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

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

November 6, 2008

Carrie L. Larson, Esq.
Pullman & Comley LLC
90 State House Square
Hartford, CT 06103-3702

RE: **TS-POCKET-106-080923** – Youghiogheny Communications-Northeast, LLC d/b/a Pocket Communications request for an order to approve tower sharing at an existing telecommunications facility located at Middlesex Turnpike/156 Bokum Road, Old Saybrook, Connecticut.

Dear Attorney Larson:

At a public meeting held October 30, 2008, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

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

The proposed shared use is to be implemented as specified in your letter dated September 22, 2008, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Daniel F. Caruso
Chairman

DFC/MP/cm

c: The Honorable Michael A. Pace, First Selectman, Town of Old Saybrook
Christine Nelson, Town Planner, Town of Old Saybrook
Crossroads Communications

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

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

September 24, 2008

The Honorable Michael A. Pace
First Selectman
Town of Old Saybrook
Town Hall
302 Main Street
Old Saybrook, CT 06475

RE: ~~EM~~TS-**POCKET-106-080923** – Youghiogheny Communications-Northeast, LLC d/b/a Pocket Communications notice of intent to modify an existing telecommunications facility located at Middlesex Turnpike/156 Bokum Road, Old Saybrook, Connecticut.

Dear Mr. Pace:

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 October 8, 2008.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/jb

Enclosure: Notice of Intent

c: Christine Nelson, Town Planner, Town of Old Saybrook

PULLMAN & COMLEY, LLC
ATTORNEYS AT LAW

CARRIE L. LARSON
90 State House Square
Hartford, CT 06103-3702
p (860) 424-4312
f (860) 424-4370

www.pullcom.com

TS
~~EM~~-POCKET-106-080923

September 22, 2008

Via Federal Express

ORIGINAL

RECEIVED
SEP 23 2008
CONNECTICUT
SITING COUNCIL

S. Derek Phelps, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Tower Sharing Application
Crossroads Communications LLC Existing Guyed Lattice Tower
Middlesex Turnpike/Bokum Road, Old Saybrook, Connecticut

Dear Mr. Phelps:

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"), proposes to install antennas and appurtenant equipment at the existing 200-foot guyed lattice radio tower owned by Crossroads Communications LLC and located at Middlesex Turnpike/Bokum Road, Old Saybrook, Connecticut ("Facility"). Pocket Communications provides prepaid, flat rate wireless voice and data services to more than a quarter of a million subscribers. Pocket is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation. This installation constitutes a request for tower sharing pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes Section 16-50g et. seq. (PUESA). This installation will not have a substantial environmental effect pursuant to Section 16-50j-72(b)(2) of the Regulations of the Connecticut State Agencies adopted pursuant to PUESA. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to Michael A. Pace, First Selectman, Town of Old Saybrook.

The existing tower consists of a 200-foot guyed lattice tower capable of supporting wireless equipment within a fenced compound. The coordinates for the Facility are **Lat: 41°-19'-39" and Long: 72°–23'-19".** The tower is located in the northeast portion of Old Saybrook, roughly 1,900 feet south of the Essex town line. The Facility is approximately 1,500 feet east of Bokum Road, approximately 2,700 feet west of Middlesex Turnpike (Route 154) and approximately 250 feet southwest of Interstate 95 (see Site Map, attached as Exhibit A). The tower currently supports a.m. radio antennas but does not contain any cellular or pcs antenna or related equipment and is contained within an existing fenced equipment compound. The property contains a second tower that does support antenna and equipment of multiple wireless service providers.

Pocket proposes to install three Kathrein 742-213 antennas at the 150 foot level (150') AGL (above ground level), and a Nortel CDMA Micro BTS 3231 cabinet, mounted on an "H-Frame," contained within a six foot by six foot (6'-0" x 6'-0") lease area. A small GPS antenna will be mounted to the ice bridge, which will run from the lease area to the tower. Utilities will be run via a proposed underground conduit from an existing utility pole, just north of the compound (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively).

For the following reasons, the proposed tower sharing on the Middlesex Turnpike/Bokum Road tower meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2) and therefore will not have a substantial environmental effect:

1. The proposed modification will not increase the height of the existing tower as Pocket's antennas will be installed at a center line height of approximately 150 feet.

2. The installation of Pocket's equipment and shelter will not require an extension of the site boundaries in the existing equipment compound.

3. The proposed modifications will not increase the noise levels at the existing Facility by six decibels or more.

4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 3.08% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached, Exhibit E, is a structural analysis confirming that the tower can support the existing and proposed antennas and associated equipment.

For the foregoing reasons, Pocket respectfully requests that the proposed tower sharing application for Pocket's antenna installation and equipment at the Old Saybrook tower be approved.

Respectfully Submitted,

Carrie L. Larson

cc: Michael A. Pace, First Selectman
Crossroads Communications LLC, underlying property owner

Exhibit A

Site Map

Pocket Site HFCT0969A

Middlesex Turnpike/Bokum Road

Old Saybrook, Connecticut

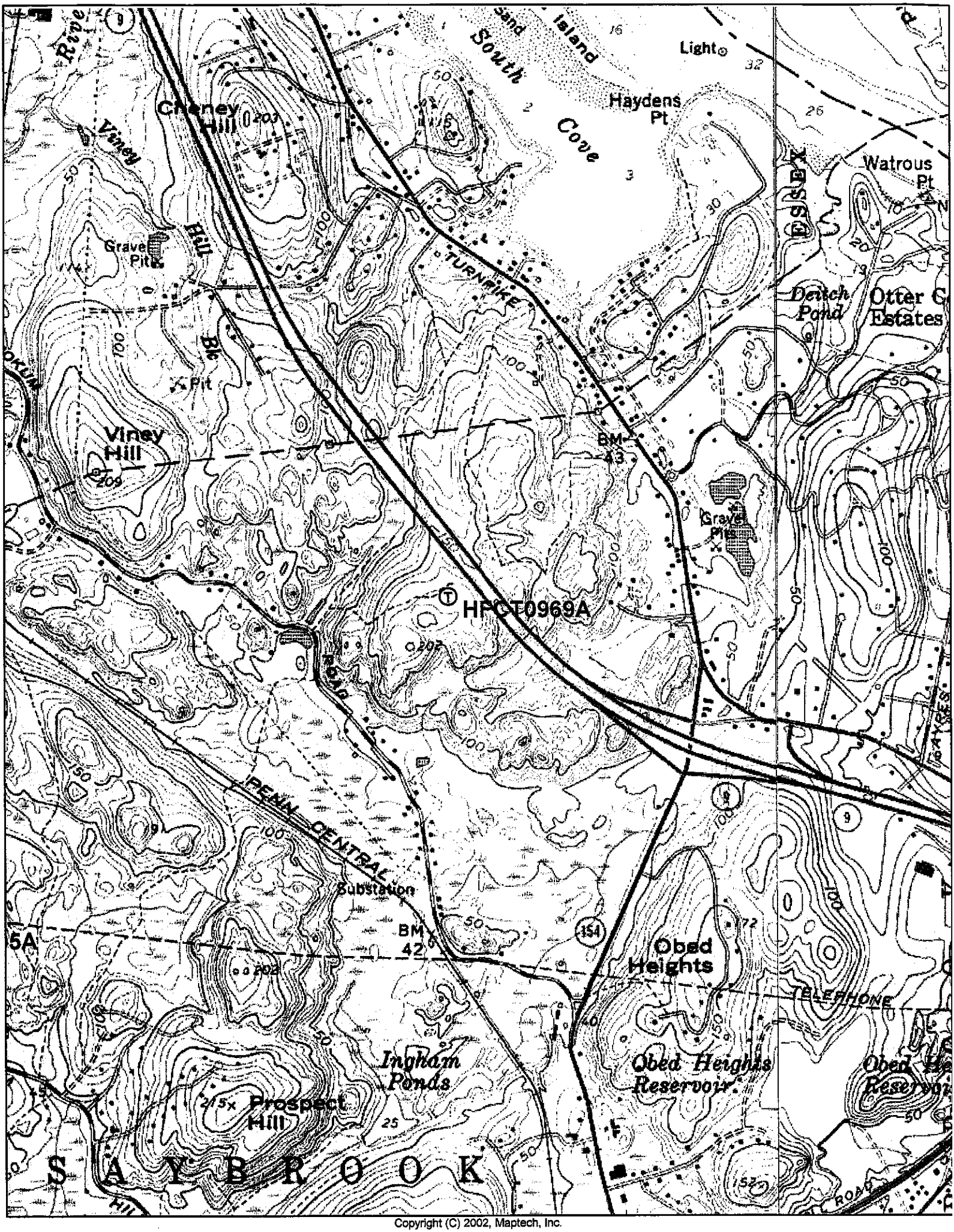


Exhibit B

Design Drawings

Pocket Site HFCT0969A

Middlesex Turnpike/Bokum Road

Old Saybrook, Connecticut

SITE INFORMATION

OWNER:	CROSSROADS COMMUNICATIONS LLC 157 N. SEIR HILL ROAD NORWALK, CT 06850 203.847.6661
OWNER SITE ID#:	N/A
APPLICANT:	YOUGHIOGHENY COMMUNICATIONS–NORTHEAST LLC 2819 NW LOOP 410 SAN ANTONIO, TX 78230
SITE ADDRESS:	156 BOKUM ROAD OLD SAYBROOK, CT. 06475
COUNTY:	MIDDLESEX
LATITUDE:	41° 19' 39" N
LONGITUDE:	72° 23' 18.88" W
ZONING CLASSIFICATION:	N/A
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
POWER COMPANY:	CONNECTICUT LIGHTING & POWER 860–947–2121
TELEPHONE COMPANY:	AT&T 888–727–8368
DESIGN FIRM:	TRIVIS 180 CHANDALAR PLACE DRIVE PELHAM, AL 35124 PHONE: (205) 621–0106

DRAWING INDEX

APPROVALS

_____ REAL ESTATE

_____ RF

_____ OPS/CONSTRUCTION

_____ LEGAL/COMPLIANCE

_____ NET DESIGN

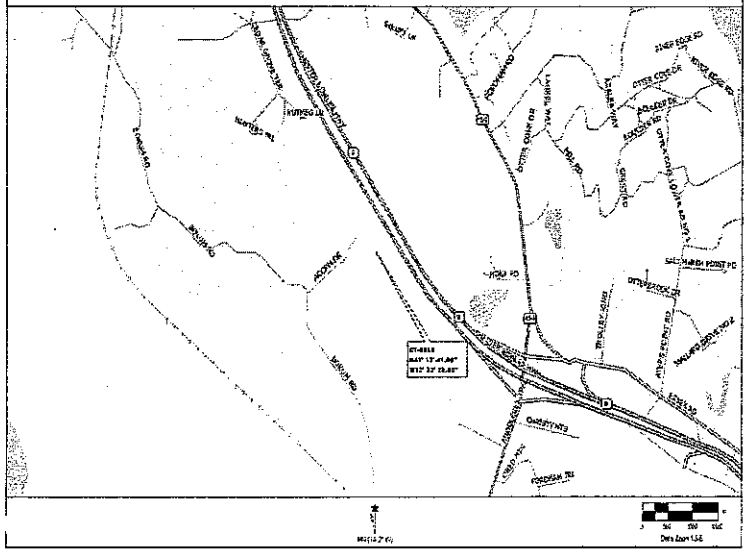
pocket™ COMMUNICATIONS

HFCT0969

CROSSROADS COMMUNICATIONS, LLC AM SITE

200' TOWER

LOCATION MAP



DRIVING DIRECTIONS

ON CT9 GOING SOUTHBOUND, APPROXIMATELY 100 YARDS PRIOR TO EXIT 2 OFF RAMP IS A DIRT ACCESS ROAD.

SITE INFORMATION

CONTRACTOR'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 GOVERN THE DESIGN.
2008 NEC NFPA 70 /; 2000 IECC CODES AND THE 2004 CITY PUBLIC SERVICE ELECTRICAL SERVICE STANDARDS.

BUILDING CODE:
INTERNATIONAL BUILDING CODE (IBC), 2006

ELECTRICAL CODE:
(NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 – 2005, NATIONAL ELECTRICAL CODE
LIGHTNING PROTECTION CODE:
[NFPA 780 – 2005, LIGHTNING PROTECTION CODE]

CONTRACTOR'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:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR–1275, GENERAL INSTALLATION REQUIREMENTS

TELCORDIA GR–1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

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 CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

SITE INFORMATION

1. THIS SITE IS UNMANNED AND IS RESTRICTED TO OUTDOOR EQUIPMENT. IT WILL BE USED FOR THE TRANSMISSION OR RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
2. POCKET COMMUNICATIONS CERTIFIES THAT THIS TELEPHONE EQUIPMENT FACILITY WILL BE SERVICED ONLY BY POCKET COMMUNICATIONS EMPLOYEES AND THE WORK ASSOCIATED WITH ANY EQUIPMENT CANNOT BE PERFORMED BY HANDICAPPED PERSONS. THIS FACILITY WILL BE FREQUENTED ONLY BY SERVICE PERSONNEL FOR REPAIR PURPOSES ONLY. THIS FACILITY IS EXEMPT FROM THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), APPENDIX B, SECTION 4.11.(5)(B).
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.
6. POCKET COMMUNICATIONS MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

CALL before you DIG
FOR CT 1-800-922-4455

NO.	DATE	REVISIONS	
1	8/25/08	REVISED SITE NUMBER	JHB
0	8/11/08	ISSUED FOR CONSTRUCTION	JHB

pocket COMMUNICATIONS

PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE

SHEET DESC: TITLE SHEET

TRIVIS
The Complete Solutions Provider
180 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 621-0106

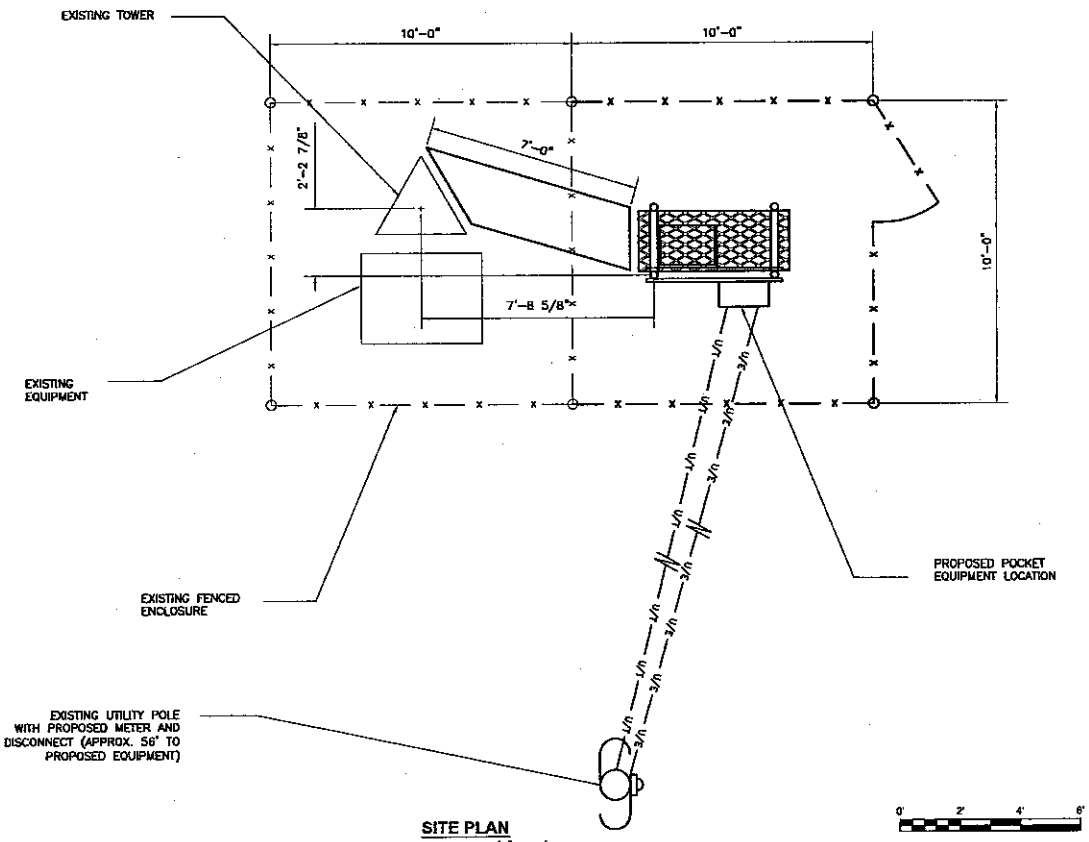
CHECKED BY: JSW
DRAWN BY: JFE
DATE: 6-24-08
JOB NO. 08424
DWG. NO.
01

CONSTRUCTION NOTES

1. FIELD VERIFICATION: CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, POCKET COMMUNICATIONS ANTENNA MOUNT LOCATION AND ANTENNAS TO BE INSTALLED.
2. COORDINATION OF WORK: CONTRACTOR SHOULD COORDINATE RF WORK AND PROCEDURES WITH POCKET COMMUNICATIONS.
3. GRAVEL SURFACE IN AREAS OF COMPOUND THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION BY CONTRACTOR.

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – POCKET COMMUNICATIONS
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF 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.
4. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED EQUIPMENT, ON THE DRAWINGS.
5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
6. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL.
7. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING.
8. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, GROUNDING CABLES AS SHOWN ON THE ELECTRICAL PLAN.
9. CONTRACTOR 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.
10. CONTRACTOR TO OBTAIN REQUIRED NOTICE TO PROCEED DOCUMENTS FROM THE TOWER OWNER BEFORE COMMENCING CONSTRUCTION.



SITE PLAN
11x17 SCALE: 1/4" = 1'
22x34 SCALE: 1/2" = 1'

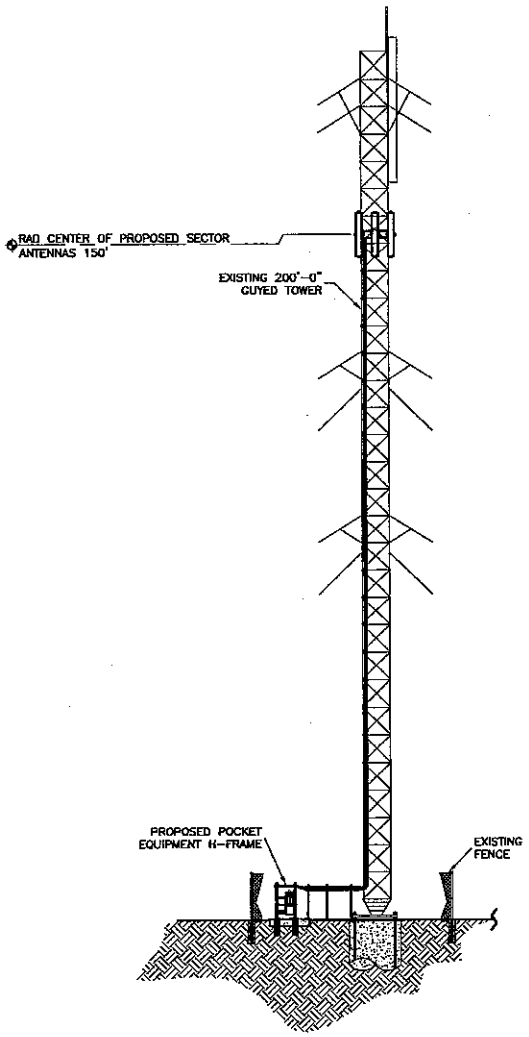
NO.	DATE	REVISIONS	INT.
0	6/11/08	ISSUED FOR CONSTRUCTION	JHB

pocket COMMUNICATIONS

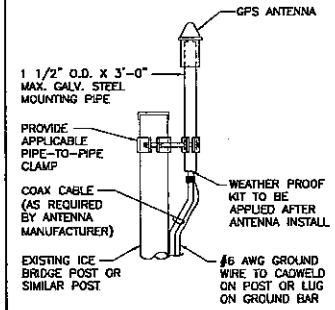
PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE
SHEET DESC: SITE PLAN

TRIVIS
The Complete Solutions Provider
1861 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 621-4106

CHECKED BY: JSW
DRAWN BY: JFE
DATE: 6-24-08
JOB NO. 08424
DWG. NO. 02



TOWER ELEVATION
N.T.S.



NOTES:

1. LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
2. ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.

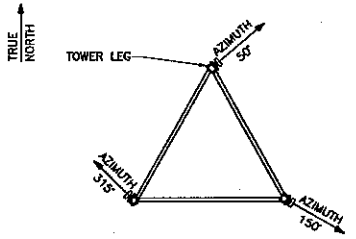
GPS ANTENNA PIPE MOUNT
SCALE: N.T.S.

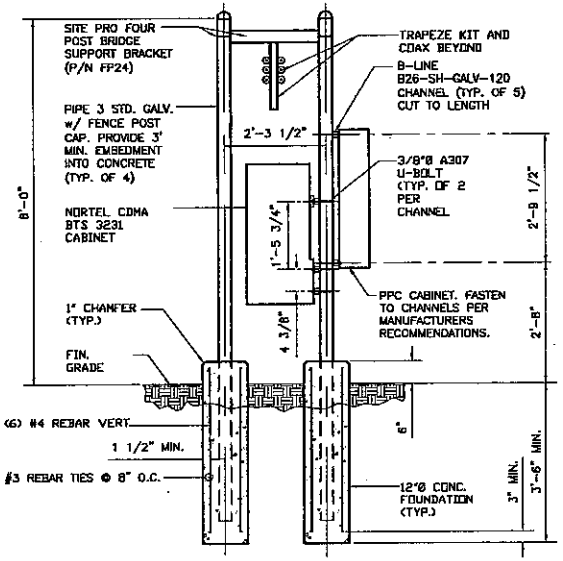
ANTENNA KEY

	# ANTENNAS PER SECTOR	ANTENNA NUMBER	COAX COLOR CODE	ANTENNA VENDOR	MODEL NUMBER	AZIMUTH	C/L HEIGHT	MECHANICAL DOWNTILT	COAX SIZE	# COAX PER ANTENNA	COAX MODEL NUMBER
ALPHA FACE	1	A-1	(1)-RED BAND	KATHREIN	N/A	50°	150'-0"	0°	1 5/8"	2	COMMSCOPE
BETA FACE	1	B-1	(1)-BLUE BAND	KATHREIN	N/A	135°	150'-0"	0°	1 5/8"	2	COMMSCOPE
GAMMA FACE	1	C-1	(1)-GREEN BAND	KATHREIN	N/A	315°	150'-0"	0°	1 5/8"	2	COMMSCOPE

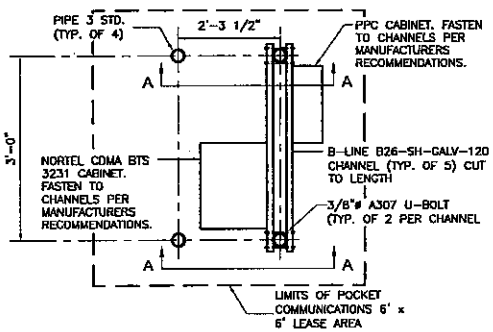
TOWER NOTES
1. FOR DETAILED TOWER INFORMATION, REFER TO TOWER ERECTION DRAWINGS BY OTHERS. THE TOWER ON THIS SHEET IS SHOWN FOR GENERAL CONFIGURATION PURPOSES ONLY.
2. ANTENNA CONFIGURATION IS SUBJECT TO CHANGE. VERIFY ANTENNA HEIGHT, DOWN-TILT, AND AZIMUTH WITH PROJECT MANAGER PRIOR TO CONSTRUCTION.

ANTENNA NOTES
1. ALL COAX SHALL BE COLOR-CODED AT (3) PLACES EACH: AT ANTENNA, EXTERIOR OF SHELTER, AND THE INTERIOR OF SHELTER.
2. (2) COLOR BANDS DENOTES TRANSMIT.
3. PRIOR TO ORDERING ANY ANTENNAS OR COAX, CONTRACTOR SHALL CONTACT POCKET'S CONSTRUCTION MANAGER AND OBTAIN APPROVAL FOR MATERIALS LISTED. CONTRACTOR IS SOLELY RESPONSIBLE FOR THIS COORDINATION.





SECTION
SCALE: N.T.S.



PROPOSED H-FRAME FOR NORTEL BTS CABINET
SCALE: N.T.S.

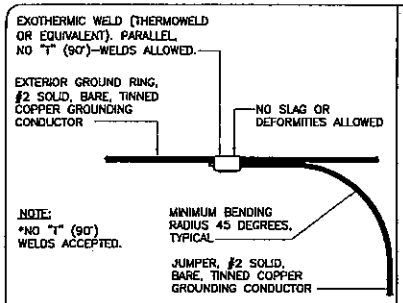
pocket COMMUNICATIONS

PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE
SHEET DESC: TOWER, ANTENNA, H-FRAME

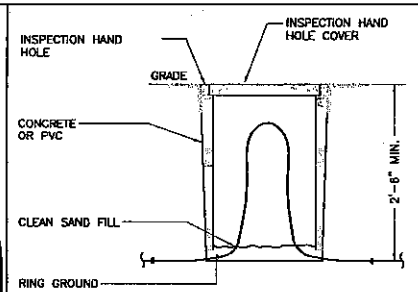
NO.	DATE	REVISIONS	INIT.
0	8/11/08	ISSUED FOR CONSTRUCTION	JHB

TRIVIS
The Complete Solutions Provider
1816 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 621-0108

CHECKED BY: JSW
DRAWN BY: JPE
DATE: 6-24-08
JOB NO. 08424
DWG. NO. 03

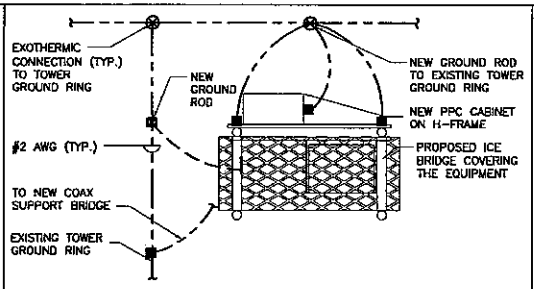


TYPICAL GROUNDING CONNECTION



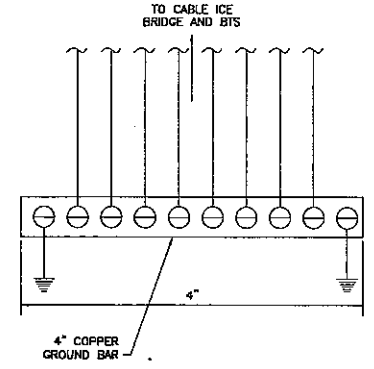
NOTE: INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 8" IN WIDTH/DIAMETER

GROUND ROD WITH ACCESS AREA

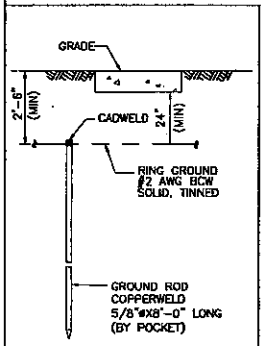


THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

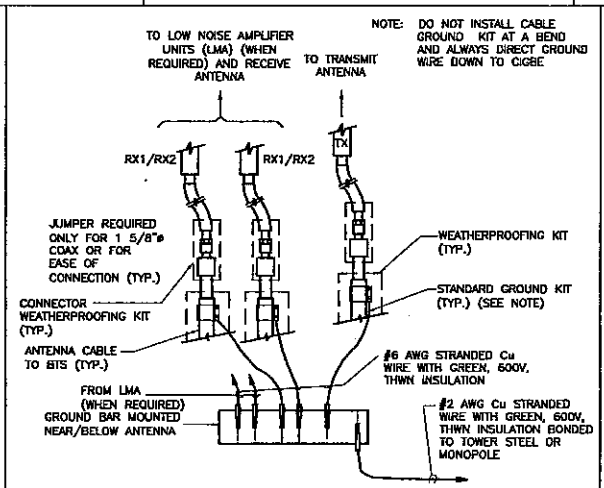
TYPICAL CABINET AND PLATFORM GROUNDING



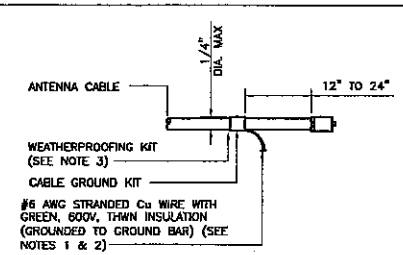
LOWER 4" GROUND BAR
SCALE: N.T.S.



GROUNDING - STANDARD DETAIL GROUND ROD
SCALE: N.T.S.



CONNECTION OF GROUND WIRE TO GROUNDING BAR (CIGBE) TOWER/MONOPOLE

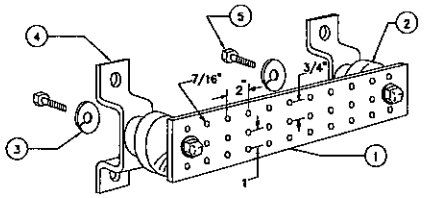


CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE (TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.)

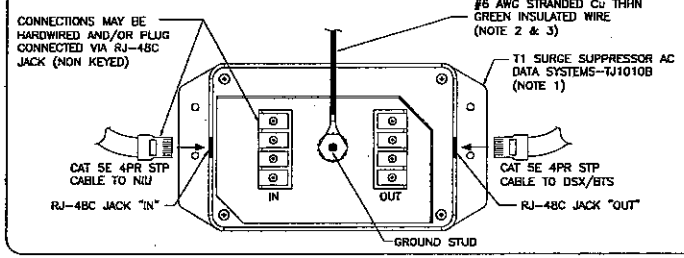
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE
SCALE: N.T.S.



LEGEND

1— COPPER GROUND BAR, 1/4"X 4"X 20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2— INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
3— 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
4— WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056
5— 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
6— SECTOR CIGBE GROUND BAR TO BE SIZED FOR (4) ANTENNAS AND (4) BRACKETS OR MASTS ALL OTHER GROUND BARS SHALL BE SIZED TO ACCOMMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY.

GROUND BAR (TYP.)
SCALE: N.T.S.



T1 SURGE SUPPRESSOR
SCALE: N.T.S.

NOTES:

1. MOUNT T1--TVSS UNIT ON EQUIPMENT FRAME HOUSING THE DSX UNIT. USE APPROPRIATE STAINLESS STEEL BOLTS WITH FLAT WASHERS AND A LOCK WASHER ON THE NUT SIDE. THE TVSS MAY BE LOCATED ON THE TELCO BACKBOARD. REFER TO MANUFACTURER'S INSTRUCTIONS.
2. ATTACH RING TERMINAL FROM SUPPLIED GROUND CONDUCTOR TO TVSS GROUND STUD SECURELY FASTEN WITH SUPPLIED WASHER AND NUT. REFER TO MANUFACTURER'S INSTRUCTIONS. FOR PROPER PERFORMANCE, THE GROUND CONDUCTOR LENGTH SHOULD BE LIMITED WITH NO SHARP BENDS ON COILS.
3. WHEN TVSS IS MOUNTED ON EQUIPMENT FRAME, BOND THE GROUND CONDUCTOR TO THE EQUIPMENT FRAME GROUND. ENSURE PROPER GROUNDING SURFACES. WHEN TVSS IS MOUNTED ON THE TELCO BACK BOARD, BOND THE GROUND CONDUCTOR TO THE TELCO (BOARD) GROUND BAR OR NEAREST GROUND BAR.

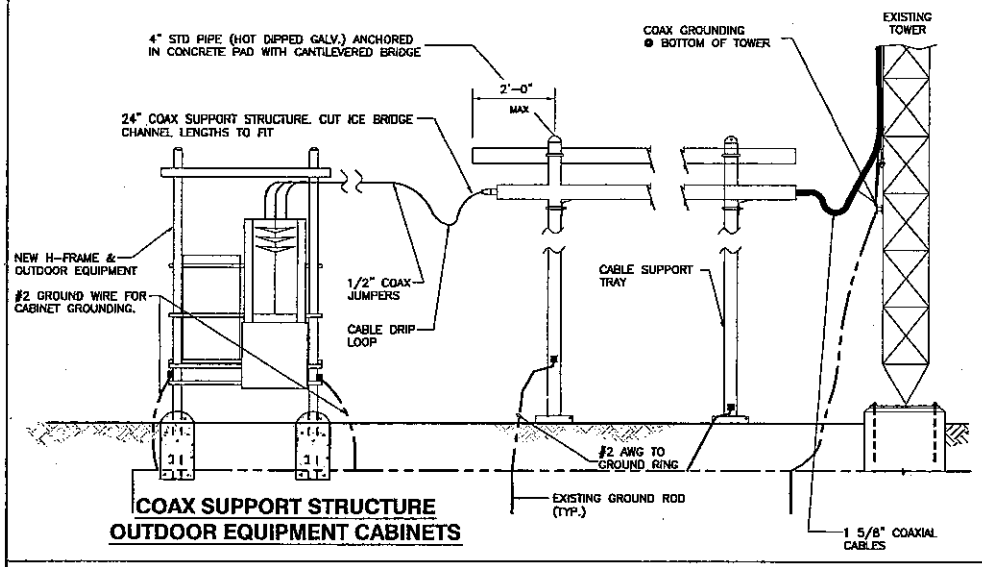
NO.	DATE	REVISIONS	BY
0	8/11/08	ISSUED FOR CONSTRUCTION	JHB

pocket. COMMUNICATIONS

PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE
SHEET TITLE: GROUNDING PLAN & DETAILS

TRIVIS
The Complete Solutions Provider
1861 CLEARLAKE PLACE DR.
PELHAM, AL 35124
(205) 601-0108

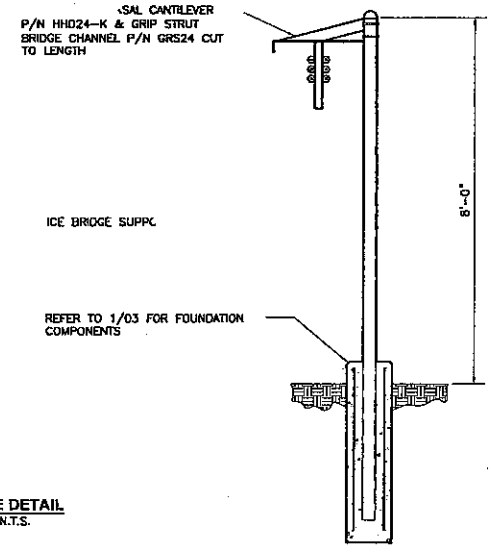
CHECKED BY: JSW
DRAWN BY: JPE
DATE: 6-24-08
JOB NO. 08424
DWG. NO.
04



COAX SUPPORT STRUCTURE OUTDOOR EQUIPMENT CABINETS

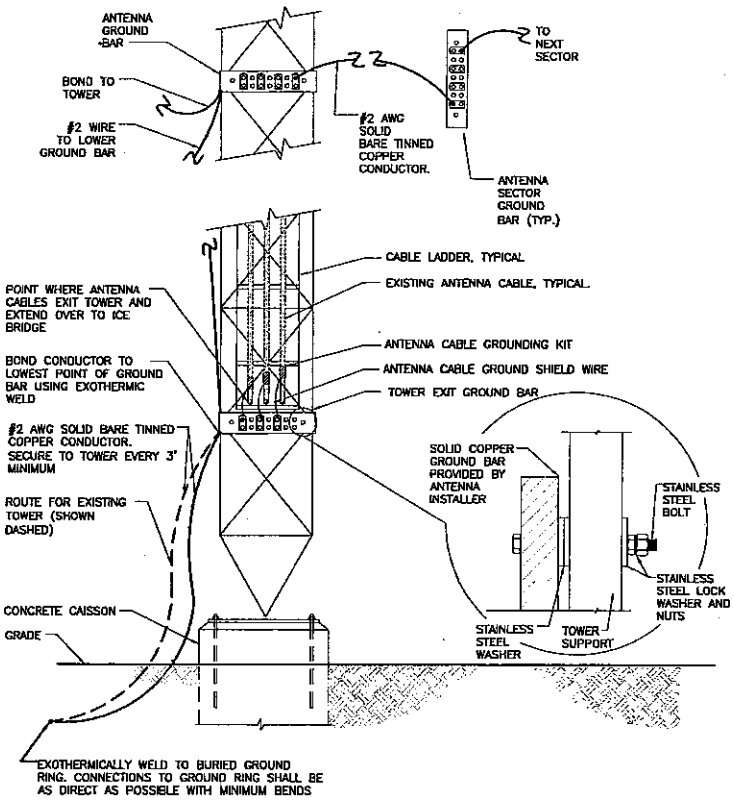
NOTES:

1. WHEN USING COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 8 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM OTHER MANUFACTURERS, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS REQUIRE ENGINEERING APPROVAL.
8. THE DESIGN IS BASED ON ASCE 7-98, 3 SECOND GUST WIND SPEED OF 110 MPH, EXPOSURE C, ELEVATION AT GRADE.
9. THIS DESIGN IS BASED ON 24" WIDE ICE BRIDGE AND (12) 1 5/8" DIA COAX CABLES AND MAX. POST SUPPORT SPACING OF 10'-0".



ICE BRIDGE DETAIL

SCALE: N.T.S.



GUY TOWER GROUNDING DETAIL

NO.	DATE	REVISIONS	INT.
0	6/11/08	ISSUED FOR CONSTRUCTION	JHB

pocket COMMUNICATIONS

PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE
SHEET DESC: COAX SUPPORT STRUCTURE

TRIVIS
The Complete Solutions Provider
180 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 621-0106

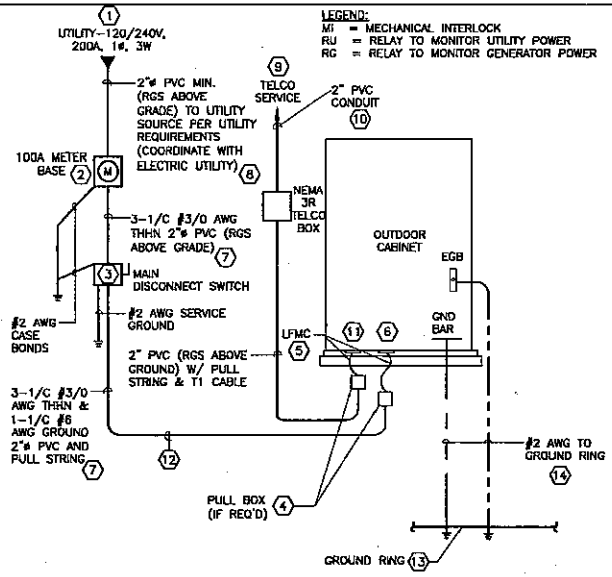
CHECKED BY: JSW
DRAWN BY: JFE
DATE: 6-24-08
JOB NO. 08424
DWG. NO. 05

PANEL "SSC"

LOAD DESCRIPTION	LOAD (kVA)	BRKR SIZE	CCT NO.	PHASE A	PHASE B	CCT NO.	BRKR SIZE	LOAD (kVA)	LOAD DESCRIPTION
BTS CABINET	2.5	30/2	1			2	30/2	2.2	TVSS
	2.5		3			4		2.2	
LIGHTING	.9	10/1	5			6	–	–	SPACE
SPACE	–	–	7			8	–	–	SPACE
SPACE	–	–	9			10	–	–	SPACE
SPACE	–	–	11			12	–	–	SPACE
SPACE	–	–	13			14	–	–	SPACE
SPACE	–	–	15			16	–	–	SPACE
SPACE	–	–	17			18	–	–	SPACE
SPACE	–	–	19			20	–	–	SPACE
SPACE	–	–	21			22	–	–	SPACE
SPACE	–	–	23			24	–	–	SPACE
LOAD SUB–TOTAL	5.6	LOAD TOTAL		10.3 KVA				4.4	LOAD SUB–TOTAL

100A MCB, 120/240V, 1ø, 3W, 65,000 AIC		
TOTAL CONNECTED LOAD	10.3 KW	
25% OF LARGEST CONT. LOAD	1250 W	
TOTAL LOADS	11.5 KW	47.9 AMPS
NOTE: ALL NON–OPTIONAL BREAKERS PROVIDED BY SSC MFR		

PANEL SCHEDULE



LEGEND:
MI = MECHANICAL INTERLOCK
RU = RELAY TO MONITOR UTILITY POWER
RG = RELAY TO MONITOR GENERATOR POWER

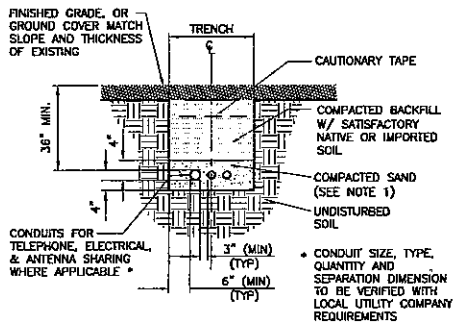
POWER, TELCO & GROUND SINGLE LINE DIAGRAM FOR OUTDOOR CABINET

REFERENCE NOTES

1. ELECTRICAL DEMARCATION POINT. ELECTRICAL CONTRACTOR TO COORDINATE WITH LOCAL POWER FOR SERVICE TO METER.
2. CONTRACTOR TO SUPPLY AND INSTALL A 100A, 120/208/240V 1ø, 3W METER BASE. METER BASE TO BE NEMA 3R RATED AND ACCEPTABLE TO LOCAL UTILITY. PROVIDE WITH MECHANICALLY ATTACHED ENGRAVED IDENTIFICATION LABEL INDICATING "POCKET COMMUNICATIONS METER".
3. CONTRACTOR TO SUPPLY AND INSTALL NEMA 3R 100A FUSIBLE DISCONNECT SWITCH WITH LOCKABLE HANDLE. PROVIDE WITH 100A FUSES, AIC RATING TO COORDINATE WITH LOCAL UTILITY REQUIREMENTS. PROVIDE WITH MECHANICALLY ATTACHED ENGRAVED IDENTIFICATION LABEL INDICATING "POCKET COMMUNICATIONS SERVICE DISCONNECT".
4. WEATHER TIGHT JUNCTION BOX (IF REQUIRED). SIZE TO NEC CODE FOR APPLICATION.
5. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT W/W WEATHER TIGHT FITTINGS AND SUPPORTS. SIZE AND CONTENTS TO MATCH ASSOCIATED USE (POWER OR TELCO)
6. UTILITY POWER ENTRY INTO CABINET. COORDINATE TERMINATION WITH CABINET MANUFACTURER.
7. CONTRACTOR SUPPLY AND INSTALL 2" GRC. AFG AND PVC 24" BFG C/W #3/0 AWG THHN & (1) #6 GRND FOR UTILITY SERVICE
8. CONTRACTOR SUPPLY AND INSTALL 4" GRC. AFG AND PVC 24" BFG C/W #3/0 AWG THHN FOR UTILITY SERVICE
9. TELCO DEMARCATION POINT. ELECTRICAL CONTRACTOR TO COORDINATE WITH LOCAL TELCO FOR SERVICE TO TELCOBOX OR CABINET.
10. CONTRACTOR TO SUPPLY AND INSTALL (1) 2" GRC AFG AND PVC 24" BFG C/W PULL CORDS FOR TELCO SERVICE TO CABINET TERMINATION POINT.
11. TELCO SERVICE ENTRY INTO CABINET. COORDINATE TERMINATION IN WITH CABINET MANUFACTURER.
12. CONTRACTOR TO ARRANGE AND PAY FOR UNDERGROUND UTILITY LOCATION SURVEYS FOR ALL TRENCHING. REUSE NATIVE BACKFILL AND RE–INSTATE TO ORIGINAL CONDITION. INSTALL 6" WIDE METALLIC LINED RED PLASTIC MARKER TAPE 8" ABOVE ALL BURIED CONDUIT.
13. PART OF CABINET BURIED GROUND RING.
14. (1) #2 SOLID BARE TINNED CU GEC BONDED TO 5/8"x10' COPPER CLAD STEEL GROUNDING ELECTRODES. LOCATE GROUNDING ELECTRODE ADJACENT TO "CABINET". BOND GROUNDING ELECTRODE SYSTEM TO CABINET GROUND RING.

GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL AND GROUNDING WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL VERIFY ROUTING AND LENGTHS PRIOR TO CONSTRUCTION.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
4. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
5. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



NOTES: 1. LEAN CONCRETE, RED–COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND.

DIRECT BURIED CONDUIT

NTS

NOTES

1. CONTRACTOR SHALL PROVIDE 100AMP, SINGLE PHASE, 120/240 VAC, 60HZ SERVICE FOR SITE.
2. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY BEFORE THE START OF CONSTRUCTION. POWER AND TELCO CONDUIT SHALL BE PROVIDED AND INSTALLED PER UTILITY REQUIREMENTS.
3. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT REFER TO DRAWINGS PROVIDED BY AC OR TELCO PANEL MANUFACTURER.
4. ALL SERVICE EQUIPMENT AND INSTALLATIONS SHALL COMPLY WITH THE N.E.C. AND UTILITY COMPANY AND LOCAL CODE REQUIREMENTS.
5. CONTRACTOR SHALL INSTALL SUFFICIENT LENGTHS OF LFMC INCLUDING ALL CONDUIT FITTINGS (NUTS, REDUCING BUSHINGS, ELBOWS, COUPLINGS, ETC) NECESSARY FOR CONNECTION FROM IMC CONDUIT TO THE PURCELL POWER CABINET.
6. CONTRACTOR SHALL PROVIDE ELECTRICAL SERVICE EQUIPMENT WITH FAULT CURRENT RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT FROM THE POWER UTILITY.
7. CONTRACTOR SHALL VERIFY THAT THE MAIN BONDING JUMPER AND GROUNDING ELECTRODE CONDUCTOR IS INSTALLED PROPERLY IN MAIN DISCONNECT SWITCH.

NO.	DATE	REVISIONS	BY
0	6/11/08	ISSUED FOR CONSTRUCTION	JHB

pocket COMMUNICATIONS

PROJECT NAME: CROSSROADS COMMUNICATIONS AM SITE
SHEET DESC: ELECTRICAL PLAN & DETAILS

TRIVIS
The Complete Solutions Provider
180 CHANDLER PLACE DR.
PELHAM, AL 35124
(205) 621-0109

CHECKED BY: JSW
DRAWN BY: JFE
DATE: 6-24-08
JOB NO. 08424
DWG. NO. 06

Exhibit C

Equipment Specifications

Pocket Site HFCT0969A

Middlesex Turnpike/Bokum Road

Old Saybrook, Connecticut

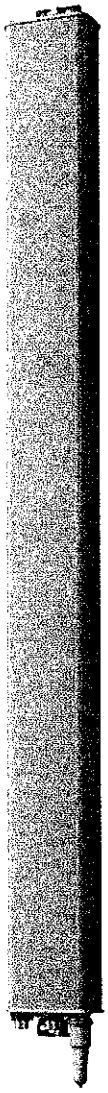
KATHREIN
SCALA DIVISION

742 213

65° Panel Antenna

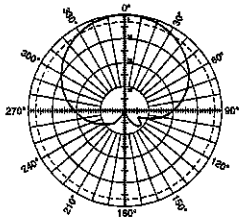
Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled downtilt is available as a retrofitable option.

- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accomodate future 3G / UMTS applications.

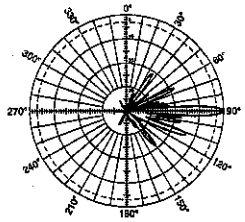


General specifications:

Frequency range	1710–2170 MHz
VSWR	< 1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Front-to-back ratio (180°±30°)	>30 dB (co-polar) >25 dB (total power)
Maximum input power	300 watts per input (at 50°C)
Electrical downtilt continuously adjustable	0–6 degrees
Connector	2 x 7/16 DIN female
Isolation	>30 dB
Cross polar ratio Main direction 0° Sector ±60°	 25 dB (typical) >10 dB
Weight	22 lb (10 kg)
Dimensions	76.5 x 6.1 x 2.7 inches (1942 x 155 x 69 mm)
Equivalent flat plate area	4.62 ft² (0.429 m²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	87.2 x 6.8 x 3.6 inches (2214 x 172 x 92 mm)
Shipping weight	24.3 lb (11 kg)
Mounting	Fixed and tilt mount options are available for 2 to 4.6 inch (50 to 115 mm) OD masts.
See reverse for order information.	



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization

Specifications:	**1710–1880 MHz**	**1850–1990 MHz**	**1920–2170 MHz**
Gain	19 dBi	19.2 dBi	19.5 dBi
+45° and -45° polarization horizontal beamwidth	67° (half-power)	65° (half-power)	63° (half-power)
+45° and -45° polarization vertical beamwidth	4.7° (half-power)	4.5° (half-power)	4.3° (half-power)
Vertical Pattern–sidelobe suppression for first side-lobe above main beam	0° 2° 4° 6° T 18 17 15 15 dB	0° 2° 4° 6° T 18 18 17 15 dB	0° 2° 4° 6° T 18 18 17 15 dB

10642-H
936.2074/h

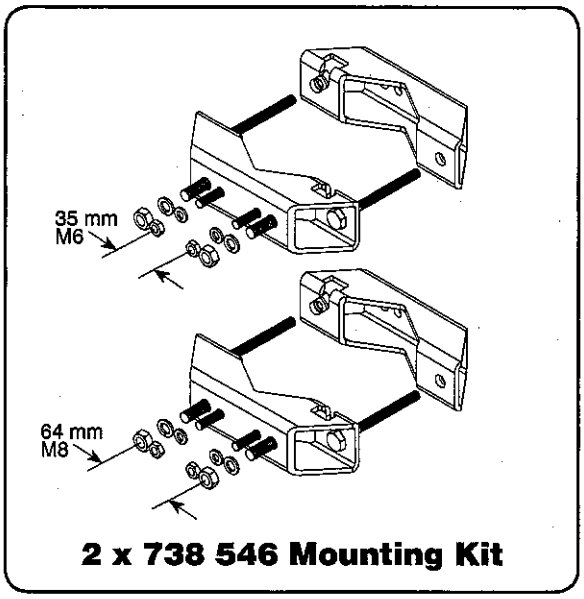
*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

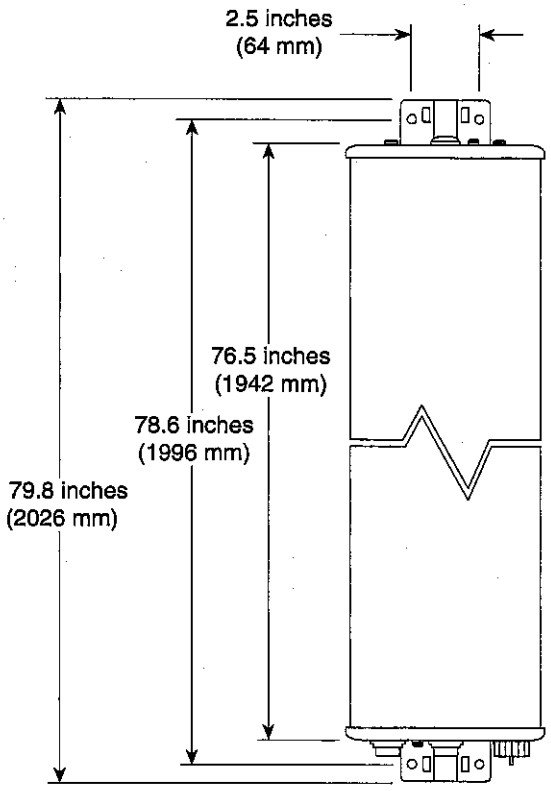
KATHREIN
SCALA DIVISION

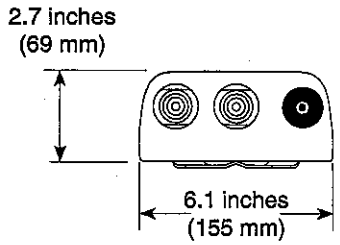
742 213

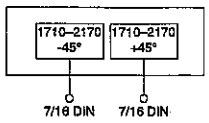
65° Panel Antenna



2 x 738 546 Mounting Kit







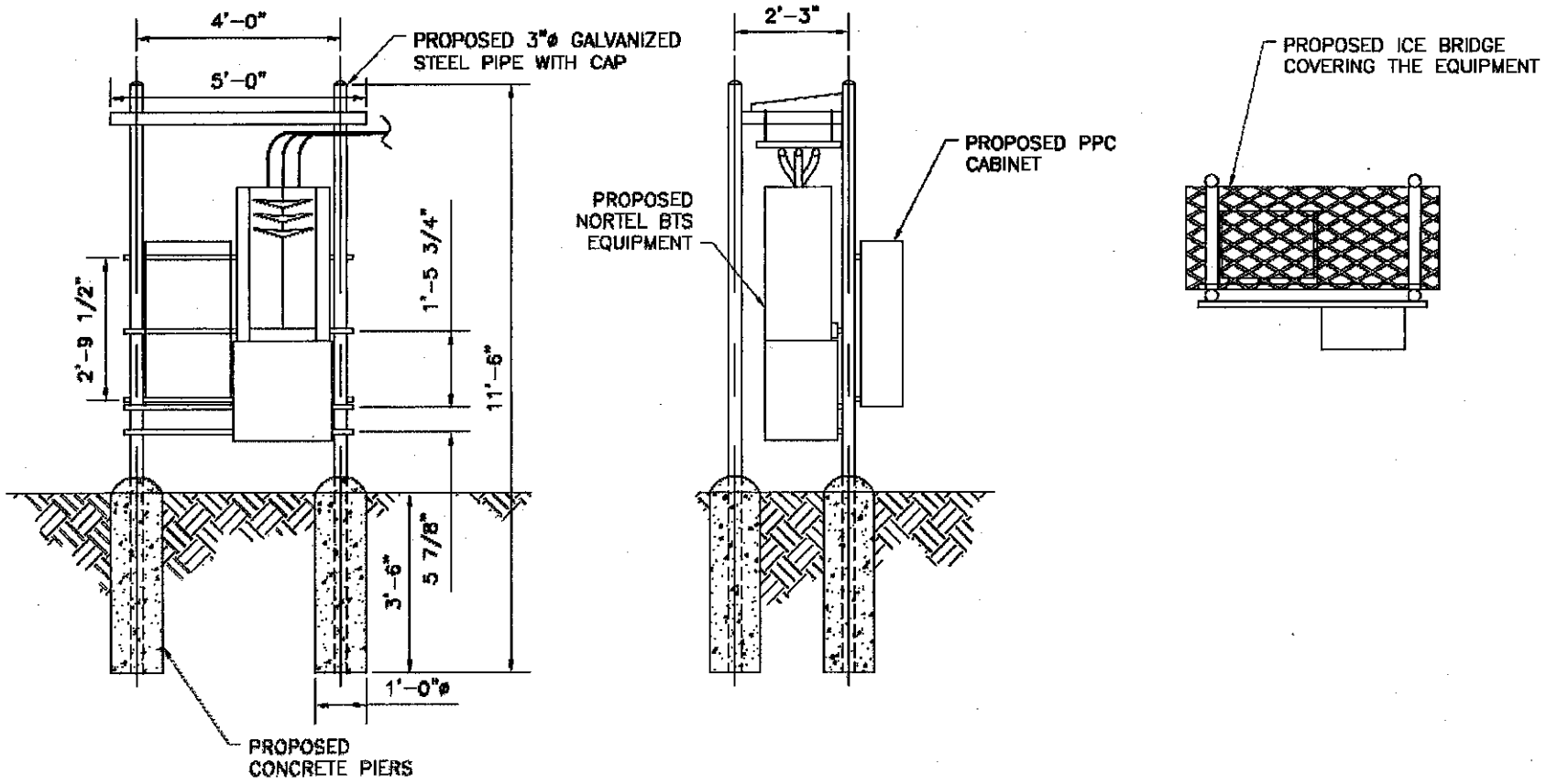
Mounting Options:

Model	Description
2 x 738 546	Mounting Kit for 2 to 4.6 inch (50 to 115 mm) OD mast.
737 978	Tilt Kit for use with the above mounting kit, 0–11 degrees downtilt angle. (requires 2 x 738 546 Mounting Kit)
742 263	Three-panel Sector Mounting Kit (120 deg. ea.) for 3.5 inch (89 mm) OD mast.

Order Information:

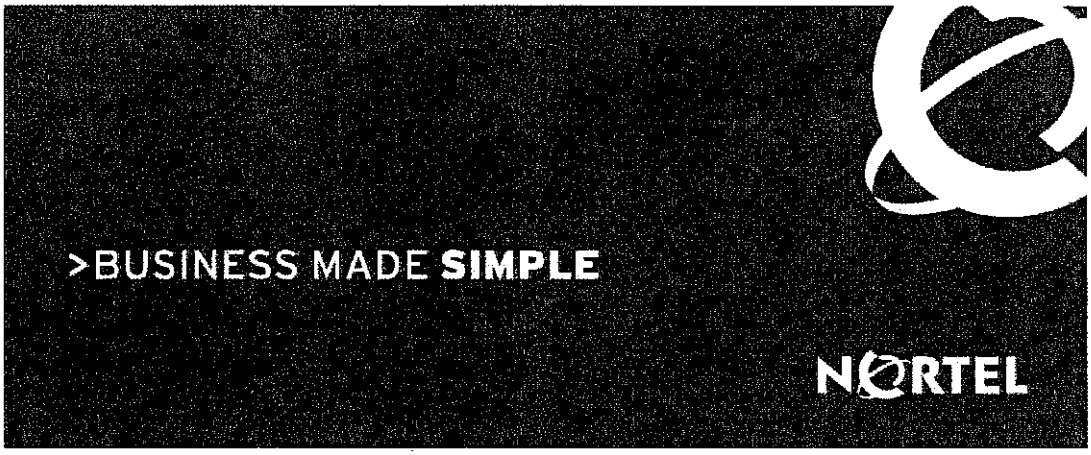
Model	Description
742 213	Antenna with 7/16 DIN connectors 0°–6° adjustable electrical downtilt

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com



Pocket/Youghiogheny Communications – Northeast, LLC

Rack Detail



CDMA BTS 3231 AWS 1.7/2.1 GHz (Outdoor/Indoor)

CDMA BTS 3231

Industry's Highest Capacity AWS Micro BTS

The CDMA BTS 3231 is the latest extension to Nortel Networks BTS (Base Transceiver Station) portfolio providing the ideal solution for urban, sub-urban and rural deployments. The CDMA BTS 3231 is a 3-carrier, 3-sector outdoor/indoor BTS operating at the AWS band of 1.7/2.1 GHz supporting IS-95, 1XRTT and 1xEV-DO simultaneously. BTS 3231 provides flexible deployments solutions including floor, rack, and wall mount options. The power consumption of BTS3231 is industry leading consuming only 630W for 3C3S. The BTS 3231 is also very light at 240lbs making it easy to transport to hard to reach locations such as the top of a high rise building.

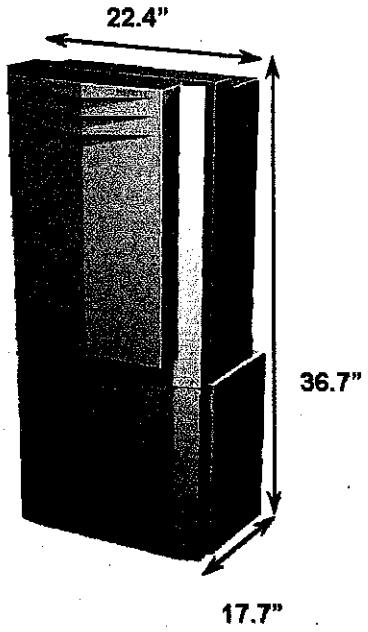


Exhibit D

Power Density Calculations

Pocket Site HFCT0969A

Middlesex Turnpike/Bokum Road

Old Saybrook, Connecticut

C Squared Systems, LLC
920 Candia Road
Manchester, NH 03109
Phone: (603) 657 9702
E-mail:
support@csquaredsystems.com

Calculated Radio Frequency Emissions

CT-0969

Middlesex Turnpike/Bokum Road

Old Saybrook, CT

Table of Contents

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Pocket antennas to be installed on one of the existing AM towers at Middlesex Turnpike/Bokum Road, Old Saybrook, CT.

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are much more conservative (higher) than the actual signal levels will be from the finished installation.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (mW/cm^2). The number of mW/cm^2 emitted is called the power density. The general population exposure limit for the cellular band is 0.567-0.593 mW/cm^2, and the general population exposure limit for the PCS/AWS band is 1.0 mW/cm^2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Higher exposure limits are permitted under the occupational / controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure (through training), and they must be able to exercise control over their exposure. General population / uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals."

The FCC describes exposure to radio frequency (RF) energy in terms of percentage of maximum permissible exposure (MPE) with 100% being the maximum allowed. Rather than the FCC presenting the user specification in terms of complex power density figures over a specified surface area, this MPE measure is particularly useful, and even more so when considering that power density limits actually vary by frequency because of the different absorptive properties of the human body at different frequencies.

MPE limits are specified as time-averaged exposure limits. This means that exposure can be averaged over 30 minutes for general population / uncontrolled exposure (or 6 minutes for occupational / controlled exposure). However, for the case of exposure of the general public, time averaging is usually not applied because of uncertainties over exact exposure conditions and difficulty in controlling time of exposure. Therefore, the typical conservative approach is to assume that any RF exposure to the general public will be continuous.

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

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit. As shown in these excerpts, each frequency band has different exposure limits, requiring power density to be reported as a percent of Maximum Permissible Exposure (MPE) when dealing with carriers transmitting in different frequency bands.

3. RF Exposure Prediction Methods

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

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna

V = Vertical Distance from bottom of antenna

Off Beam Loss is determined by the selected antenna patterns

4. Calculation Results

Table 1 below outlines the power density information for the site. The power density information for the existing AM station was derived as follows:

WLIS is licensed for omni-directional AM daytime operation at 5 KW. The AM daytime operation is transmitted from one of two towers located off Bokum Road. In addition to WLIS AM operation, this tower currently supports Verizon Wireless, AT&T Mobility and T-Mobile cellular and PCS operations.

WLIS is also licensed for nighttime, directional AM operation at 10% reduced power (500W). This directional AM pattern is achieved using a second tower off Bokum Road. The tower that Pocket is proposing to use is this second AM tower that only becomes active during the nighttime operation.

In order to derive the %MPE value for WLIS nighttime operation, the 0.56% MPE value for daytime operation (taken from the CSC database) was adjusted by a factor of 10% (the reduction from 5KW down to 500W) to arrive at the %MPE of 0.056%. The resultant cumulative %MPE with the addition of the Pocket transmitters to this adjacent AM tower is 3.08%.

Carrier	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Antenna Height (Feet)	Operating Frequency (MHz)	Total ERP (Watts)	Power Density (mw/cm^2)	Limit	%MPE
WLIS	1	500	190	1.42	500	N/A	89.2	0.056%
Pocket	3	631	150	2130-2133.75	1893	0.0303	1.0000	3.025%
							Total	3.08%

Table 1: Proposed Carrier Information

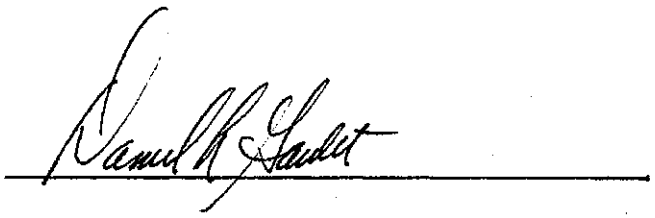
5. Conclusion

The above analysis verifies that emissions from the proposed site will be well below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 3.08% of the FCC limit.

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

6. Statement of Certification

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



September 10, 2008
Date

Daniel l. Goulet
C Squared Systems, LLC

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

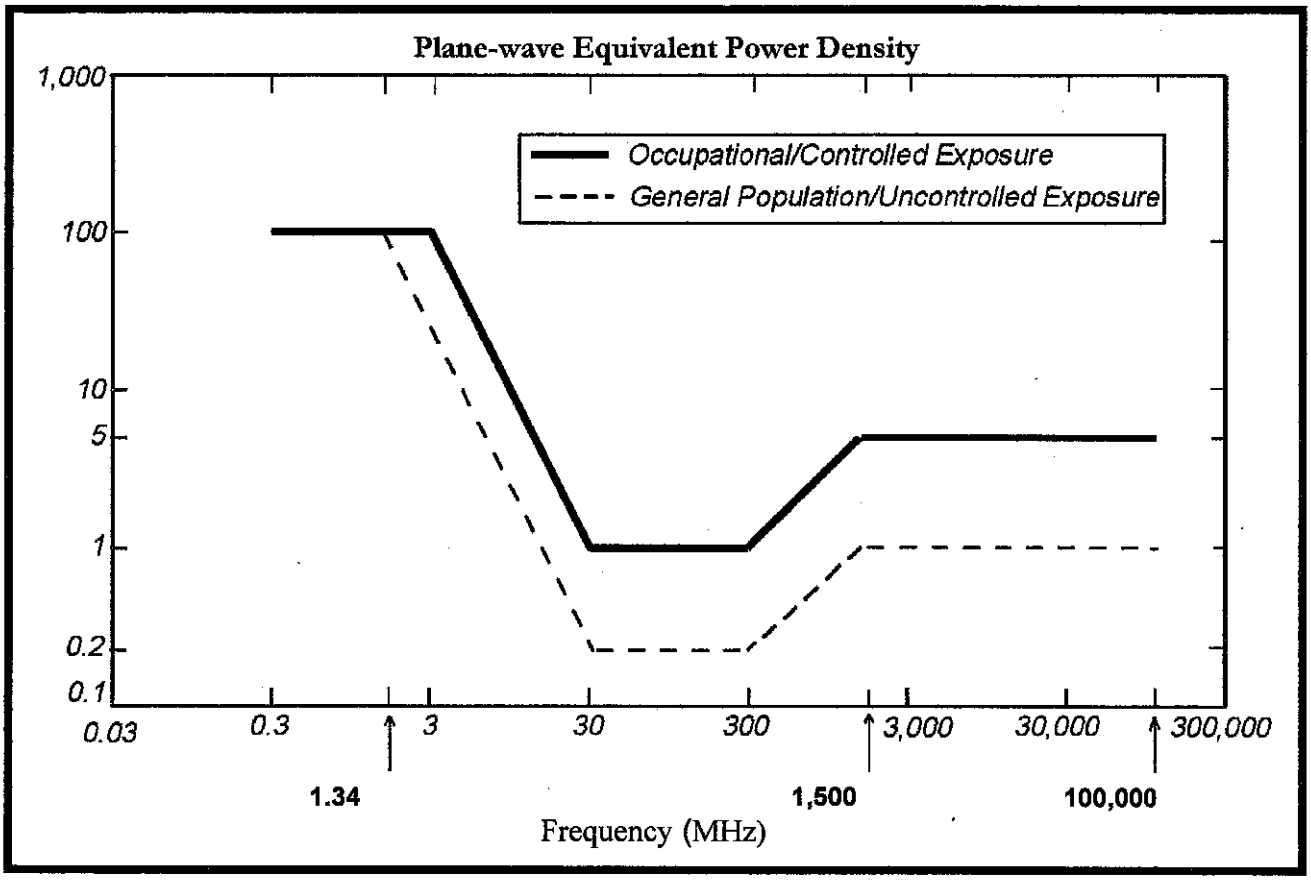
(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



• FCC Limits for Maximum Permissible Exposure (MPE)

Exhibit E

Structural Analysis

Pocket Site HFCT0969A

Middlesex Turnpike/Bokum Road

Old Saybrook, Connecticut

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

Structural Analysis Report

PJF Project No.: **A00008-T106**

Structure: Existing 200-ft Guyed Tower

Manufacturer: Utility Tower
Location: Old Saybrook, Connecticut
Site Name: South Old Saybrook

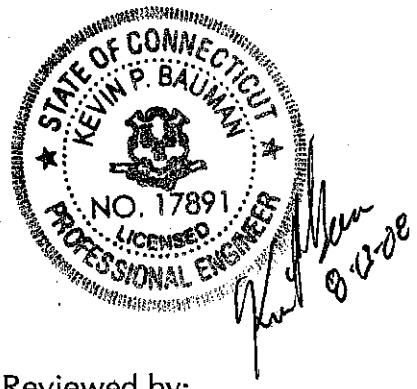
Prepared For:

Force 3 Communications, LLC

495 Hartman Road
Winston Salem, NC 27127

Attn: Terry Brady

August 12, 2008



Analyzed by:
Madhukar Ozarker
Project Engineer
mozarker@pjfweb.com

Reviewed by:
Kevin P. Bauman, P.E.
Department Manager
kbauman@pjfweb.com

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

Executive Summary

Design Standard:
Paul J. Ford and Company has analyzed the existing South Old Saybrook tower in accordance with the Telecommunications Industry Association Standard TIA/EIA-222-F for the following design wind velocities:

85 mph Basic Wind Velocity without ice
74 mph Basic Wind Velocity with 0.5" radial ice
50 mph (Operational) Basic Wind Velocity without ice

Section 3108.4 of the International Building Code states: "Towers shall be designed to resist wind loads in accordance with TIA/EIA-222."

Antenna Loads:
The existing 200-ft guyed tower was analyzed for the following antenna and coax loading:

Status	Elev.	Antenna	Coax
Proposed	150'	(3) Kathrein 742-213 leg mounted	(6) 1 5/8"

Stresses:
When the existing tower is analyzed in accordance with the above mentioned code requirements to support the proposed antenna load it is stressed to **88%** of its safe capacity. The tower meets the minimum code requirements as it now stands.

Existing Foundations:
We were not able to calculate the capacity of the existing foundations without a site-specific geotechnical report and the original drawings indicating the size of the foundations below grade.

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

Tower History:
Paul J. Ford and Company was not supplied with the original drawings but Paul J Ford and Company was informed that this South Old Saybrook tower is an identical structure similar to the North Old Saybrook which was analyzed by Paul J Ford and Company in 2002 (Job # 34802-317). Therefore we have used the same tower geometry and members as indicated in our previous Job # 34802-317. In addition, we were informed that there are no antennas on this tower.

Project Description:
Force 3 Communications, LLC has asked Paul J. Ford and Company to provide a structural analysis of the existing 200-ft guyed tower located in Old Saybrook, Connecticut. In this analysis, we considered the addition of (3) new Kathrein 742-213 antennas at an elevation of 150 ft. The new antennas are fed with (6) 1 5/8" coax.

Proposed Antenna and Feedline Loading:
Our structural analysis was completed considering the following antenna and feedline loading:

Status	Elev.	Antenna	Coax
Proposed	**150'**	**(3) Kathrein 742-213 leg mounted**	**(6) 1 5/8"**

Note: The antenna feedlines are assumed to be **stacked in two rows** (3 over 3) as indicated on the attached tower sketches.

Structural Analysis:
Our structural analysis of this tower was completed according to the recommendations of the "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", TIA/EIA-222-F. This standard recommends a minimum basic design wind velocity of 85 mph (measured at 33-ft above grade) for Middlesex County. If ice accumulation is considered, this standard allows a reduced design wind velocity of 74 mph with simultaneous 0.5" solid radial ice accumulation. The guyed tower was analyzed as a three-dimensional space truss using finite element software.

Results:
Our structural analysis of the existing South Old Saybrook tower indicates that the leg at elevation 60' – 40' is stressed to 88% of its safe capacity. This is the structural component that controls the capacity of the tower.

We were not able to calculate the capacity of the existing foundations with the information provided to us.

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

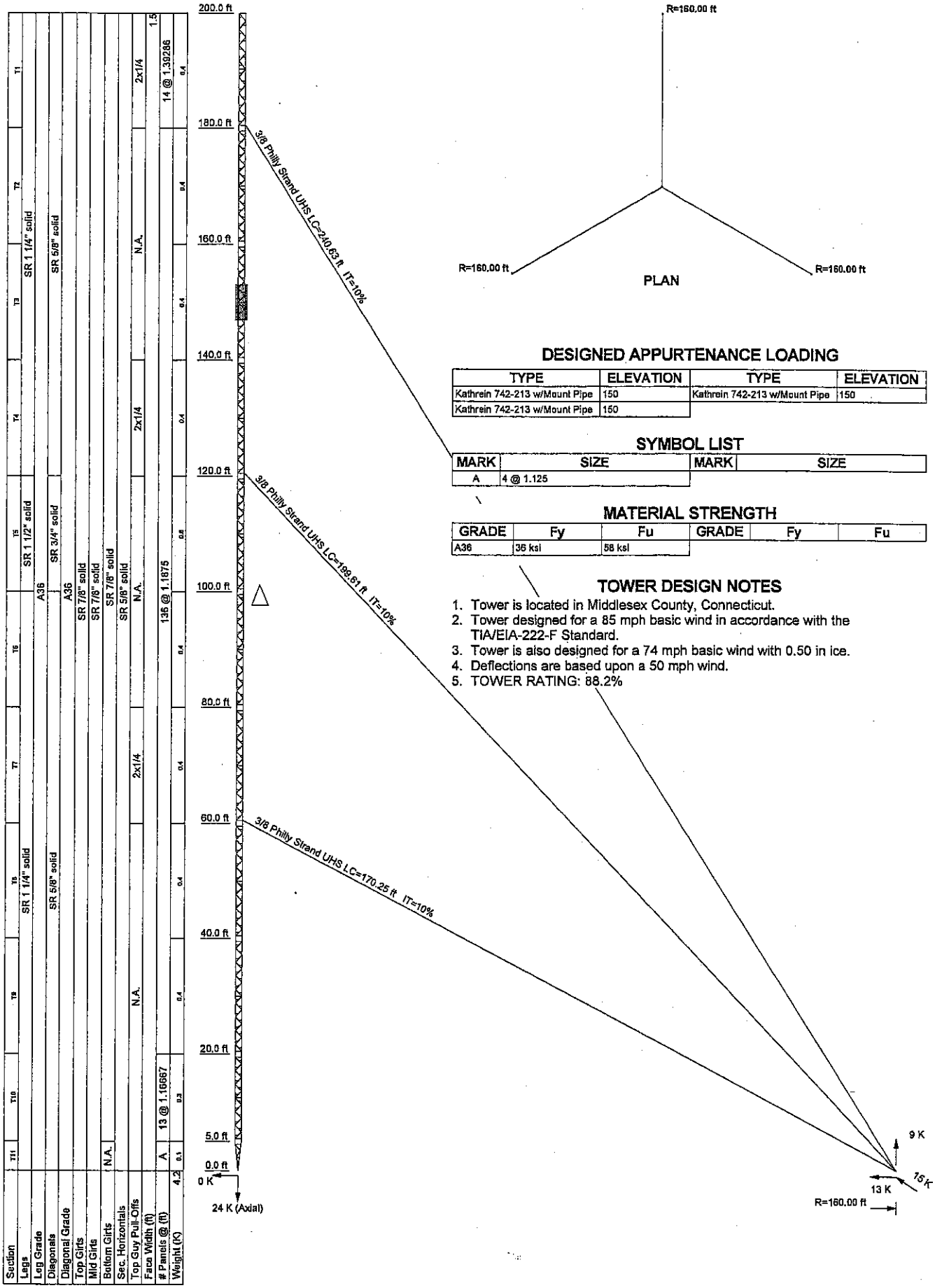
Conclusion:
Paul J. Ford and Company performed a structural analysis of the existing South Old Saybrook tower in accordance with the Telecommunications Industry Association Standard TIA/EIA-222-F. Our analysis indicates that the tower is adequate as it now stands to safely support the proposed antenna loading without the need for any modifications.

We were not able to calculate the capacity of the existing foundations without a site-specific geotechnical report and the original drawings indicating the size of the foundations below grade. If we are provided with this information, we will provide the foundation capacity calculations.

We hope that this analysis satisfies your current needs. If you have any questions concerning our analysis, or if we can be of further service to you, please feel free to contact us at (614) 221-6679.

Sincerely,
Paul J. Ford and Company

Madhukar Ozarker
Project Engineer



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Kathrein 742-213 w/Mount Pipe	150	Kathrein 742-213 w/Mount Pipe	150
Kathrein 742-213 w/Mount Pipe	150		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	4 @ 1.125		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

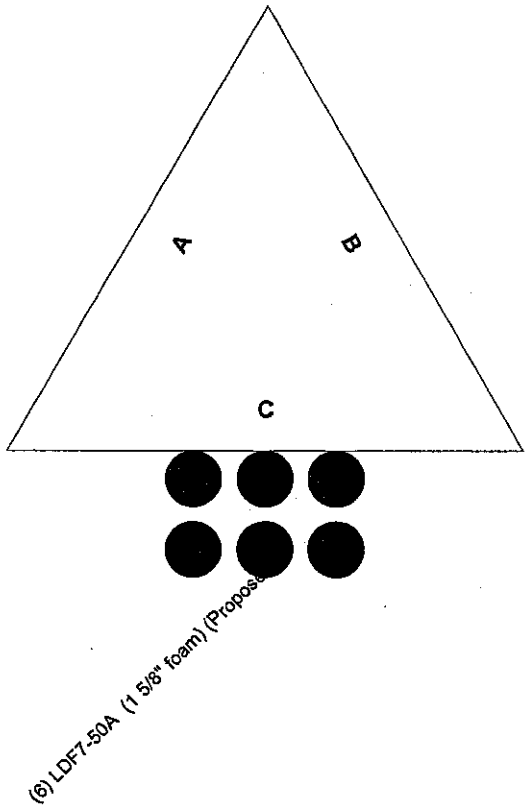
1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 88.2%

Paul J Ford and Company
250 E. Broad Street Suite 1500
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105
Structural Engineers

Job: Existing 200 ft guyed tower 'South' - Old Saybrook, CT			
Project: PJF # A00008-T106			
Client: F3 Communications, LLC	Drawn by: MO	App'd:	
Code: TIA/EIA-222-F	Date: 08/12/08	Scale: NTS	
Path: G:\TOWER\000 Misc\2008\A00008-T106.eri		Dwg No. E-1	

Feedline Plan
20'

Section @ 20'



Structural Engineers

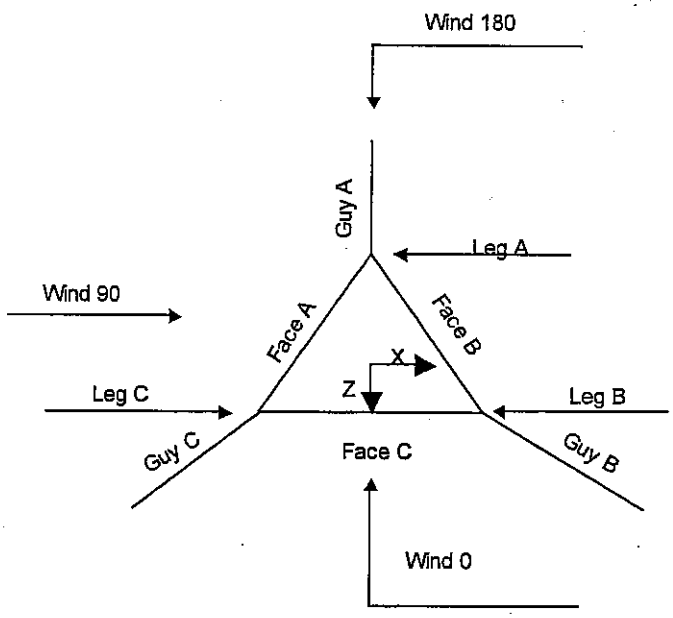
Paul J Ford and Company
250 E. Broad Street Suite 1500
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: *Existing 200 ft guyed tower 'South' - Old Saybrook, CT*			
Project: *PJF # A00008-T106*			
Client: F3 Communications, LLC	Drawn by: MO	App'd:	
Code: TIA/EIA-222-F	Date: 08/12/08	Scale: NTS	
Path: G:\TOWER\000 Misc\2008\A00008-T106.eri		Dwg No. E-7	

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 200.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 1.50 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.50 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.



Corner & Starmount Guyed Tower

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
LDF7-50A (1 5/8" foam) (Proposed)	C	Yes	Ar (CaAa)	150.00 - 0.00	6	3	0.52 0.50	1.98		0.92

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Kathrein 742-213 w/Mount Pipe	C	From Leg	0.50 0.00 0.00	0.00	150.00	No Ice 1/2" Ice	5.14 5.61	2.96 3.63	0.02 0.05
Kathrein 742-213 w/Mount Pipe	B	From Leg	0.50 0.00 0.00	0.00	150.00	No Ice 1/2" Ice	5.14 5.61	2.96 3.63	0.02 0.05
Kathrein 742-213 w/Mount Pipe	A	From Leg	0.50 0.00 0.00	0.00	150.00	No Ice 1/2" Ice	5.14 5.61	2.96 3.63	0.02 0.05

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy

Comb. No.	Description
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	21	23.94	-0.00	-0.43
	Max. H_x	11	15.88	0.43	0.03
	Max. H_z	15	23.64	0.00	0.41
	Max. M_x	1	0	0.00	0.00
	Max. M_z	1	0	0.00	0.00
	Max. Torsion	11	0	0.43	0.03
	Min. Vert	1	13.40	0.00	0.00
	Min. H_x	5	15.88	-0.43	0.03
	Min. H_z	8	15.71	-0.00	-0.45
	Min. M_x	1	0	0.00	0.00
	Min. M_z	1	0	0.00	0.00
	Min. Torsion	5	0	-0.43	0.03
Guy C @ 160 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-0.77	-0.56	0.33
	Max. H_x	10	-0.77	-0.56	0.33
	Max. H_z	17	-8.71	-11.06	6.38
	Min. Vert	17	-8.71	-11.06	6.38
	Min. H_x	17	-8.71	-11.06	6.38
	Min. H_z	10	-0.77	-0.56	0.33
Guy B @ 160 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-0.77	0.56	0.33
	Max. H_x	25	-8.71	11.06	6.38
	Max. H_z	25	-8.71	11.06	6.38
	Min. Vert	25	-8.71	11.06	6.38
	Min. H_x	6	-0.77	0.56	0.33
	Min. H_z	6	-0.77	0.56	0.33
Guy A @ 160 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-0.77	0.00	-0.65
	Max. H_x	24	-4.88	0.84	-6.80
	Max. H_z	2	-0.77	0.00	-0.65
	Min. Vert	21	-8.73	0.00	-12.78
	Min. H_x	18	-4.88	-0.84	-6.80
	Min. H_z	21	-8.73	0.00	-12.78

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	2.87	33	0.11	0.61
T2	180 - 160	3.28	33	0.12	0.61
T3	160 - 140	3.68	33	0.06	0.65
T4	140 - 120	3.61	33	0.08	0.67
T5	120 - 100	3.17	33	0.09	0.68
T6	100 - 80	2.82	33	0.10	0.70
T7	80 - 60	2.29	33	0.15	0.69
T8	60 - 40	1.67	29	0.12	0.68
T9	40 - 20	1.31	29	0.09	0.68
T10	20 - 5	0.81	29	0.16	0.66
T11	5 - 0	0.22	29	0.20	0.61

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.50	Guy	33	3.27	0.12	0.61	50927
150.00	Kathrein 742-213 w/Mount Pipe	33	3.71	0.06	0.66	8818
120.50	Guy	33	3.18	0.09	0.68	18095
60.50	Guy	29	1.68	0.12	0.68	10899

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T K	Allowable T_a K	Required S.F.	Actual S.F.
T1	180.50 (A) (763)	3/8 Philly Strand UHS	1.60	16.00	5.41	8.00	2.000	2.957 ✔
	180.50 (B) (762)	3/8 Philly Strand UHS	1.60	16.00	5.40	8.00	2.000	2.962 ✔
	180.50 (C) (758)	3/8 Philly Strand UHS	1.60	16.00	5.40	8.00	2.000	2.962 ✔
T4	120.50 (A) (769)	3/8 Philly Strand UHS	1.60	16.00	5.87	8.00	2.000	2.725 ✔
	120.50 (B) (768)	3/8 Philly Strand UHS	1.60	16.00	5.86	8.00	2.000	2.729 ✔
	120.50 (C) (764)	3/8 Philly Strand UHS	1.60	16.00	5.86	8.00	2.000	2.729 ✔
T7	60.50 (A) (775)	3/8 Philly Strand UHS	1.60	16.00	4.66	8.00	2.000	3.431 ✔
	60.50 (B) (774)	3/8 Philly Strand UHS	1.60	16.00	4.66	8.00	2.000	3.431 ✔
	60.50 (C) (770)	3/8 Philly Strand UHS	1.60	16.00	4.66	8.00	2.000	3.431 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	200 - 180	1 1/4" solid	20.00	1.39	107.0 K=2.00	1.00	12	1.23	-3.86	14.82	0.261 ✔
T2	180 - 160	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.99	14	1.23	-12.72	17.04	0.746 ✔
T3	160 - 140	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.99	14	1.23	-15.02	17.06	0.881 ✔
T4	140 - 120	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.98	14	1.23	-11.45	16.98	0.674 ✔
T5	120 - 100	1 1/2" solid	20.00	1.19	76.0 K=2.00	0.93	15	1.77	-10.80	25.86	0.418 ✔
T6	100 - 80	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.97	14	1.23	-11.66	16.75	0.696 ✔
T7	80 - 60	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.98	14	1.23	-19.78	16.87	1.173 ✔
T8	60 - 40	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.98	14	1.23	-19.78	16.83	1.175 ✔
T9	40 - 20	1 1/4" solid	20.00	1.19	91.2 K=2.00	0.97	14	1.23	-15.73	16.67	0.943 ✔
T10	20 - 5	1 1/4" solid	15.00	1.17	89.6 K=2.00	0.96	14	1.23	-15.55	16.80	0.926 ✔
T11	5 - 0	1 1/4" solid	5.07	1.14	87.7 K=2.00	0.93	14	1.23	-11.25	16.60	0.678 ✔

Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	200 - 180	5/8" solid	2.05	1.90	124.3 K=0.85	10	0.31	-0.38	2.96	0.129 ✔
T2	180 - 160	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-1.33	3.32	0.401 ✔
T3	160 - 140	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-0.77	3.32	0.232 ✔
T4	140 - 120	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-1.29	3.32	0.387 ✔
T5	120 - 100	3/4" solid	1.91	1.75	95.4 K=0.85	14	0.44	-1.66	5.99	0.278 ✔
T6	100 - 80	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-0.82	3.32	0.246 ✔
T7	80 - 60	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-1.26	3.32	0.380 ✔
T8	60 - 40	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-1.73	3.32	0.522 ✔

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 $\frac{P}{P_a}$
T9	40 - 20	5/8" solid	1.91	1.78	116.2 K=0.85	11	0.31	-0.81	3.32	0.244 ✔
T10	20 - 5	5/8" solid	1.90	1.77	115.4 K=0.85	11	0.31	-0.84	3.35	0.251 ✔
T11	5 - 0	5/8" solid	1.24	0.99	64.5 K=0.85	17	0.31	-0.61	5.21	0.116 ✔

Secondary Horizontal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	200 - 180	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T2	180 - 160	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T3	160 - 140	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T4	140 - 120	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T5	120 - 100	5/8" solid	0.75	0.69	52.8 K=1.00	18	0.31	-0.00	5.55	0.000 ✔
T6	100 - 80	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T7	80 - 60	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T8	60 - 40	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T9	40 - 20	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T10	20 - 5	5/8" solid	0.75	0.70	53.6 K=1.00	18	0.31	-0.00	5.53	0.000 ✔
T11	5 - 0	5/8" solid	0.58	0.53	40.5 K=1.00	19	0.31	-0.00	5.88	0.000 ✔

Top Girt Design Data (Compression)

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 $\frac{P}{P_a}$
T1	200 - 180	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.00	10.18	0.000 ✔
T2	180 - 160	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.67	10.18	0.066 ✔
T3	160 - 140	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.42	10.18	0.041 ✔
T4	140 - 120	7/8" solid	1.50	1.40	65.1	17	0.60	-0.42	10.18	0.041

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 $\frac{P}{P_a}$
					K=0.85					✔
T5	120 - 100	7/8" solid	1.50	1.38	64.1 K=0.85	17	0.60	-0.88	10.24	0.086 ✔
T6	100 - 80	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.19	10.18	0.018 ✔
T7	80 - 60	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.49	10.18	0.048 ✔
T8	60 - 40	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.83	10.18	0.082 ✔
T9	40 - 20	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.38	10.18	0.037 ✔
T10	20 - 5	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.07	10.18	0.007 ✔

Bottom Girt Design Data (Compression)

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 $\frac{P}{P_a}$
T2	180 - 160	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.39	10.18	0.039 ✔
T3	160 - 140	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.48	10.18	0.047 ✔
T5	120 - 100	7/8" solid	1.50	1.38	64.1 K=0.85	17	0.60	-0.19	10.24	0.018 ✔
T6	100 - 80	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.43	10.18	0.042 ✔
T8	60 - 40	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.37	10.18	0.036 ✔
T9	40 - 20	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.10	10.18	0.010 ✔
T10	20 - 5	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.04	10.18	0.004 ✔

Mid Girt Design Data (Compression)

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 $\frac{P}{P_a}$
T1	200 - 180	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.01	10.18	0.001 ✔
T2	180 - 160	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.01	10.18	0.001 ✔
T3	160 - 140	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.20	10.18	0.019 ✔
T4	140 - 120	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.01	10.18	0.001 ✔

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 $\frac{P}{P_a}$
T6	100 - 80	7/8" solid	1.50	1.40	65.1 K=0.85	17	0.60	-0.00	10.18	0.000 ✓

Tension Checks

Leg Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	1 1/4" solid	20.00	1.39	53.5	22	1.23	2.85	26.51	0.108 ✓
T2	180 - 160	1 1/4" solid	20.00	0.50	19.2	22	1.23	8.18	26.51	0.308 ✓
T3	160 - 140	1 1/4" solid	20.00	1.19	45.6	22	1.23	11.11	26.51	0.419 ✓
T4	140 - 120	1 1/4" solid	20.00	1.19	45.6	22	1.23	8.12	26.51	0.306 ✓
T5	120 - 100	1 1/2" solid	20.00	0.50	16.0	22	1.77	1.81	38.17	0.047 ✓
T6	100 - 80	1 1/4" solid	20.00	1.19	45.6	22	1.23	1.90	26.51	0.072 ✓
T7	80 - 60	1 1/4" solid	20.00	1.19	45.6	22	1.23	5.33	26.51	0.201 ✓
T8	60 - 40	1 1/4" solid	20.00	1.19	45.6	22	1.23	3.94	26.51	0.148 ✓

Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	5/8" solid	2.05	1.90	146.3	22	0.31	0.38	6.63	0.058 ✓
T2	180 - 160	5/8" solid	1.91	1.78	136.7	22	0.31	1.32	6.63	0.199 ✓
T3	160 - 140	5/8" solid	1.91	1.78	136.7	22	0.31	0.77	6.63	0.116 ✓
T4	140 - 120	5/8" solid	1.91	1.78	136.7	22	0.31	1.28	6.63	0.193 ✓
T5	120 - 100	3/4" solid	1.91	1.75	112.2	22	0.44	1.64	9.54	0.172 ✓
T6	100 - 80	5/8" solid	1.91	1.78	136.7	22	0.31	0.79	6.63	0.120 ✓
T7	80 - 60	5/8" solid	1.91	1.78	136.7	22	0.31	1.24	6.63	0.187 ✓

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 $\frac{P}{P_a}$
T8	60 - 40	5/8" solid	1.91	1.78	136.7	22	0.31	1.68	6.63	0.253 ✓
T9	40 - 20	5/8" solid	1.91	1.78	136.7	22	0.31	0.80	6.63	0.121 ✓
T10	20 - 5	5/8" solid	1.90	1.77	135.8	22	0.31	0.70	6.63	0.106 ✓
T11	5 - 0	5/8" solid	1.24	0.99	75.8	22	0.31	0.24	6.63	0.037 ✓

Secondary Horizontal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T2	180 - 160	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T3	160 - 140	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T4	140 - 120	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T5	120 - 100	5/8" solid	0.75	0.69	52.8	22	0.31	0.00	6.63	0.000 ✓
T6	100 - 80	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T7	80 - 60	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T8	60 - 40	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T9	40 - 20	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T10	20 - 5	5/8" solid	0.75	0.70	53.6	22	0.31	0.00	6.63	0.000 ✓
T11	5 - 0	5/8" solid	0.58	0.53	40.5	22	0.31	0.00	6.63	0.000 ✓

Top Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	7/8" solid	1.50	1.40	76.6	22	0.60	0.00	12.99	0.000 ✓
T2	180 - 160	7/8" solid	1.50	1.40	76.6	22	0.60	0.73	12.99	0.056 ✓

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 $\frac{P}{P_a}$
T3	160 - 140	7/8" solid	1.50	1.40	76.6	22	0.60	0.37	12.99	0.029 ✓
T4	140 - 120	7/8" solid	1.50	1.40	76.6	22	0.60	0.52	12.99	0.040 ✓
T5	120 - 100	7/8" solid	1.50	1.38	75.4	22	0.60	0.90	12.99	0.069 ✓
T6	100 - 80	7/8" solid	1.50	1.40	76.6	22	0.60	0.15	12.99	0.011 ✓
T7	80 - 60	7/8" solid	1.50	1.40	76.6	22	0.60	0.47	12.99	0.036 ✓
T8	60 - 40	7/8" solid	1.50	1.40	76.6	22	0.60	1.05	12.99	0.081 ✓
T9	40 - 20	7/8" solid	1.50	1.40	76.6	22	0.60	0.37	12.99	0.028 ✓
T10	20 - 5	7/8" solid	1.50	1.40	76.6	22	0.60	0.12	12.99	0.009 ✓
T11	5 - 0	7/8" solid	1.35	1.25	68.3	22	0.60	0.70	12.99	0.054 ✓

Bottom Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	7/8" solid	1.50	1.40	76.6	22	0.60	1.11	12.99	0.085 ✓
T2	180 - 160	7/8" solid	1.50	1.40	76.6	22	0.60	0.43	12.99	0.033 ✓
T3	160 - 140	7/8" solid	1.50	1.40	76.6	22	0.60	0.39	12.99	0.030 ✓
T4	140 - 120	7/8" solid	1.50	1.40	76.6	22	0.60	1.30	12.99	0.100 ✓
T5	120 - 100	7/8" solid	1.50	1.38	75.4	22	0.60	0.27	12.99	0.021 ✓
T6	100 - 80	7/8" solid	1.50	1.40	76.6	22	0.60	0.47	12.99	0.036 ✓
T7	80 - 60	7/8" solid	1.50	1.40	76.6	22	0.60	1.27	12.99	0.098 ✓
T8	60 - 40	7/8" solid	1.50	1.40	76.6	22	0.60	0.39	12.99	0.030 ✓
T9	40 - 20	7/8" solid	1.50	1.40	76.6	22	0.60	0.08	12.99	0.006 ✓
T10	20 - 5	7/8" solid	1.50	1.40	76.6	22	0.60	0.84	12.99	0.065 ✓

Mid Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	7/8" solid	1.50	1.40	76.6	22	0.60	0.01	12.99	0.001 ✓
T2	180 - 160	7/8" solid	1.50	1.40	76.6	22	0.60	0.03	12.99	0.002 ✓
T3	160 - 140	7/8" solid	1.50	1.40	76.6	22	0.60	0.21	12.99	0.016 ✓
T4	140 - 120	7/8" solid	1.50	1.40	76.6	22	0.60	0.04	12.99	0.003 ✓
T5	120 - 100	7/8" solid	1.50	1.38	75.4	22	0.60	0.05	12.99	0.004 ✓
T6	100 - 80	7/8" solid	1.50	1.40	76.6	22	0.60	0.05	12.99	0.004 ✓
T7	80 - 60	7/8" solid	1.50	1.40	76.6	22	0.60	0.04	12.99	0.003 ✓
T8	60 - 40	7/8" solid	1.50	1.40	76.6	22	0.60	0.04	12.99	0.003 ✓
T9	40 - 20	7/8" solid	1.50	1.40	76.6	22	0.60	0.05	12.99	0.004 ✓
T10	20 - 5	7/8" solid	1.50	1.40	76.6	22	0.60	0.06	12.99	0.005 ✓
T11	5 - 0	7/8" solid	0.68	0.57	31.3	22	0.60	0.23	12.99	0.017 ✓

Top Guy Pull-Off Design Data (Tension)

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 $\frac{P}{P_a}$
T1	200 - 180	2x1/4	1.50	1.40	232.1	22	0.50	0.92	10.80	0.085 ✓
T4	140 - 120	2x1/4	1.50	1.40	232.1	22	0.50	1.08	10.80	0.100 ✓
T7	80 - 60	2x1/4	1.50	1.40	232.1	22	0.50	1.06	10.80	0.098 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	200 - 180	Leg	1 1/4" solid	1	-3.86	19.75	19.6	Pass
T2	180 - 160	Leg	1 1/4" solid	71	-12.72	22.71	56.0	Pass
T3	160 - 140	Leg	1 1/4" solid	147	-15.02	22.74	66.1	Pass
T4	140 - 120	Leg	1 1/4" solid	223	-11.45	22.63	50.6	Pass
T5	120 - 100	Leg	1 1/2" solid	298	-10.80	34.47	31.3	Pass
T6	100 - 80	Leg	1 1/4" solid	374	-11.66	22.33	52.2	Pass
T7	80 - 60	Leg	1 1/4" solid	449	-19.78	22.49	88.0	Pass
T8	60 - 40	Leg	1 1/4" solid	525	-19.78	22.43	88.2	Pass
T9	40 - 20	Leg	1 1/4" solid	602	-15.73	22.22	70.8	Pass

PJF

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Job	Page
Existing 200 ft guyed tower 'South' - Old Saybrook, CT	12 of 13
Project	**Date**
PJF # A00008-T106	16:42:15 08/12/08
Client	**Designed by**
F3 Communications, LLC	MO

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T10	20 - 5	Leg	1 1/4" solid	678	-15.55	22.39	69.4	Pass
T11	5 - 0	Leg	1 1/4" solid	738	-11.25	22.13	50.8	Pass
T1	200 - 180	Diagonal	5/8" solid	21	-0.38	3.95	9.7	Pass
T2	180 - 160	Diagonal	5/8" solid	141	-1.33	4.42	30.1	Pass
T3	160 - 140	Diagonal	5/8" solid	159	-0.77	4.42	17.4	Pass
T4	140 - 120	Diagonal	5/8" solid	241	-1.29	4.42	29.0	Pass
T5	120 - 100	Diagonal	3/4" solid	369	-1.66	7.98	20.8	Pass
T6	100 - 80	Diagonal	5/8" solid	385	-0.82	4.42	18.4	Pass
T7	80 - 60	Diagonal	5/8" solid	469	-1.26	4.42	28.5	Pass
T8	60 - 40	Diagonal	5/8" solid	597	-1.73	4.42	39.2	Pass
T9	40 - 20	Diagonal	5/8" solid	675	-0.81	4.42	18.3	Pass
T10	20 - 5	Diagonal	5/8" solid	689	-0.84	4.47	18.8	Pass
T11	5 - 0	Diagonal	5/8" solid	746	-0.61	6.95	8.7	Pass
T1	200 - 180	Secondary Horizontal	5/8" solid	16	-0.00	7.37	0.0	Pass
T2	180 - 160	Secondary Horizontal	5/8" solid	120	-0.00	7.37	0.0	Pass
T3	160 - 140	Secondary Horizontal	5/8" solid	180	-0.00	7.37	0.0	Pass
T4	140 - 120	Secondary Horizontal	5/8" solid	240	-0.00	7.37	0.0	Pass
T5	120 - 100	Secondary Horizontal	5/8" solid	316	-0.00	7.40	0.0	Pass
T6	100 - 80	Secondary Horizontal	5/8" solid	400	-0.00	7.37	0.0	Pass
T7	80 - 60	Secondary Horizontal	5/8" solid	524	-0.00	7.37	0.0	Pass
T8	60 - 40	Secondary Horizontal	5/8" solid	560	-0.00	7.37	0.0	Pass
T9	40 - 20	Secondary Horizontal	5/8" solid	672	-0.00	7.37	0.0	Pass
T10	20 - 5	Secondary Horizontal	5/8" solid	700	-0.00	7.37	0.0	Pass
T11	5 - 0	Secondary Horizontal	5/8" solid	749	-0.00	8.58	0.0	Pass
T1	200 - 180	Top Girt	7/8" solid	4	-0.00	13.57	0.0	Pass
T2	180 - 160	Top Girt	7/8" solid	72	-0.67	13.57	4.9	Pass
T3	160 - 140	Top Girt	7/8" solid	148	-0.42	13.57	3.1	Pass
T4	140 - 120	Top Girt	7/8" solid	225	-0.42	13.57	3.1	Pass
T5	120 - 100	Top Girt	7/8" solid	300	-0.88	13.65	6.4	Pass
T6	100 - 80	Top Girt	7/8" solid	376	-0.19	13.57	1.4	Pass
T7	80 - 60	Top Girt	7/8" solid	452	-0.49	13.57	3.6	Pass
T8	60 - 40	Top Girt	7/8" solid	528	-0.83	13.57	6.1	Pass
T9	40 - 20	Top Girt	7/8" solid	605	-0.38	13.57	2.8	Pass
T10	20 - 5	Top Girt	7/8" solid	680	0.12	17.31	0.7	Pass
T11	5 - 0	Top Girt	7/8" solid	740	0.70	17.31	4.1	Pass
T1	200 - 180	Bottom Girt	7/8" solid	9	1.11	17.31	6.4	Pass
T2	180 - 160	Bottom Girt	7/8" solid	75	-0.39	13.57	2.9	Pass
T3	160 - 140	Bottom Girt	7/8" solid	152	-0.48	13.57	3.6	Pass
T4	140 - 120	Bottom Girt	7/8" solid	229	1.30	17.31	7.5	Pass
T5	120 - 100	Bottom Girt	7/8" solid	303	0.27	17.31	1.6	Pass
T6	100 - 80	Bottom Girt	7/8" solid	379	-0.43	13.57	3.2	Pass
T7	80 - 60	Bottom Girt	7/8" solid	456	1.27	17.31	7.4	Pass
T8	60 - 40	Bottom Girt	7/8" solid	532	-0.37	13.57	2.7	Pass
T9	40 - 20	Bottom Girt	7/8" solid	607	-0.10	13.57	0.8	Pass
T10	20 - 5	Bottom Girt	7/8" solid	683	0.84	17.31	4.9	Pass
T1	200 - 180	Mid Girt	7/8" solid	11	-0.01	13.57	0.1	Pass
T2	180 - 160	Mid Girt	7/8" solid	79	0.03	17.31	0.2	Pass
T3	160 - 140	Mid Girt	7/8" solid	154	-0.20	13.57	1.4	Pass
T4	140 - 120	Mid Girt	7/8" solid	232	0.04	17.31	0.2	Pass
T5	120 - 100	Mid Girt	7/8" solid	308	0.05	17.31	0.3	Pass
T6	100 - 80	Mid Girt	7/8" solid	384	0.05	17.31	0.3	Pass
T7	80 - 60	Mid Girt	7/8" solid	458	0.04	17.31	0.2	Pass
T8	60 - 40	Mid Girt	7/8" solid	534	0.04	17.31	0.2	Pass
T9	40 - 20	Mid Girt	7/8" solid	611	0.05	17.31	0.3	Pass
T10	20 - 5	Mid Girt	7/8" solid	688	0.06	17.31	0.4	Pass
T11	5 - 0	Mid Girt	7/8" solid	743	0.23	17.31	1.3	Pass
T1	200 - 180	Guy A@180.5	3/8 Philly Strand	763	5.41	8.00	67.6	Pass
T4	140 - 120	Guy A@120.5	3/8 Philly Strand	769	5.87	8.00	73.4	Pass
T7	80 - 60	Guy A@60.5	3/8 Philly Strand	775	4.66	8.00	58.3	Pass
T1	200 - 180	Guy B@180.5	3/8 Philly Strand	762	5.40	8.00	67.5	Pass
T4	140 - 120	Guy B@120.5	3/8 Philly Strand	768	5.86	8.00	73.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T7	80 - 60	Guy B@60.5	3/8 Philly Strand	774	4.66	8.00	58.3	Pass
T1	200 - 180	Guy C@180.5	3/8 Philly Strand	758	5.40	8.00	67.5	Pass
T4	140 - 120	Guy C@120.5	3/8 Philly Strand	764	5.86	8.00	73.3	Pass
T7	80 - 60	Guy C@60.5	3/8 Philly Strand	770	4.66	8.00	58.3	Pass
T1	200 - 180	Top Guy Pull-Off@180.5	2x1/4	761	0.92	14.40	6.4	Pass
T4	140 - 120	Top Guy Pull-Off@120.5	2x1/4	767	1.08	14.40	7.5	Pass
T7	80 - 60	Top Guy Pull-Off@60.5	2x1/4	772	1.06	14.40	7.4	Pass
							Summary	
						Leg (T8)	88.2	Pass
						Diagonal (T8)	39.2	Pass
						Secondary Horizontal (T11)	0.0	Pass
						Top Girt (T5)	6.4	Pass
						Bottom Girt (T4)	7.5	Pass
						Mid Girt (T3)	1.4	Pass
						Guy A (T4)	73.4	Pass
						Guy B (T4)	73.3	Pass
						Guy C (T4)	73.3	Pass
						Top Guy Pull-Off (T4)	7.5	Pass
						RATING =	**88.2**	**Pass**