

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

May 31, 2011

Douglas L. Culp, Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-158-110504** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 515 Boston Post Road, Westport, Connecticut.

Dear Mr. Culp:

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:

- 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 May 4, 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.

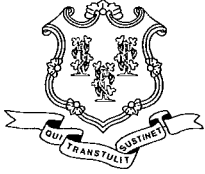
Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Gordon F. Joseloff, First Selectman, Town of Westport
Laurence Bradley, Director, Planning & Zoning, Town of Westport
Crown Castle USA, Inc.





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May 9, 2011

The Honorable Gordon F. Joseloff
First Selectman
Town of Westport
Town Hall
110 Myrtle Avenue
Westport, CT 06880

RE: **EM-CING-158-110504** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 515 Boston Post Road, Westport, Connecticut.

Dear First Selectman Joseloff:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by May 23, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Laurence Bradley, Director, Planning & Zoning, Town of Westport

EM-CING-158-110504



ingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

ORIGINAL

HAND DELIVERED

May 4, 2011

RECEIVED
MAY - 4 2011

CONNECTICUT
SITING COUNCIL

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing tele-communications facility located at 515 Boston Post Road Westport, CT (owner Crown Castle)

Dear Ms. Roberts:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or 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.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a new high-performance air interface for cellular mobile communications. It is the last step toward the 4th generation (4G) of radio technologies, 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 at 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 Statutes ("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. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. Moreover, 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 call me at (860) 463-5511 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Douglas L. Culp
Real Estate Consultant

Attachments

**NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification**

515 Boston Post Road East Westport, CT
Site Number 2153
Exempt Mod 08/07 and 05/08

Tower Owner/Manager: Crown Castle

Equipment configuration: Monopole

Current and/or approved: Six PowerWave antennas @ 120 ft
Six PowerWave TMA's and Six PowerWave Diplexers @ 120 ft
Twelve runs 1 5/8 inch coax to 120 ft
Equipment Shelter

Planned Modifications: Retain existing PowerWave Antenna's, Diplexers and TMA's at 105 ft
Retain all Coax Cabling
Install three PowerWave P65-16 antennas or equivalent @ 120 ft
Install six remote radio heads and surge arrestor @ 120 ft
Install one fiber and two DC power cables to 120 ft
Install one new cabinet and surge suppressor equipment in shelter

Power Density:

Worst-case calculations for existing wireless operations at the site, using standard parameters for other carriers, indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the Tower, of 91.3% of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 93.8 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm ²)	Standard Limits (mW/cm ²)	Percent of Limit
Other Users							70.85
AT&T UMTS	120	1900 Band	2	500	0.0250	1.0000	2.50
AT&T UMTS	120	800 Band	1	500	0.0125	0.5867	2.13
AT&T GSM	120	800Band	10	296	0.0739	0.5867	12.60
AT&T GSM	120	1900 Band	3	427	0.0320	1.0000	3.20
Total							91.3%

* Data for other users are from Siting Council records.

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm ²)	Standard Limits (mW/cm ²)	Percent of Limit
Other Users							70.85
AT&T UMTS	120	800 Band	1	500	0.0125	0.5867	2.13
AT&T UMTS	120	1900 Band	2	500	0.0250	1.0000	2.50
AT&T GSM	120	1900 Band	3	427	0.0320	1.0000	3.20
AT&T GSM	120	880 - 894	10	296	0.0739	0.5867	12.60
AT&T LTE	120	740 - 746	1	500	0.0125	0.4933	2.53
Total							93.8%

* Data for other users are from Siting Council records.

Structural information:

The attached structural analysis demonstrates that the monopole and foundation have adequate structural capacity to accommodate the proposed modifications. (Paul J. Ford and Co., dated 4-13-11).

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 515 BOSTON POST ROAD EAST
 WESTPORT, CT 06880
 LATITUDE: 41.1401° N 41° 8' 24.59" N
 LONGITUDE: -73.3472° W -73° 20' 50" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY
 NOC# 866-915-5600



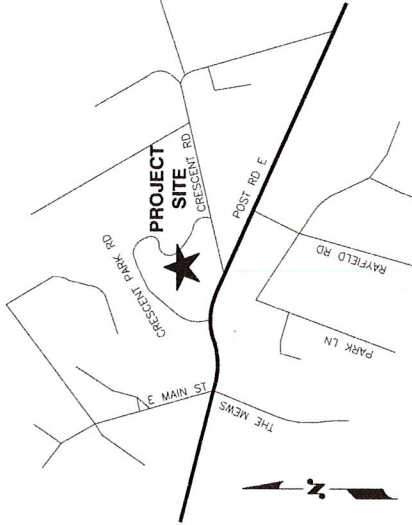
SITE NUMBER: CT2153
SITE NAME: WESTPORT FD

DRAWING INDEX

	REV
T-1 TITLE SHEET	2
GN-1 GENERAL NOTES	2
A-1 COMPOUND & EQUIPMENT PLAN	2
A-2 ANTENNA LAYOUT AND ELEVATION	2
A-3 DETAILS	2
G-1 PLUMBING DIAGRAM & DETAILS	2

VICINITY MAP

DIRECTIONS TO SITE:
 HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MILES. TURN LEFT AT CAPITAL BLVD. 0.3 MILES. TURN LEFT AT WEST ST. 0.3 MILES. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN. 9.6 MILES. TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY. 0.4 MILES. MERGE ONTO CT-15 S. 29.8 MILES. TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT. 0.7 MILES. FOLLOW SIGNS FOR CT-8 S/BRIDGEPORT AND MERGE ONTO CT-8 S/BRIDGEPORT. 0.7 MILES. TAKE RIGHT TURN ONTO STATE ROUTE 108 S/W. 0.5 MILES. TAKE LEFT TURN ONTO PEASE AVE. 0.1 MILES. SLIGHT RIGHT AT US-1 S/POST RD. DESTINATION WILL BE ON THE RIGHT. 3.1 MILES.



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSIBLE BY AUTHORIZED PERSONNEL. THE FACILITY IS NOT TO BE OPENED TO THE PUBLIC AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS



BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT



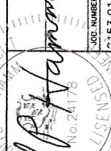
22 KEERWADIN DRIVE
 SALEM, NH 03079

SITE NUMBER: CT2153
 SITE NAME: WESTPORT FD
 515 BOSTON POST ROAD EAST
 WESTPORT, CT 06880
 FAIRFIELD COUNTY



500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06067

AT&T
 TITLE SHEET
 (LIE)



NO.	DATE	ISSUED FOR	REVISIONS	DESIGNED BY	DC
2	04/18/11	CONSTRUCTION REVISED			
1	03/08/11	ISSUED FOR CONSTRUCTION			
0	02/17/11	ISSUED FOR REVIEW			

SCALE: AS SHOWN
 DRAWN BY: AL
 CHECKED BY: JAV

NO.	DATE	ISSUED FOR	REVISIONS	DESIGNED BY	DC
2	04/18/11	CONSTRUCTION REVISED			

GROUNDING NOTES

- THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATIONS, RADIO, LIGHTNING PROTECTION, AND AC POWER (GES'S)) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES. 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS. 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING SHALL BE MADE ELECTRICALLY CONTINUOUS WITH THE EXISTING ELECTRICAL CONDUCTIVE REINFORCING STEEL. AT LEAST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR - SA
SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION) OWNER - AT&T MOBILITY
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL FURNISH ALL APPROPRIATE NOTICES AND COMPLY WITH ALL APPLICABLE ORDINANCES, RULES, REGULATIONS, AND ORDINANCES. ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK, ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- RIFFLING LIST SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT THE CONTRACTOR MUST PROVIDE. ITEMS NOT LISTED IN THE BILL OF MATERIALS AND RIFLING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
- SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
- THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
- ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

- ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE AISC STEEL CONSTRUCTION MANUAL. ALL STEEL SHALL BE ASTM A58 (FY = 36 KSI) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (FY = 36 KSI). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH-UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
- CONSTRUCTION SHALL COMPLY WITH LIMITS SPECIFICATIONS, AND "GENERAL" CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES.
- SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR CONVENIENT MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
- SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE OBSERVED. ALL WORK SHALL BE DONE AT HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE PROTECTED FROM EXISTING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
- APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL BE APPLICABLE.
BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTNING CODE: REFER TO ELECTRICAL DRAWINGS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F,
STRUCTURAL STANDARDS FOR STEEL
ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES, REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS A CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

ACR	DESCRIPTION	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
ACL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	
AWG	AMERICAN WIRE GAUGE	MCB	MASTER GROUND BUS	
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD
BTS	BASE TRANSMITTER STATION	PROPOSED	NEW	TO BE DETERMINED
EX	EXISTING EXISTING	N.T.S.	NOT TO SCALE	TO BE REMOVED
EG	EQUIPMENT GROUND	REF. COM	REFERENCE	AND REPLACED
EGR	EQUIPMENT GROUND RING	REQ. P.	REQUIRED	TYPICAL

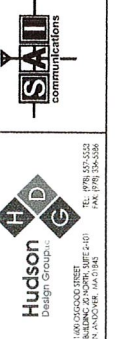
NO.	DATE	BY	CHK	REV	DESCRIPTION
1	04/19/11	AL	DC		CONSTRUCTION REVISION
2	02/29/11	AL	DC		ISSUED FOR CONSTRUCTION
3	02/19/11	AL	DC		ISSUED FOR REVIEW



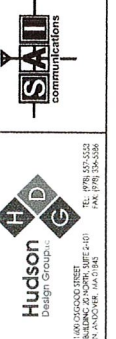
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT2153
SITE NAME: WESTPORT FD
515 BOSTON POST ROAD, EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

22 KEEWAYDIN DRIVE
SALEM, NH 03079



1400 COLUMBIA STREET
SALISBURY, MA 01960
TEL: 978-532-5332
FAX: 978-532-5336

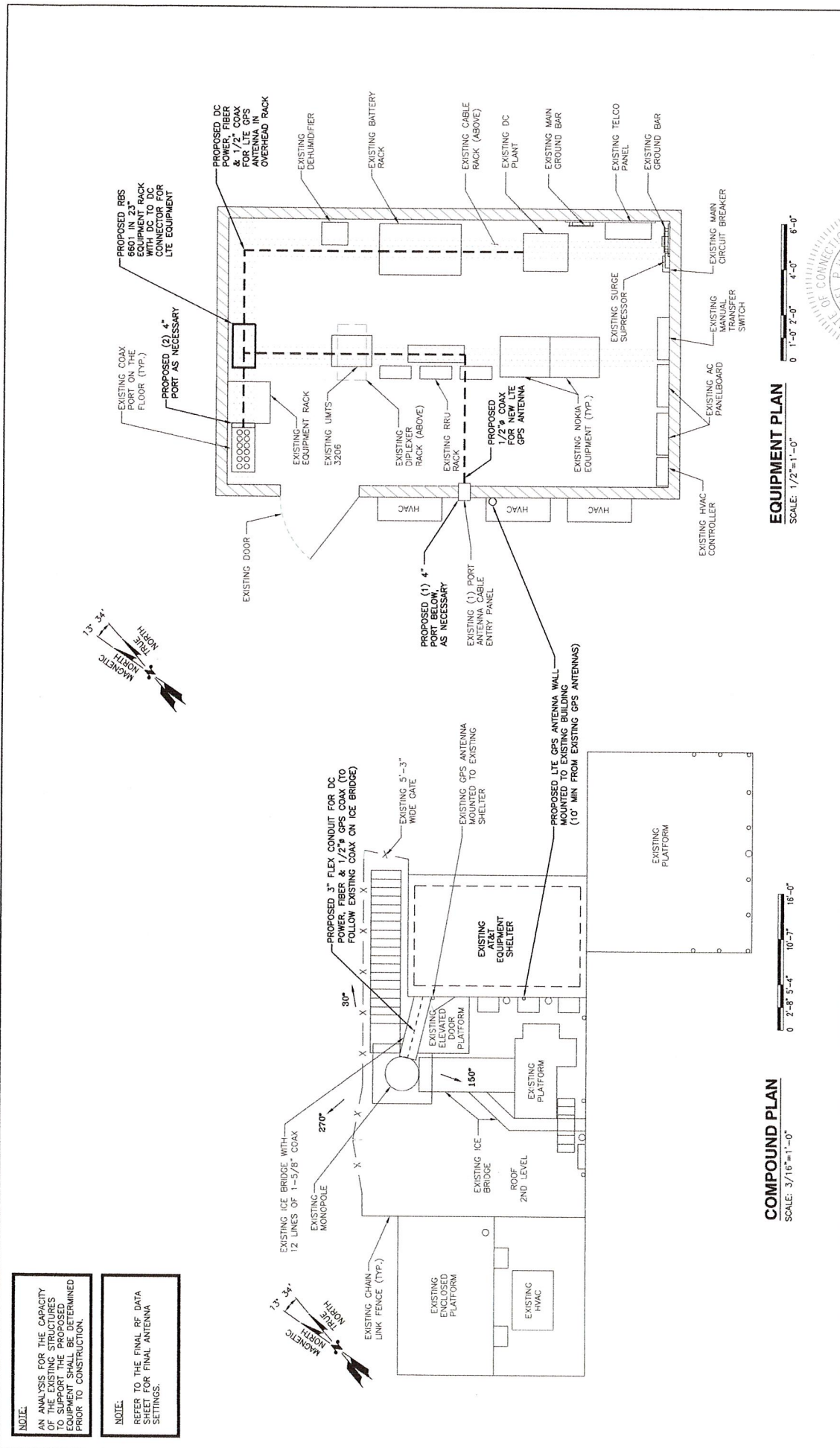
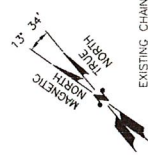
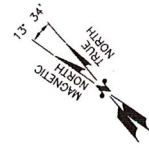



Professional Engineer
No. 10247
State of Connecticut
Exp. 12/31/12

AT&T
GENERAL NOTES
(LIE)
DRAWING NUMBER
GN-1
JOB NUMBER
2153.01
DESIGNED BY: DC
DRAWN BY: AL

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



COMPOUND PLAN
SCALE: 3/16"=1'-0"

EQUIPMENT PLAN
SCALE: 1/2"=1'-0"

Hudson Design Group
1600 GLOUCESTER STREET
ROCKY HILL, CT 06867
TEL: (860) 535-5533
FAX: (860) 535-5534
P: 1119 000000

SIAI communications

22 KEEMAYDN DRIVE
SALEM, NH 03079

at&t

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06867

AT&T

COMPOUND & EQUIPMENT PLAN (LIE)

NO.	DATE	BY	CHK'D BY	REVISIONS	DESIGNED BY:	DC
2	04/18/11			CONSTRUCTION REVISIONS		
1	02/09/11			ISSUED FOR CONSTRUCTION		
0	02/14/11			ISSUED FOR REVIEW		

SCALE: AS SHOWN

DATE: 06.24.10

PROJECT: WESTPORT FD

DRAWN BY: AL

SCALE: 2:153.01

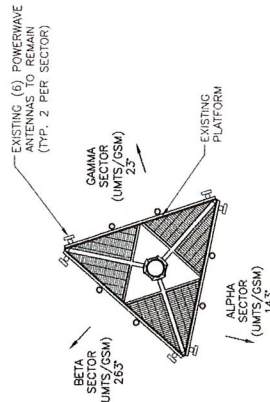
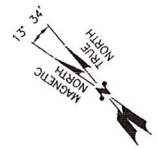
PROJECT NUMBER: A-1

DRAWING NUMBER: A-1

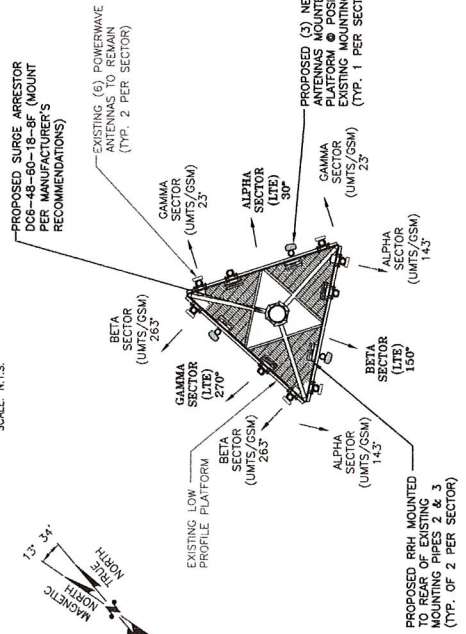
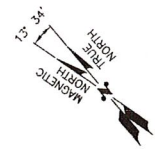
REV: 2

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNAS TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

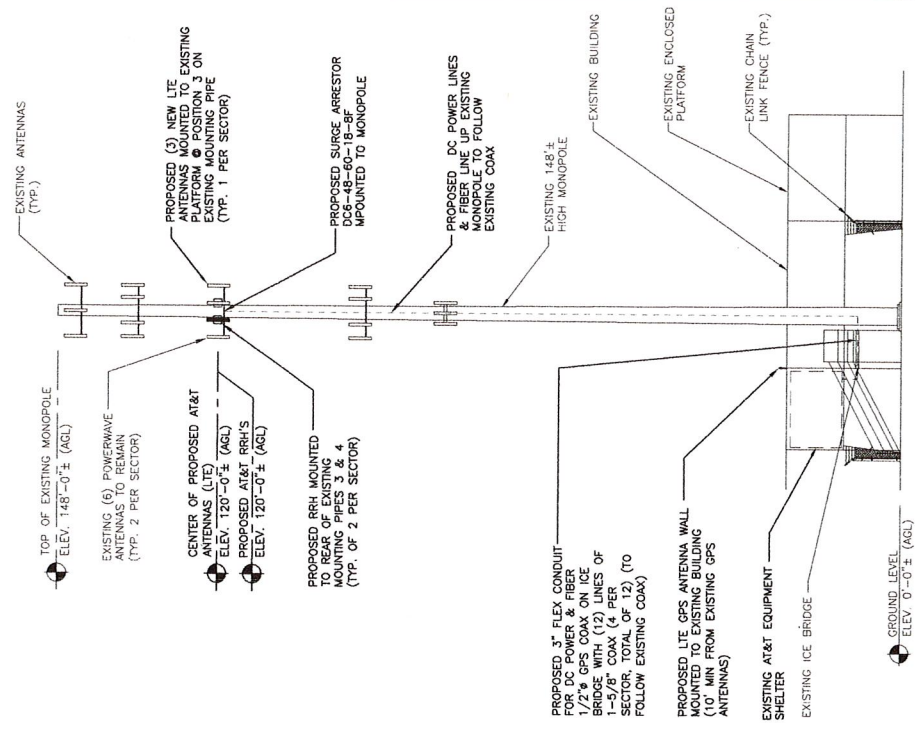
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



EXISTING GSM/UMTS ANTENNA PLAN
SCALE: N.T.S.



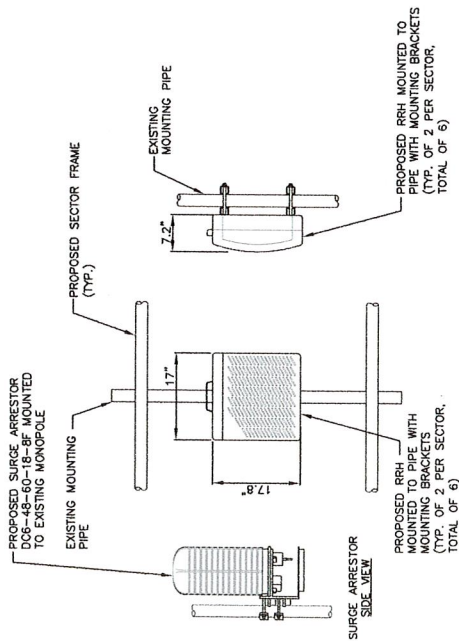
PROPOSED LTE ANTENNA PLAN
SCALE: N.T.S.



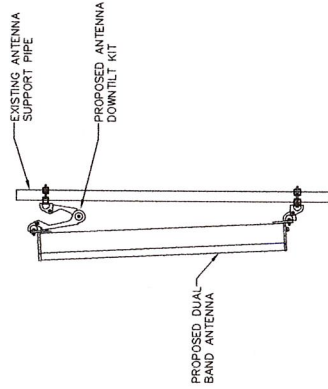
SOUTHEAST ELEVATION
SCALE: 3/32" = 1'-0"



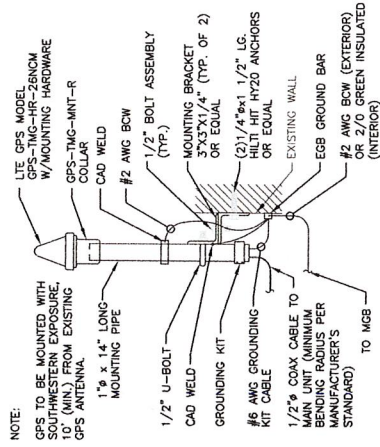
<p>Hudson Design Group 160 OSCAR STREET, SUITE 210 N. ANDOVER, MA 01861 PHONE: 978-534-1400 FAX: 978-534-5334</p>		<p>22 KEEWATON DRIVE SALEM, NH 03079</p>		<p>500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067</p>		<p>SITE NUMBER: CT2153 SITE NAME: WESTPORT FD 515 BOSTON POST ROAD EAST WESTPORT, CT 06880 FAIRFIELD COUNTY</p>		<p>CONSTRUCTION PERIOD 1. 10/27/11 SCHEDULED FOR CONSTRUCTION 2. 01/27/12 SCHEDULED FOR REVIEW</p>		<p>DATE: 01/27/11 BY: [Signature] SCALE: AS SHOWN DESIGNED BY: DC DRAWN BY: AL</p>		<p>AT&T ANTENNA LAYOUT AND ELEVATION (LITE) DRAWING NUMBER: A-2 JOB NUMBER: 2-153.01</p>		<p>REV: 2</p>
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PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL
SCALE: N.T.S.



PROPOSED LTE ANTENNA DETAIL
SCALE: N.T.S.



GPS MOUNTED TO WALL
SCALE: N.T.S.

Hudson
Design Group
140 GOSWOLD STREET, SUITE 410
N. ANDOVER, MA 01850
TEL: (978) 462-1100
FAX: (978) 534-5558

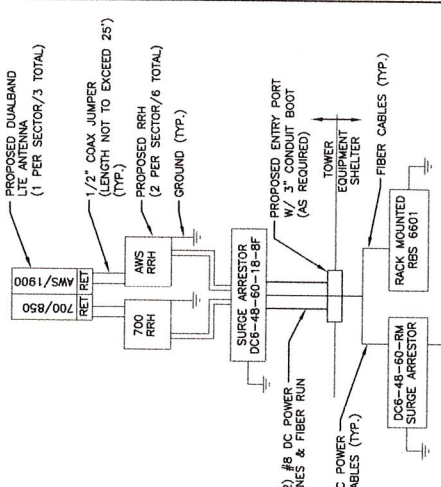
SAI
communications

22 KEEMOND DRIVE
SALEM, NH 03079

SITE NUMBER: CT2153
SITE NAME: WESTPORT FD
515 BOSTON POST ROAD EAST
WESTPORT, CT 06880
FAIRFIELD COUNTY

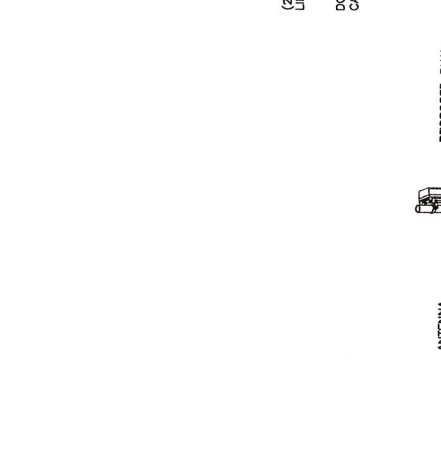
at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06867

NO.	DATE	ISSUED FOR	REVISIONS	DESIGNED BY:	DC	DRAWN BY:	AL
2	04/12/11	CONSTRUCTION PERMITS					
1	03/09/11	ISSUED FOR CONSTRUCTION					
0	02/14/11	ISSUED FOR REVIEW					
NO.	DATE	ISSUED FOR	REVISIONS	DESIGNED BY:	DC	DRAWN BY:	AL
SCALE: AS SHOWN							
SITE NUMBER: 2153.01 SHEET NUMBER: A-3 DRAWING NUMBER: A-3							
AT&T DETAILS (LIE)							
REV: 2							



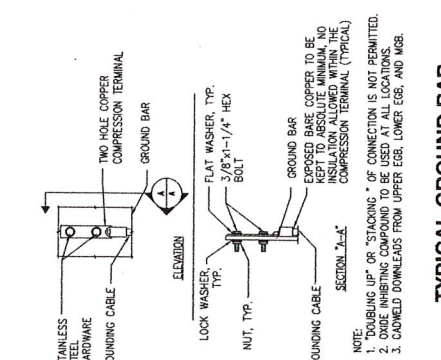
NOTES:
 1. CONTRACTOR TO CONFIRM ALL PARTS.
 2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

PLUMBING DIAGRAM
 3 N.T.S.



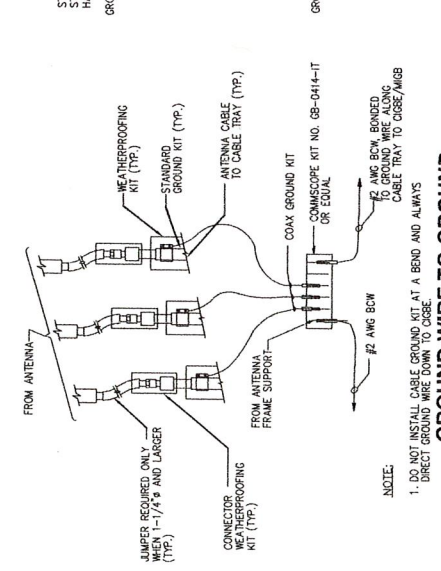
NOTES:
 1. CONTRACTOR TO CONFIRM ALL PARTS.
 2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

GROUNDING RISER DIAGRAM
 5 N.T.S.



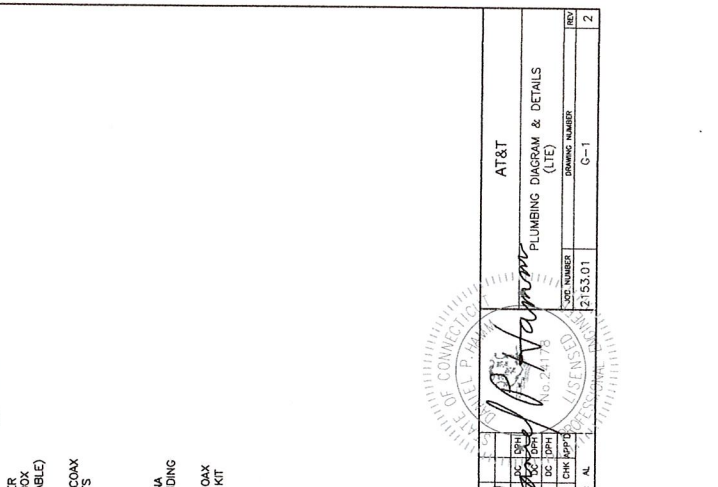
NOTE:
 1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OVIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 3. CARVED DOWNLOAS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL
 2 N.T.S.



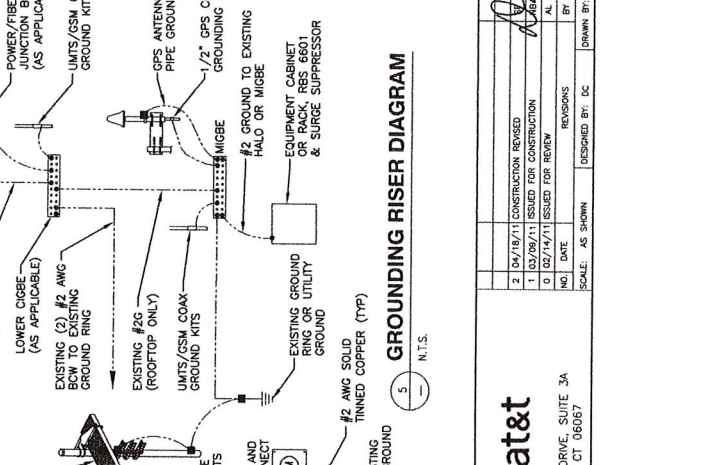
NOTE:
 1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE TO GROUND BAR.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL
 1 N.T.S.



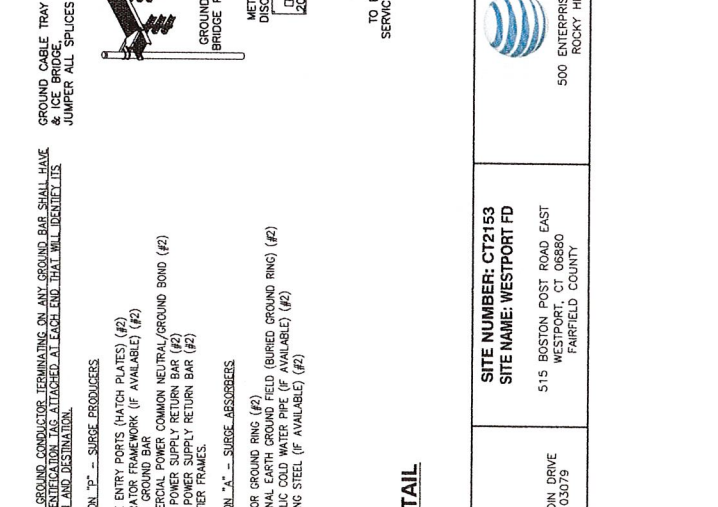
NOTE:
 1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OVIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 3. CARVED DOWNLOAS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL
 2 N.T.S.



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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL
 1 N.T.S.



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

GROUND BAR - DETAIL
 4 N.T.S.

NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLSB-0420-S	SOLID GND. BAR (20" x 1/4")
2	2	WALL, WTG. BRKT.	WALL MOUNTING BRACKET
3	2	INSULATORS	INSULATORS
4	4	5/8" - 11x1" H.H.C.S.	5/8" - 11x1" H.H.C.S.
5	4	5/8 LOCKWASHER	5/8 LOCKWASHER

WIRELESS SOLUTIONS INC.
 CABLE ENTRY PORTS (HATCH PLATES) (#2)
 GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
 FLECO GROUND BAR (IF AVAILABLE) (#2)
 4-24V POWER SUPPLY RETURN BAR (#2)
 4-48V POWER SUPPLY RETURN BAR (#2)
 RECTIFIER FRAMES.
 SECTION "A" - SURGE ABSORBERS
 INTERIOR GROUND RING (#2)
 EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
 METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
 BUILDING STEEL (IF AVAILABLE) (#2)

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT2153
 SITE NAME: WESTPORT FD
 515 BOSTON POST ROAD EAST
 WESTPORT, CT 06880
 FAIRFIELD COUNTY

1400 COUNCIL STREET
 BURLINGTON, VT 05403
 TEL: (878) 855-2522
 FAX: (878) 855-2523
 WWW.HUDSONDESIGN.COM

22 KEAWAYTON DRIVE
 SALEM, NH 03079

AT&T
 PLUMBING DIAGRAM & DETAILS
 (LTE)

DATE: 01/19/11
 CONSTRUCTION REVISED
 1 03/09/11 ISSUED FOR CONSTRUCTION
 2 02/14/11 ISSUED FOR REVIEW
 3 02/14/11 ISSUED FOR REVIEW

SCALE: AS SHOWN
 DESIGNED BY: DC
 DRAWN BY: AL

JOB NUMBER: 2153.01
 DRAWING NUMBER: G-1
 REV: 2



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: April 13, 2011

Joshua Mostow
Crown Castle USA Inc.
1200 MacArthur Blvd.
Mahwah, NJ 07430

Paul J Ford and Company
250 E. Broad Street Suite 1500
Columbus, OH 43215
(614) 221-6679
abonham@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: 2153
Carrier Site Name: Westport-Boston Post

Road

Crown Castle Designation: Crown Castle BU Number: 876354
Crown Castle Site Name: Westport Fire

Department

Crown Castle JDE Job Number: 152026
Crown Castle Work Order Number: 395576

Engineering Firm Designation: Paul J Ford and Company Project Number: 32910-0089 Final R1
(Corrected Proposed Loading)

Site Data: 515 Boston Post Road, Westport, Fairfield County, CT
Latitude 41° 8' 24.26", Longitude -73° 20' 51.61"
148 Foot - Monopole Tower

Dear Joshua Mostow,

Paul J Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and in accordance with application 119145, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

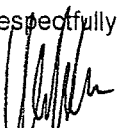
LC4: Existing + Reserved + Proposed Equipment + Proposed Modifications **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

Please note that per TIA/EIA-222-F Standard, the minimum design wind speed for Fairfield County, CT is 85 MPH. In our analysis, we used 91.2 MPH design wind speed to compensate for the importance factor of 1.15.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Respectfully submitted by:


Allen R Bonham, EI *H.R.*
Structural Engineer

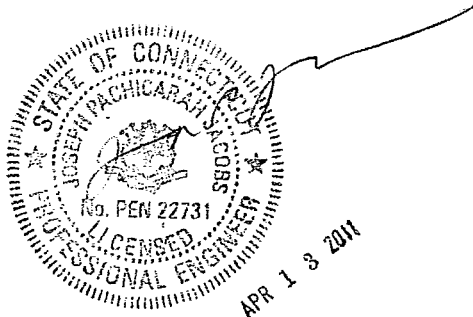


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1) INTRODUCTION

This tower is a 148 ft Monopole tower designed by Summit in February of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 91.2 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120	120	6	Ericsson	RRUS-11	2 (l) 1 (l)	3/8 5/8	1
		3	Powerwave Technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	Raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148	150	9	-	MLA_ANTENNA w/Mount Pipe	9	1-5/8	3
		6	Decibel	DB980H90E-M w/Mount Pipe	6 (l)	1-5/8	1
	160	1	-	DB420	2 (l)	7/8	1
	152	1	Andrew	P2F-52	5 (E)* 6 (E)*	1/2 5/16	2
		1		VHLP2-11			
		1		VHLP2-23			
		2		VHLP800-11			
	148	3	Argus Technologies	LLPX310R w/ Mount Pipe			
	148	3	Samsung Telecommunications	FDD_R6_RRH			
		1	-	Platform Mount [LP 712-1]			1
144	144	1	Andrew	VHLP2.5-10W	1 (l)	EW90	2
		1	-	Pipe Mount [PM 601-1]			
134	134	12	Decibel	DB844H90E-XY w/ Mount Pipe	12 (l)	1-1/4	1
		1	-	Platform Mount [LP 303-1]			
120	120	6	Powerwave Technologies	7770.00 w/ Mount Pipe	12 (l)	1-5/8	1
		6		LGP13519			
		6		LGP2140X			
		1	-	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
96	110	1	RFS/Celwave	PD220	7 (I) 5 (I)	7/8 1/2	1
	108	1	Decibel	DB205-A			
	107	1		DB224			
		1		DB420-B			
	105	1	Andrew	DB806E-XT			
		2	RFS/Celwave	PD1110			
		2		PD201-1			
	96	1	-	Platform Mount [LP 712-1]			
90	3	RFS/Celwave	PD83-1				
82	82	3	RFS/Celwave	ATMAA1412D-1A20	18 (I) 6 (I)	7/8 1-1/4	1
		3		APXV18-206516S-C-A20 w/ Mount Pipe			
		9	EMS Wireless	RR90-17-00DPL2 w/ Mount Pipe			
		1	-	Platform Mount [LP 712-1]			
72	72	3	Kathrein	800 10504	6 (I)	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
53	56	1	Radiall/Larsen	BSA150B	2 (I)	1/2	1
	53	1	tower mounts	Side Arm Mount [SO 701-1]			
	50	1	Radiall/Larsen	BSA150B			
50	50	1	Trimble	BULLET III	1 (I)	1/2	1

Notes:

- 1) Existing equipment
- 2) Reserved equipment
- 3) MLA equipment; not considered in analysis

(E) Coax to be mounted externally and exposed to the wind. See coax layout in Appendix B.

(I) Coax to be mounted internally and shielded from the wind. See coax layout in Appendix B.

* Coax are to be mounted externally inside a 2" diameter conduit.

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Sea Consultants Inc., 97013.01, 12/18/1996	1531886	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, Inc., A29297-62, 2/24/1997	1448194	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, Inc., A29297-62, 2/24/1997	1446984	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37508-0047, 3/4/2009	2350855	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 32910-0089 R1, 4/7/2011		PJF

3.1) Analysis Method

RISATower (version 5.4.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	148 - 100.5	Pole	TP31.643x22x0.25	1	-8.38	1181.35	80.8	Pass
L2	100.5 - 69	Pole	TP37.5377x30.331x0.375	2	-18.56	2153.41	96.8	Pass
L3	69 - 58.25	Pole	TP39.72x37.5377x0.3897	3	-19.92	2307.05	98.4	Pass
L4	58.25 - 52.83	Pole	TP40.0697x37.9256x0.4375	4	-23.44	2679.26	99.0	Pass
L5	52.83 - 28.75	Pole	TP44.959x40.0697x0.5055	5	-29.04	3380.90	95.0	Pass
L6	28.75 - 12	Pole	TP47.4841x42.7806x0.5412	6	-38.10	3925.40	99.7	Pass
L7	12 - 0	Pole	TP49.92x47.4841x0.5591	7	-42.62	4264.28	99.3	Pass
							Summary	
						Pole (L6)	99.7	Pass
						Rating =	99.7	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	88.1	Pass
1	Base Plate	0	48.6	Pass
1, 2	Foundation (Soil) - PLS Caisson Methodology	0	90.3	Pass
1	Foundation (Structural)	0	62.4	Pass

Structure Rating (max from all components) =	99.7%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) *Foundation Analysis Notes: According to the procedures prescribed and agreed to by the Crown Castle Engineering Foundation Committee, held in January 2010, the existing caisson foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the caisson is the greater of the geotechnical report's recommendation, the frost depth of the site or half of the caisson diameter.

4.1) Recommendations

- 1.) See attached modification drawings.

APPENDIX A RISA TOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 4) Tower is located in Fairfield County, Connecticut.
- 5) Basic wind speed of 91 mph.
- 6) Nominal ice thickness of 0.7500 in.
- 7) Ice thickness is considered to increase with height.
- 8) Ice density of 56 pcf.
- 9) A wind speed of 38 mph is used in combination with ice.
- 10) Temperature drop of 50 °F.
- 11) Deflections calculated using a wind speed of 50 mph.
- 12) A non-linear (P-delta) analysis was used.
- 13) Pressures are calculated at each section.
- 14) Stress ratio used in pole design is 1.333.
- 15) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|---|
| Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
✓ Use Code Stress Ratios
✓ Use Code Safety Factors - Guys
✓ Escalate Ice
Always Use Max Kz
Use Special Wind Profile
Include Bolts In Member Capacity
Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
Add IBC .6D+W Combination | Distribute Leg Loads As Uniform
Assume Legs Pinned
✓ Assume Rigid Index Plate
✓ Use Clear Spans For Wind Area
Use Clear Spans For KL/r
Retension Guys To Initial Tension
✓ Bypass Mast Stability Checks
✓ Use Azimuth Dish Coefficients
✓ Project Wind Area of Appurt.
Autocalc Torque Arm Areas
SR Members Have Cut Ends
Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing | ✓ Treat Feedline Bundles As Cylinder
Use ASCE 10 X-Brace Ly Rules
Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
SR Leg Bolts Resist Compression
All Leg Panels Have Same Allowable
Offset Girt At Foundation
✓ Consider Feedline Torque
Include Angle Block Shear Check
Poles
✓ Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	148.00-100.50	47.50	4.00	12	22.0000	31.6430	0.2500	1.0000	A607-60 (60 ksi)
L2	100.50-69.00	35.50	0.00	12	30.3310	37.5377	0.3750	1.5000	A607-60 (60 ksi)
L3	69.00-58.25	10.75	5.00	12	37.5377	39.7200	0.3897	1.5587	A607-60 (60 ksi)
L4	58.25-52.83	10.42	0.00	12	37.9256	40.0697	0.4375	1.7500	A607-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (60 ksi)
L5	52.83-28.75	24.08	5.75	12	40.0697	44.9590	0.5055	2.0219	A607-60 (60 ksi)
L6	28.75-12.00	22.50	0.00	12	42.7806	47.4841	0.5412	2.1646	A607-60 (60 ksi)
L7	12.00-0.00	12.00		12	47.4841	49.9200	0.5591	2.2363	A607-60 (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	32.7592	25.2714	3178.9251	11.2387	16.3911	193.9425	6441.3640	12.4378	7.8103	31.241
L2	32.2416	36.1718	4143.0744	10.7242	15.7114	263.6980	8394.9919	17.8027	7.1237	18.997
	38.8619	44.8739	7910.3285	13.3042	19.4445	406.8152	16028.470	22.0856	9.0551	24.147
L3	38.8619	46.6110	8210.0501	13.2990	19.4445	422.2294	16635.787	22.9405	9.0158	23.137
	41.1212	49.3492	9743.6475	14.0803	20.5750	473.5682	19743.271	24.2882	9.6006	24.638
L4	40.3286	52.8114	9473.2998	13.4208	19.6455	482.2128	19195.473	25.9922	8.9916	20.552
	41.4832	55.8319	11193.495	14.1883	20.7561	539.2864	22681.057	27.4788	9.5662	21.866
L5	41.4832	64.3953	12866.092	14.1640	20.7561	619.8697	26070.192	31.6934	9.3840	18.565
	46.5450	72.3532	18249.710	15.9144	23.2888	783.6273	36978.860	35.6100	10.6944	21.157
L6	45.5341	73.6037	16761.810	15.1217	22.1603	756.3880	33963.971	36.2255	10.0149	18.506
	49.1591	81.7997	23007.929	16.8056	24.5967	935.4053	46620.302	40.2593	11.2754	20.836
L7	49.1591	84.4761	23742.603	16.7991	24.5967	965.2741	48108.952	41.5766	11.2274	20.082
	51.6810	88.8614	27635.384	17.6712	25.8586	1068.7132	55996.781	43.7349	11.8802	21.25

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 148.00-100.50				1	1	1		
L2 100.50-69.00				1	1	1		
L3 69.00-58.25				1	1	1		
L4 58.25-52.83				1	1	1		
L5 52.83-28.75				1	1	1		
L6 28.75-12.00				1	1	1		
L7 12.00-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA ft ² /ft	Weight plf
EW90(EW90)	C	No	Inside Pole	144.00 - 0.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.32 0.32 0.32 0.32 0.32

LDF5-50A(7/8")	C	No	Inside Pole	148.00 - 0.00	2	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.33 0.33 0.33 0.33 0.33
LDF7-50A(1-5/8")	C	No	Inside Pole	148.00 - 0.00	6	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.82 0.82 0.82 0.82 0.82

7983A(1/2")	A	No	CaAa (Out Of Face)	148.00 - 0.00	5	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.08 0.74 2.01 6.39 22.47
9207(5/16")	A	No	CaAa (Out Of Face)	148.00 - 0.00	6	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.60 1.11 2.22 6.29 21.76
2" Rigid Conduit	A	No	CaAa (Out Of Face)	148.00 - 0.00	1	No Ice 0.20 1/2" Ice 0.30 1" Ice 0.40 2" Ice 0.60 4" Ice 1.00	2.80 4.33 6.47 12.57 32.12

LDF6-50A(1-1/4")	A	No	Inside Pole	134.00 - 0.00	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.66 0.66 0.66 0.66 0.66

LDF7-50A(1-5/8")	C	No	Inside Pole	120.00 - 0.00	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.82 0.82 0.82 0.82 0.82
FB-L98B-002-50000(3/8)	C	No	Inside Pole	120.00 - 0.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.06 0.06 0.06 0.06 0.06
LDF4.5-50 (5/8" foam)	C	No	Inside Pole	120.00 - 0.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00 2" Ice 0.00 4" Ice 0.00	0.15 0.15 0.15 0.15 0.15

LDF4-50A(1/2")	A	No	Inside Pole	96.00 - 0.00	5	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.15 0.15 0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
LDF5-50A(7/8")	A	No	Inside Pole	96.00 - 0.00	7	2" Ice	0.00	0.15
						4" Ice	0.00	0.15
						No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF4-50A(1/2")	A	No	Inside Pole	53.00 - 0.00	2	4" Ice	0.00	0.15
						No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
						No Ice	0.00	0.15
LDF4-50A(1/2")	A	No	Inside Pole	50.00 - 0.00	1	4" Ice	0.00	0.15
						No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
						No Ice	0.00	0.15
***	LDF5-50A(7/8")	B	Inside Pole	82.00 - 0.00	18	No Ice	0.00	0.33
1/2" Ice						0.00	0.33	
1" Ice						0.00	0.33	
2" Ice						0.00	0.33	
4" Ice						0.00	0.33	
No Ice						0.00	0.70	
1/2" Ice						0.00	0.70	
LCF114-50J(1-1/4")	B	No	Inside Pole	82.00 - 0.00	6	1" Ice	0.00	0.70
						2" Ice	0.00	0.70
						4" Ice	0.00	0.70
						No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
						2" Ice	0.00	0.70
***	HJ7-50A(1-5/8")	B	Inside Pole	72.00 - 0.00	6	No Ice	0.00	1.04
1/2" Ice						0.00	1.04	
1" Ice						0.00	1.04	
2" Ice						0.00	1.04	
4" Ice						0.00	1.04	
No Ice						0.00	1.04	
1/2" Ice						0.00	1.04	
***	1 1/4" Flat Reinforcement	C	CaAa (Out Of Face)	35.00 - 0.00	1	No Ice	0.21	0.00
1/2" Ice						0.32	0.00	
1" Ice						0.43	0.00	
2" Ice						0.65	0.00	
4" Ice						1.10	0.00	
No Ice						0.17	0.00	
1/2" Ice						0.28	0.00	
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	52.00 - 35.00	1	1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
						2" Ice	0.61	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	67.00 - 60.00	1	4" Ice	1.06	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
						No Ice	0.17	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	148.00-100.50	A	0.000	0.000	0.000	9.500	0.59
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.47
L2	100.50-69.00	A	0.000	0.000	0.000	6.300	0.55
		B	0.000	0.000	0.000	0.000	0.15
		C	0.000	0.000	0.000	0.000	0.50
L3	69.00-58.25	A	0.000	0.000	0.000	2.150	0.19
		B	0.000	0.000	0.000	0.000	0.18

Tower Sectio n	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L4	58.25-52.83	C	0.000	0.000	0.000	1.167	0.17
		A	0.000	0.000	0.000	1.084	0.10
		B	0.000	0.000	0.000	0.000	0.09
L5	52.83-28.75	C	0.000	0.000	0.000	0.000	0.09
		A	0.000	0.000	0.000	4.816	0.44
		B	0.000	0.000	0.000	0.000	0.39
L6	28.75-12.00	C	0.000	0.000	0.000	4.135	0.38
		A	0.000	0.000	0.000	3.350	0.31
		B	0.000	0.000	0.000	0.000	0.27
L7	12.00-0.00	C	0.000	0.000	0.000	3.490	0.27
		A	0.000	0.000	0.000	2.400	0.22
		B	0.000	0.000	0.000	0.000	0.20
		C	0.000	0.000	0.000	2.500	0.19

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	148.00-100.50	A	0.878	0.000	0.000	0.000	17.845	1.51
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.47
L2	100.50-69.00	A	0.840	0.000	0.000	0.000	11.834	1.16
		B		0.000	0.000	0.000	0.000	0.15
		C		0.000	0.000	0.000	0.000	0.50
L3	69.00-58.25	A	0.811	0.000	0.000	0.000	3.894	0.38
		B		0.000	0.000	0.000	0.000	0.18
		C		0.000	0.000	0.000	2.429	0.17
L4	58.25-52.83	A	0.798	0.000	0.000	0.000	1.964	0.19
		B		0.000	0.000	0.000	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.09
L5	52.83-28.75	A	0.769	0.000	0.000	0.000	8.518	0.83
		B		0.000	0.000	0.000	0.000	0.39
		C		0.000	0.000	0.000	8.107	0.38
L6	28.75-12.00	A	0.750	0.000	0.000	0.000	5.925	0.57
		B		0.000	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	6.351	0.27
L7	12.00-0.00	A	0.750	0.000	0.000	0.000	4.200	0.40
		B		0.000	0.000	0.000	0.000	0.20
		C		0.000	0.000	0.000	4.500	0.19

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	148.00-100.50	0.0000	-0.2754	0.0000	-0.4568
L2	100.50-69.00	0.0000	-0.2804	0.0000	-0.4766
L3	69.00-58.25	-0.1287	-0.1994	-0.2398	-0.3053
L4	58.25-52.83	0.0000	-0.2828	0.0000	-0.4721
L5	52.83-28.75	-0.2028	-0.1544	-0.3565	-0.2252
L6	28.75-12.00	-0.2444	-0.1298	-0.4018	-0.2009
L7	12.00-0.00	-0.2459	-0.1306	-0.4028	-0.2015

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft					
DB420	C	From Leg	0.00	0.0000	148.00	No Ice	3.33	3.33	0.03	
			0.00			1/2"	5.99	5.99	0.04	
			12.00			Ice	8.66	8.66	0.05	
						1" Ice	13.99	13.99	0.07	
						2" Ice	24.64	24.64	0.12	
						4" Ice				
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00	0.0000	148.00	No Ice	4.27	3.86	0.03	
			0.00			1/2"	4.86	4.95	0.07	
			2.00			Ice	5.37	5.75	0.12	
						1" Ice	6.42	7.39	0.23	
						2" Ice	8.86	10.87	0.59	
						4" Ice				
LLPX310R w/ Mount Pipe	A	From Leg	4.00	0.0000	148.00	No Ice	4.96	2.85	0.04	
			0.00			1/2"	5.35	3.37	0.08	
			0.00			Ice	5.75	3.90	0.12	
						1" Ice	6.58	5.08	0.23	
						2" Ice	8.37	7.84	0.53	
						4" Ice				
FDD_R6_RRH	A	From Leg	4.00	0.0000	148.00	No Ice	1.79	0.78	0.03	
			0.00			1/2"	1.97	0.92	0.04	
			0.00			Ice	2.16	1.07	0.06	
						1" Ice	2.57	1.39	0.09	
						2" Ice	3.49	2.14	0.20	
						4" Ice				
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	4.27	3.86	0.03	
			0.00			1/2"	4.86	4.95	0.07	
			2.00			Ice	5.37	5.75	0.12	
						1" Ice	6.42	7.39	0.23	
						2" Ice	8.86	10.87	0.59	
						4" Ice				
LLPX310R w/ Mount Pipe	B	From Leg	4.00	0.0000	148.00	No Ice	4.96	2.85	0.04	
			0.00			1/2"	5.35	3.37	0.08	
			0.00			Ice	5.75	3.90	0.12	
						1" Ice	6.58	5.08	0.23	
						2" Ice	8.37	7.84	0.53	
						4" Ice				
FDD_R6_RRH	B	From Leg	4.00	0.0000	148.00	No Ice	1.79	0.78	0.03	
			0.00			1/2"	1.97	0.92	0.04	
			0.00			Ice	2.16	1.07	0.06	
						1" Ice	2.57	1.39	0.09	
						2" Ice	3.49	2.14	0.20	
						4" Ice				
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	4.27	3.86	0.03	
			0.00			1/2"	4.86	4.95	0.07	
			2.00			Ice	5.37	5.75	0.12	
						1" Ice	6.42	7.39	0.23	
						2" Ice	8.86	10.87	0.59	
						4" Ice				
LLPX310R w/ Mount Pipe	C	From Leg	4.00	0.0000	148.00	No Ice	4.96	2.85	0.04	
			0.00			1/2"	5.35	3.37	0.08	
			0.00			Ice	5.75	3.90	0.12	
						1" Ice	6.58	5.08	0.23	
						2" Ice	8.37	7.84	0.53	
						4" Ice				
FDD_R6_RRH	C	From Leg	4.00	0.0000	148.00	No Ice	1.79	0.78	0.03	
			0.00			1/2"	1.97	0.92	0.04	
			0.00			Ice	2.16	1.07	0.06	
						1" Ice	2.57	1.39	0.09	
						2" Ice	3.49	2.14	0.20	
						4" Ice				
Platform Mount [LP 712-1]	C	None		0.0000	148.00	No Ice	24.53	24.53	1.34	
						1/2"	29.94	29.94	1.65	
						Ice	35.35	35.35	1.96	
						1" Ice	46.17	46.17	2.58	
						2" Ice	67.81	67.81	3.82	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft		C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K
						4" Ice			
*** Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" 2" 4"	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18
*** (4) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice 1" 2" 4"	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	0.03 0.07 0.12 0.23 0.56
(4) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice 1" 2" 4"	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	0.03 0.07 0.12 0.23 0.56
(4) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	134.00	No Ice 1/2" Ice 1" 2" 4"	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	0.03 0.07 0.12 0.23 0.56
Platform Mount [LP 303-1]	C	None		0.0000	134.00	No Ice 1/2" Ice 1" 2" 4"	14.66 18.87 23.08 31.50 48.34	14.66 18.87 23.08 31.50 48.34	1.25 1.48 1.71 2.18 3.10
*** (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" 2" 4"	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) LGP2140X	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" 2" 4"	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.01 0.02 0.03 0.05 0.13
(2) LGP13519	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" 2" 4"	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" 2" 4"	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) LGP2140X	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" 2" 4"	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.01 0.02 0.03 0.05 0.13
(2) LGP13519	B	From Leg	4.00	0.0000	120.00	No Ice	0.34	0.21	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	CA _{AA} Front ft ²	CA _{AA} Side ft ²	Weight K	
			0.00			1/2"	0.42	0.28	0.01
			0.00			Ice	0.51	0.36	0.01
						1" Ice	0.73	0.55	0.02
						2" Ice	1.25	1.03	0.07
						4" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	120.00	No Ice	6.12	4.25	0.06
			0.00			1/2"	6.63	5.01	0.10
			0.00			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice	10.36	10.41	0.66
						4" Ice			
(2) LGP2140X	C	From Leg	4.00	0.0000	120.00	No Ice	1.26	0.38	0.01
			0.00			1/2"	1.42	0.49	0.02
			0.00			Ice	1.58	0.62	0.03
						1" Ice	1.94	0.89	0.05
						2" Ice	2.75	1.54	0.13
						4" Ice			
(2) LGP13519	C	From Leg	4.00	0.0000	120.00	No Ice	0.34	0.21	0.01
			0.00			1/2"	0.42	0.28	0.01
			0.00			Ice	0.51	0.36	0.01
						1" Ice	0.73	0.55	0.02
						2" Ice	1.25	1.03	0.07
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	120.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	120.00	No Ice	8.64	6.36	0.08
			0.00			1/2"	9.29	7.54	0.14
			0.00			Ice	9.91	8.43	0.22
						1" Ice	11.18	10.24	0.39
						2" Ice	13.83	14.10	0.89
						4" Ice			
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.00	0.0000	120.00	No Ice	8.64	6.36	0.08
			0.00			1/2"	9.29	7.54	0.14
			0.00			Ice	9.91	8.43	0.22
						1" Ice	11.18	10.24	0.39
						2" Ice	13.83	14.10	0.89
						4" Ice			
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.00	0.0000	120.00	No Ice	8.64	6.36	0.08
			0.00			1/2"	9.29	7.54	0.14
			0.00			Ice	9.91	8.43	0.22
						1" Ice	11.18	10.24	0.39
						2" Ice	13.83	14.10	0.89
						4" Ice			
(2) RRUS-11	A	From Leg	4.00	0.0000	120.00	No Ice	4.42	1.19	0.06
			0.00			1/2"	4.71	1.35	0.08
			0.00			Ice	5.00	1.53	0.11
						1" Ice	5.61	1.90	0.18
						2" Ice	6.94	2.75	0.37
						4" Ice			
(2) RRUS-11	B	From Leg	4.00	0.0000	120.00	No Ice	4.42	1.19	0.06
			0.00			1/2"	4.71	1.35	0.08
			0.00			Ice	5.00	1.53	0.11
						1" Ice	5.61	1.90	0.18
						2" Ice	6.94	2.75	0.37
						4" Ice			
(2) RRUS-11	C	From Leg	4.00	0.0000	120.00	No Ice	4.42	1.19	0.06
			0.00			1/2"	4.71	1.35	0.08
			0.00			Ice	5.00	1.53	0.11
						1" Ice	5.61	1.90	0.18
						2" Ice	6.94	2.75	0.37
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	120.00	No Ice	1.27	1.27	0.02	
			0.00			1/2"	1.46	1.46	0.04	
			0.00			Ice	1.66	1.66	0.05	
						1" Ice	2.09	2.09	0.10	
						2" Ice	3.10	3.10	0.21	
					4" Ice					
*** DB420-B	A	From Leg	4.00	0.0000	96.00	No Ice	3.33	3.33	0.03	
			0.00			1/2"	5.99	5.99	0.04	
			11.00			Ice	8.66	8.66	0.05	
						1" Ice	13.99	13.99	0.07	
						2" Ice	24.64	24.64	0.12	
					4" Ice					
(2) PD83-1	A	From Leg	4.00	0.0000	96.00	No Ice	3.70	3.70	0.02	
			0.00			1/2"	5.58	5.58	0.05	
			-6.00			Ice	7.47	7.47	0.09	
						1" Ice	11.30	11.30	0.20	
						2" Ice	18.46	18.46	0.58	
					4" Ice					
(2) PD1110	A	From Leg	4.00	0.0000	96.00	No Ice	2.50	2.50	0.02	
			0.00			1/2"	3.84	3.84	0.04	
			9.00			Ice	5.20	5.20	0.07	
						1" Ice	7.97	7.97	0.15	
						2" Ice	11.61	11.61	0.42	
					4" Ice					
PD201-1	A	From Leg	4.00	0.0000	96.00	No Ice	0.63	0.63	0.00	
			0.00			1/2"	1.54	1.54	0.01	
			9.00			Ice	2.47	2.47	0.02	
						1" Ice	4.27	4.27	0.07	
						2" Ice	6.57	6.57	0.23	
					4" Ice					
DB205-A	B	From Leg	4.00	0.0000	96.00	No Ice	1.20	1.20	0.04	
			0.00			1/2"	2.16	2.16	0.05	
			12.00			Ice	3.12	3.12	0.06	
						1" Ice	5.04	5.04	0.08	
						2" Ice	8.88	8.88	0.13	
					4" Ice					
PD201-1	B	From Leg	4.00	0.0000	96.00	No Ice	0.63	0.63	0.00	
			0.00			1/2"	1.54	1.54	0.01	
			9.00			Ice	2.47	2.47	0.02	
						1" Ice	4.27	4.27	0.07	
						2" Ice	6.57	6.57	0.23	
					4" Ice					
PD83-1	B	From Leg	4.00	0.0000	96.00	No Ice	3.70	3.70	0.02	
			0.00			1/2"	5.58	5.58	0.05	
			-6.00			Ice	7.47	7.47	0.09	
						1" Ice	11.30	11.30	0.20	
						2" Ice	18.46	18.46	0.58	
					4" Ice					
DB806E-XT	C	From Leg	4.00	0.0000	96.00	No Ice	2.00	2.00	0.02	
			0.00			1/2"	2.83	2.83	0.03	
			9.00			Ice	3.46	3.46	0.05	
						1" Ice	4.45	4.45	0.11	
						2" Ice	6.56	6.56	0.29	
					4" Ice					
PD220	C	From Leg	4.00	0.0000	96.00	No Ice	3.08	3.08	0.02	
			0.00			1/2"	5.30	5.30	0.05	
			14.00			Ice	7.54	7.54	0.09	
						1" Ice	12.06	12.06	0.21	
						2" Ice	21.31	21.31	0.62	
					4" Ice					
DB224	C	From Leg	4.00	0.0000	96.00	No Ice	3.15	3.15	0.03	
			0.00			1/2"	5.67	5.67	0.04	
			11.00			Ice	8.19	8.19	0.05	
						1" Ice	13.23	13.23	0.07	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	CA _A Front ft ²	CA _A Side ft ²	Weight K	
						2" Ice 4" Ice	23.31 23.31	0.11	
Platform Mount [LP 712-1]	C	None		0.0000	96.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	1.34 1.65 1.96 2.58 3.82	

(3) RR90-17-00DPL2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.04 0.07 0.12 0.23 0.56
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.86 4.27 4.73 5.69 7.73	3.30 4.00 4.67 6.06 9.04	0.04 0.07 0.11 0.21 0.53
ATMAA1412D-1A20	A	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.47 0.57 0.69 0.95 1.57	0.01 0.02 0.03 0.06 0.16
(3) RR90-17-00DPL2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.04 0.07 0.12 0.23 0.56
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.86 4.27 4.73 5.69 7.73	3.30 4.00 4.67 6.06 9.04	0.04 0.07 0.11 0.21 0.53
ATMAA1412D-1A20	B	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.47 0.57 0.69 0.95 1.57	0.01 0.02 0.03 0.06 0.16
(3) RR90-17-00DPL2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	0.04 0.07 0.12 0.23 0.56
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.86 4.27 4.73 5.69 7.73	3.30 4.00 4.67 6.06 9.04	0.04 0.07 0.11 0.21 0.53
ATMAA1412D-1A20	C	From Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.47 0.57 0.69 0.95 1.57	0.01 0.02 0.03 0.06 0.16
Platform Mount [LP 712-1]	C	None		0.0000	82.00	No Ice 1/2"	24.53 29.94	1.34 1.65	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t .	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			

800 10504	A	From Leg	1.00 0.00 0.00	0.0000	72.00	No Ice	3.35	1.87	0.02
						1/2"	3.70	2.20	0.04
						Ice	4.05	2.53	0.06
						1" Ice	4.84	3.22	0.12
						2" Ice	6.61	4.70	0.29
						4" Ice			
800 10504	B	From Leg	1.00 0.00 0.00	0.0000	72.00	No Ice	3.35	1.87	0.02
						1/2"	3.70	2.20	0.04
						Ice	4.05	2.53	0.06
						1" Ice	4.84	3.22	0.12
						2" Ice	6.61	4.70	0.29
						4" Ice			
800 10504	C	From Leg	1.00 0.00 0.00	0.0000	72.00	No Ice	3.35	1.87	0.02
						1/2"	3.70	2.20	0.04
						Ice	4.05	2.53	0.06
						1" Ice	4.84	3.22	0.12
						2" Ice	6.61	4.70	0.29
						4" Ice			
Pipe Mount [PM 601-3]	C	None		0.0000	72.00	No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
						2" Ice	13.11	13.11	0.53
						4" Ice			

BSA150B	B	From Leg	1.00 0.00 3.00	0.0000	53.00	No Ice	2.33	2.33	0.00
						1/2"	3.13	3.13	0.15
						Ice	3.93	3.93	0.31
						1" Ice	5.53	5.53	0.65
						2" Ice	8.73	8.73	1.42
						4" Ice			
BSA150B	B	From Leg	1.00 0.00 -3.00	0.0000	53.00	No Ice	2.33	2.33	0.00
						1/2"	3.13	3.13	0.15
						Ice	3.93	3.93	0.31
						1" Ice	5.53	5.53	0.65
						2" Ice	8.73	8.73	1.42
						4" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	0.50 0.00 0.00	0.0000	53.00	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			

BULLET III	C	From Leg	1.00 0.00 0.00	0.0000	50.00	No Ice	0.08	0.08	0.00
						1/2"	0.12	0.12	0.00
						Ice	0.17	0.17	0.00
						1" Ice	0.29	0.29	0.01
						2" Ice	0.65	0.65	0.04
						4" Ice			

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 ft ²	Weight K	
P2F-52	B	Paraboloid w/o Radome	From Leg	4.00	0.0000		148.00	2.09	No Ice	3.44	0.02
				0.00					1/2" Ice	3.72	0.03
				4.00					1" Ice	3.99	0.05
									2" Ice	4.55	0.09
									4" Ice	5.67	0.17
VHLP2-11	B	Paraboloid w/o Radome	From Leg	4.00	0.0000		148.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.05
				4.00					1" Ice	4.30	0.07
									2" Ice	4.88	0.11
									4" Ice	6.04	0.19
VHLP2-23	C	Paraboloid w/o Radome	From Leg	4.00	0.0000		148.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.05
				4.00					1" Ice	4.30	0.07
									2" Ice	4.88	0.11
									4" Ice	6.04	0.20
(2) VHLP800-11	C	Paraboloid w/o Radome	From Leg	4.00	0.0000		148.00	2.92	No Ice	6.68	0.02
				0.00					1/2" Ice	7.07	0.06
				4.00					1" Ice	7.46	0.09
									2" Ice	8.23	0.17
									4" Ice	9.78	0.31
**											
VHLP2.5-10W	A	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000		144.00	2.92	No Ice	6.68	0.05
				0.00					1/2" Ice	7.07	0.09
				0.00					1" Ice	7.46	0.12
									2" Ice	8.23	0.20
									4" Ice	9.78	0.34

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft ²	Face Area ft ²	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
L1 148.00-100.50	123.15	1.457	31	106.168	A	0.000	106.168	106.168	100.00	0.000	9.500
					B	0.000	106.168	100.00	0.000	0.000	
					C	0.000	106.168	100.00	0.000	0.000	
L2 100.50-69.00	84.47	1.308	28	90.143	A	0.000	90.143	90.143	100.00	0.000	6.300
					B	0.000	90.143	100.00	0.000	0.000	
					C	0.000	90.143	100.00	0.000	0.000	
L3 69.00-58.25	63.57	1.206	26	34.605	A	0.000	34.605	34.605	100.00	0.000	2.150
					B	0.000	34.605	100.00	0.000	0.000	
					C	0.000	34.605	100.00	0.000	1.167	
L4 58.25-52.83	55.53	1.16	25	17.846	A	0.000	17.846	17.846	100.00	0.000	1.084
					B	0.000	17.846	100.00	0.000	0.000	
					C	0.000	17.846	100.00	0.000	0.000	
L5 52.83-28.75	40.56	1.061	23	85.312	A	0.000	85.312	85.312	100.00	0.000	4.816
					B	0.000	85.312	100.00	0.000	0.000	
					C	0.000	85.312	100.00	0.000	4.135	
L6 28.75-12.00	20.27	1	21	63.836	A	0.000	63.836	63.836	100.00	0.000	3.350
					B	0.000	63.836	100.00	0.000	0.000	
					C	0.000	63.836	100.00	0.000	3.490	
L7 12.00-0.00	5.95	1	21	48.702	A	0.000	48.702	48.702	100.00	0.000	2.400
					B	0.000	48.702	100.00	0.000	0.000	
					C	0.000	48.702	100.00	0.000	2.500	

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 148.00-100.50	123.15	1.457	5	0.8784	113.122	A	0.000	113.122	113.122	100.00	0.000	17.845
						B	0.000	113.122	100.00	0.000	0.000	
						C	0.000	113.122	100.00	0.000	0.000	
L2 100.50-69.00	84.47	1.308	5	0.8395	94.755	A	0.000	94.755	94.755	100.00	0.000	11.834
						B	0.000	94.755	100.00	0.000	0.000	
						C	0.000	94.755	100.00	0.000	0.000	
L3 69.00-58.25	63.57	1.206	4	0.8114	36.059	A	0.000	36.059	36.059	100.00	0.000	3.894
						B	0.000	36.059	100.00	0.000	0.000	
						C	0.000	36.059	100.00	0.000	2.429	
L4 58.25-52.83	55.53	1.16	4	0.7983	18.579	A	0.000	18.579	18.579	100.00	0.000	1.964
						B	0.000	18.579	100.00	0.000	0.000	
						C	0.000	18.579	100.00	0.000	0.000	
L5 52.83-28.75	40.56	1.061	4	0.7688	88.398	A	0.000	88.398	88.398	100.00	0.000	8.518
						B	0.000	88.398	100.00	0.000	0.000	
						C	0.000	88.398	100.00	0.000	8.107	
L6 28.75-12.00	20.27	1	4	0.7500	65.982	A	0.000	65.982	65.982	100.00	0.000	5.925
						B	0.000	65.982	100.00	0.000	0.000	
						C	0.000	65.982	100.00	0.000	6.351	
L7 12.00-0.00	5.95	1	4	0.7500	50.202	A	0.000	50.202	50.202	100.00	0.000	4.200
						B	0.000	50.202	100.00	0.000	0.000	
						C	0.000	50.202	100.00	0.000	4.500	

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 148.00-100.50	123.15	1.457	9	106.168	A	0.000	106.168	106.168	100.00	0.000	9.500
					B	0.000	106.168	100.00	0.000	0.000	
					C	0.000	106.168	100.00	0.000	0.000	
L2 100.50-69.00	84.47	1.308	8	90.143	A	0.000	90.143	90.143	100.00	0.000	6.300
					B	0.000	90.143	100.00	0.000	0.000	
					C	0.000	90.143	100.00	0.000	0.000	
L3 69.00-58.25	63.57	1.206	8	34.605	A	0.000	34.605	34.605	100.00	0.000	2.150
					B	0.000	34.605	100.00	0.000	0.000	
					C	0.000	34.605	100.00	0.000	1.167	
L4 58.25-52.83	55.53	1.16	7	17.846	A	0.000	17.846	17.846	100.00	0.000	1.084
					B	0.000	17.846	100.00	0.000	0.000	
					C	0.000	17.846	100.00	0.000	0.000	
L5 52.83-28.75	40.56	1.061	7	85.312	A	0.000	85.312	85.312	100.00	0.000	4.816
					B	0.000	85.312	100.00	0.000	0.000	
					C	0.000	85.312	100.00	0.000	4.135	
L6 28.75-12.00	20.27	1	6	63.836	A	0.000	63.836	63.836	100.00	0.000	3.350
					B	0.000	63.836	100.00	0.000	0.000	
					C	0.000	63.836	100.00	0.000	3.490	
L7 12.00-0.00	5.95	1	6	48.702	A	0.000	48.702	48.702	100.00	0.000	2.400
					B	0.000	48.702	100.00	0.000	0.000	
					C	0.000	48.702	100.00	0.000	2.500	

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice

Comb. No.	Description
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	148 - 100.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17.05	0.80	0.69
			Max. Mx	5	-8.41	-580.56	38.20
			Max. My	2	-8.40	-34.98	580.83
			Max. Vy	5	20.83	-580.56	38.20
			Max. Vx	2	-20.87	-34.98	580.83
			Max. Torque	12			2.75
L2	100.5 - 69	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.81	0.90	2.98
			Max. Mx	5	-18.58	-1543.33	67.90
			Max. My	2	-18.57	-61.76	1545.83
			Max. Vy	5	32.93	-1543.33	67.90
			Max. Vx	2	-32.97	-61.76	1545.83
			Max. Torque	9			-3.65
L3	69 - 58.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.35	0.90	3.21
			Max. Mx	5	-19.94	-1735.02	72.69
			Max. My	2	-19.93	-66.09	1737.83
			Max. Vy	5	33.77	-1735.02	72.69
			Max. Vx	2	-33.82	-66.09	1737.83
			Max. Torque	9			-3.67
L4	58.25 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.01	-0.41	2.86
			Max. Mx	5	-23.46	-2095.68	81.30
			Max. My	2	-23.45	-74.04	2098.87

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	52.83 - 28.75	Pole	Max. Vy	5	35.60	-2095.68	81.30
			Max. Vx	2	-35.67	-74.04	2098.87
			Max. Torque	9			-3.69
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-44.21	-0.40	3.60
			Max. Mx	5	-29.05	-2771.32	96.72
			Max. My	2	-29.05	-88.01	2775.85
			Max. Vy	5	38.15	-2771.32	96.72
			Max. Vx	2	-38.22	-88.01	2775.85
			Max. Torque	9			-3.08
L6	28.75 - 12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-54.27	-0.40	4.56
			Max. Mx	5	-38.10	-3666.14	115.44
			Max. My	2	-38.10	-104.96	3672.34
			Max. Vy	5	41.30	-3666.14	115.44
			Max. Vx	2	-41.36	-104.96	3672.34
			Max. Torque	9			-3.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-59.16	-0.40	5.11
			Max. Mx	5	-42.62	-4171.36	125.27
L7	12 - 0	Pole	Max. My	2	-42.62	-113.86	4178.45
			Max. Vy	5	42.94	-4171.36	125.27
			Max. Vx	2	-43.00	-113.86	4178.45
			Max. Torque	9			-3.21

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	59.16	0.00	0.00
	Max. H _x	11	42.64	42.66	0.30
	Max. H _z	2	42.64	-0.74	42.98
	Max. M _x	2	4178.45	-0.74	42.98
	Max. M _z	5	4171.36	-42.92	0.80
	Max. Torsion	5	2.48	-42.92	0.80
	Min. Vert	1	42.64	0.00	0.00
	Min. H _x	5	42.64	-42.92	0.80
	Min. H _z	8	42.64	0.11	-42.52
	Min. M _x	8	-4102.22	0.11	-42.52
	Min. M _z	11	-4131.43	42.66	0.30
	Min. Torsion	9	-3.21	21.15	-36.95

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	42.64	0.00	0.00	-1.55	0.12	0.00
Dead+Wind 0 deg - No Ice	42.64	0.74	-42.98	-4178.45	-113.86	-0.97
Dead+Wind 30 deg - No Ice	42.64	21.99	-36.88	-3564.09	-2167.13	-0.65
Dead+Wind 60 deg - No Ice	42.64	37.27	-21.68	-2118.37	-3627.77	-1.71
Dead+Wind 90 deg - No Ice	42.64	42.92	-0.80	-125.27	-4171.36	-2.48
Dead+Wind 120 deg - No Ice	42.64	37.54	20.57	1941.86	-3672.07	-1.41
Dead+Wind 150 deg - No Ice	42.64	20.96	36.71	3534.72	-2008.39	0.45
Dead+Wind 180 deg - No Ice	42.64	-0.11	42.52	4102.22	15.39	2.23
Dead+Wind 210 deg - No Ice	42.64	-21.15	36.95	3571.89	2037.00	3.21
Dead+Wind 240 deg - No Ice	42.64	-37.21	21.22	2042.15	3618.06	2.38
Dead+Wind 270 deg - No Ice	42.64	-42.66	-0.30	-49.83	4131.43	0.92
Dead+Wind 300 deg - No Ice	42.64	-36.86	-21.32	-2064.50	3565.23	-0.52

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - No Ice	42.64	-21.31	-36.61	-3523.88	2063.95	-1.45
Dead+Ice+Temp	59.16	-0.00	-0.00	-5.11	-0.40	-0.00
Dead+Wind 0 deg+Ice+Temp	59.16	0.14	-8.99	-913.84	-22.13	-0.36
Dead+Wind 30 deg+Ice+Temp	59.16	4.58	-7.72	-781.35	-469.40	-0.45
Dead+Wind 60 deg+Ice+Temp	59.16	7.79	-4.53	-464.98	-788.38	-0.69
Dead+Wind 90 deg+Ice+Temp	59.16	8.97	-0.15	-29.23	-906.83	-0.77
Dead+Wind 120 deg+Ice+Temp	59.16	7.84	4.32	420.89	-796.94	-0.43
Dead+Wind 150 deg+Ice+Temp	59.16	4.39	7.69	765.77	-438.59	0.03
Dead+Wind 180 deg+Ice+Temp	59.16	-0.02	8.90	889.02	2.57	0.56
Dead+Wind 210 deg+Ice+Temp	59.16	-4.43	7.73	772.94	443.32	0.90
Dead+Wind 240 deg+Ice+Temp	59.16	-7.78	4.44	440.07	785.91	0.79
Dead+Wind 270 deg+Ice+Temp	59.16	-8.92	-0.06	-14.74	898.36	0.50
Dead+Wind 300 deg+Ice+Temp	59.16	-7.71	-4.46	-454.57	775.51	0.14
Dead+Wind 330 deg+Ice+Temp	59.16	-4.46	-7.67	-773.58	448.77	-0.21
Dead+Wind 0 deg - Service	42.64	0.22	-12.92	-1258.68	-34.20	-0.35
Dead+Wind 30 deg - Service	42.64	6.61	-11.08	-1073.76	-652.15	-0.25
Dead+Wind 60 deg - Service	42.64	11.20	-6.52	-638.69	-1091.77	-0.53
Dead+Wind 90 deg - Service	42.64	12.90	-0.24	-38.84	-1255.34	-0.70
Dead+Wind 120 deg - Service	42.64	11.28	6.18	583.27	-1105.07	-0.33
Dead+Wind 150 deg - Service	42.64	6.30	11.03	1062.59	-604.29	0.14
Dead+Wind 180 deg - Service	42.64	-0.03	12.78	1233.41	4.73	0.67
Dead+Wind 210 deg - Service	42.64	-6.36	11.11	1073.82	613.11	0.97
Dead+Wind 240 deg - Service	42.64	-11.18	6.38	613.48	1088.98	0.68
Dead+Wind 270 deg - Service	42.64	-12.82	-0.09	-16.12	1243.45	0.26
Dead+Wind 300 deg - Service	42.64	-11.08	-6.41	-622.42	1073.04	-0.15
Dead+Wind 330 deg - Service	42.64	-6.40	-11.00	-1061.58	621.21	-0.41

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-42.64	0.00	0.00	42.64	0.00	0.000%
2	0.74	-42.64	-42.98	-0.74	42.64	42.98	0.000%
3	21.99	-42.64	-36.88	-21.99	42.64	36.88	0.000%
4	37.27	-42.64	-21.68	-37.27	42.64	21.68	0.000%
5	42.92	-42.64	-0.80	-42.92	42.64	0.80	0.000%
6	37.54	-42.64	20.57	-37.54	42.64	-20.57	0.000%
7	20.96	-42.64	36.71	-20.96	42.64	-36.71	0.000%
8	-0.11	-42.64	42.52	0.11	42.64	-42.52	0.000%
9	-21.15	-42.64	36.95	21.15	42.64	-36.95	0.000%
10	-37.21	-42.64	21.22	37.21	42.64	-21.22	0.000%
11	-42.66	-42.64	-0.30	42.66	42.64	0.30	0.000%
12	-36.86	-42.64	-21.32	36.86	42.64	21.32	0.000%
13	-21.31	-42.64	-36.61	21.31	42.64	36.61	0.000%
14	0.00	-59.16	0.00	0.00	59.16	0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
15	0.14	-59.16	-8.99	-0.14	59.16	8.99	0.000%
16	4.58	-59.16	-7.72	-4.58	59.16	7.72	0.000%
17	7.79	-59.16	-4.53	-7.79	59.16	4.53	0.000%
18	8.97	-59.16	-0.15	-8.97	59.16	0.15	0.000%
19	7.84	-59.16	4.32	-7.84	59.16	-4.32	0.000%
20	4.39	-59.16	7.69	-4.39	59.16	-7.69	0.000%
21	-0.02	-59.16	8.90	0.02	59.16	-8.90	0.000%
22	-4.43	-59.16	7.73	4.43	59.16	-7.73	0.000%
23	-7.78	-59.16	4.44	7.78	59.16	-4.44	0.000%
24	-8.92	-59.16	-0.06	8.92	59.16	0.06	0.000%
25	-7.71	-59.16	-4.46	7.71	59.16	4.46	0.000%
26	-4.46	-59.16	-7.67	4.46	59.16	7.67	0.000%
27	0.22	-42.64	-12.92	-0.22	42.64	12.92	0.000%
28	6.61	-42.64	-11.08	-6.61	42.64	11.08	0.000%
29	11.20	-42.64	-6.52	-11.20	42.64	6.52	0.000%
30	12.90	-42.64	-0.24	-12.90	42.64	0.24	0.000%
31	11.28	-42.64	6.18	-11.28	42.64	-6.18	0.000%
32	6.30	-42.64	11.03	-6.30	42.64	-11.03	0.000%
33	-0.03	-42.64	12.78	0.03	42.64	-12.78	0.000%
34	-6.36	-42.64	11.11	6.36	42.64	-11.11	0.000%
35	-11.18	-42.64	6.38	11.18	42.64	-6.38	0.000%
36	-12.82	-42.64	-0.09	12.82	42.64	0.09	0.000%
37	-11.08	-42.64	-6.41	11.08	42.64	6.41	0.000%
38	-6.40	-42.64	-11.00	6.40	42.64	11.00	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00056367
3	Yes	5	0.00000001	0.00029381
4	Yes	5	0.00000001	0.00030338
5	Yes	5	0.00000001	0.00004414
6	Yes	5	0.00000001	0.00027235
7	Yes	5	0.00000001	0.00027190
8	Yes	4	0.00000001	0.00071411
9	Yes	5	0.00000001	0.00029640
10	Yes	5	0.00000001	0.00027638
11	Yes	4	0.00000001	0.00057736
12	Yes	5	0.00000001	0.00028158
13	Yes	5	0.00000001	0.00028727
14	Yes	4	0.00000001	0.00001648
15	Yes	5	0.00000001	0.00017609
16	Yes	5	0.00000001	0.00018950
17	Yes	5	0.00000001	0.00019099
18	Yes	5	0.00000001	0.00017463
19	Yes	5	0.00000001	0.00018454
20	Yes	5	0.00000001	0.00018025
21	Yes	5	0.00000001	0.00017001
22	Yes	5	0.00000001	0.00018388
23	Yes	5	0.00000001	0.00018573
24	Yes	5	0.00000001	0.00017280
25	Yes	5	0.00000001	0.00018611
26	Yes	5	0.00000001	0.00018443
27	Yes	4	0.00000001	0.00009495
28	Yes	4	0.00000001	0.00057214
29	Yes	4	0.00000001	0.00061854
30	Yes	4	0.00000001	0.00016018
31	Yes	4	0.00000001	0.00051095
32	Yes	4	0.00000001	0.00050370
33	Yes	4	0.00000001	0.00013113
34	Yes	4	0.00000001	0.00060384
35	Yes	4	0.00000001	0.00051672
36	Yes	4	0.00000001	0.00010327

37	Yes	4	0.00000001	0.00053629
38	Yes	4	0.00000001	0.00056149

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 100.5	30.746	29	1.8261	0.0079
L2	104.5 - 69	15.410	29	1.4225	0.0035
L3	69 - 58.25	6.544	29	0.9164	0.0015
L4	63.25 - 52.83	5.497	29	0.8216	0.0012
L5	52.83 - 28.75	3.821	29	0.6933	0.0009
L6	34.5 - 12	1.659	29	0.4331	0.0005
L7	12 - 0	0.198	29	0.1581	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	P2F-52	29	30.746	1.8261	0.0079	33341
150.00	(2) DB980H90E-M w/Mount Pipe	29	30.746	1.8261	0.0079	33341
148.00	DB420	29	30.746	1.8261	0.0079	33341
144.00	VHLP2.5-10W	29	29.246	1.7934	0.0075	33341
134.00	(4) DB844H90E-XY w/ Mount Pipe	29	25.525	1.7101	0.0064	11907
120.00	(2) 7770.00 w/ Mount Pipe	29	20.502	1.5844	0.0049	5953
96.00	DB420-B	29	12.914	1.3193	0.0029	3749
82.00	(3) RR90-17-00DPL2 w/ Mount Pipe	29	9.310	1.1249	0.0021	3622
72.00	800 10504	29	7.132	0.9670	0.0016	3548
53.00	BSA150B	29	3.846	0.6953	0.0009	3726
50.00	BULLET III	29	3.424	0.6568	0.0009	3781

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 100.5	101.845	4	6.0587	0.0269
L2	104.5 - 69	51.099	4	4.7194	0.0119
L3	69 - 58.25	21.718	4	3.0417	0.0050
L4	63.25 - 52.83	18.246	4	2.7272	0.0041
L5	52.83 - 28.75	12.686	4	2.3014	0.0031
L6	34.5 - 12	5.507	4	1.4382	0.0017
L7	12 - 0	0.658	4	0.5252	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	P2F-52	4	101.845	6.0587	0.0269	10270
150.00	(2) DB980H90E-M w/Mount Pipe	4	101.845	6.0587	0.0269	10270
148.00	DB420	4	101.845	6.0587	0.0269	10270

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144.00	VHLP2.5-10W	4	96.882	5.9500	0.0254	10270
134.00	(4) DB844H90E-XY w/ Mount Pipe	4	84.573	5.6734	0.0216	3666
120.00	(2) 7770.00 w/ Mount Pipe	4	67.953	5.2564	0.0166	1830
96.00	DB420-B	4	42.832	4.3774	0.0099	1146
82.00	(3) RR90-17-00DPL2 w/ Mount Pipe	4	30.888	3.7330	0.0072	1102
72.00	800 10504	4	23.666	3.2093	0.0055	1077
53.00	BSA150B	4	12.768	2.3083	0.0031	1127
50.00	BULLET III	4	11.366	2.1805	0.0028	1143

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	148 - 100.5 (1)	TP31.643x22x0.25	47.50	0.00	0.0	36.000	24.6177	-8.38	886.24	0.009
L2	100.5 - 69 (2)	TP37.5377x30.331x0.375	35.50	0.00	0.0	36.000	44.8739	-18.56	1615.46	0.011
L3	69 - 58.25 (3)	TP39.72x37.5377x0.3897	10.75	0.00	0.0	36.000	48.0756	-19.92	1730.72	0.012
L4	58.25 - 52.83 (4)	TP40.0697x37.9256x0.437 5	10.42	0.00	0.0	36.000	55.8319	-23.44	2009.95	0.012
L5	52.83 - 28.75 (5)	TP44.959x40.0697x0.5055	24.08	0.00	0.0	36.000	70.4529	-29.04	2536.31	0.011
L6	28.75 - 12 (6)	TP47.4841x42.7806x0.541 2	22.50	0.00	0.0	36.000	81.7997	-38.10	2944.79	0.013
L7	12 - 0 (7)	TP49.92x47.4841x0.5591	12.00	0.00	0.0	36.000	88.8614	-42.62	3199.01	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} F _{by}
L1	148 - 100.5 (1)	TP31.643x22x0.25	588.93	38.408	36.000	1.067	0.00	0.000	36.000	0.000
L2	100.5 - 69 (2)	TP37.5377x30.331x0.375	1558.7 5	45.979	36.000	1.277	0.00	0.000	36.000	0.000
L3	69 - 58.25 (3)	TP39.72x37.5377x0.3897	1751.5 6	46.779	36.000	1.299	0.00	0.000	36.000	0.000
L4	58.25 - 52.83 (4)	TP40.0697x37.9256x0.43 75	2114.2 0	47.044	36.000	1.307	0.00	0.000	36.000	0.000
L5	52.83 - 28.75 (5)	TP44.959x40.0697x0.505 5	2793.7 2	45.134	36.000	1.254	0.00	0.000	36.000	0.000
L6	28.75 - 12 (6)	TP47.4841x42.7806x0.54 12	3693.2 7	47.380	36.000	1.316	0.00	0.000	36.000	0.000
L7	12 - 0 (7)	TP49.92x47.4841x0.5591	4200.9 8	47.170	36.000	1.310	0.00	0.000	36.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} F _{vt}
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Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_t ksi	Allow. F_t ksi	Ratio $\frac{f_t}{F_t}$
L1	148 - 100.5 (1)	TP31.643x22x0.25	21.02	0.854	24.000	0.072	0.49	0.015	24.000	0.001
L2	100.5 - 69 (2)	TP37.5377x30.331x0.375	33.12	0.738	24.000	0.062	2.08	0.029	24.000	0.001
L3	69 - 58.25 (3)	TP39.72x37.5377x0.3897	33.96	0.706	24.000	0.060	2.09	0.026	24.000	0.001
L4	58.25 - 52.83 (4)	TP40.0697x37.9256x0.4375	35.81	0.641	24.000	0.054	2.12	0.022	24.000	0.001
L5	52.83 - 28.75 (5)	TP44.959x40.0697x0.5055	38.36	0.544	24.000	0.046	1.60	0.012	24.000	0.001
L6	28.75 - 12 (6)	TP47.4841x42.7806x0.5412	41.51	0.507	24.000	0.043	1.67	0.010	24.000	0.000
L7	12 - 0 (7)	TP49.92x47.4841x0.5591	43.14	0.485	24.000	0.041	1.71	0.009	24.000	0.000

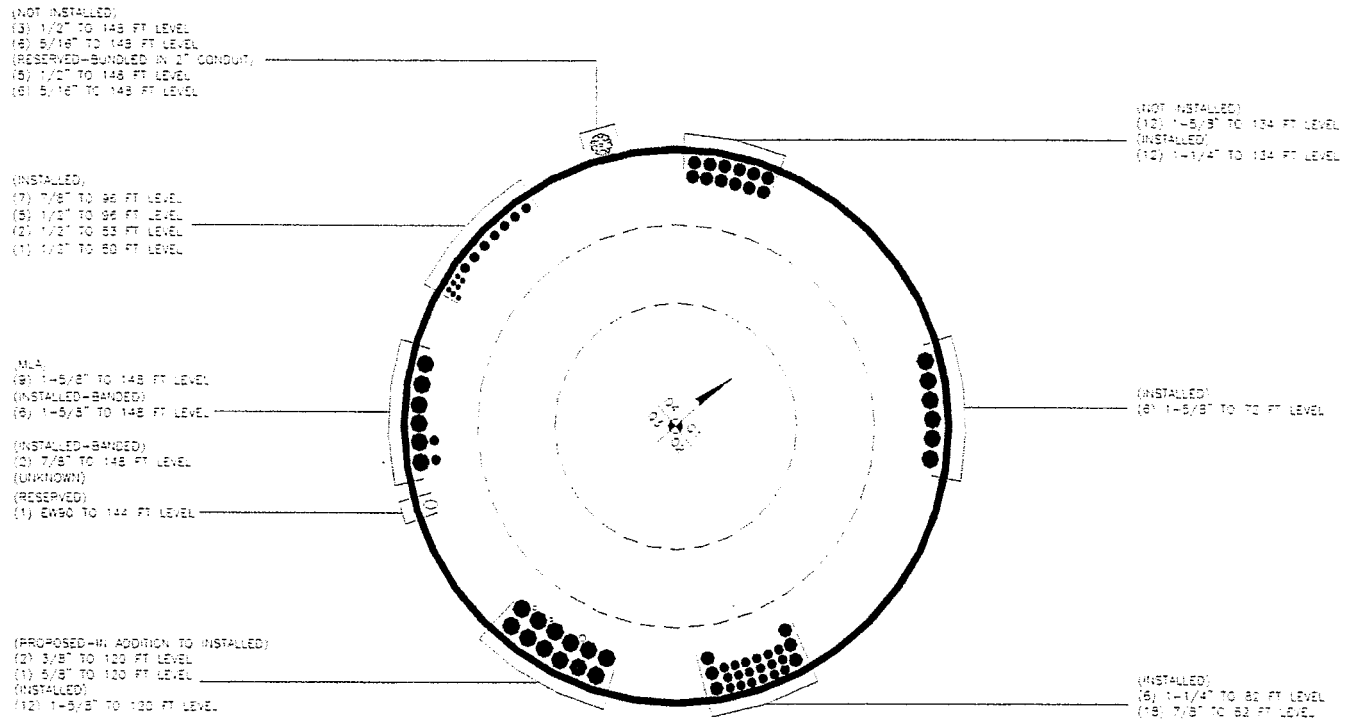
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_t}{F_t}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	148 - 100.5 (1)	0.009	1.067	0.000	0.072	0.001	1.078	1.333	H1-3+VT ✓
L2	100.5 - 69 (2)	0.011	1.277	0.000	0.062	0.001	1.290	1.333	H1-3+VT ✓
L3	69 - 58.25 (3)	0.012	1.299	0.000	0.060	0.001	1.312	1.333	H1-3+VT ✓
L4	58.25 - 52.83 (4)	0.012	1.307	0.000	0.054	0.001	1.319	1.333	H1-3+VT ✓
L5	52.83 - 28.75 (5)	0.011	1.254	0.000	0.046	0.001	1.266	1.333	H1-3+VT ✓
L6	28.75 - 12 (6)	0.013	1.316	0.000	0.043	0.000	1.329	1.333	H1-3+VT ✓
L7	12 - 0 (7)	0.013	1.310	0.000	0.041	0.000	1.324	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail
L1	148 - 100.5	Pole	TP31.643x22x0.25	1	-8.38	1181.35	80.8	Pass
L2	100.5 - 69	Pole	TP37.5377x30.331x0.375	2	-18.56	2153.41	96.8	Pass
L3	69 - 58.25	Pole	TP39.72x37.5377x0.3897	3	-19.92	2307.05	98.4	Pass
L4	58.25 - 52.83	Pole	TP40.0697x37.9256x0.4375	4	-23.44	2679.26	99.0	Pass
L5	52.83 - 28.75	Pole	TP44.959x40.0697x0.5055	5	-29.04	3380.90	95.0	Pass
L6	28.75 - 12	Pole	TP47.4841x42.7806x0.5412	6	-38.10	3925.40	99.7	Pass
L7	12 - 0	Pole	TP49.92x47.4841x0.5591	7	-42.62	4264.28	99.3	Pass
Summary								
Pole (L6)							99.7	Pass
RATING =							99.7	Pass

APPENDIX B BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Program Version 5.4.2.0 - 6/17/2010 File:T:/329_Sabre Communications/_2010_SABRE/32910-0089_876354/Final Rev 1/32910-0089
Final R1.eri

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90E-M w/ Mount Pipe	150	(2) 7770.00 w/ Mount Pipe	120
(2) DB980H90E-M w/ Mount Pipe	150	(2) LGP2140X	120
LLPX310R w/ Mount Pipe	148	(2) 7770.00 w/ Mount Pipe	120
FDD_R6_RRH	148	PD201-1	96
DB420	148	PD83-1	96
LLPX310R w/ Mount Pipe	148	DB806E-XT	96
FDD_R6_RRH	148	PD220	96
(2) DB980H90E-M w/ Mount Pipe	148	DB224	96
LLPX310R w/ Mount Pipe	148	Platform Mount [LP 712-1]	96
FDD_R6_RRH	148	DB420-B	96
Platform Mount [LP 712-1]	148	(2) PD83-1	96
P2F-52	148	(2) PD1110	96
VHLP2-11	148	PD201-1	96
VHLP2-23	148	DB205-A	96
(2) VHLP800-11	148	ATMAA1412D-1A20	82
Pipe Mount [PM 601-1]	144	(3) RR90-17-00DPL2 w/ Mount Pipe	82
VHLP2.5-10W	144	APXV18-206516S-C-A20 w/ Mount Pipe	82
Platform Mount [LP 303-1]	134	ATMAA1412D-1A20	82
(4) DB844H90E-XY w/ Mount Pipe	134	Platform Mount [LP 712-1]	82
(4) DB844H90E-XY w/ Mount Pipe	134	(3) RR90-17-00DPL2 w/ Mount Pipe	82
(4) DB844H90E-XY w/ Mount Pipe	134	APXV18-206516S-C-A20 w/ Mount Pipe	82
(2) LGP13519	120	ATMAA1412D-1A20	82
(2) 7770.00 w/ Mount Pipe	120	(3) RR90-17-00DPL2 w/ Mount Pipe	82
(2) LGP2140X	120	APXV18-206516S-C-A20 w/ Mount Pipe	82
(2) LGP13519	120	Pipe	82
Platform Mount [LP 712-1]	120	800 10504	72
P65-16-XLH-RR w/ Mount Pipe	120	800 10504	72
P65-16-XLH-RR w/ Mount Pipe	120	800 10504	72
P65-16-XLH-RR w/ Mount Pipe	120	800 10504	72
(2) RRUS-11	120	Pipe Mount [PM 601-3]	72
(2) RRUS-11	120	Side Arm Mount [SO 701-1]	53
(2) RRUS-11	120	BSA150B	53
DC6-48-60-18-8F	120	BSA150B	53
(2) LGP2140X	120	BULLET III	50
(2) LGP13519	120		

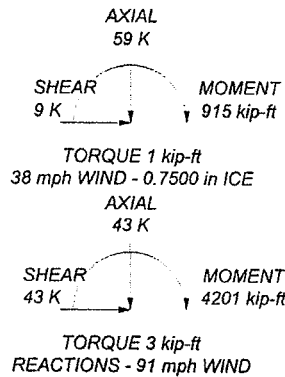
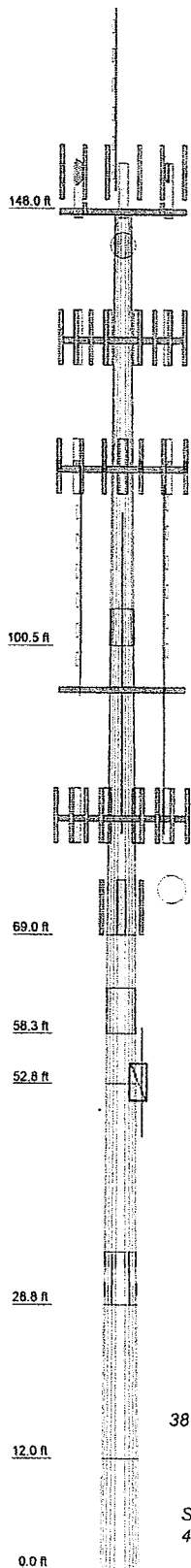
MATERIAL STRENGTH


GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 91 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.7%

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	47.50	12	0.2500	4.00	22.0000	31.6430	A607-60	3.5
2	35.50	12	0.3750	5.00	30.3310	37.5377	A607-60	4.9
3	10.42 - 10.75	12	0.3897	5.00	37.5377	38.7200	A607-60	1.8
4	10.42 - 10.75	12	0.4375	5.00	37.9256	40.0697	A607-60	1.9
5	24.08	12	0.5055	5.75	40.0697	44.8590	A607-60	5.6
6	22.50	12	0.5412	5.75	42.7805	47.4841	A607-60	5.9
7	12.00	12	0.5891	5.75	47.4841	49.9200	A607-60	3.5
								27.1



 <p>Paul J Ford and Company 250 E. Broad Street Suite 1500 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105</p>	Job: Westport Fire Department / Westport, CT
	Project: 32910-0089 Final R1/ BU# 876354
	Client: Crown Castle Drawn by: Allen Bonham App'd:
	Code: TIA/EIA-222-F Date: 04/13/11 Scale: NTS
	Path: 7:373 5324 Communications\2010 8A82F7510-0089 876354\Final R1\101510-0089 Final R1.dwg Dwg No. E-1

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete not exceeding $(1) \times (\text{Rod Diameter})$

Site Data

BU#: 876354		
Site Name: Westport Fire Department		
App #:		
Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

Plate Data

W=Side:	60	in
Thick:	2.75	in
Grade:	50	ksi
Clip Distance:	16	in

Stiffener Data (Welding at both sides)

Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	18	in
Thick:	1	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data

Diam:	49.92	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor

ASD ASIF:	1.333	
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** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	4201	ft-kips
Unfactored Axial, P:	43	kips
Unfactored Shear, V:	43	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	171.7 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	88.1% Pass

Base Plate Results

Base Plate Stress:	5.3 ksi	Shear Check Only
Allowable PL Bending Stress:	26.7 ksi	
Base Plate Stress Ratio:	20.0% Pass	

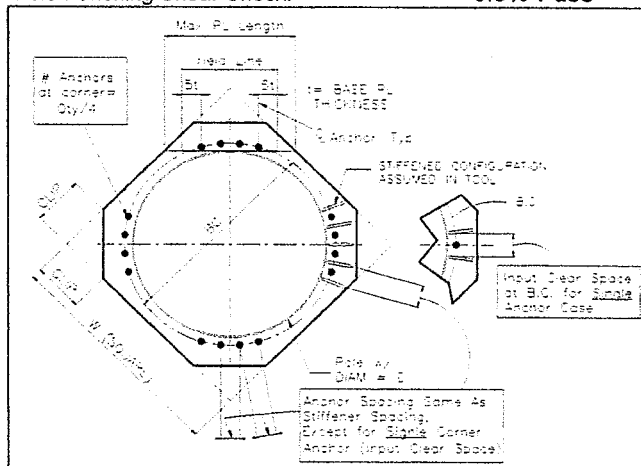
PL Ref. Data
Yield Line (in):
N/A, Roark
Max PL Length:
34.93

Stiffener Results

Horizontal Weld :	46.9% Pass
Vertical Weld:	40.8% Pass
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$:	11.2% Pass
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$:	47.2% Pass
Plate Comp. (AISC Bracket):	48.6% Pass

Pole Results

Pole Punching Shear Check:	8.3% Pass
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DRILLED PIER SOIL AND STEEL ANALYSIS - TIA/EIA-222-F

Unfactored Base Reactions from RISAs

	Comp. (+)	Tension (-)	
Moment, M =	4201.0		k-ft
Shear, V =	43.0		kips
Axial Load, P =	43.0		kips
OTM =	4222.5	0.0	k-ft @ Ground

Safety Factors / Load Factors / ϕ Factors

Tower Type =	Monopole
ACI Code =	ACI 318-05
Seismic Design Category =	D
Reference Standard =	TIA/EIA-222-F
Use 1.3 Load Factor?	Yes
Load Factor =	1.30

Drilled Pier Parameters

Diameter =	7	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	22.5	ft
fc' =	3	ksi
ec =	0.003	in/in

	Safety Factor	ϕ Factor
Soil Lateral Resistance =	2.00	0.75
Skin Friction =	2.00	0.75
End Bearing =	2.00	0.75
Concrete Wt. Resist Uplift =	1.25	

Mat Ftdn. Cap Width = _____ ft
 Mat Ftdn. Cap Length = _____ ft
 Depth Below Grade = _____ ft

Load Combinations Checked per TIA/EIA-222-F

- Ult. Skin Friction/2.00 + Ult. End Bearing/2.00
 + Effective Soil Wt. - Buoyant Conc. Wt. \geq Compression
- Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 \geq Uplift
- Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 \geq Uplift

Steel Parameters

Number of Bars =	40	
Rebar Size =	#11	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	4	in

Soil Parameters

Water Table Depth =	99.00	ft
Depth to Ignore Soil =	3.50	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?	Ground	

Above Full Cohesion Lateral Resistance = $4(Cohesion)(Dia)(H)$
 Below Full Cohesion Lateral Resistance = $8(Cohesion)(Dia)(H)$

Maximum Capacity Ratios

Maximum Soil Ratio =	110.0%
Maximum Steel Ratio =	105.0%

Define Soil Layers

Note: Cohesion = Undrained Shear Strength = Unconfined Compressive Strength / 2

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	6	100	1000		Clay				6
2	18	135		38	Sand	10000			24
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	16.57	ft, from Grade
Bending Moment, M =	4935.05	k-ft, from COR
Resisting Moment, Ma =	5466.97	k-ft, from COR
MOMENT RATIO =	90.3%	OK

Shear, V =	43.00	kips
Resisting Shear, Va =	47.63	kips
SHEAR RATIO =	90.3%	OK

Soil Results: Uplift

Uplift, T =	0.00	kips
Allowable Uplift Cap., Ta =	106.22	kips
UPLIFT RATIO =	0.0%	OK

Compression, C =	43.00	kips
Allowable Comp. Cap., Ca =	168.47	kips
COMPRESSION RATIO =	25.5%	OK

Steel Results (ACI 318-05):

Minimum Steel Area =	27.71	sq in
Actual Steel Area =	62.40	sq in
Allowable Min Axial, Pa =	-2592.00	kips, Where Ma = 0 k-ft
Allowable Max Axial, Pa =	7086.56	kips, Where Ma = 0 k-ft
Axial Load, P =	74.75	kips @ 5.00 ft Below Grade
Moment, M =	4409.06	k-ft @ 5.00 ft Below Grade
Allowable Moment, Ma =	7061.61	k-ft
MOMENT RATIO =	62.4%	OK

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: 876354
Site Name: Westport Fire Department
App #:

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	4409.06	ft-kips (* Note)
Max. Service Shaft P:	74.75	kips
Max Axial Force Type:	Comp.	

(* Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Load Factor	Shaft Factored Loads	
1.30	Mu: 5731.778	ft-kips
1.30	Pu: 97.175	kips

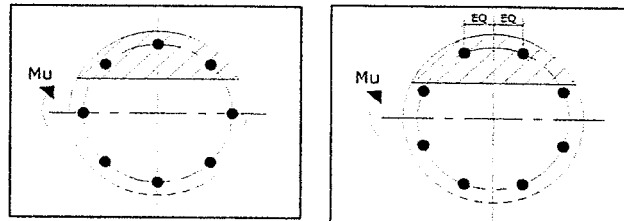
Pier Properties	
Concrete:	
Pier Diameter =	7.0 ft
Concrete Area =	5541.8 in ²
Reinforcement:	
Clear Cover to Tie=	4.00 in
Horiz. Tie Bar Size=	5
Vert. Cage Diameter =	6.11 ft
Vert. Cage Diameter =	73.34 in
Vertical Bar Size =	11
Bar Diameter =	1.41 in
Bar Area =	1.56 in ²
Number of Bars =	40
As Total=	62.4 in ²
A s/ Aconc, Rho:	0.0113 1.13%

Material Properties		
Concrete Comp. strength, f _c =	3000	psi
Reinforcement yield strength, F _y =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2005	
Seismic Properties		
Seismic Design Category =	D	
Seismic Risk =	High	

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: 2



Case 1

Case 2

ACI 10.5, ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

$$(3) \cdot (\sqrt{F_c}) / F_y = 0.0027$$

$$200 / F_y = 0.0033$$

IBC 1810.1.2: 0.0050 SDC D, E, or F

Governing: **0.0050** **0.50%**

ACI 10.8 and 10.9

Min As for Columns, Comp. Controlled, Shafts:

Min As: 0.0100 **1.00%**

Minimum Rho Check:

Actual Req'd Min. Rho:	0.50%	Flexural Member
Provided Rho:	1.13%	OK

Extreme Steel Strain, ϵ_t : **0.0095**
 $\epsilon_t > 0.0050$, Tension Controlled
 Reduction Factor, ϕ : **0.900**

Dist. From Edge to Neutral Axis: **18.79** in

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = ($\phi=0.65$) Pn:		
Pn per ACI 318 (10-2)	9212.52	kips
at Mu=($\phi=0.65$)Mn=	5501.91	ft-kips
Max Tu, ($\phi=0.9$) Tn =	3369.6	kips
at Mu= $\phi=(0.90)$ Mn=	0.00	ft-kips

Output Note: Negative Pu=Tension
 For Axial Compression, ϕ Pn = Pu = 97.18 kips
 Drilled Shaft Moment Capacity, ϕ Mn: **9180.09** ft-kips
 Drilled Shaft Superimposed Mu: **5731.78** ft-kips

(Mu/ϕMn, Drilled Shaft Flexure CSR):	62.44%
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UPON THE SUCCESSFUL AND COMPLETE INSTALLATION OF THE REINFORCING SYSTEM SPECIFIED IN THESE PLANS, THE REINFORCED POLE MEETS THE WIND DESIGN RECOMMENDATIONS OF THE TIA/EIA-222-F-1996 STANDARD FOR WIND SPEEDS OF 91.2 MPH AND 19 MPH + 1/2" RADIAL ICE

A. GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED TO PAUL J. FORD & COMPANY BY CROWN CASTLE USA ("CCUSA" OWNER). THIS INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY PAUL J. FORD & COMPANY FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. ANY DISCREPANCIES AND/OR CHANGES BETWEEN THE INFORMATION CONTAINED IN THESE DRAWINGS AND THE ACTUAL VERIFIED SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF CROWN CASTLE USA AND PAUL J. FORD & COMPANY SO THAT ANY CHANGES AND/OR ADJUSTMENTS, IF NECESSARY, CAN BE MADE TO THE DESIGN AND DRAWINGS.
2. THE EXISTING UNREINFORCED MONOPOLE STRUCTURE DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE ANTENNA AND PLATFORM LOADS SHOWN ON THESE DRAWINGS AT THE REQUIRED MINIMUM TIA/EIA-222-F BASIC WIND SPEEDS. DO NOT INSTALL ANY ADDITIONAL OR NEW ANTENNA AND PLATFORM LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN PROPERLY AND ADEQUATELY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO INSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT. IMPORTANT CUTTING, WELDING AND SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CCUSA CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CCUSA GUIDELINES FROM CCUSA. PER THE 12-01-2005 CCUSA DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CCUSA POLICY 'CUTTING AND WELDING PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT"
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE INSPECTOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR PLATFORMS TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.
6. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY THE INSPECTION/TESTING AGENCY. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
7. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FLAWS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CCUSA SAFETY GUIDELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAX CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.
11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.

B. "LOW HEAT" WELDING PROCEDURES:

1. ANY AND ALL FIELD WELDING REQUIRED ON THIS PROJECT SHALL BE PERFORMED BY AWS CERTIFIED WELDERS USING "LOW HEAT" WELDING TECHNIQUES.
2. FOR THE PURPOSES OF THIS PROJECT, "LOW HEAT" WELDING IS DEFINED AS A CAREFUL AND CONTROLLED WELDING PROCESS, PERFORMED BY EXPERIENCED AWS CERTIFIED WELDERS, SUCH THAT THE CORRECT AMOUNT OF WELD METAL IS DEPOSITED AND IS PROPERLY FUSED IN SUCH A WAY THAT EXCESSIVE AMOUNTS OF HEAT BUILDUP AT THE WELDED JOINT. DUE TO EXCESSIVE MOLTEN WELD METAL POOLING, IS AVOIDED.
3. THE "LOW HEAT" WELDING PROCESS SHALL BE SET UP SO THAT ANY FIELD WELDING ACTIVITY ON THE POLE STRUCTURE DOES NOT SCORCH OR OTHERWISE DAMAGE THE EXISTING GALVANIZED SURFACE ON THE INSIDE OF THE POLE SHAFT AND AROUND THE REGION OF THE WELD.
4. THE "LOW HEAT" WELDING PROCESS, USED IN CONJUNCTION WITH THE CCUSA COAX PROTECTION AND FIRE SAFETY GUIDELINES, SHALL BE SET UP SO THAT ANY FIELD WELDING ACTIVITY ON THE POLE STRUCTURE DOES NOT SCORCH AND/OR OTHERWISE DAMAGE THE EXISTING COAX CABLES THAT RUN ON THE INSIDE AND/OR OUTSIDE OF THE POLE SHAFT IN AND AROUND THE REGION OF THE WELD.
5. "LOW HEAT" WELD DEMONSTRATION REQUIRED: PRIOR TO BEGINNING THE FIELD WELDING FOR THE REINFORCEMENT WORK, THE CONTRACTOR'S AWS CERTIFIED WELDER SHALL DEMONSTRATE THE "LOW HEAT" WELDING PROCESS THAT WILL BE USED ON THIS PROJECT SO THAT CCUSA REPRESENTATIVES CAN OBSERVE AND VERIFY THAT THE PROPOSED PROCESS DOES NOT DAMAGE THE EXISTING GALVANIZED SURFACE ON THE BACK SIDE OF THE SAME PLATE THAT IS BEING WELDED. THE CONTRACTOR SHALL USE TEMPERATURE MONITORING DEVICES SUCH AS THERMOCOUPLE, HEAT CRAYON, AND/OR INFRARED SENSOR TO MEASURE AND DEMONSTRATE THE TEMPERATURE OF THE STEEL ON THE BACK SURFACE IN THE REGION OF THE WELD. THE "LOW HEAT" WELD DEMONSTRATION SHALL BE CARRIED OUT ON-SITE AND USING A GALVANIZED STEEL PLATE SAMPLE WITH A THICKNESS EQUAL TO THE MINIMUM SHAFT THICKNESS THAT WILL BE REINFORCED. ONLY AFTER THE "LOW HEAT" TECHNIQUES HAVE BEEN SUCCESSFULLY DEMONSTRATED AND ARE APPROVED BY CCUSA REPRESENTATIVES, CAN THE CONTRACTOR PROCEED WITH THE FIELD WELDING ON THE STRUCTURE.
6. CAUTION: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SAFETY AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE HELD FULLY LIABLE FOR ANY DAMAGE (INCLUDING HEAT AND FIRE DAMAGE CAUSED BY FIELD WELDING) TO THE STRUCTURE AND ANY OF ITS COMPONENTS WHICH OCCURS DURING CONSTRUCTION.

C. SPECIAL INSPECTION AND TESTING

1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY THE OWNER'S REPRESENTATIVE AND THE OWNER'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY. REFER TO CROWN DOCUMENT ENG-SOW-1006 FOR SPECIFICATION.
2. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY THE OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
 - (A) ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
 - (B) THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES FOR THE OWNER. THE TESTING AGENCY SHALL INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.

A. GENERAL

- (1) PERFORM CONTINUOUS ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY OWNER IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.

B. FOUNDATIONS, CONCRETE, AND SOIL PREPARATION - (NOT REQUIRED)

C. CONCRETE TESTING PER A.C.I. - (NOT REQUIRED)

D. STRUCTURAL STEEL

- (1) CHECK THE STEEL ON THE JOB WITH THE PLANS.
- (2) CHECK MILL CERTIFICATIONS.
- (3) CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
- (4) INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
- (5) CALL FOR LABORATORY TEST REPORTS WHEN IN DOUBT.
- (6) CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
- (7) CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
- (8) CHECK BOLT TIGHTENING ACCORDING TO AISC "TURN OF THE NUT" METHOD.

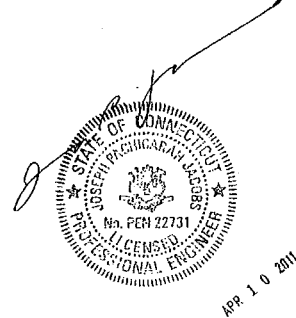
E. WELDING:

- (1) VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
- (2) INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND IN ACCORDANCE WITH AWS D1.1.
- (3) APPROVE FIELD WELDING SEQUENCE.
 - (A) A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO THE OWNER BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM THE OWNER.
 - (B) INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
 - (A) INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE AND WORKING CONDITIONS.
 - (B) VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
 - (C) INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
 - (D) VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1.
 - (E) SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE OR DYE PENE TRANT.
 - (F) INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED PLANS.
 - (G) VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
 - (H) REVIEW THE REPORTS BY TESTING LABS.
 - (I) CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
 - (J) INSPECT RUST PROTECTION OF WELDS AS PER SPECIFICATIONS.
 - (K) CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.

F. SPECIAL INSPECTION OF EXISTING SHAFT-TO-FLANGE WELD CONNECTIONS:

- (1) PRIOR TO CONSTRUCTION, TESTING AGENCY SHALL INSPECT CONDITION OF EXISTING SHAFT-TO-BASE-PLATE WELD CONNECTION. ALSO INSPECT EXISTING STIFFENERS IF PRESENT. THE INSPECTOR SHALL USE THE FOLLOWING INSPECTION METHODS, OR COMBINATION OF METHODS, AS REQUIRED TO IDENTIFY ANY CRACKS: VISUAL, MAGNETIC PARTICLE, AND/OR ULTRA-SONIC. IN ADDITION, OTHER TEST METHODS MAY ALSO BE USED AT THE RECOMMENDATION OF THE TESTING AGENCY AND UPON THE APPROVAL OF THE OWNER AND THE ENGINEER. THE TESTING AGENCY SHALL PROVIDE CAREFUL AND THOROUGH DOCUMENTATION OF THIS INSPECTION TO THE OWNER AND THE ENGINEER. TESTING AGENCY SHALL COORDINATE THESE INSPECTION ACTIVITIES WITH THE OWNER'S REQUIRED PROCESSES AND PROCEDURES. IMPORTANT: THE TESTING AGENCY SHALL IMMEDIATELY REPORT ANY INDICATIONS OF CRACKS, FRACTURES, DISTRESS, AND/OR CORROSION TO THE OWNER AND ENGINEER.
- (2) AFTER CONSTRUCTION, TESTING AGENCY SHALL INSPECT ANY AND ALL FIELD REPAIRS IMPLEMENTED AS REQUIRED BY THE OWNER FROM THE RESULTS OF THE INSPECTION IN THE PREVIOUS NOTE 5.F.(1) ABOVE.
- (3) REFER TO CROWN DOCUMENTS ENG-SOW-10033 AND ENG-BUL-10051 FOR SPECIFICATIONS.

S. FOR WINDS MONOPOLE 2010.029-5496 COMMUNICATIONS 27810-0089 A



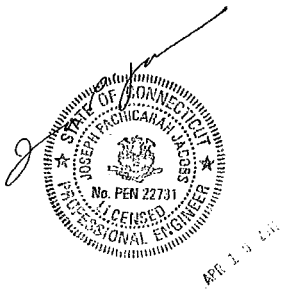
ISSUE DATE FOR PERMIT: 4-7-2011

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT
 BU #876354; WESTPORT FIRE DEPARTMENT; WESTPORT, CT

<p>SABRE COMMUNICATIONS Tower & Pole 200 East Broad Street - Suite 1500 - Columbus, Ohio 43215 (614) 271-6679</p>	<p>Job No. 32910-0089 Date: 4-7-2011 Scale: N.T.S. Designed By: A.R.B. Drawn By: B.M.S. Checked By: H.K. SHEET NO: S-1</p>
<p>PAUL J. FORD AND COMPANY STRUCTURAL ENGINEERS 250 East Broad Street - Suite 1500 - Columbus, Ohio 43215 (614) 271-6679</p>	

- C. SPECIAL INSPECTION AND TESTING - CONTINUED
- G. REPORTS:
(1) COMPLETE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO THE OWNER.
6. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES AND PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO THE OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT THE OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. THE OWNER RESERVES THE RIGHT TO DETERMINE WHAT IS AN ACCEPTABLE RESOLUTION OF DISCREPANCIES AND PROBLEMS.
7. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO THE OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
8. RESPONSIBILITY: THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.
- D. STRUCTURAL STEEL
1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
- A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
(A.) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
(B.) "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
(C.) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED).
- B. BY THE AMERICAN WELDING SOCIETY (AWS):
(A.) "STRUCTURAL WELDING CODE - STEEL D1.1"
(B.) "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING"
2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E70XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH-UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS FIELD WELDING JOINTS.
8. UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123. SEE SECTION J FOR FURTHER NOTES AND FOR EXCEPTIONS (IF ANY).
9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE OWNER'S APPROVED TESTING AGENCY. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE TESTING AGENCY IN THEIR TESTING EFFORTS.
10. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
11. FIELD CUTTING OF STEEL:
(A.) PRIOR TO ANY FIELD CUTTING, THE CONTRACTOR SHALL MARK THE CUT OUTLINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS.
(B.) ANY REQUIRED CUTS IN THE STEEL SHALL BE CAREFULLY CUT BY MECHANICAL METHODS SUCH AS DRILLING, SAW CUTTING, AND GRINDING. THE CONTRACTOR IS RESPONSIBLE TO PREVENT ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, DURING THE CUTTING WORK. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
(C.) ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- E. BASE PLATE GROUT - (NOT REQUIRED)
- F. FOUNDATION WORK - (NOT REQUIRED)
- G. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)
- H. EPOXY GROUTED REINFORCING ANCHOR RODS - (NOT REQUIRED)
- I. TOUCH UP OF GALVANIZING
1. THE CONTRACTOR SHALL TOUCH UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. THE OWNER'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
3. THE OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE INADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.
- J. HOT DIP GALVANIZING
1. NOT DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES AS REQUIRED.
4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.
- K. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER
1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE MONOPOLE REINFORCING SYSTEM INDICATED IN THESE DOCUMENTS USES REINFORCING COMPONENTS THAT INVOLVE FIELD WELDING STEEL MEMBERS TO THE EXISTING GALVANIZED STEEL POLE STRUCTURE. THESE FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE CONNECTED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT THE OWNER REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.
3. THE OWNER SHALL REFER TO TIA/EA-222-F-1996, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. PAUL J. FORD & COMPANY RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT. ACCORDING TO TIA/EA-222-F-1996 SECTION 14.1, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

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ISSUE DATE FOR PERMIT: 4-7-2011

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT
BU #876354; WESTPORT FIRE DEPARTMENT; WESTPORT, CT

Revisions:	SABRE COMMUNICATIONS 280 WILSON STREET, P.O. BOX 648, WESTPORT, CT 06891 PH: (712) 258-6690 FAX: (712) 224-1601	Job No. 32910-0089
		Date: 4-7-2011
		Scale: N.T.S.
		Designed By: A.R.B.
		Drawn By: B.M.S.
		Checked By:
		SHEET NO. S-2

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 750 East Broad Street - Suite 1500 - Columbus, Ohio 43215
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NOTE: NO DETAILED INFORMATION REGARDING INTERFERENCES WAS PROVIDED. THEREFORE, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO PAUL J. FORD AND COMPANY AND CROWN CASTLE FIELD PERSONNEL IMMEDIATELY.

THIS POLE REINFORCEMENT DRAWING IS FOR THE POLE DESIGN AND ANTENNA LOADING DOCUMENTED IN THE PJF CO-LOCATION ANALYSIS FOR THIS SITE (PJF#32910-0089), DATED 4-7-2011.

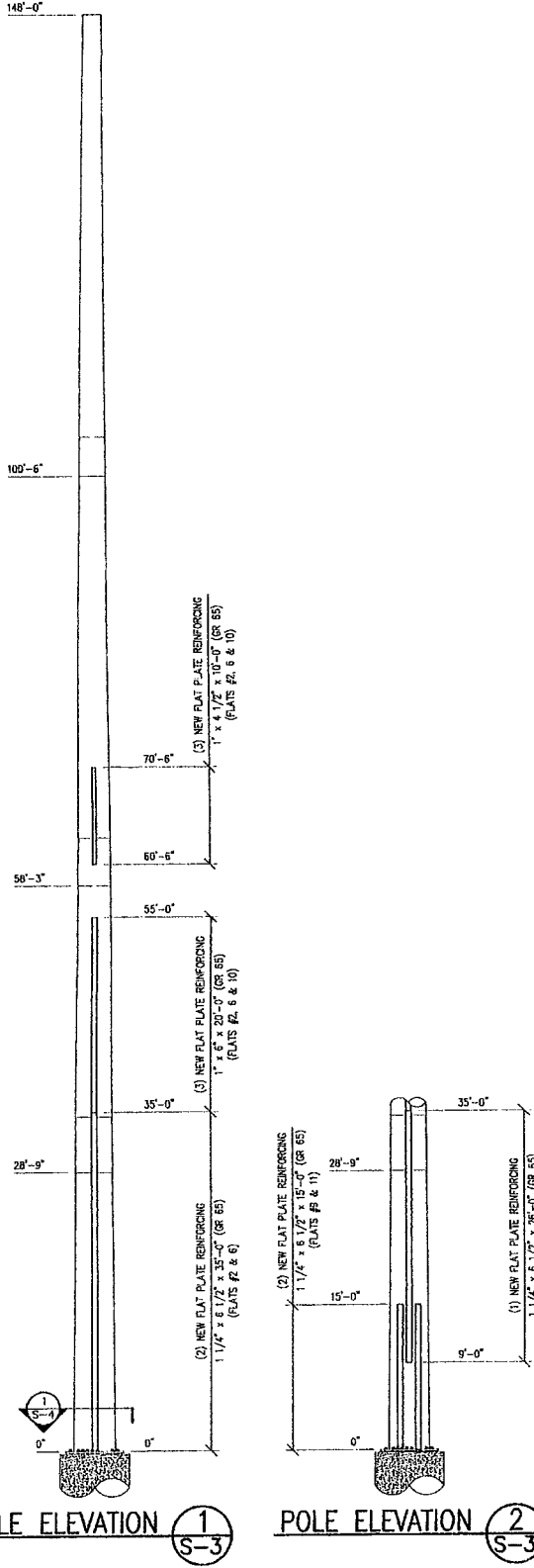
POLE SPECIFICATIONS	
Pole Shape Type:	T2-SIDED POLYGON
Taper:	0.XXXXXX IN/FT
Shaft Steel:	ASTM A507 GRADE 60
Base PL Steel:	ASTM A572 50 KSI
Anchor Rods:	2 1/4" #18J ASTM A615 GRADE 75

SHAFT SECTION DATA					
Shaft Section	Section Length (feet)	Plate Thickness (in.)	Lap Splice (in.)	Diameter Across Flats (inches)	
				⊕ Top	⊕ Bottom
1	47.50	0.2500		22.000	31.643
2	46.25	0.3750	48.00	30.331	39.720
3	34.50	0.4375	60.00	34.955	44.959
4	34.50	0.5000	69.00	42.917	49.920

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.

PLEASE CONTACT SABRE COMMUNICATIONS FOR ALL MATERIAL AND INSTALLATION PRICING.



POLE ELEVATION 1
S-3

POLE ELEVATION 2
S-3

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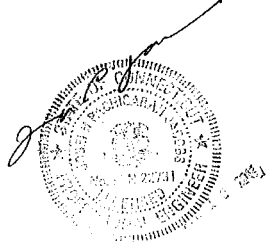
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT
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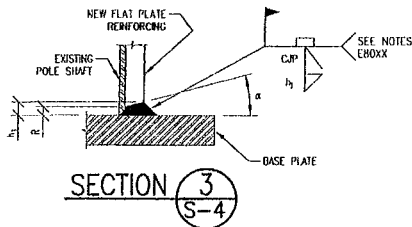
Revision

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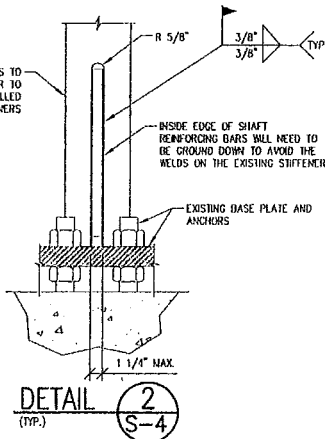
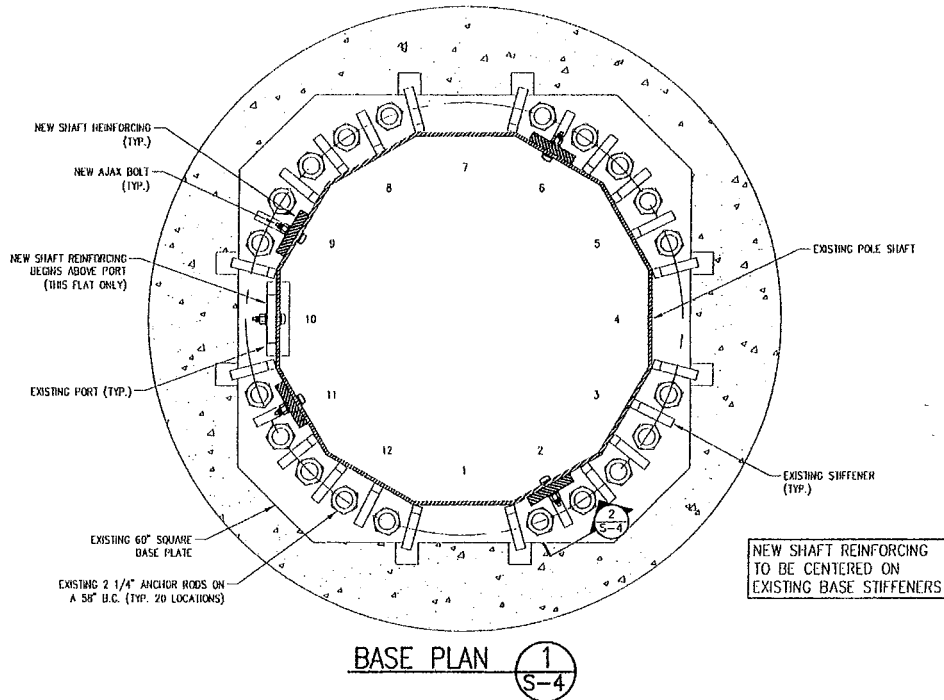
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Scale	N.T.S.
Designed By	A.R.B.
Drawn By	B.M.S.
Checked By	
SHEET NO.	S-3



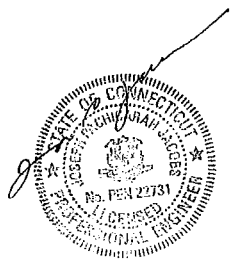


WELD DETAIL NOTES:

1. THE WELD DETAILS AND DIMENSIONS REGARDING THE ROOT OPENING (R), GROOVE ANGLE (α), AND REINFORCING FILLET WELD SIZE (h) SHALL BE IN ACCORDANCE WITH AN APPROVED SPECIFIC AWS-QUALIFIED WELDING PROCEDURE SPECIFICATION (WPS). THE WPS SHALL BE DEVELOPED IN COOPERATION WITH AND APPROVED BY AN AWS CERTIFIED WELD INSPECTOR (CWI). ALL WELDS SHALL BE IN ACCORDANCE WITH AWS D1.1, AND SHALL BE INSTALLED BY AWS-CERTIFIED WELDERS WHO HAVE BEEN CERTIFIED/QUALIFIED TO THIS SPECIFIC WPS. A COPY OF THE WPS SHALL BE SUPPLIED TO THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
2. THE EXISTING SHAFT TO BASE PLATE WELD CONNECTION SERVES AS A BACKING ELEMENT FOR THE NEW CJP FIELD WELD AS SHOWN IN THE DETAIL. THIS EXISTING WELD SURFACE SHALL BE PROPERLY PREPARED FOR FIELD WELDING ACCORDING TO AWS D1.1.
3. THE EXISTING SHAFT TO BASE PLATE WELD SHALL BE INSPECTED BY AN AWS CERTIFIED WELD INSPECTOR (CWI) FOR CRACK INDICATIONS OR OTHER SIGNS OF DISTRESS PRIOR TO CONSTRUCTION AND PRIOR TO ANY NEW FIELD WELDING. ANY CRACKS OR DISTRESS IDENTIFIED BY THE CWI SHALL BE REPORTED TO THE OWNER AND ENGINEER FOR EVALUATION OF REPAIR RECOMMENDATIONS. ALL REQUIRED WELD REPAIRS SHALL BE COMPLETED BY THE CONTRACTOR AND INSPECTED AND APPROVED BY THE CWI BEFORE ANY NEW FIELD WELDING PROCEEDS. THE CONTRACTOR SHALL REFER TO CROWN CASTLE DOCUMENTS ENG-SOW-10033 AND ENG-DUL-10051 FOR SPECIFICATIONS OF INSPECTION AND REPAIR REQUIREMENTS FOR THIS CONNECTION. ALSO READ NOTES ON SHEET S-1.
4. ALL FIELD WELDS SHALL BE INSPECTED BY A CERTIFIED WELD INSPECTOR (CWI) ACCORDING TO AWS D1.1.



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ISSUE DATE FOR PERMIT: 4-7-2011

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT
BU #876354; WESTPORT FIRE DEPARTMENT; WESTPORT, CT

Sabre Towers & Poles 2101 MURRAY STREET, P.O. BOX 658, SPOKE CITY, IA 51111 Ph: (712) 258-0080 FAX: (712) 224-1001	Job No. 32910-0089 Date: 4-7-2011 Scale: N.T.S. Designed By: A.R.B. Drawn By: B.M.S. Checked By:
	PAUL J. FORD AND COMPANY STRUCTURAL ENGINEERS 250 East Broad Street • Suite 1500 • Coleridge, Ohio 43215 (614) 221-6670 www.pjfw.com

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY REMAINS WITH THE EOR AT ALL TIMES.

ALL MIs SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-DUL-10173 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 - MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN ENG-SOW-10007.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND INSPECTIONS TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON-SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF REPAIRING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CONNECTION OF FAILING MIs

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

MI VERIFICATION INSPECTIONS

CROWN RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTIONS(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEA/SES FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

PAYMENT

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/CONNECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - FOUNDATION MODIFICATIONS
 - WELD PREPARATION
 - BOLT INSTALLATION AND TORQUE
 - FINAL INSTALLED CONDITION
 - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
- FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

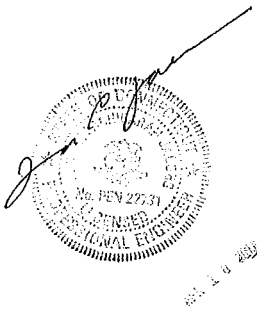
THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS. PLEASE REFER TO ENG-SOW-10007.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWINGS
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
-	FABRICATOR NDE INSPECTION
-	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE CROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: LIFT AND DENSITY
X	ON-SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
X	INSPECTION OF BOLT TIGHTENING PER ASC "TURN OF THE NUT" METHOD
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

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ISSUE DATE FOR PERMIT: 4-7-2011

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT
BU #876354; WESTPORT FIRE DEPARTMENT; WESTPORT, CT

<p>SABRE COMMUNICATIONS 810 HEBBAY STREET, P.O. BOX 658, SHILOH, IA 50151 PH: (712) 258-6690 FAX: (712) 424-1801</p>	Job No. 32910-0089 Date: 4-7-2011 Scale: N.T.S. Designed By: A.R.B. Drawn By: B.M.S. Checked By: SHEET NO: <p style="text-align: center; font-size: 24pt;">S-5</p>
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PAUL J. FORD AND COMPANY
 STRUCTURAL ENGINEERS
 230 East Broad Street - Suite 1509 - Columbus, Ohio 43215
 (614) 221-6679 www.pjfwc.com

P65-16-XLH-RR

Dual Broadband Antennas

POLARIZATION: Dual linear $\pm 45^\circ$
 FREQUENCY (MHz): 698-894, 1710-2170
 HORIZONTAL BEAM WIDTH ($^\circ$): 65, 65
 GAIN (dBi/dBd): 15.5/13.4 17.5/15.4
 TILT: 1-12, 0-8
 LENGTH: 72"

ELECTRICAL SPECIFICATIONS*

	698-894		1710-2170		
	698-806	806-894	1710-1880	1850-1990	1900-2170
Frequency range (MHz)					
Frequency band (MHz)	698-806	806-894	1710-1880	1850-1990	1900-2170
Gain (dBi/dBd)	14.8/12.7	15.5/13.4	16.9/14.8	17.2/15.1	17.5/15.4
Polarization	Dual Linear +/- 45		Dual Linear +/- 45		
Nominal Impedance (Ω)	50		50		
VSWR	< 1.5:1		< 1.5:1		
Horizontal beam width, -3 dB ($^\circ$)	66	65	60	63	63
Vertical beam width, -3 dB ($^\circ$)	14.7	12.5	6.8	6.4	5.7
Electrical down tilt ($^\circ$)	1 to 12		0 to 8		
Side lobe suppression, vertical 1st upper (dB)	> 16	> 16	> 16		
	> 16	> 16			
Isolation between inputs (dB)	> 30	> 30	> 30	> 30	
Inter band Isolation (dB)	> 40		> 40		
Tracking, horizontal plane $\pm 60^\circ$ (dB)	< 2		< 2	< 2	< 2
First null fill (dB)			> -20	> -20	> -20
Vertical beam squint ($^\circ$)	< 0.8	< 0.8	< 0.5	< 0.5	< 0.5
Front to back ratio (dB) $180^\circ \pm 30^\circ$ copolar	> 24	> 24	> 30	> 30	> 28
Front to back ratio (dB) $180^\circ \pm 30^\circ$ total power					
Cross polar discrimination (XPD) 0° (dB)	> 15	> 15	> 15	> 15	> 15
Cross polar discrimination (XPD) $\pm 60^\circ$ (dB)	> 10	> 10	> 10	> 10	> 10
Far field coupling					
IM3, 2xTx@43dBm (dBc)	< -153		< -153		
IM7, 2xTx@43dBm (dBc)					
Power handling, average per input (W)	500		250		
Power handling, average total (W)	1000		500		

MECHANICAL SPECIFICATIONS*

Connector	4 X 7/16 DIN Female, IP67
Connector position	Bottom
Dimensions, HxWxD, mm (ft)	72" x 12" x 6" (1829 x 305 x 152)
Mounting	Pre-mounted Tilt Brackets
Weight, with brackets, kg (lbs)	29 (64)
Weight, without brackets, kg (lbs)	24 (53)
Wind load, frontal/lateral/rear side 42 m/s Cd=1.6 (N)	1380
Maximum operational wind speed, m/s (mph)	100 (45)
Survival wind speed, m/s (mph)	150 (67)
Lightning protection	DC Ground
Operating Temperature	-40C to +60C
Radome material	PVC, IP55
Packet size, HxWxD, mm (ft)	87" x 16" x 10" (2225 x 400 x 225)
Radome colour	Light Grey
Shipping weight, kg (lbs)	34 (75)
RET	iRET AISGv1.1, MET and AISGv2.0
Brackets	7256.00, 7454.00A



*All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

ANTENNA PATTERNS*

For detailed patterns visit <http://www.powerwave.com/rpa/>.

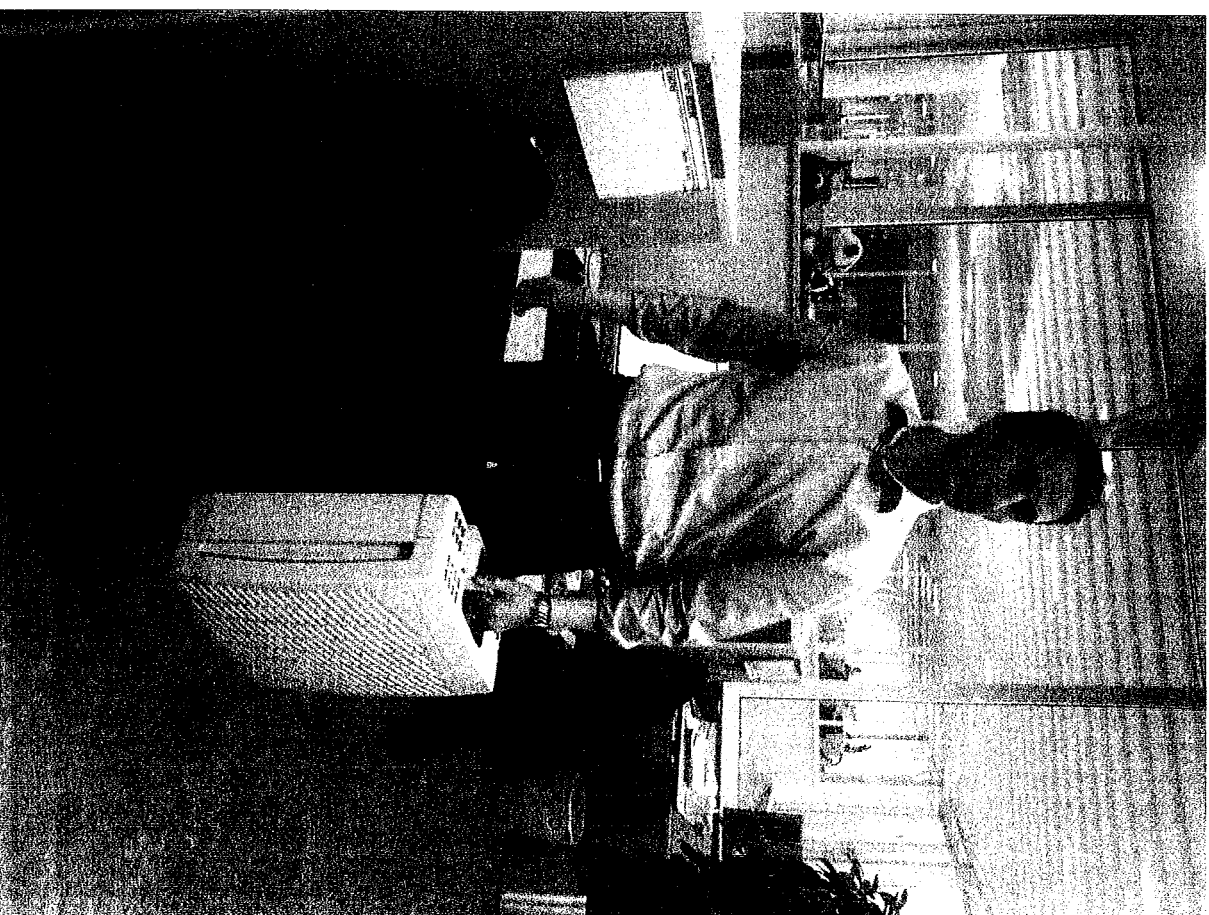


RRUS 11 – Dual PA RRU.

Technical Data

RBS6000

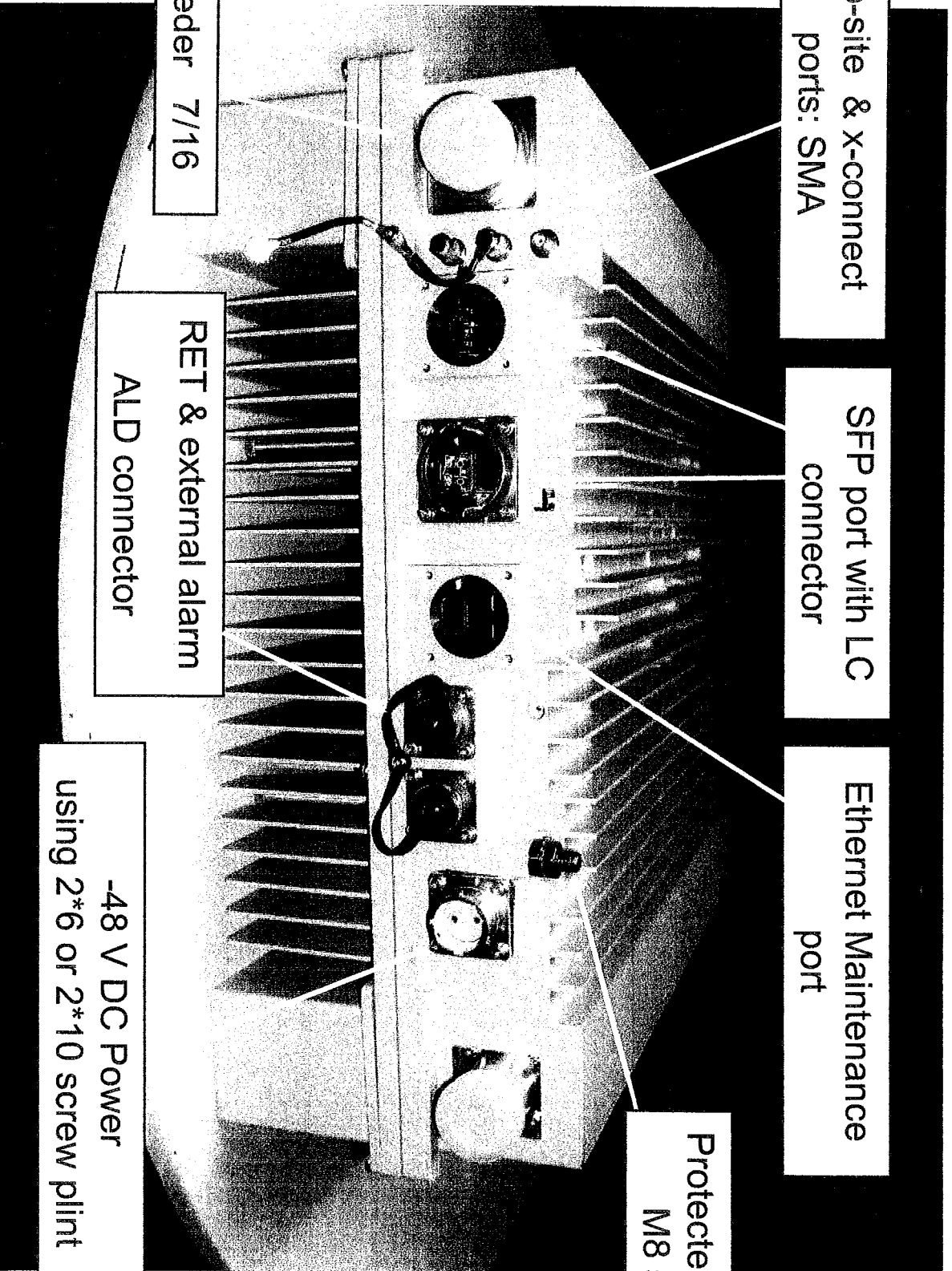
- > Multi standard
- > RF: 2x30 Watts
- > Carrier BW: 1.4 – 20 MHz
- > Alarms: 2
- > Dimensions (with sunshield):
 - Width: 17.0 in
 - Height: 17.8 in
 - Depth: 7.2 in
 - Weight: 55 lbs (Band 12)
50 lbs (Band 4)
 - Weight: 50 lbs (Band 4)
- > Temperature: -40 to +131 F
- > Cooling: Self convection
- > Power: -48 VDC
- > Rec. fuse size 20 Amp
 - Rec. DC cable:
 - 6 mm² up to 60 meters
 - 10 mm² over 60 meters
- > Power Cons: 200 Watts typ.
Shielded



RRUS-11 I/F



RBS6000



Co-site & x-connect ports: SMA

SFP port with LC connector

Ethernet Maintenance port

Protected ground M8 stud

RET & external alarm ALD connector

-48 V DC Power using 2*6 or 2*10 screw plint

RF feeder 7/16

POWER

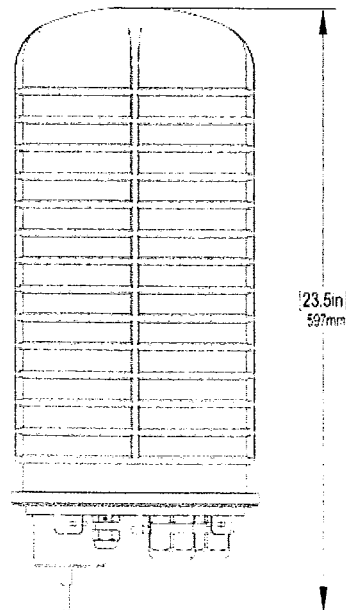
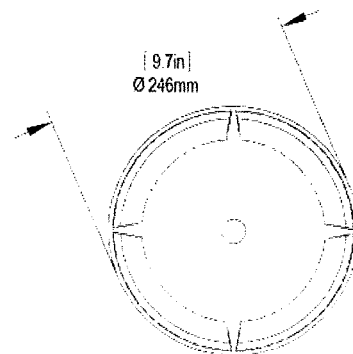
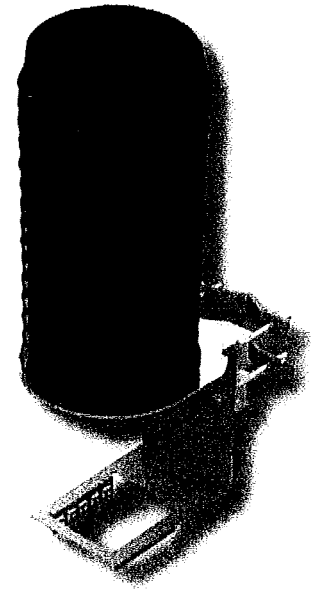
DC6-48-60-18-8F

DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

FEATURES

- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.



DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 μ s
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 μ s
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 - 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)



Raycap

G02-00-068 REV 050610



GS-07F-0435V



Certified to
ISO 9001:2000



TUV Rheinland
of North America

806 W. Clearwater Loop • Post Falls • Idaho • 83854 • USA
208.777.1166 • 800.890.2569 • 208.777.4466 • www.raycapsurgeprotection.com



New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

May 4, 2011

Honorable Gordon F. Joseloff
1st Selectman, Town of Westport
Westport Town Hall
110 Myrtle Ave., Room 310
Westport, CT 06880

Re: Telecommunications Facility – 515 Boston Post Road Westport, CT

Dear Selectman Joseloff:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System (“UMTS”) and Long Term Evolution (“LTE”) capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC (“AT&T”) will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (“R.C.S.A.”) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T’s proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular’s proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council’s procedures; please call me at (860) 463-5511 or Ms. Linda Roberts, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Douglas L. Culp
Real Estate Consultant

Enclosure