face)	109.75 - 94.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5"x1.75" Mod Plate	B	No	CaAa (Out Of Face)	109.75 - 94.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5"x1.75" Mod Plate	C	No	CaAa (Out Of Face)	109.75 - 94.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5" x 1-1/4" Mod Plate	A	No	CaAa (Out Of Face)	125.00 - 110.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5" x 1-1/4" Mod Plate	B	No	CaAa (Out Of Face)	125.00 - 110.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
5" x 1-1/4" Mod Plate	C	No	CaAa (Out Of Face)	125.00 - 110.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10'-8" Central Platform w/ 42" tower extension	C	None			0.0000	153.00	No Ice	43.32	43.32	2500.00
							1/2" Ice	46.28	46.28	3250.00
12' Omni	C	From Centroid-Leg	3.00	0.00	0.0000	153.00	No Ice	3.00	3.00	20.00
							1/2" Ice	4.23	4.23	42.30
				2.00						
(2) RA21.7770.00	A	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	6.79	3.51	37.20
							1/2" Ice	7.28	3.90	74.53
				0.00						
(2) RA21.7770.00	B	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	6.79	3.51	37.20
							1/2" Ice	7.28	3.90	74.53
				0.00						
(2) RA21.7770.00	C	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	6.79	3.51	37.20
							1/2" Ice	7.28	3.90	74.53
				0.00						
(4) TT19-08BP111-001	A	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	0.00	0.52	20.00
							1/2" Ice	0.00	0.62	21.80
				0.00						
(4) TT19-08BP111-001	B	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	0.00	0.52	20.00
							1/2" Ice	0.00	0.62	21.80
				0.00						
(4) TT19-08BP111-001	C	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	0.00	0.52	20.00
							1/2" Ice	0.00	0.62	21.80
				0.00						
(2) 7020.00 RET	A	From Centroid-Leg	3.00	0.00	30.0000	153.00	No Ice	0.12	0.20	2.20
							1/2" Ice	0.17	0.28	5.16
				-2.50						
(2) 7020.00 RET	B	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	0.12	0.20	2.20
							1/2" Ice	0.17	0.28	5.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) 7020.00 RET	C	g From Centroid-Le	-2.50 3.00 0.00		30.0000	153.00	No Ice 1/2" Ice	0.12 0.17	0.20 0.28	2.20 5.16
Valmont 13' Platform w/o rails (GPD)	C	g None	-2.50		0.0000	138.00	No Ice 1/2" Ice	24.80 26.20	24.80 26.20	1500.00 2500.00
LLPX310R-V1	A	From Centroid-Le	3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R-V1	B	g From Centroid-Le	3.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R-V1	C	g From Centroid-Le	3.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
RRH-2WB0	A	g From Centroid-Le	3.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
RRH-2WB0	B	g From Centroid-Le	3.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
RRH-2WB0	C	g From Centroid-Le	3.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
Horizon DUO	A	g From Centroid-Le	3.00 3.63 1.69		-90.0000	138.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	7.00 11.78
Horizon DUO	C	g From Centroid-Le	6.00 3.63 1.69		-77.0000	138.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	7.00 11.78
Power Box (2'x2'x8")	A	g From Centroid-Le	6.00 3.63 1.69		25.0000	138.00	No Ice 1/2" Ice	5.60 5.92	1.87 2.08	50.00 82.96
Pipe Mount 5'x2.375"	A	g From Centroid-Le	4.00 3.63 1.69		0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
Pipe Mount 5'x2.375"	B	g From Centroid-Le	0.00 3.63 1.69		0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
Pipe Mount 5'x2.375"	C	g From Centroid-Le	0.00 3.63 1.69		0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
12' T-Arm (1)	A	g From Face	0.00 2.50 0.00		0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	B	From Face	0.00 2.50 0.00		0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	C	From Face	0.00 2.50 0.00		0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
800 10504	A	From Face	0.00 5.00 0.00		0.0000	119.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	17.64 35.71
800 10504	B	From Face	0.00 5.00 0.00		0.0000	119.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	17.64 35.71

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
800 10504	C	From Face	5.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	17.64 35.71
860 10025	A	From Face	5.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	0.18 0.25	0.15 0.21	1.20 2.85
860 10025	B	From Face	5.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	0.18 0.25	0.15 0.21	1.20 2.85
860 10025	C	From Face	5.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	0.18 0.25	0.15 0.21	1.20 2.85
12' T-Arm (1)	A	From Face	2.50 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	B	From Face	2.50 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	C	From Face	2.50 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
(2) LPD-6513	A	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	6.42 6.82	5.15 5.53	28.00 51.00
(2) LPD-6513	B	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	6.42 6.82	5.15 5.53	28.00 51.00
(2) LPD-6513	C	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	6.42 6.82	5.15 5.53	28.00 51.00
P65-16-XL-2	A	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	8.40 8.95	4.12 4.56	33.00 77.53
P65-16-XL-2	B	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	8.40 8.95	4.12 4.56	33.00 77.53
P65-16-XL-2	C	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	8.40 8.95	4.12 4.56	33.00 77.53
MG D3-800TO	A	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	3.28 3.61	2.10 2.42	17.60 36.86
MG D3-800TO	B	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	3.28 3.61	2.10 2.42	17.60 36.86
MG D3-800TO	C	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	3.28 3.61	2.10 2.42	17.60 36.86
(2) FD9R6004	A	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	0.00 0.00	0.25 0.32	3.00 6.59
(2) FD9R6004	B	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	0.00 0.00	0.25 0.32	3.00 6.59
(2) FD9R6004	C	From Face	5.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice	0.00 0.00	0.25 0.32	3.00 6.59

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
VHLP2-18	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	3.63 1.69 6.00	-90.0000		138.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 70.00
VHLP2-23	C	Paraboloid w/Shroud (HP)	From Centroid -Leg	3.63 1.69 6.00	-77.0000		138.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 50.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
153.00	10'-8" Central Platform w/ 42" tower extension	28	40.006	2.5416	0.0143	12042
144.00	VHLP2-18	28	36.898	2.4334	0.0120	10034
138.00	Valmont 13' Platform w/o rails (GPD)	28	33.832	2.3271	0.0097	5017
119.00	12' T-Arm (1)	28	24.895	2.0233	0.0050	2713
99.00	12' T-Arm (1)	28	17.003	1.7420	0.0033	3446

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
L1	150 - 123	Pole	TP20.4042x15x0.2188	1	-5156.07	739157.80	75.1	Pass
L2	123 - 109.75	Pole & Reinf.	TP21x20.4042x0.5657	2	-8035.89	1935076.03	77.4	Pass
L3	109.75 - 104	Pole & Reinf.	TP21.5597x21x0.7569	3	-9241.49	2635794.11	68.9	Pass
L4	104 - 94	Pole & Reinf.	TP23.0497x21.5597x0.7113	4	-12377.40	2659841.43	85.0	Pass
L5	94 - 69.25	Pole & Reinf.	TP27.0373x23.0497x0.6153	5	-16758.20	2671678.47	89.4	Pass
L6	69.25 - 50	Pole & Reinf.	TP29.9068x25.3234x0.6226	6	-22391.60	3052063.33	99.8	Pass
L7	50 - 30	Pole & Reinf.	TP32.8882x29.9068x0.8824	7	-27752.80	4639572.96	76.2	Pass
L8	30 - 0	Pole & Reinf.	TP37.3602x30.5271x0.8622	8	-30283.40	4397580.15	82.9	Pass
							Summary	
						Pole (L6)	99.8	Pass
						RATING =	**99.8**	**Pass**

APPENDIX C

Tower Elevation Drawing

Section	1	2	3	4	5	6	7	8
Length (ft)	27.00	13.25	5.75	10.00	24.75	22.25	20.00	34.00
Number of Sides	12	12	12	12	12	12	12	12
Thickness (in)	0.2188	0.5657	0.7569	0.7113	0.6153	0.6226	0.8824	0.8622
Socket Length (ft)					3.00		4.00	
Top Dia (in)	15.0000	20.4042	21.0000	21.5597	23.0497	25.3234	29.9068	30.5271
Bot Dia (in)	20.4042	21.0000	21.5597	23.0497	27.0373	29.9068	32.8882	37.3602
Grade					A572-65			
Weight (lb) 30146.5	1131.4	1653.8	978.7	1682.9	4076.1	4097.1	5900.7	10625.8

AXIAL
49442 lb

SHEAR
23228 lb

MOMENT
2375249 lb-ft

TORQUE 1476 lb-ft
78 mph WIND - 0.5000 in ICE

AXIAL
41013 lb

SHEAR
28180 lb

MOMENT
2828047 lb-ft

TORQUE 1769 lb-ft
REACTIONS - 90 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10'-8" Central Platform w/ 42" tower extension	153	VHLP2-23	138
12' Omni	153	12' T-Arm (1)	119
(2) RA21.7770.00	153	800 10504	119
(2) RA21.7770.00	153	800 10504	119
(2) RA21.7770.00	153	800 10504	119
(4) TT19-08BP111-001	153	860 10025	119
(4) TT19-08BP111-001	153	860 10025	119
(4) TT19-08BP111-001	153	860 10025	119
(2) 7020.00 RET	153	12' T-Arm (1)	119
(2) 7020.00 RET	153	12' T-Arm (1)	119
(2) 7020.00 RET	153	12' T-Arm (1)	99
Valmont 13' Platform w/o rails (GPD)	138	(2) LPD-6513	99
LLPX310R-V1	138	(2) LPD-6513	99
LLPX310R-V1	138	(2) LPD-6513	99
LLPX310R-V1	138	P65-16-XL-2	99
RRH-2WB0	138	P65-16-XL-2	99
RRH-2WB0	138	P65-16-XL-2	99
RRH-2WB0	138	MG D3-800TO	99
Horizon DUO	138	MG D3-800TO	99
Horizon DUO	138	MG D3-800TO	99
Power Box (2'x2'x8")	138	(2) FD9R6004	99
Pipe Mount 5'x2.375"	138	(2) FD9R6004	99
Pipe Mount 5'x2.375"	138	(2) FD9R6004	99
Pipe Mount 5'x2.375"	138	12' T-Arm (1)	99
VHLP2-18	138	12' T-Arm (1)	99

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

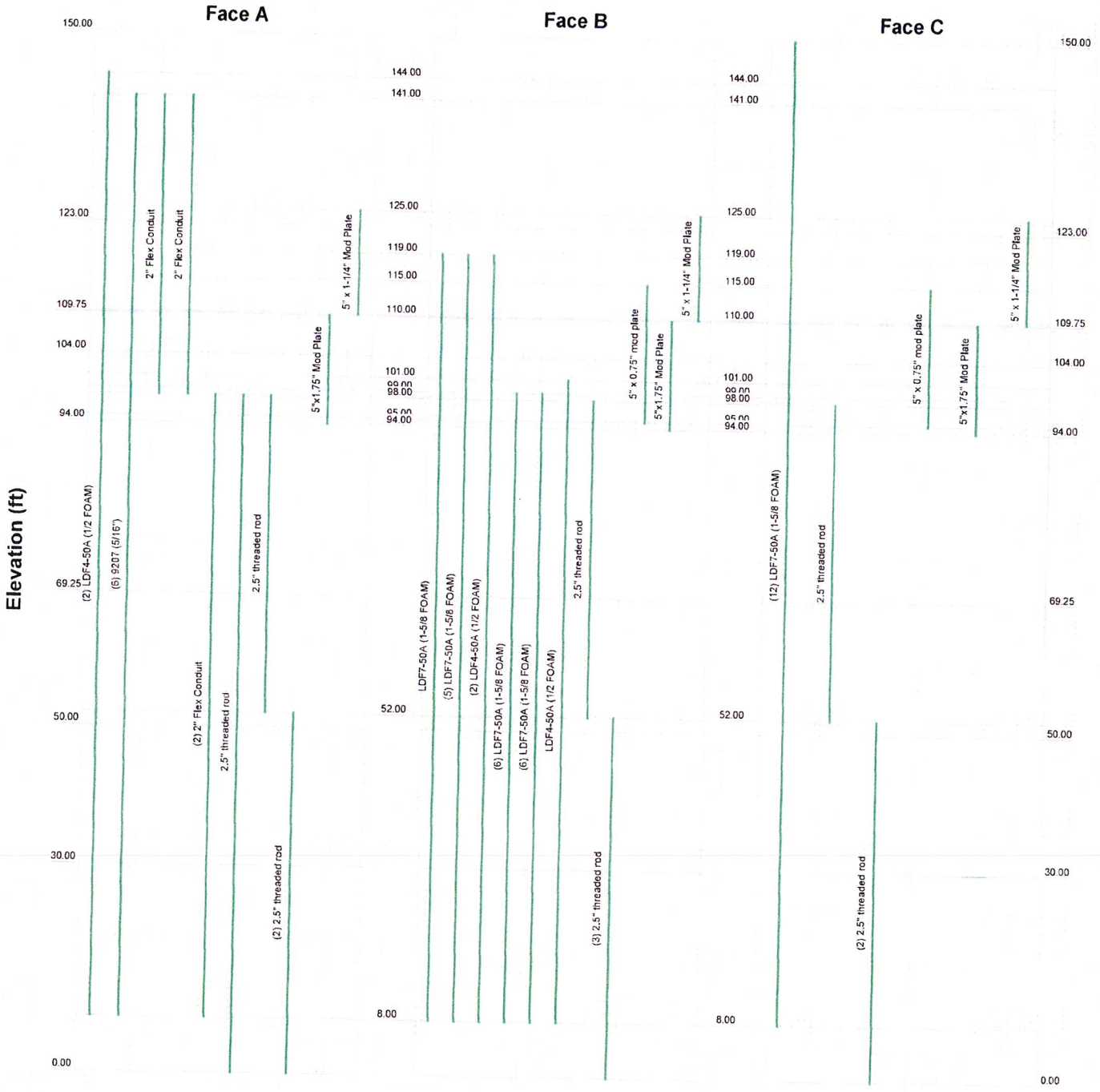
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.

GPD Group
520 South Main St., Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2102

Job:	**60393 BRIDGEPORT NORTH**
Project:	**2011261.96**
Client: AT&T Mobility	Drawn by: kdavis App'd:
Code: TIA/EIA-222-F	Date: 09/21/11 Scale: NTS
Path: N:\2011\2011261\96\RISA\60393.en	Dwg No. E-1

Feedline Distribution Chart
0' - 150'

Round | Flat | App In Face | App Out Face | Truss Leg



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Phone: (330) 572-2100
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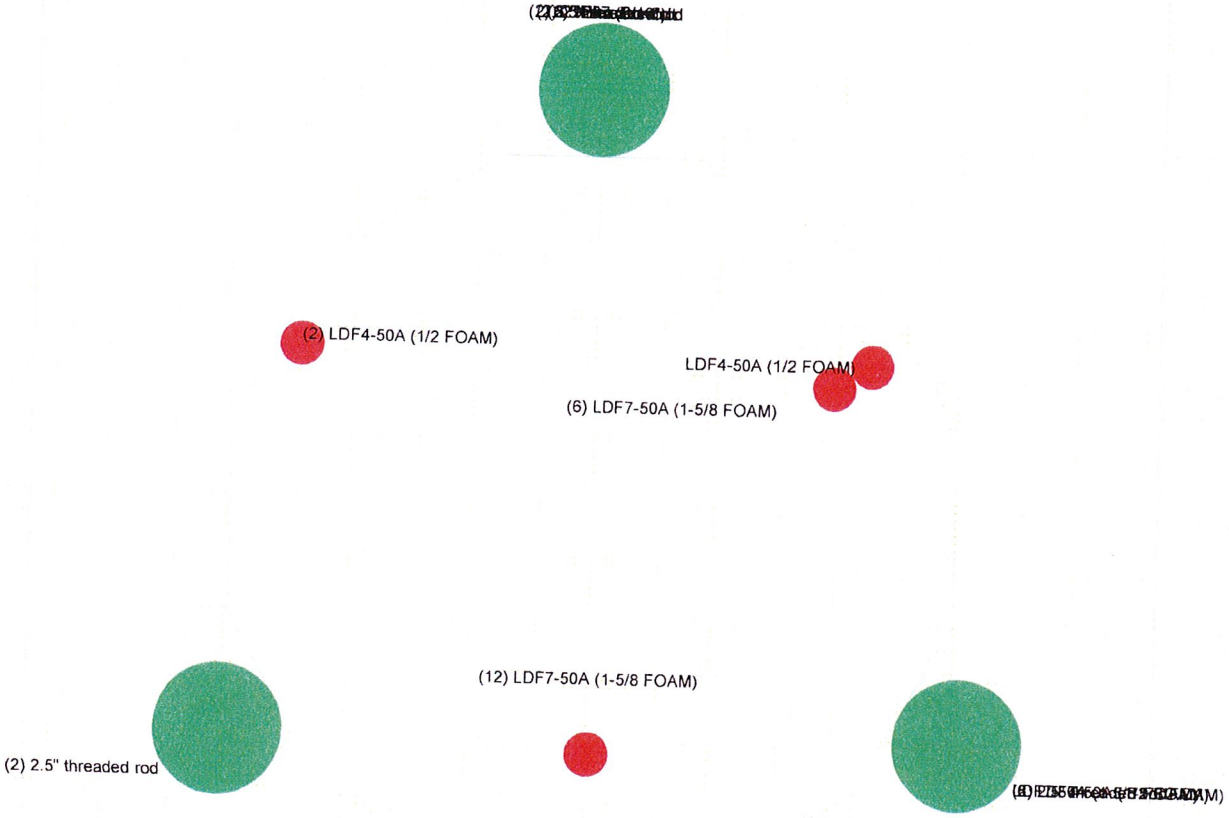
Job:	60393 BRIDGEPORT NORTH
Project:	2011261.96
Client: AT&T Mobility	Drawn by: kdavis App'd:
Code: TIA/EIA-222-F	Date: 09/21/11 Scale: NTS
Path: N:\2011\2011261\96\RISA\60393.en	Dwg No. E-7

Feedline Plan
30'

Round Flat App In Face App Out Face

Section @ 30'



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Phone: (330) 572-2100
FAX: (330) 572-2102

Job:	***60393 BRIDGEPORT NORTH***			
Project:	***2011261.96***			
Client:	AT&T Mobility	Drawn by: kdavis	App'd:	
Code:	TIA/EIA-222-F	Date: 09/21/11	Scale:	NTS
Path:	N:\2011\2011261\96\RISA\60393.eri		Dwg No.	E-7

APPENDIX D

Base Plate and Anchor Rod Analysis

GPD GROUP

Anchor Rod and Base Plate Stresses
60393 BRIDGEPORT NORTH
2011261.96

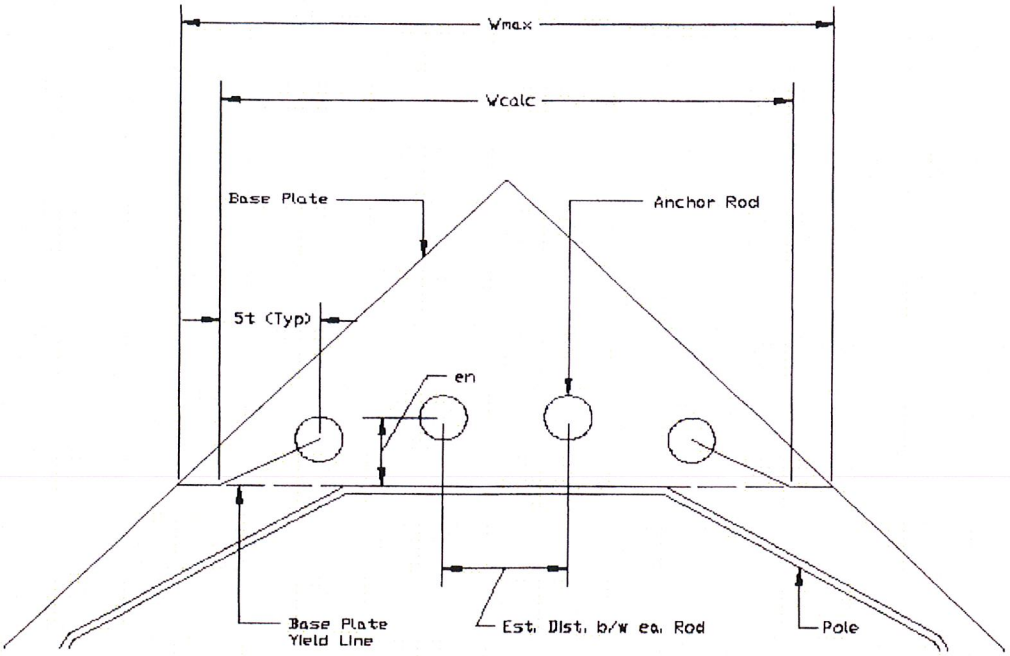
*Overturning Moment =	1245.10	k*ft
Axial Force =	41.01	k
Shear Force =	28.18	k

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of anchor rod forces in the analysis.

Anchor Rods		
Pole Diameter =	37.36	in
Number of Rods =	8	
Type =	Upset Rod	
Rod Yield Strength (Fy) =	75	ksi
ASIF =	1.333	
Rod Circle =	43	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in^2
Max Tension on Rod =	168.37	kips
Max Compression on Rod =	178.62	kips
Allow. Rod Force =	195.00	kips
Anchor Rod Capacity =	**86.3%**	**OK**

Base Plate		
Plate Strength (Fy) =	50	ksi
Plate Thickness =	2.75	in
Plate Width =	41	in
Est. Dist. b/w ea. Rod =	6	in
w_{calc} =	33.500	in
w_{max} =	20.623	in
w =	20.62	in
S =	25.99	in^3
fb =	35.53	ksi
Fb =	50	ksi
Base Plate Capacity =	**71.1%**	**OK**



GPD Unstiffened Square Base Plate Stress (Rev F) - V2.07

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GPD GROUP

Engineers • Architects • Planners

Job #: 2011261.96

Sheet No 1 Of 1

Calculated By: KMD Date: 9/23/2011

Checked By: _____ Date: _____

ANCHOR ROD CALCULATIONS

@ Base

Moment from RISA (M) =	2828.05 kip-ft	ASIF =	1.33		
Axial from RISA (P) =	41.01 kip				
Inner Bolt Diameter =	2.25 in				
Inner Bolt Area (A_{inner}) =	3.98 in^2	Inner Bolt Circle (BC_{inner}) =	43 in		
Inner Bolt MOI ($I_{o.inner}$) =	1.26 in^4	Total Area ($A_{tot.in}$) =	31.81 in^2		
Number Inner Bolts (N_{inner}) =	8	Percent Total Area (η_{in}) =	44.8%	Axial, Inner Bolts ($P*\eta_{in}$) =	18.35 kips
Outer Bolt Diameter =	2.5 in				
Outer Bolt Area (A_{outer}) =	4.91 in^2	Outer Bolt Circle (BC_{outer}) =	43 in		
Outer Bolt MOI ($I_{o.outer}$) =	1.92 in^4	Total Area ($A_{tot.out}$) =	39.27 in^2		
Number Outer Bolts (N_{outer}) =	8	Percent Total Area (η_{out}) =	55.2%	Axial, Outer Bolts ($P*\eta_{out}$) =	22.66 kips

I_{inner} =	7361.83 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8+N_{inner}*I_{o.inner})$
I_{outer} =	9091.60 $in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8+N_{outer}*I_{o.outer})$
I_{tot} =	16453.43 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
F_{inner} =	178.62 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} + P*\eta_{in}/N_{inner})$
F_{outer} =	220.51 kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} + P*\eta_{out}/N_{outer})$

APPENDIX E

Flange Bolt and Flange Plate Analysis

GPD GROUP

Existing Flange Connection @ 109.75'
60393 BRIDGEPORT NORTH
2011261.96

*O.T. Moment =	105.6	k*ft
Axial =	8.04	kips
Shear =	12.85	kips

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis

Acceptable Stress Ratio =	100.0%

Flange Bolts

# Bolts =	12	
Bolt Type =	A325	
F_t =	44	ksi
ASIF =	1.333	
Bolt Circle =	26	in
Bolt Diameter =	1	in

Tension & Shear (ASD, Section J3.5)

F_v =	21	ksi
Nominal Area =	0.79	in^
f_v =	1.36	ksi
Applied Shear =	1.07	kips
Allowable Shear =	21.99	kips
Ft^2 - 4.39(fv^2))^1/2 =	43.91	ksi
Allowable Bolt Stress =	58.54289	ksi
B =	45.98	kips

Prying Action Check
N/A for stiffened flange

Max Comp. on Bolt =	16.90	kips
Max Tension on Bolt =	15.56	kips
Shear Capacity =	4.9%	
Tensile Capacity =	33.9%	
Bolt Capacity =	**33.9%**	**OK**

Pole Information

Shaft Diam. (Upper) =	21	in
Thickness (Upper)=	0.21875	in
# of Sides (Upper) =	12	
F_y (Upper) =	60	ksi
Shaft Diam. (Lower) =	21	in
Thickness (Lower)=	0.25	in
# of Sides (Lower) =	12	
F_y (Lower) =	60	ksi

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1	in
Outer Diameter =	28.5	in
b =	6.31	in
Le =	3.00	in
f_b =	16.13	ksi
F_b =	36	ksi
UP Capacity =	**44.8%**	**OK**

Lower Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1	in
Outer Diameter =	28.5	in
b =	6.31	in
Le =	3.00	in
f_b =	16.13	ksi
F_b =	36	ksi
LP Capacity =	**44.8%**	**OK**

UpperStiffeners

Configuration =	Every Bolt	
Thickness =	0.5	in
Width =	3	in
Notch =	0.75	in
Height =	5	in
Stiffener Strength (F_y) =	70	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	9.89	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	24.9%	kips
Controlling Capacity =	**24.9%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.5	in
Width =	3	in
Notch =	0.75	in
Height =	5	in
Stiffener Strength (F_y) =	70	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	9.32	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	23.5%	kips
Controlling Capacity =	**23.5%**	**OK**

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GPD GROUP

Engineers • Architects • Planners

Job #: 2011261.96

Sheet No 1 Of 1

Calculated By: KMD Date: 9/23/2011

Checked By: Date:

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 109.75'

Moment from RISA (M) =	381.01 kip-ft	ASIF =	1.33
Axial from RISA (P) =	8.04 kip		

Inner Bolt Diameter =	1 in				
Inner Bolt Area (A_{inner}) =	0.79 in^2	Inner Bolt Circle (BC_{inner}) =	26 in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05 in^4	Total Area ($A_{tot.in}$) =	9.42 in^2		
Number Inner Bolts (N_{inner}) =	12	Percent Total Area (η_{in}) =	38.6%	Axial, Inner Bolts ($P*\eta_{in}$) =	3.10 kips
Bridge Stiffener Width =	4.00 in				
Bridge Stiffener Thickness =	1.25 in				
Bridge Stiffener Unbraced Length =	12.00 in				
Bridge Stiffener Area (A_{pl}) =	5.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	32.5 in		
Bridge Stiffener MOI (I_o) =	6.67 in^4	Total Area ($A_{tot.pl}$) =	15.00 in^2		
Number Bridge Stiffeners (N_{pl})	3	Percent Total Area (η_{pl}) =	61.4%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	4.94 kips

I_{inner} =	796.98 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8+N_{inner}*I_{o.inner})$
I_{pl} =	2000.47 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8+N_{pl}*I_{o.pl})$
I_{tot} =	2797.45 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
F_{inner} =	16.9 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} + P*\eta_{in}/N_{inner})$
F_{pl} =	134.4 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$

f_y =	50	ksi
E =	29000	ksi
K =	1.0	
KL/r =	10.392	
C_c =	107.00	
$F_{a.pl}$ =	29.22	ksi
$F_{allow.pl}$ =	194.81	kips
Bridge Stiffener Rating =	69.0%	OK

APPENDIX F

Modification Calculations

GPD GROUP

Reinforced Monopole Analysis
USID #: 60393 BRIDGEPORT NORTH
2011261.96

Code =	TIA/EIA-222-F
AISF=	1.3333
Max Capacity=	1
# of Sides =	12

Geometry									Reactions				Output	Capacities		
Shape	Quantity	Section	Elevation (ft)	Pole Flat-Flat (in)	Wall t (in)	Fy (ksi)	K	Conn.Spacing (in)	Moment (k-ft)	Axial (k)	Shear (k)	Torsion (k-ft)	Equivalent f (in)	Pole	Reinforcment	Pass/Fail
Plate 5x1.25	3	L2	109.75	21	0.21875	65	0.8	18	361.01	8.04	12.85	1.868	0.5657	48.5%	77.4%	Pass
Plate 5x1.75	3	L3	104	21.5597	0.25	65	0.8	18	456.87	9.24	13.56	1.851	0.7569	42.3%	68.9%	Pass
Plate 5x1.75	3	L4	94	23.0497	0.25	65	0.8	18	616.52	12.38	18.4	1.849	0.7113	52.5%	85.0%	Pass
SR 2.5	4	L5	71.25	26.554	0.25	65	1	30	1043.47	16.76	20.91	1.824	0.6153	75.7%	89.4%	Pass
SR 2.5	6	L6	50	29.9068	0.3125	65	1	30	1536.06	22.39	23.33	1.798	0.6226	86.2%	99.8%	Pass
SR 2.5	6	L7	34	32.29316	0.3125	65	1	30	1922.58	27.75	25.01	1.782	0.8824	66.6%	76.2%	Pass
		L8	0	37.3602	0.40625	65	1	30	2828.05	41.01	28.18	1.769	0.8622	74.1%	82.8%	Pass

GPD Modified Monopole Analysis - V1.00

	Channel Types Used				
	Channel Designation	Area (in²)	Ey (in)	Fy (ksi)	Max P (k)
See Note 3	MP30-3	2.92	0.59	65	97.5
See Note 3	MP30-4	4.13	0.61	65	138.9
See Note 3	MP30-5	5.65	0.79	65	196.3
See Note 3	MP30-6	8.47	0.93	65	299.7

	Plate Types Used				
	Plate Designation	Width (in)	Thickness (in)	Fy (ksi)	Max P (k)
See Note 3	Plate 5x0.75	5	0.75	50	92.93
See Note 3	Plate 5x1.75	5	1.75	50	216.84
See Note 3	Plate 5x1.5	5	1.5	50	185.86
See Note 3	Plate 5x1.25	5	1.25	50	154.88

Solid Rounds Types Used				
Solid Round Designation	Diameter (in)	Ey (in)	Fy (ksi)	Max P (k)
SR 2.5	2.5	2.82	60	187.73

APPENDIX G

Foundation Calculations

GPD GROUP

Mat Foundation Analysis
60393 BRIDGEPORT NORTH
2011261.96

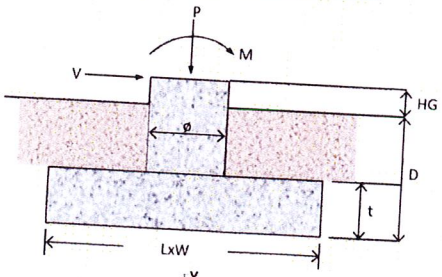
General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Rock
Foundation Type	Mono Pad
Pier Type	Square
Reinforcing Known	No
Max Capacity	1.05

Bearing Summary			Load Case
Qxmax	2.19	ksf	1D+1W
Qymax	2.20	ksf	1D+1W
Qmax @ 45°	2.77	ksf	1D+1W
$Q_{(all)\ Gross}$	10.33	ksf	
Controlling Capacity	**26.9%**	**Pass**	

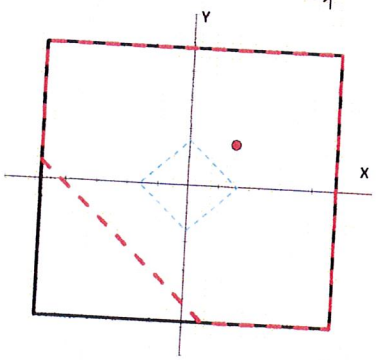
Tower Reactions	
Moment, M	2976.05 k-ft
Axial, P	41.01 k
Shear, V	28.18 k

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	2.21	≥1.5	1D+1W
FS(ot)y	2.19	≥1.5	1D+1W
Controlling Capacity	**68.4%**	**Pass**	

Pad & Pier Geometry		
Pier Width, ø	0	ft
Pad Length, L	24	ft
Pad Width, W	24	ft
Pad Thickness, t	5.5	ft
Depth, D	5.5	ft
Height Above Grade, HG	0.8	ft



Pad & Pier Reinforcing	
Rebar Fy	ksi
Concrete Fc'	ksi
Clear Cover	in
Reinforced Top & Bottom?	
Pad Reinforcing Size	
Pad Quantity Per Layer	
Pier Rebar Size	
Pier Quantity of Rebar	



Soil Properties	
Soil Type	Granular
Soil Unit Weight	120 pcf
Angle of Friction, ø	40 °
Bearing Type	Net
Ultimate Bearing	20 ksf
Water Table Depth	9999 ft
Frost Depth	3.5 ft

APPENDIX H

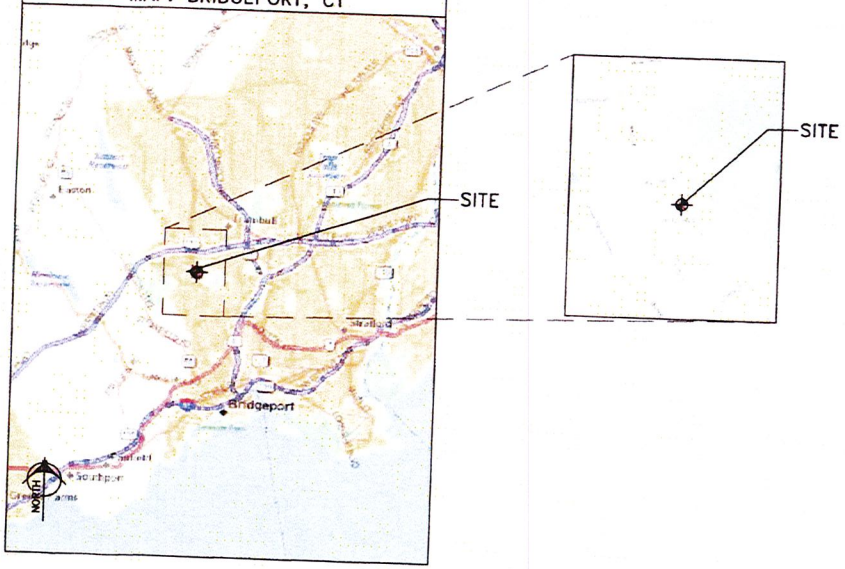
Modification Design Drawings

BRIDGEPORT NORTH

USID #: 60393

150' MODIFIED MONOPOLE

VICINITY MAP: BRIDGEPORT, CT



PROJECT SUMMARY	
TOWER OWNER:	AT&T MOBILITY
TOWER TYPE:	MONOPOLE
GOVERNING CODE:	TIA/EIA-222-F & 2003 IBC
SITE ADDRESS:	2 KAECHELE PLACE BRIDGEPORT, CT 06606 FAIRFIELD COUNTY
LATITUDE:	41° 13' 23.97" N
LONGITUDE:	73° 13' 0.397" W
OWNER CONTACT:	MR. MARTIN JELLEME 5405 WINDWARD PKWY. ALPHARETTA, GA 30004 (770) 708-6124 - OFFICE (678) 735-8038 - CELL
ENGINEER CONTACT:	MR. KEVIN CLEMENTS 12600 DEERFIELD PKWY, SUITE 2039 ALPHARETTA, GA 30004 (678) 762-3305

PROJECT OVERVIEW:
THE LISTED DRAWINGS REPRESENT REQUIRED MODIFICATIONS TO THE TOWER BY INSTALLING MODIFICATION PLATES TO THE TOWER SHAFT, BRIDGE STIFFENERS AROUND THE EXISTING FLANGE, AND A CONCRETE COLLAR TO THE FOUNDATION..

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STATE OF CONNECTICUT
DAVID B. GRANGER, P.E.
NO. 17537
LICENSED
PROFESSIONAL ENGINEER

TOWER OWNER

at&t

ENGINEERS

GPD GROUP.
520 South Main Street, Suite 2531, Akron, Ohio 44311

CO-LOCATOR

SITE NAME:
BRIDGEPORT NORTH

SITE NUMBER:
USID #: 60393

GPD JOB NUMBER:
2011261.96

DATE : 09/23/11 | REVISION | 0

GENERAL NOTES

1. THE FOLLOWING DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER. THE MODIFICATIONS ARE BASED ON GPD GROUP STRUCTURAL REPORT (PROJECT #: 2011267.22, DATED AUGUST 30, 2011). ALL MODIFICATIONS MUST BE INSTALLED TO BRING THE TOWER INTO CONFORMANCE WITH TIA/EIA-222-F, 2003 IBC, & 2005 CSC SUPPLEMENT.

2. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222-F, 2003 IBC, 2005 CSC SUPPLEMENT, AWS, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

3. ALL ORIGINAL TOWER INFORMATION WAS OBTAINED IN THE FORM OF A TOWER MAPPING BY GPD & MTSI (DATED FEBRUARY 23, 2011) & PREVIOUS MODIFICATION DRAWINGS BY GPD GROUP (JOB #: 2008264.36, DATED OCTOBER 18, 2008). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED TOWER DOCUMENTS.

4. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.

5. MANUFACTURER TOLERANCES, FIELD ADJUSTMENTS, INCORRECT STACKING, AND TEMPERATURE CAN CAUSE DIMENSION DISCREPANCIES. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS. ALL FIELD MEASUREMENTS MUST BE REPORTED TO ENGINEER.

6. ALL NEW STEEL SHALL BE HOT DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZINC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).

8. CAULKING SHALL BE PROVIDED AROUND PERIMETER OF ANY AND ALL MODIFICATION MEMBERS TO ENSURE COMPLETE SEAL BETWEEN EXISTING STRUCTURE AND REINFORCING MEMBERS. SEALANT IS TO BE EXTERIOR GRADE, PAINTABLE SILICONE CAULKING AS MANUFACTURED BY DOW AND ACCEPTABLE TO GPD.

9. LOADINGS:

WIND LOADS:
FASTEST MILE WIND SPEED (PER: TIA/EIA-222-F, 2003 IBC, & 2005 CSC SUPPLEMENT) 90 MPH
(FAIRFIELD COUNTY, CONNECTICUT)

ICE LOADS:
1/2" RADIAL BASE ICE
FASTEST MILE WIND SPEED (CONCURRENT W/ ICE) 75 MPH

10. STRUCTURAL STEEL:

SPECIFICATIONS
LATEST EDITION OF AISC

MATERIAL

BRIDGE STIFFENERS	ASTM A572 (GR 50)
PLATES	ASTM A572 (GR 50)
ONE-SIDE BOLTS	AJAX 20mm (GR PC8.8) W/ HIGH STRENGTH SLEEVE(F_{ub}= 120 KSI)
HOT DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

11. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.

12. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.

13. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

14. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

15. THE ENGINEER (GPD GROUP) SHALL MAKE POST INSTALLATION OBSERVATION FOR TOWER AND FOUNDATION. CONTRACTOR SHALL COORDINATE THE ON-SITE INSTALLATION OBSERVATION W/ ENGINEER (GPD GROUP) AT LEAST 5 BUSINESS DAYS PRIOR TO THE CONCRETE POUR FOR EACH FOUNDATION MODIFICATION. CONTRACTOR SHALL COORDINATE W/ENGINEER (GPD GROUP) WITHIN 72 HOURS AFTER 100% COMPLETION OF THE TOWER MODIFICATION INSTALLATION. INSTALLATION OF PROPOSED LOADING WITHOUT ENGINEER APPROVAL IS PROHIBITED. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS, AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD GROUP THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD GROUP ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD GROUP.

2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, GPD GROUP SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.

3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.

4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.

6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. SEE GENERAL NOTES #4 AND #5 THIS SHEET.

7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

10. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER BRACING, TEMPORARY GLOBAL TOWER BRACING, AND ALL BRACING OF SURROUNDING BUILDINGS, PAD, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL BRACING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

11. CONTRACTOR SHALL VERIFY MONOPOLE IS SET PROPERLY AND HAS BEEN JACKED INTO ITS FINAL RESTING POSITION BEFORE FINAL CRITICAL FIELD MEASUREMENTS ARE VERIFIED AND BEFORE ORDERING MATERIAL. ANY OBJECTS/STEP BOLTS THAT PREVENT TOWER FROM SITTING PROPERLY SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.

WELD NOTES

1. CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE DURATION OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.

2. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND AWS Z 49.1 OR LATEST EDITIONS.

3. OXY FUCL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

4. INSTALL 3000° (NFPA 701) FIRE BLANKET AROUND ALL COAX.

5. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED DIVEN THE PREVIOUSLY GALV. SURFACE.

6. COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.

7. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING ON A GALVANIZED SURFACE. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC IT DOES NOT PROVIDE A STRUCTURAL WELD.

8. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.

9. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.

10. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).

11. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).

12. CLEAN OUT ALL DEBRIS THROUGHOUT MONOPOLE AND MONOPOLE BASE PRIOR TO WELDING.

MODIFICATION PLATE NOTES

1. USE AJAX ONE-SIDED BOLTS WITH CORRECT SLEEVE LENGTHS PER DETAILS. BOLT THREADS SHALL NOT BE IN THE SHEAR PLANE.

2. ALL HOLES DRILLED IN POLE SHALL BE SOLVENT CLEANED AND COLD GALVANIZED WITH TWO COATS OF ZRC ZINC RICH PAINT.

3. AJAX BOLTS TIGHTENED PER AISC "SNUG-TIGHT CONDITION".

4. CONTRACTOR SHALL VERIFY TOWER IS PLUMB PRIOR TO INSTALLATION OF ANY MODIFICATIONS.

5. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH AJAX ONE-SIDED BOLT INSTALLATION PROCEDURES AND RECOMMENDATIONS.

FOUNDATION NOTES

1. CONTRACTOR SHALL NOTIFY THE FOLLOWING INDIVIDUALS 5 BUSINESS DAYS PRIOR TO FOUNDATION CONSTRUCTION IN ORDER TO COORDINATE THE VISUAL INSPECTION BY GPD:

-MARTY JELLEME (AT&T) 770-708-6124
-KEVIN CLEMENTS (GPD GROUP) 678-762-3305
-KYLE DAVIS (GPD GROUP) 614-898-1822

2. EXISTING FOUNDATION INFORMATION IS BASED ON A FOUNDATION EXPLORATION BY FDH (PROJECT #: 08-08085E N1, DATED SEPTEMBER 23, 2008). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED FOUNDATION DOCUMENT. IF EXISTING FOUNDATION CONDITIONS DIFFER FROM THE REFERENCED DOCUMENT, CONTACT ENGINEER AND TOWER OWNER IMMEDIATELY.

3. CONCRETE WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.

4. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.

5. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.

6. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS. ALL FOUNDATIONS SHALL REST ON FIRM UNDISTURBED SOIL FREE FROM WATER AND ORGANIC MATTER. CONTRACTOR SHALL COMPACT SUBGRADE AS REQUIRED.

7. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.

8. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH MINIMUM COVER OF REINFORCEMENT. ALL REINFORCING SHALL BE EQUALLY SPACED UNLESS NOTED OTHERWISE.

9. PROVIDE #8 2'-6" X 2'-6" CORNER BARS AT ALL PLACES WHERE DIRECTION OF REINFORCEMENT CHANGES.

10. SOIL INFORMATION IS BASED ON A GEOTECHNICAL REPORT BY FDH (PROJECT #: 08-08085E G1, DATED SEPTEMBER 23, 2008). IF SOIL CONDITIONS ENCOUNTERED ARE DIFFERENT FROM REFERENCED GEOTECHNICAL REPORT, NOTIFY ENGINEER IMMEDIATELY.

A) ULTIMATE BEARING = 20,000 PSF AT 5'-6"
B) UNIT WEIGHT OF SOIL = 105 PCF
C) GROUNDWATER = NOT ENCOUNTERED

11. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED GEOTECHNICAL REPORT. CONTRACTOR SHALL IMPLEMENT ALL RECOMMENDATIONS CONTAINED IN THE REFERENCED GEOTECHNICAL REPORT.

12. BACKFILL SHALL BE CLEAN, FREE OF DEBRIS, AND ORGANIC FREE. CONTRACTOR SHALL BRING IN CLEAN FILL AS REQUIRED. (MIN. UNIT WEIGHT = 120 PCF).

13. ALL BACKFILL SHALL BE CONTROLLED-COMPACTED, PLACED IN A MAXIMUM OF 8" LIFTS, MOISTURE CONDITIONED TO WITHIN THREE PERCENT OF OPTIMUM MOISTURE, AND COMPACTED TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D1557.

14. CARE SHALL BE TAKEN DURING INSTALLATION OF DOWELS SO THAT EXISTING REINFORCING STEEL AND ANCHOR BOLTS ARE NOT DAMAGED. CONTRACTOR SHALL USE X-RAY OR OTHER ENGINEER APPROVED NON-DESTRUCTIVE MEANS TO LOCATE EXISTING REINFORCING STEEL AND ANCHOR BOLTS. CONTACT ENGINEER IMMEDIATELY IF EXISTING STEEL IS ENCOUNTERED.

15. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH SIKA & HILTI BONDING AGENT INSTALLATION PROCEDURES AND RECOMMENDATIONS.

16. PRIOR TO APPLICATION OF BONDING AGENT, CLEAN FACE OF EXISTING FOUNDATION SUCH THAT IT IS FREE FROM ALL DIRT, DEBRIS, AND FOREIGN MATTER.

17. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.

18. ALL GROUNDING SHALL ACHIEVE 5Ω OR LESS RESISTANCE UPON COMPLETION. ALL GROUNDING ENCOUNTERED SHALL BE RELOCATED 3'-0" BEYOND FOUNDATION. ALL GROUNDING SHALL BE CONTINUOUS AND COORDINATED WITH OWNER. GROUNDING DESIGN AND ENGINEERING IS BEYOND THE SCOPE OF THESE DESIGN DRAWINGS AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMISSION.

19. CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING PUBLIC AND PRIVATE UTILITIES PRIOR TO EXCAVATION. IF NECESSARY UTILITIES SHALL BE RELOCATED PRIOR TO FOUNDATION MODIFICATION. UTILITIES SHALL NOT BE ENCASED IN CONCRETE.

20. EQUIPMENT PAD, SHELTER, AND ICE BRIDGE SUPPORT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMMISSION. CONTRACTOR SHALL TAKE GREAT CARE AND ALL NECESSARY PROVISIONS WHEN SHORING IS REQUIRED.

STATE OF CONNECTICUT
DAVID B. GRANGER P.E.
LICENSED
PROFESSIONAL ENGINEER

GPD GROUP

at&t

USID: 60191

REV	DATE	DESCRIPTION

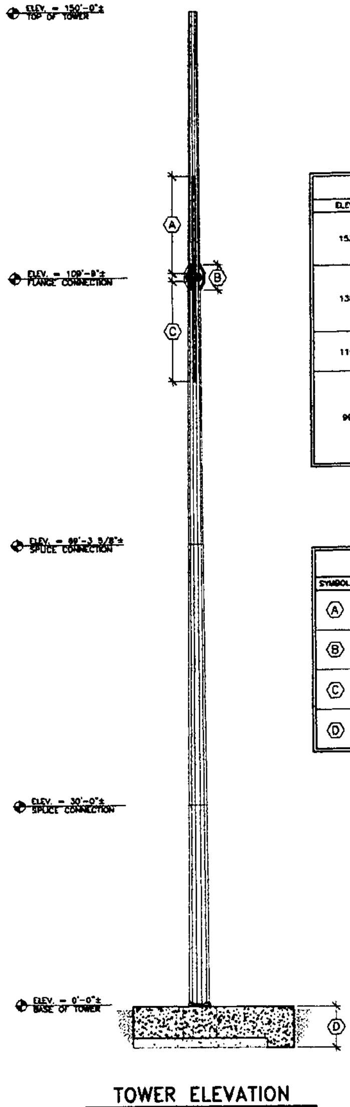
60393 - BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06606

PROJECT NOTES

	DATE
DRAWN BY:	
CHECKED BY:	

2011261.96

N-1

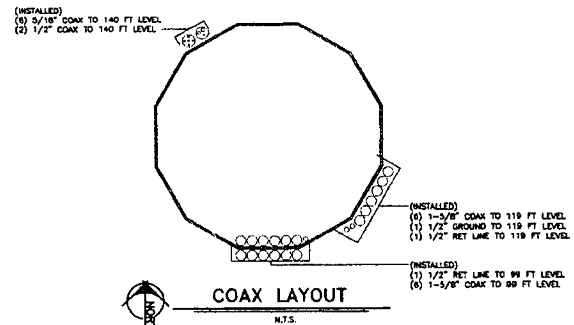


TOWER ELEVATION

3/32" = 1'-0"

ANTENNA SCHEDULE

ELEVATION	STATUS	ANTENNA	MOUNT	COAX
153'-3"	EXISTING EXISTING EXISTING EXISTING	(1) 12' OMNI (6) RA21.7770.00 (12) TT19-08BP111-001 TMA'S (6) 7020	(1) 10'-8" PLATFORM w/ RAILS	(12) 1-5/8" (1) 1-1/4" (1) RET LINE
138'-0"	EXISTING EXISTING EXISTING EXISTING EXISTING	(3) RRH-2WB0 (3) LLPX310R-V1 (1) VHLP2-18 (1) VHLP2-23 (2) POWER BOX (2'x2'x8")	13' LP PLATFORM	(8) 5/16" (2) 2" CONDUIT (1) 1/2" (1) 1/2"
119'-0"	EXISTING EXISTING EXISTING	(3) 880 10504 (3) 800 10025	(3) 12' T-ARMS	(6) 1-5/8" (1) RET LINE (1) 1/2" GROUND
99'-0"	EXISTING EXISTING EXISTING RESERVED RESERVED RESERVED RESERVED	(1) GPS (6) LPD-6513 (6) BSA-185065/10CF (6) LPD-6513 (3) P65-16-XL-2 (3) MG D3-800TO (6) FD9R6004 TMA'S	(3) 12' T-ARMS	(1) 1/2" (6) 1-5/8" (6) 1-5/8"

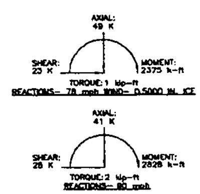


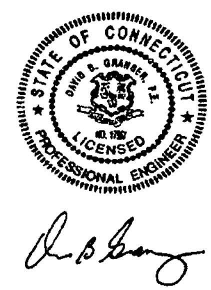
COAX LAYOUT

N.T.S.

MODIFICATION SCHEDULE

SYMBOL	ELEVATION	MEMBER TYPE	EXISTING MEMBER	NEW MEMBER	NOTES
A	110'-3" TO 125'-3"	TOWER SHAFT	12-SIDED MONOPOLE	5"x1-1/4" THICK FLAT PLATE	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER AND REMOVE EXISTING FLAT PLATE MODIFICATIONS AS REQUIRED. SEE DETAIL 1/S-2.
B	109'-9"	BRIDGE STIFFENERS	-	1-1/4" THICK PLATE	INSTALL ADDITIONAL BRIDGE STIFFENERS AROUND EXISTING FLANGE PLATE. SEE DETAIL 1/S-2 & SECTION A/S-2.
C	94'-0" TO 109'-3"	TOWER SHAFT	12-SIDED MONOPOLE	5"x1-3/4" THICK FLAT PLATE	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER AND REMOVE EXISTING FLAT PLATE MODIFICATIONS AS REQUIRED. SEE DETAIL 1/S-2.
D	GRADE	TOWER BASE FOUNDATION	MODIFIED PAD & PIER	CONCRETE COLLAR	INSTALL NEW CONCRETE COLLAR TO EXISTING FOUNDATION. SEE DETAIL 4/F-1.





GPD GROUP

at&t

USID 60393

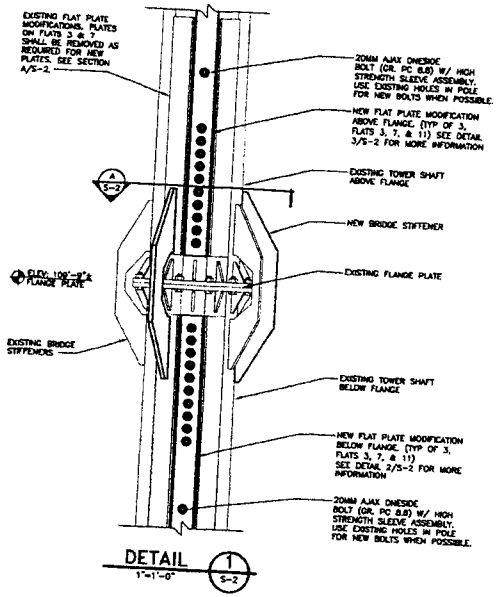
REV	DATE	DESCRIPTION

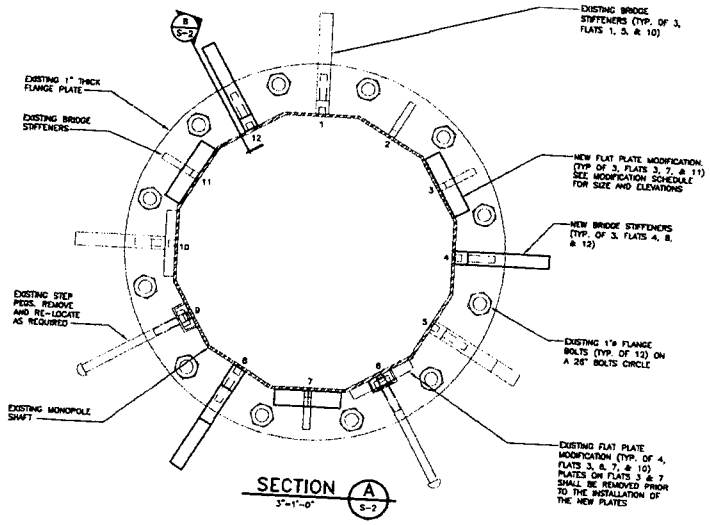
60393 · BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06606

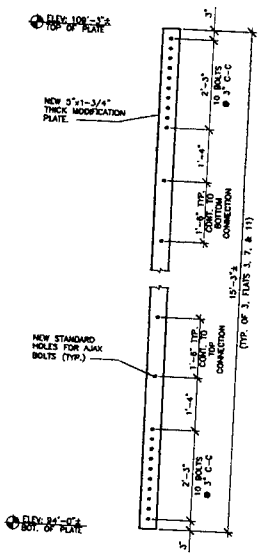
TOWER ELEVATION &
MODIFICATION SCHEDULE

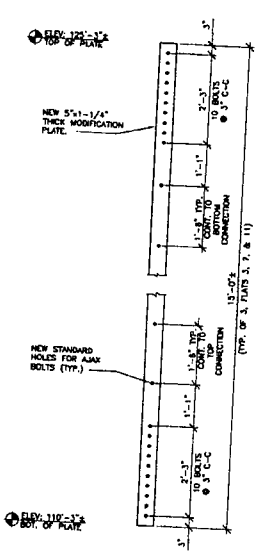
2011261.96

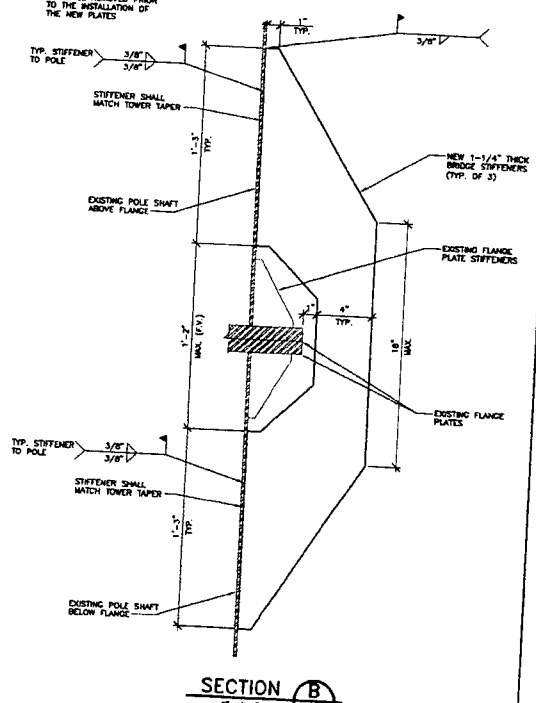
S-1











STATE OF CONNECTICUT
DAVID B. GRANGER, P.E.
NO. 17587
LICENSED PROFESSIONAL ENGINEER

GPD GROUP

at&t

USID: 60193

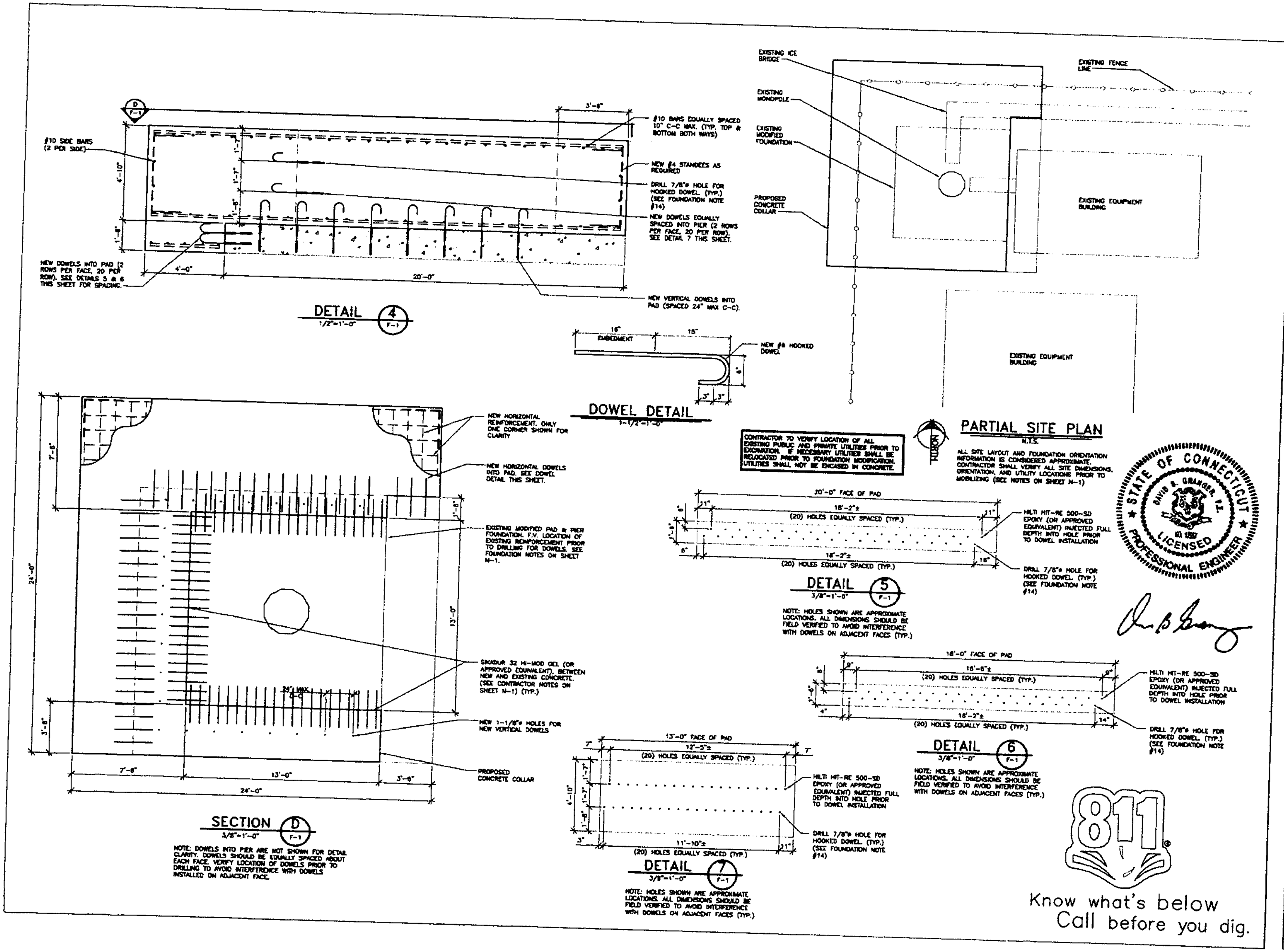
REV.	DATE	DESCRIPTION

60393 - BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06606

MODIFICATION DETAILS & SECTIONS

2011261.96

S-2



GPD GROUP

at&t

USID: 60193

REV.	DATE	DESCRIPTION

60393 - BRIDGEPORT NORTH
2 KAECHELE PLACE
BRIDGEPORT, CT 06606

FOUNDATION MODIFICATIONS & PARTIAL SITE PLAN

2011261.96

F-1

Exhibit 3

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Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

CT2106

2 Kaechele Place, Bridgeport, CT 06606

October 26, 2011

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the existing monopole tower located at 2 Kaechele Place in Bridgeport, CT. Verizon, Clearwire and MetroPCS also have antennas mounted on the tower.
The coordinates of the tower are 41-13-24 N, 73-13-0.4 W.

AT&T is proposing the following modifications:

1) Add UMTS PCS frequencies;
2) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. All information for Verizon, Clearwire and MetroPCS comes directly from the current CSC database. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
Verizon	100	869	9	289	0.0935	0.5793	16.14%
Verizon	100	1970	3	446	0.0481	1.0000	4.81%
Verizon	100	757	1	701	0.0252	0.5047	4.99%
Clearwire	110	2496	2	153	0.0091	1.0000	0.91%
Clearwire	110	18000	1	211	0.0063	1.0000	0.63%
MetroPCS	120	2130	7	881	0.1540	1.0000	15.40%
AT&T UMTS	154	880	1	500	0.0076	0.5867	0.13%
AT&T UMTS	154	1900	1	500	0.0076	1.0000	0.08%
AT&T LTE	154	734	1	500	0.0076	0.4893	0.15%
AT&T GSM	154	880	3	296	0.0135	0.5867	0.23%
AT&T GSM	154	1900	1	427	0.0065	1.0000	0.06%
						Total	**43.54%**

Table 1: Carrier Information[1]

[1] Calculated values for AT&T include a -10 dB off-beam loss factor. Antenna specifics for Verizon, MetroPCS and Clearwire were unavailable and therefore do not include any off-beam loss factor.

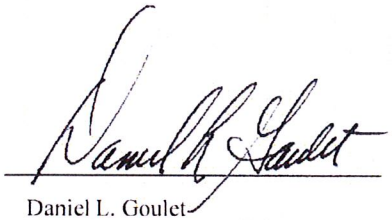
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed and existing transmit antennas at the existing facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 43.54% of the FCC limit.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



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October 26, 2011
Date