

Township of Upper

License of Space on Ground and Tower
at

1721 Mt. Pleasant Road, Tuckahoe
Township of Upper, Cape May County, NJ

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I

TOWNSHIP OF UPPER
CAPE MAY COUNTY
NEW JERSEY

NOTICE TO BIDDERS
ADVERTISEMENT

NOTICE is hereby given that on Tuesday, October 27, 2015, sealed bids will be received by the Township of Upper at Township Hall, 2100 Tuckahoe Road, Petersburg, New Jersey, at the hour of 2:00 PM prevailing time, for the LICENSE OF SPACE ON GROUND AND TOWER located at 1721 MT. PLEASANT ROAD, WOODBINE, TOWNSHIP OF UPPER, CAPE MAY COUNTY, NJ, at which place and time the said bids will be publicly opened and read.

Specifications may be obtained at the office of the Township Clerk, Township Hall, 2100 Tuckahoe Road, Petersburg, New Jersey or via email at clerk@uppertownship.com. Bids must be enclosed in a sealed envelope and plainly marked in the lower quadrant: BID ENCLOSED FOR THE LICENSE OF SPACE ON GROUND AND TOWER. The name and address of the bidders shall be on the envelope.

The Form of Bid and License Agreement supplied by the Township of Upper must be used in bidding. Award may be given to different bidders for each of the items listed on the Form of Bid. Bids must be submitted prior to the time designated above for receipt and opening of bids, and must be submitted either by mail or in person by the bidder or his agent. No bids will be received after the time designated above for their receipt.

Bids must be addressed to the Township Committee, Township of Upper, 2100 Tuckahoe Road, Petersburg, New Jersey, 08270. Each bidder must deposit with his bid a certified check, cashier's check, or bid bond in the amount of ten percent (10%) of the total first year's annual rent bid (but not in excess of \$20,000.00 pursuant to N.J.S.A. 40A:11-21). The right is reserved to reject any or all bids or to waive minor irregularities in any bid presented. Award, if any, will be made to the best responsible bidder at a formal meeting of Township Committee.

No bidder may withdraw its bond within sixty (60) days after the actual date of opening.

Bidders are required to comply with the requirements of N.J.S.A. 105-31 (P.L. 1974, C. 127, Law Against Discrimination Affirmative Action Supplement). Bidders are required to submit a statement of ownership with the bid, in compliance with N.J.S.A. 52:25-24.2 (P.L. 1977, C. 33).

BY ORDER OF THE TOWNSHIP COMMITTEE

Barbara L. Young
Township Clerk

II

TOWNSHIP OF UPPER

INSTRUCTIONS TO BIDDERS AND GENERAL SPECIFICATIONS

INSTRUCTIONS TO BIDDERS AND STATUTORY REQUIREMENTS

SUBMISSION OF BIDS

A. The Township of Upper, Cape May County, New Jersey (hereinafter referred to as "TOWNSHIP") invites sealed bids pursuant to the Notice to Bidders.

B. Sealed bids will be received by the designated representative at 2:00 p.m. prevailing time on Tuesday, October 27, 2015, at which time said bids will be publicly opened and read aloud.

C. The bid form shall be submitted, in a sealed envelope: (1) addressed to the TOWNSHIP, (2) bearing the name and address of the bidder written on the face of the envelope, and (3) clearly marked "BID ENCLOSED FOR THE LICENSE OF SPACE ON GROUND AND TOWER". Two (2) paper copies (1 original, 1 copy) and one (1) electronic copy (CD-ROM or Flash Drive) of all bid documents must be submitted.

D. It is the bidder's responsibility to see that bids are presented to the TOWNSHIP on or prior to the hour designated and at the place designated. Bids may be hand delivered or mailed; however, the TOWNSHIP disclaims any responsibility for bids forwarded by regular or overnight mail. If the bid is sent by overnight mail, the designation in section C, above, must also appear on the outside of the delivery company envelope. Bids received after the designated time and date will be returned unopened.

E. Sealed bids forwarded to the TOWNSHIP before the time of opening of bids may be withdrawn upon written application of the bidder who shall be required to produce evidence showing that the individual is or represents the principal or principals involved in the bid. Once bids have been opened, they must remain firm for a period of sixty (60) calendar days.

F. All prices and amounts must be written in ink or preferably typewritten. Bids containing any conditions, omissions, unexplained erasures or alterations, items not called for in the bid form, attachment of additive information not required by the specifications, or irregularities of any kind, may be rejected by the TOWNSHIP. Any changes, white-outs, strike-outs, etc. on the bid page must be initialed in ink by the person responsible for signing the bid. Bidders may not materially change the bid specifications through conditions on the bid sheet.

G. Each bid form must give the full business address of the bidder and be signed by an authorized representative. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed in the legal name of the corporation, followed by the name of the State in which incorporated and must contain the signature and designation of the president, secretary or other person authorized to bind the corporation in the matter. When requested, satisfactory evidence of the authority of the officer signing shall be furnished.

H. Bidders must insert prices for furnishing all of the materials and/or services required by these specifications.

I. Any and all successful bidders shall guarantee any or all materials and services supplied under these specifications. Defective or inferior items shall be replaced at the expense of the vendor. In case of rejected materials, the vendor will be responsible for return freight charges.

J. The person designated as the TOWNSHIP's Representative is Barbara Spiegel, Chief Financial Officer. The TOWNSHIP's Representative will present the final recommendation for award of the bid to the TOWNSHIP.

INTERPRETATION AND ADDENDA

A. The bidder understands and agrees that its bid is submitted on the basis of the specifications set forth herein. The bidder accepts the obligation to become familiar with these specifications.

B. Bidders are expected to examine the specifications and related documents with care and observe all their requirements. Ambiguities, errors or omissions noted by bidders should be promptly reported in writing to TOWNSHIP's designated representative. In the event the bidder fails to notify the TOWNSHIP of such ambiguities, errors or omissions, the bidder shall be bound by the bid.

C. No oral interpretation of the meaning of the specifications will be made to any bidder. Every request for an interpretation shall be in writing, addressed to the TOWNSHIP's representative stipulated in the bid. In order to be given consideration, written requests for interpretation must be received by October 14, 2015, 4:00PM EST. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications, and will be distributed to all prospective bidders, in accordance with N.J.S.A. 40A:11-23. All addenda so issued shall become part of the contract documents, and shall be acknowledged by the bidder in the bid. The TOWNSHIP'S interpretations or corrections thereof shall be final.

The Township Engineer will be available for site inspection by appointment by calling 609-628-2011 ext. 244 or email: engineer@uppertownship.com. All appointments must be made before October 7, 2015.

D. Discrepancies in Bids

1. If the amount shown in words and its equivalent in figures do not agree, the written words shall be binding. Ditto marks are not considered writing or printing and shall not be used.
2. In the event that there is a discrepancy between the unit prices and the extended totals, the unit prices shall prevail. In the event there is an error of the summation of the extended totals, the computation by the TOWNSHIP of the extended totals shall govern.

BID SECURITY

Each bid shall be accompanied by a Bid Bond, Certified Check, Treasurer's Check or Cashier's Check in the amount of ten percent (10%) of the total bid (but not in excess of \$20,000.00). N.J.S.A. 40A:11-21.

The bid security of all bidders except in the case of the six (6) apparent highest responsible bidders, shall be returned within ten (10) working days after the opening of bids, Sundays and holidays exempted. The bid security of the remaining unsuccessful bidders shall be returned within three (3) working days, Sundays and holidays exempted after award of the contract and upon receipt and approval of the signed contract.

All Bid Bonds shall be on the forms that are accepted by the State of New Jersey, Department of Banking & Insurance.

Where the specifications and/or instructions provide for no Surety/Performance bond requirements, the check of the successful bidder shall be returned upon satisfactory completion of the work and/or delivery and inspection of the goods and services purchased subject to such other provisions of these instructions and/or the specifications, whichever may be deemed applicable.

If no contract has been awarded within sixty (60) days after bid opening and/or the time frame for the award has not been extended by the Township, then the bid security shall be returned to the bidder.

PREPARATION OF BIDS

- A. The TOWNSHIP is exempt from any local, state or federal sales, use or excise tax.
- B. Each successful bidder shall be responsible for obtaining any applicable permits or licenses from any government entity that has jurisdiction to require the same. All bids submitted shall include this cost in the bid price.

STATUTORY AND OTHER REQUIREMENTS

A. Stockholder Disclosure

Chapter 33 of the Public Laws of 1977 provides that no corporation or partnership shall be awarded any contract for the performance of any work or the furnishing of any materials or supplies, unless, prior to the receipt of the bid or accompanying the bid of said corporation or partnership, there is submitted a statement setting forth the names and addresses of all stockholders in the corporation or partnership who own ten percent or more of its stock of any class, or of all individual partners in the partnership who own a ten percent or greater interest therein. The Stockholder Disclosure Form shall be completed and attached to the bid.

B. Non-Collusion Affidavit

The Non-Collusion Affidavit, which is part of these specifications, shall be properly executed and submitted with the bid.

C. Non-Assignment of Contract

The bidder shall not assign, transfer, convey, sublet or otherwise dispose of the contract, or his rights, title or interest in or to the same of any part thereof without the prior written consent of the TOWNSHIP, except as otherwise provided in the License Agreement attached hereto.

METHOD OF AWARD

- A. The TOWNSHIP will award the license on the basis of the bid amount and the bidder's preference as to tower placement, to be determined based on height of placement on the tower.
- B. Each successful bidder will receive a License Agreement in executable form, with the first years annual license fee in the amount equal to the submitted bid price.
- C. Awards shall be made to those responsible bidders whose bid amount for non-conflicting height preferences is the highest. Should multiple bidders have identical height preferences, an award of that particular height preference shall be made to the bidder whose bid amount is highest. For example, if two bidders have listed a primary height preference of 180 feet, placement at that height shall be awarded to whichever of the two bidders has the higher bid amount. This process would repeat for the unsuccessful bidder's second and third preferences.
- D. In the event that a bidder does not receive an award for any of the bidder's listed height preferences, the TOWNSHIP will offer the bidder any remaining space on the tower, if available, at a price equal to the lowest successful bid amount. Upon receiving said offer, the bidder shall have sixty (60) days to accept the offer by executing the License Agreement.

REJECTION OF BIDS

A. Reservation of Rights

TOWNSHIP reserves the right to waive any informalities, irregularities or minor defects in the bids received and to report any and all bids. In addition, TOWNSHIP reserves the right to reject any and all bids for reasons that the TOWNSHIP deems appropriate, and where said rejection is, in the judgment of the TOWNSHIP, determined to be in the best interest of the municipality.

B. Multiple Bids Not Allowed

More than one bid from an individual, a firm or partnership, a corporation or association under the same or different names shall not be considered. The bidders may only bid on the proposed license. Any language offering a different price for a greater term will cause the entire submission to be rejected.

C. Unbalanced Bids

Bids which are obviously unbalanced may be rejected.

D. Unsatisfactory Past Performance

Bids received from bidders who have previously failed to complete contracts within the time scheduled therefor, or who have performed prior work for the TOWNSHIP in an unacceptable manner, may be rejected. Bidders may also be rejected for "prior negative experience" pursuant to N.J.S.A. 40A:11-4.

E. Failure to Enter License Agreement

Should the bidder(s), to whom the license is awarded, fail to enter into the License Agreement within sixty (60) days, Sundays and holidays excepted, the TOWNSHIP may then, at its option, accept the bid of the next highest responsible bidder.

GOVERNING LAW

This contract shall be governed by and construed in accordance with Local Public Contracts Law of the State of New Jersey (N.J.S.A. 40A: 11-1 et. seq.) and the Local Lands and Buildings Law, (N.J.S.A. 40A:12-1 et seq.)

III

TOWNSHIP OF UPPER

DETAILED BID SPECIFICATIONS

The Township of Upper is accepting sealed bids from qualified firms for a 5-year agreement, with an option for three (3) successive five (5) year renewal terms, to license space on TOWNSHIP-owned property, including an existing 150-foot lattice tower ("Tower"), which was previously owned by AT&T. The Tower was designed to accommodate an 30' extension section. A non-exclusive route for access and utilities to the area licensed to winning bidder(s) will also be provided as part of the License Agreement.

The Tower is located at **1721 Mount Pleasant Road, Tuckahoe, NJ ("Property")**. The spaces available for bid are shown on Exhibit XI.

Specific requirements for award and operation of the license.

1. The TOWNSHIP intends to enter into one or more license agreements with the firms who present the best financial offer(s) to license space on the Ground and Tower at the Property.
2. The bid price shall represent the annual license fee for the first year of the License Agreement. After the first year, the annual license fee shall be increased on each anniversary of the commencement date of the License Agreement by three percent (3%) of the annual license fee for the previous year.
3. A copy of the License Agreement for the space at the Tower and ground area near the Tower is attached to this bid package. Each bidder should carefully review the License Agreement in considering whether to make a bid for space on the Tower. Modifications to the License Agreement will not be accepted, except for the firm's specific legal name and address to be used for the purposes of delivering legal notice. Each successful bidder will be provided with a License Agreement for execution.
4. No wireless telecommunication infrastructure may interfere with the TOWNSHIP's own telecommunication systems or operational uses or with any emergency response, regardless of when the TOWNSHIP or emergency response installations occur.
5. The TOWNSHIP shall have the right to terminate the License Agreement if it is determined by a federal regulatory agency having jurisdiction, that termination is in the public interest because of a threat to the public safety, health or welfare.
6. The term of the License Agreement shall be for an initial term of five (5) years. Following the initial term, the License Agreement may, at Licensee's option, be renewed for three (3) additional and successive five (5) year terms.
7. The TOWNSHIP reserves the exclusive right to install, provide access to lease space and/or negotiate financing agreements on additional TOWNSHIP property or other locations, and to contract in the best interest of the TOWNSHIP. Successful bidders shall

have no rights to areas within the TOWNSHIP borders outside of the specific area licensed to the successful bidder(s).

8. Each successful bidder shall pay for all utilities used by it at its licensed space, and shall have a separate meter installed at its sole cost and expense.
9. The minimum annual license fee bid acceptable for this License Agreement is Twenty Thousand Dollars (\$20,000.00). Each bidder shall be responsible for any and all taxes, assessments, franchise fees and other similar charges arising out of or assessed against its occupancy of a portion of the subject property and/or Tower.
10. The License shall be signed and returned to the Township within sixty (60) days of the award of the bid(s).
11. All bids are subject to the loading capacity of the Tower and the TOWNSHIP reserves the right to reject any and all bids to the extent such bid would result in the Tower's structural capacity being exceeded. Tower structural information is provided in Exhibit XII. This information was provided by the American Tower Corporation, whom performed the last structural analysis for AT&T.
12. Any successful bidder whom wish to go above the 150' existing height shall be responsible any costs to structurally modify the Tower and necessary engineering calculations. Engineering calculations would have to be submitted and approved prior to the execution of the License Agreement. Additionally, any permits required to be obtained from the N.J. Pinelands Commission must be secured by the successful bidder.

Bidders shall supply the following information:

1. Full name, tax identification number and main address of your firm.
2. A brief history of the business.
3. Information detailing the financial stability of the firm. Confidential information will be reviewed and returned if so mark by the bidder.
4. Number of years in business, date of incorporation.
5. Certification that no member of the firm has a conflict of interest with Township of Upper.
6. State whether any of the employees or officers of your firm have been named as a defendant in any litigation brought as a result of any contract operations for operation and maintenance. If so, name the individual, describe the circumstances, including the outcome.

7. State whether your firm has ever been terminated, fired or replaced on a project other than those contracts that have been terminated due to completion. If so, name the owner and describe the circumstances.

8. Bids shall be accompanied by the bid security in an amount equal to ten percent (10%) (not to exceed \$20,000.00 pursuant to N.J.S.A. 40A:11-21) of the license fee bid price in the form of cash, certified check or bank treasurer's check, which down payment shall be promptly returned to unsuccessful bidders. Failure to include a ten percent (10%) down payment is cause for a declaration of non-compliance of the bid.

IV

TOWNSHIP OF UPPER

FORM OF BID

**License of Space on Ground and Tower
at 1721 Mt. Pleasant Road, Tuckahoe, Township of Upper, Cape May County, NJ**

The undersigned, as bidder, declares that s/he has carefully examined the specifications and is familiar with the work to be bid and will enter into the License Agreement on the locations identified within the bid specification, for the total annual license fee payment of:

TOTAL BASE BID:

In words: _____

In numbers: \$ _____

HEIGHT PREFERENCES – Height preferences must be stated in feet, and must be no higher than 180 feet. Please list top three (3) options:

Height Preference #1: _____

Height Preference #2: _____

Height Preference #3: _____

Ground Space Preference #1: _____ **Size:** _____

Ground Space Preference #2: _____ **Size:** _____

Name of Bidder: _____

Address of Bidder: _____

Phone Number: _____ FAX _____

Email: _____

Signature of Bidder: _____ Date: _____

Print Name: _____

VENDOR SHALL USE THIS PAGE TO SUBMIT BID

V

**TOWNSHIP OF UPPER
STOCKHOLDER DISCLOSURE CERTIFICATION
N.J.S.A 52:25-24.2 (P.L. 1977 c33)**

Failure of the bidder/respondent to submit the required information is cause for automatic rejection

Legal Name of Bidder: _____

I certify that the list below contains the names and home addresses of all stockholders; partners or individuals holding ten percent (10%) or more of the issued and outstanding stock or interest of the undersigned.

I certify that no one stockholder, partner or individual owns ten percent (10%) or more of the issued and outstanding stock or interest of the undersigned.

Check the box that represents the type of business organization:

Partnership

Corporation

Sole Proprietorship

Limited Partnership

Limited Liability Corporation

Limited Liability Partnership

Subchapter S Corporation

Complete if the bidder/respondent is one of the 3 types of Corporations:

Date Incorporated: _____ Where Incorporated: _____

Business Address:

Street Address City State Zip

Telephone # Fax #

Listed below are the names and addresses of all stockholders, partners or individuals who own ten percent (10%) or more of its stock of any classes, or who owns ten percent (10%) or greater interest therein. Sign and notarize the form below, and, if necessary, complete the stockholder list below.

Stockholders/Member/Partner:

Name: _____

Name: _____

Home Address: _____

Home Address: _____

Name: _____

Name: _____

Home Address: _____

Home Address: _____

Subscribed and sworn before me this ____ day of _____, 2__.

(Affiant)

(Notary Public)

My Commission expires:

(Print name & title of affiant)

(Corporate Seal)

VI

**TOWNSHIP OF UPPER
NON-COLLUSION AFFIDAVIT**

State of New Jersey
County of _____

ss:

I, _____ residing in _____
(name of affiant) (name of municipality)
in the County of _____ and State of _____ of full age,
being duly sworn according to law on my oath depose and say that:

I am _____ of the firm of _____
(title or position) (name of firm)

_____ the bidder making this Bid

entitled _____, and that I executed the said Bid with
(title of bid)

full authority to do so, that said bidder has not, directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said Bid and in this affidavit are true and correct, and made with full knowledge that the Township of Upper relies upon the truth of the statements contained in said Bid and in the statements contained in this affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by _____.

Subscribed and sworn to

Before me this day

Signature

_____, 20__

(Type or print name of affiant under signature)

Notary public of

My Commission expires: _____

(Seal)

VII

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that the person or entity, or one of the person or entity's parents, subsidiaries, or affiliates, is not identified on a list created and maintained by the Department of the Treasury as a person or entity engaging in investment activities in Iran. If the Department of Treasury finds a person or entity to be in violation of the principles which are the subject of this law, the Department of Treasury shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the person or entity. You can view this list on: <http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf>

I certify, pursuant to Public Law 2012, c. 25, that the person or entity listed below for which I am authorized to bid:

- is not providing goods or services of \$20,000,000 or more in the energy sector of Iran, including a person or entity that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran, AND
is not a financial institution that extends \$20,000,000 or more in credit to another person or entity, for 45 days or more, if that person or entity will use the credit to provide goods or services in the energy sector in Iran.

In the event that a person or entity is unable to make the above certification because it or one of its parents, subsidiaries, or affiliates has engaged in the above-referenced activities, a detailed, accurate and precise description of the activities must be provided below to the Township of Upper under penalty of perjury.

PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN

You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the boxes below.

PROVIDE INFORMATION RELATIVE TO THE ABOVE QUESTIONS. PLEASE PROVIDE THOROUGH ANSWERS TO EACH QUESTION. IF YOU NEED TO MAKE ADDITIONAL ENTRIES, USE ADDITIONAL PAGES

Name: Relationship to Bidder/Vendor:

Description of Activities:
Duration of Engagement
Bidder/Vendor

Contact Name: Contact Phone Number:

Certification: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the below-referenced person or entity. I acknowledge that the Township of Upper is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of contracts with the Township to notify the Township in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreements(s) with the Township of Upper and that the Township at its option may declare contract(s) resulting from this certification void and unenforceable.

Full Name (Print)

Signature

Title Date Bidder/Vendor

VIII
AFFIRMATIVE ACTION COMPLIANCE NOTICE
N.J.S.A. 10:5-31 and N.J.A.C. 17:27

This form is a summary of the successful bidder's requirement to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27.

The successful bidder shall submit to the public agency, after notification of award but prior to execution of this contract, one of the following three documents as forms of evidence:

(a) A photocopy of a valid letter that the contractor is operating under an existing Federally approved or sanctioned affirmative action program (good for one year from the date of the letter);

OR

(b) A photocopy of a Certificate of Employee Information Report approval, issued in accordance with N.J.A.C. 17:27-4;

OR

(c) A photocopy of an Employee Information Report (Form AA302) provided by the Division and distributed to the public agency to be completed by the contractor in accordance with N.J.A.C. 17:27-4.

The successful vendor may obtain the Affirmative Action Employee Information Report (AA302) from the contracting unit during normal business hours.

The successful vendor(s) must submit the copies of the AA302 Report to the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts (Division). The Public Agency copy is submitted to the public agency, and the vendor copy is retained by the vendor.

The undersigned vendor certifies that he/she is aware of the commitment to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27 and agrees to furnish the required forms of evidence.

The undersigned vendor further understands that his/her bid shall be rejected as non-responsive if said contractor fails to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27.

COMPANY: _____ SIGNATURE: _____

PRINT NAME: _____ TITLE: _____

DATE: _____

IX

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127)

N.J.A.C. 17:27

GOODS, PROFESSIONAL SERVICE AND GENERAL SERVICE CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union of the contractor's commitments under this chapter and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

The contractor or subcontractor agrees to make good faith efforts to meet targeted county employment goals established in accordance with N.J.A.C. 17:27- 5.2.

The contractor or subcontractor agrees to inform in writing its appropriate recruitment agencies including, but not limited to, employment agencies, placement bureaus, colleges, universities, and labor unions, that it does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, and that it will discontinue the use of any recruitment agency which engages in direct or indirect discriminatory practices.

The contractor or subcontractor agrees to revise any of its testing procedures, if necessary, to assure that all personnel testing conforms with the principles of job-related testing, as established by the statutes and court decisions of the State of New Jersey and as established by applicable Federal law and applicable Federal court decisions.

In conforming with the targeted employment goals, the contractor or subcontractor agrees to review all procedures relating to transfer, upgrading, downgrading and layoff to ensure that all such actions are taken without regard to age,

race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, consistent with the statutes and court decisions of the State of New Jersey, and applicable Federal law and applicable Federal court decisions.

The contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

Letter of Federal Affirmative Action Plan Approval

Certificate of Employee Information Report

Employee Information Report Form AA302 (electronically provided by the Division and distributed to the public agency through the Division's website at www.state.nj.us/treasury/contract_compliance)

The contractor and its subcontractors shall furnish such reports or other documents to the Division of Purchase & Property, CCAU, EEO Monitoring Program as may be requested by the office from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Purchase & Property, CCAU, EEO Monitoring Program for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code at N.J.A.C. 17:27.**

X

FORM OF LICENSE AGREEMENT

LICENSE AGREEMENT

THIS LICENSE AGREEMENT (hereinafter "License" or "Agreement") granted and agreed upon this ____ day of _____, 20__, by the Township of Upper, a municipal corporation, having an office at Township Hall, 2100 Tuckahoe Road, Petersburg, NJ 08250 (hereinafter referred to as "Township" or "Licensor") to and with _____, having a mailing address of _____ (hereinafter referred to as "Licensee").

WHEREAS, Licensor is the owner of certain real property located in the Township of Upper, County of Cape May and State of New Jersey as more particularly described on Exhibit A, attached hereto and made a part hereof ("the Property") upon which a lattice tower ("Tower") is located;

WHEREAS, Licensee is the holder of a license from the Federal Communications Commission ("FCC") permitting it to operate a wireless communications facility in the State of New Jersey;

WHEREAS, Licensee now desires to license space on the Property and Tower for the placement of its communications facility ("Communications Facility");

WHEREAS, Licensor and Licensee now desire to enter into this Agreement to establish the terms and conditions of Licensee's use of the Premises (as defined below).

NOW THEREFORE, in consideration of the above recited premises and of the agreements, obligations, terms and conditions hereinafter set forth and recited, Licensor and Licensee do hereby agree as follows:

1. **GRANT OF LICENSE.** Licensor hereby grants Licensee a non-exclusive license to use a portion of space on its Tower and those additional areas depicted on Exhibit B hereto all of which areas shall hereinafter be referred to as the "Premises".

Licensee recognizes that this Agreement does not grant to Licensee exclusive occupancy of the Tower and the Premises and Licensee acknowledges that Licensor has the right to enter into similar licenses (or leases) with other licensees (or lessees) for the right to use space on the Tower and on the Property, outside of the Premises.

2. USE OF LICENSED AREA.

(A) The Premises is to be used only for the operation, construction, installation and maintenance of the Communications Facility and for no other purpose. Licensee shall be permitted to maintain the equipment listed on Exhibit C, attached hereto and incorporated herein, on the frequencies set forth in Exhibit D, attached hereto and incorporated herein.

(B) The Communications Facility shall be unmanned. Only employees, contractors, subcontractors, consultants and engineers of Licensee or persons under its direct supervision who have been given prior approval by Licensor for Tower access and work will be permitted to access the Tower. Licensee will be given reasonable access to the Communications Facility between the hours of 8 a.m. and 6:00 p.m., seven (7) days a week, for the sole purpose of performing maintenance and repairs to the Communications Facility and the Premises; provided that Licensee provides Licensor with at least two (2) hours prior telephonic notice at (____) ____ - ____ (the "Contact Telephone Number") of the times that Licensee will need access to the Premises. Notwithstanding the foregoing, Licensee shall provide Licensor with at least thirty (30) day prior written notice if Licensee intends to perform construction at the Premises beyond normal maintenance and repair work. If an emergency repair of Licensee's equipment in the Premises is necessary to restore Licensee's service, Licensee will be allowed reasonable access to the Premises twenty-four hours per day, (7) days a week, provided that Licensee notifies Licensor as soon as reasonably practicable. In the event that the Contact Telephone Number changes, Licensor shall provide Licensee with twenty-four (24) hours written notice of such change per the notice requirements in Section 26. Licensee shall allow a representative of Licensor to observe any installation, repair, maintenance or removal work performed in the Premises or any other portion of the Premises.

(C) Licensee shall install all of its equipment in compliance with all applicable governmental licenses, permits and other approvals (collectively, "Government Approvals"). Licensee shall cause all construction to occur lien-free and shall discharge or bond any mechanic's lien filed or recorded within thirty (30) days of receiving notice of such lien. Licensee shall install and maintain the Communications Facility in a workmanlike manner. Licensee shall mark cabling every 18 inches for cabling located on the Tower and at the entry and exit points of the Tower with identifying ownership markings and identify the antenna with similar ownership markings. Licensee shall (i) keep the Communications Facility in a neat, clean and orderly condition at all times, (ii) not cause rubbish, garbage or debris to accumulate or remain on or around the Communications Facility at any time, (iii) not commit or suffer any acts to be done at the Communications Facility or on the Premises in violation of any applicable law, regulation, permit or rule, and (iv) not use or allow the use by Licensee or its employees, contractors, subcontractors, consultants and engineers of the Communications Facility or Premises for any illegal purpose. Licensee shall, at its sole cost and expense, promptly repair any damage caused by the installation, operation, maintenance, repair and/or removal of the Communications Facility.

(D) Licensee shall not expand, modify and/or alter the Communications Facility (including, but not limited to, the addition of structures, co-location, or addition of uses, without submission of plans and specifications and Licensor's prior written approval of the submitted plans and specifications, such approval not to be unreasonably withheld, conditioned or delayed, provided that it shall not be unreasonable for Licensor to reject modifications that increase the structural load on the Tower and/or reduce the capacity, including wind loading capacity, of the Tower. Licensee shall be required to submit the plans and specifications in order to provide the Licensor with an opportunity to review, among other aspects, the aesthetic and visual nature of the modifications to the Communications Facility and, therefore, such plans and specifications shall describe and/or depict the Communications Facility in sufficient detail to provide that opportunity to Licensor, which shall be in Licensor's sole discretion. Specifically, plans and specifications shall describe and/or depict the type, shape, height, weight, wind-loading, structural analysis/capacity, elevation, distance to other structures on the Premises

and streets adjoining the Premises, proposed means of access, and precise location of proposed additional or modified cables, wires, lines and other accessories, of and/or related to the Communications Facility, if applicable. All plans and specifications shall also sufficiently describe the screening and/or camouflage used to ensure that any modifications to the Communications Facility that require Licensor's consent do not detract from the appearance of the surrounding neighborhood. Moreover, if Licensee seeks to install a generator, plans and specifications shall describe and/or depict the precise location of the generator, measures included to reduce the noise of the generator and anticipated decibel levels of the generator once measures are implemented. The plans and specifications shall also describe and/or depict the color and composition of the modifications to the Communications Facility that require Licensor's consent, which color and composition shall compliment and blend into the Premises and surrounding community, to the extent reasonably feasible. Approvals under this Section shall not relieve Licensee of its obligation to obtain any and all Governmental Approvals and to comply with all applicable requirements of the Township of Upper.

(E) Prior to Licensee commencing any work modifying its equipment on the Tower which requires Licensor's consent, Licensor may, in its reasonable discretion, perform or cause to be performed a structural analysis or require a professional engineer's certified letter to determine the availability of capacity at the Tower for such modification on the Tower by Licensee. Licensee agrees to remit payment to Licensor for all reasonable costs and expenses incurred by Licensor for such structural analysis or professional engineer's certified letter ("Structural Analysis Fee") within thirty (30) days following receipt of an invoice from Licensor.

(F) All equipment or other property attached to or otherwise brought onto the Premises by the Licensee shall at all times be removable personal property of Licensee, which are not fixtures, and must be removed by Licensee upon the expiration or earlier termination of this License. If Licensee fails to remove Licensee's equipment by the expiration date of this Agreement or the earlier termination date of this Agreement, if applicable, Licensee shall continue to pay Licensor a holdover rate as specified in Section 6 of this Agreement and Licensor may remove such equipment at Licensee's

reasonable expense and bill Licensee. Such payment will be due upon receipt. All work to be performed on behalf of Licensee at the Premises that requires Licensor's consent will be by contractors approved by Licensor in writing, which approval shall not be unreasonably withheld, delayed or conditioned. Licensee shall maintain such equipment and other property in accordance and compliance with all applicable laws.

(G) No cars, trucks, vans, building materials, equipment or other personal property shall be parked, stored or left outdoors except when Licensee's workers are actually performing maintenance or repairs. No such items or materials shall be parked, left or stored outdoors overnight.

(H) Subject to the terms of this Agreement, Licensee's permitted antennas on the Tower shall be limited to a maximum of twelve (12) and be clearly identified on Exhibit B, which antennas may be replaced from time to time with like-for-like antennas that are the same or smaller in dimensions, weight and appearance. Licensee shall only be permitted to transmit/receive signals on its licensed frequencies which must be set forth on Exhibit D at the power levels specified therein. Subject to Licensee's strict compliance with Licensee's non-interference covenants to Licensor in Section 2 of this Agreement, Licensee shall have the right to add, change or modify the frequencies initially identified in Exhibit D upon written notice to Licensor, which notice shall, to the extent it relates to additional frequencies to be operated by Licensee at the Property, be accompanied by a copy of the FCC license(s) applicable to each such frequency evidencing that Licensee is the FCC licensee thereunder. At the expiration of the Term or any Renewal term of this License Agreement, as herein defined, or upon the sooner termination of this Agreement as herein provided, Licensee shall remove the Licensee Facilities from the Property and the Premises and shall restore the Premises to the same condition as existed on the Commencement Date (hereafter defined), except for the ordinary wear and tear and loss by casualty beyond Licensee's control. In addition, the Tower shall not be removed. In the event Licensee fails to do so, Licensor, at Licensee's sole cost and expense, shall have the right to perform all reasonable and necessary work to remove Licensee's Facilities and to restore the Property and Premises to the same condition as existing at the Commencement Date. Licensee shall pay Licensor's restoration and repair costs promptly upon receipt of an invoice and supporting documentation.

(I) Licensee covenants to operate the Communications Facility in compliance with all applicable FCC rules and regulations, including FCC non-interference rules, and to comply with all applicable radio frequency emission standards adopted by the federal government pertaining to radio frequency emissions. Licensee acknowledges that the Tower, and the area surrounding the Tower, is currently being used to support municipal and public safety communications equipment and signals. Notwithstanding anything to the contrary herein, at no time may Licensee interfere with in any manner whatsoever, Licensor's operations on the Property.

In the event Licensee's use of the Tower or Premises interferes with radio or telecommunications of Licensor, upon telephonic notice from Licensor to Licensee at _____, advising Licensee of such interference, Licensee must immediately correct and eliminate such interference including, immediately suspending operations (except for intermittent testing during Licensor approved time periods), while it attempts to correct and eliminate such interference. In the event Licensee fails to correct and eliminate such interference, Licensee's operations shall remain suspended until the interference is eliminated except for intermittent testing, however, during such suspension, Licensee's obligations to pay the License Fee shall continue.

As of the Effective Date (hereinafter defined), Licensor and Licensee are aware of the publication of FCC Final Rule, Private Land Mobile Services; 800 MHz Public Safety Interference Proceeding, *Federal Register*: November 22, 2004 (Volume 69, Number 224), Rules and Regulations, Page 67823-67853 ("**Final Rule**"). Claims of Interference made by or against users which are public safety entities shall be in compliance with the Final Rule as and when effective, or otherwise in accordance with FCC Rules and Regulations.

(J) In the event it is finally determined by a court of competent jurisdiction (with all appeals exhausted or the time within which to perfect having expired, although Licensor shall in no way be obligated to pursue any appeals) that Licensor does not possess the right, power or authority to license the Premises to the Licensee as provided in this Agreement, Licensor may cancel this Agreement. If any party brings an action or proceeding against Licensor claiming this Agreement is void, illegal, *ultra vires*

or in any other manner unenforceable, Licensee shall, at its sole cost and expense, defend such action or proceeding and seek appropriate relief including stays of enforcement of lower court judgments, consistent with this Agreement. Licensor agrees to defend and hold Licensee harmless against title claims that the Property and/or the Tower do not belong to Licensor.

(K) In the event that the FCC makes a determination which is final and non-appealable or any other governmental agency with jurisdiction over the Licensed Premises or Communication Facilities determines, that the use, operation or maintenance of the Communications Facility within the Premises endangers or presents a risk to the public health, safety or welfare of surrounding property owners or residents of the Township, upon and after notice from Licensor advising Licensee of such determination and the basis therefor, Licensee shall immediately correct and eliminate the matter or thing causing the risk to the public health, safety and/or welfare, which may include removal of the Communications Facility from the Premises. Upon Licensee's failure to correct and eliminate the danger or deleterious effect within a reasonable time after notice, either Licensor or Licensee may cancel this Agreement and the license granted hereunder upon thirty (30) days' notice to Licensee.

3. **TERM.** The term of this Agreement shall be for five (5) years commencing as of _____ ("Commencement Date") and expiring at 11:59 p.m. on _____ ("Initial Term"). As of the Commencement Date, any month-to-month tenancy under a Prior Lease shall be terminated.

4. **RENEWAL TERM.** Provided Licensor agrees and Licensee is not in default under this Agreement beyond the expiration of any cure period, this Agreement may be renewed for three (3) additional five (5) year terms (each an "Renewal Term") (the Initial Term and Renewal Terms are collectively referred to herein as the "Term"). The Renewal Terms will be upon the same terms and conditions which were in effect during the Initial Term except that the License Fee shall be adjusted as set forth herein. Licensee shall exercise its option to renew this Agreement, if at all, by providing Licensor with written notice that Licensee intends to exercise its option to renew no later than one hundred eighty (180) days prior to the then current Initial Term or Renewal Term, as the case may be.

5. **TERMINATION AND SURRENDER.** If at any time during this Agreement the Premises becomes unsuitable for the Communications Facility due to: (a) governmental regulations; (b) signal interference not caused by Licensee; (c) interference with Licensee's operations that cannot be resolved; (d) destruction of the Premises resulting in same becoming unusable, Licensee shall first send to Licensor notice of its intention to terminate this Agreement and specifically state the reasons therefor; or (e) Hazardous Materials (as defined below) on the Property, or any environmental, health or safety condition or matter relating to the Property, that, in Licensee's sole determination, renders the condition of the Premises or Property unsuitable for Licensee's use. The parties shall attempt to resolve the matters creating the unsuitability for forty-five (45) days. If, after such forty-five (45) day period the parties are unable to resolve the issues or items which caused the Premises to become unsuitable for Licensee's wireless communications system operations, Licensee may terminate this Agreement by notice to Licensor, which termination shall be effective no sooner than thirty (30) days after such notice is received by Licensor. At the end of such thirty (30) day period, this Agreement shall expire as fully and completely as if that day were the date herein definitely fixed for the expiration of the Term, except that all of Licensee's liabilities and obligations existing prior to the date of termination shall survive such termination. At the expiration or earlier termination of this Agreement, Licensee shall remove the Communications Facility from the Premises and the Premises and surrender to Licensor the Premises and fixtures, if any, except Licensee's trade fixtures and equipment that Licensee is required or entitled to remove by reason of express provisions of the License, in good condition, except for ordinary wear and tear and damage beyond Licensee's control (or loss by casualty beyond Licensee's control). In the event Licensee fails to do so, Licensor, at Licensee's sole cost and expense, shall have the right to perform all reasonable and necessary work to remove the Communications Facility and to restore the Premises and Premises to the same condition as existing on the Commencement Date. Licensee shall pay Licensor's reasonable restoration and repair costs promptly upon receipt of an invoice and supporting documentation.

Licensee's trade fixtures and trade equipment installed on the Premises shall not be deemed part of the Premises, and Licensee may remove them at its own expense at or before the expiration or earlier termination of this License. Licensee shall repair all damage to the Premises resulting from or caused by the removal of trade fixtures and trade equipment or other property of Licensee. If Licensee fails to repair such damage, Licensor may elect to repair the damage, and Licensee shall, on demand, pay to Licensor the reasonable cost of those repairs.

If Licensee fails to remove its trade fixtures and trade equipment by the date this Agreement expires, Licensor may then elect to retain such trade fixtures and trade equipment that Licensee does not remove or may remove them and either store or dispose of them in any manner. Title to any property that Licensor elects to retain shall vest in Licensor at the time of the election to retain it. Licensee shall, on demand, pay to Licensor the reasonable expense of removing, storing and disposing of the property Licensor elects to treat in such manner. Licensor may exercise a separate option to retain, store, or dispose of each such item or all items, or groups of items, and the election made for any one item or group of items may differ from that made for other items or groups of items.

6. **HOLDING OVER.** Licensee acknowledges the extreme importance to Licensor that occupancy of the Premises be surrendered at the expiration or sooner termination of this License. Licensee agrees to and shall indemnify and save Licensor harmless against any and all reasonable costs, claims or liabilities directly or indirectly resulting from delay by Licensee in so surrendering the Premises, including, without limitation: (i) any claims made by any succeeding licensee founded on such delay; (ii) any expenses or losses incurred by Licensor due to the cancellation or modification of a new license with a succeeding licensee for the succeeding term; and (iii) any other extra expenses incurred in reletting the Premises. In no event shall any provision hereof or otherwise be construed as permitting Licensee to hold over in occupancy of the Premises beyond the expiration or termination of the Term hereof. Holdover tenancy is expressly prohibited. The rights and obligations hereunder shall continue after the termination or expiration of this License.

7. **LICENSE FEE.**

(A) Licensee will pay to Licensor an annual license fee for the first year of the Term of _____ Dollars (\$_____) (“License Fee”). The License Fee shall be payable in annual installments of _____ Dollars (\$_____). Licensee shall continue to pay Licensor the License Fee on or before each anniversary of the Commencement Date. The License Fee shall be increased on each anniversary of the Commencement Date (including any additional years should this Agreement be renewed) by an amount equal to three (3%) percent of the License Fee for the previous year. The initial License Fee payment will be forwarded by Licensee to Licensor within thirty (30) days after the Commencement Date.

(B) In the event Licensee fails to pay the License Fee within ten (10) days of when due and payable, Licensee shall be assessed a late charge of ten percent (10%) of the amount of License Fee then due, payable immediately as an additional fee.

(C) Licensor hereby agrees to provide to Licensee with a complete and fully executed Internal Revenue Service Form W-9 (“W-9”), or equivalent, for any party to whom License Fee payments are to be made pursuant to this Agreement. From time to time during the Term of this Agreement and within thirty (30) days of a written request from Licensee, Licensor agrees to provide updated W-9 or equivalent. The License Fee Documentation shall be provided to Licensee in accordance with the provisions of and at the address given in Section 25.

(D) Within sixty (60) days of obtaining an interest in the Premises or this Agreement, any assignee(s), transferee(s) or other successor(s) in interest of Licensor shall provide to Licensee the W-9 in the manner set forth in the preceding sub-section. From time to time during the Term of this Agreement and within thirty (30) days of a written request from Licensee, any assignee(s) or transferee(s) of Licensor agrees to provide an updated W-9.

8. **CONDITION OF PREMISES.** Promptly after completing any construction, alterations or additions upon the Premises in compliance with the terms and conditions herein, Licensee

shall restore the Premises and any affected area of the Premises to the condition as existed upon execution of this Agreement, except for the alterations or additions themselves. Upon termination or expiration of this Agreement, Licensee shall restore the Premises to the same condition as existed on the Commencement Date, reasonable wear and tear (or loss by casualty beyond Licensee's control) excepted.

9. WARRANTY OF TITLE AND RIGHT TO GRANT LICENSE.

(A) Licensor represents that Licensor owns the Property in fee simple.

(B) Licensor represents that, to the best of its knowledge, as of the Effective Date, the Property are unencumbered by any liens, restrictions, mortgages, covenants, conditions, easements, leases, agreements of record or not of record, which would adversely affect Licensee's use and enjoyment of the Premises under this License.

10. MAINTENANCE AND REPAIRS. Within thirty (30) days of receiving an invoice from Licensor, Licensee agrees to reimburse Licensor for a pro-rata share of any and all costs and expenses actually incurred by Licensor for the maintenance and repair of the Tower and any perimeter fence or wall, which pro-rata share shall be equally divided among the number of parties using space on the Tower. Licensee shall perform all repairs necessary to keep the Premises and its improvements within the Premises in good repair and condition and in compliance with all applicable governmental, municipal and administrative laws, ordinances, codes, rules and regulations. Licensee shall abide by all FCC requirements, including power reductions if necessary, while work on the Tower is being performed on behalf of Licensor and any other users of the Tower subject to Licensor providing Licensee reasonable telephonic notice at _____ of such work. Licensor agrees to use commercially reasonable efforts to minimize any inconvenience, possible loss or expense to Licensee. At all times during the Term, Licensee shall cooperate with other parties using space on the Tower and/or Property.

11. UTILITIES. Licensee will pay for all utilities used by it at the Licensed Space and shall have a separate meter installed at its sole cost and expense. Licensor will, at no cost to Licensee, reasonably cooperate with Licensee, and any utility company providing utility services to

Licensee, to establish a non-exclusive utility route in a mutually agreeable location on the Property for the purpose of installing, operating and maintaining such lines, wires, and conduits, as necessary in order to provide such services to the Premises.

12. LICENSEE'S DEFAULT; RIGHT TO CURE; NO WAIVER.

(A) Each of the following shall be deemed a default by Licensee and a breach of this Agreement:

(i) Non-payment of any installment of the License Fee, including any adjustments in said License Fee as required or permitted hereunder within ten (10) days of the due date;

(ii) Failure to perform any other obligation or covenant for a period of thirty (30) days after receipt of such notice from Licensor specifying the failure. If such failure of performance is one which cannot with due diligence be cured within such thirty (30) day period, such failure of performance shall not be deemed a default if Licensee shall have commenced good faith efforts to rectify the same within said thirty (30) day period and provided further that such efforts shall be prosecuted to completion with reasonable diligence, but in no event shall any cure period be more than ninety (90) days.

(iii) Any vacating or abandonment of the Premises by Licensee, during which Licensee is not operating its Communications Facility, for more than three (3) consecutive months unless ordered to do so by a duly authorized legal authority or for other cause beyond Licensee's reasonable control.

(B) The waiver by Licensor of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition or any subsequent breach of the same or any other term, covenant or condition herein contained. The subsequent acceptance of the License Fee hereunder by Licensor shall not be deemed to be a waiver of any preceding breach by Licensee of any term, covenant or condition of the License, other than the failure of Licensee to pay the particular License Fee so accepted, regardless of Licensor's knowledge of such preceding breach at the

time of acceptance of such License Fee. No covenant, term or condition of this License shall be deemed to have been waived by Licensor unless such waiver is in writing by Licensor.

(C) All covenants and agreements to be performed by Licensee under any of the terms of this License shall be performed by Licensee at Licensee's sole cost and expense and without any abatement of License Fee. If Licensee fails to cure a default within the time period described above, Licensor may, without waiving or releasing Licensee from any obligations of Licensee, reasonably and in good faith make any such payment or perform any such other act on Licensee's behalf. All sums so paid by Licensor and all necessary incidental costs together with interest thereon at the lesser of (i) eighteen percent (18%) per annum, or (ii) the highest rate permitted by applicable laws from the date of such payment by Licensor shall be payable to Licensor on demand, as an additional license fee, and Licensee hereby covenants to pay any such sums. But, the payment of such interest and sums shall not excuse or cure any default by Licensee under this License.

13. ASSIGNMENT AND SUBLETTING.

(A) Licensor may assign this Agreement upon written notice to Licensee, subject to its assignee assuming all of Licensor's obligations herein.

(B) Licensee may not assign, or otherwise transfer all or any part of its interest in this Agreement or in the Premises without the prior written consent of Licensor; provided, however, that Licensee may without any approval or consent of Licensor assign its interest to Licensee's principal, affiliates, subsidiaries of its principal or to any entity which acquires all or substantially all of Licensee's assets in the market defined by the FCC in which the Property is located by reason of a merger, acquisition or other business reorganization, provided that any such assignee expressly agrees in writing to assume all of Licensee's obligations and liabilities hereunder. Notwithstanding anything to the contrary contained in this Agreement, Licensee may assign, mortgage, pledge, hypothecate or otherwise transfer without consent its interest in this Agreement to any financing entity, or agent on behalf of any financing entity to whom Licensee (i) has obligations for borrowed money or in respect of guaranties thereof, (ii) has obligations evidenced by bonds, debentures, notes or similar instruments, or (iii) has obligations

under or with respect to letters of credit, bankers acceptances and similar facilities or in respect of guaranties thereof.

14. **TRANSFER BY LICENSOR.** Any good faith transfer of the Premises by Licensor or Licensor's successors shall relieve Licensor of all liability with respect to the performance or observance of any other covenants or conditions imposed on Licensor by this License not then accrued, provided that the transferee shall have expressly assumed and agreed to be bound by all of the covenants and conditions made on the part of Licensor, which are to be observed or performed on or after the date of transfer.

15. **REAL PROPERTY TAXES AND ASSESSMENTS.** Licensee shall pay during the term of this Agreement, without abatement, deduction, or offset, any and all real and personal property taxes, general and special assessments, and other taxes or assessments issued by the governing entity (including any increase caused by a change in the tax rate or by a change in assessed valuation) of any description levied or assessed during the term of this Agreement by any governmental agency or entity on or against the Premises and Licensee's personal property located on or in the Premises. Licensee acknowledges that the Property, of which the Premises forms a part, is at present exempt from real property taxation because Licensor is a tax exempt entity.

Licensor and Licensee shall each be responsible for the payment of any taxes, levies, assessments and other charges imposed including franchise and similar taxes imposed upon the business conducted by Licensor or Licensee at the Premises. Licensee acknowledges that the Premises, of which the Premises forms a part, are at present exempt from real property taxation because Licensor is a tax exempt entity. Notwithstanding the foregoing, Licensee shall not have the obligation to pay any tax, assessment, or charge that Licensee is disputing in good faith in appropriate proceedings prior to a final determination that such tax is properly assessed provided that no lien attaches to the Premises. Nothing in this Paragraph shall be construed as making Licensee liable for any portion of Licensor's income taxes in connection with any Property or otherwise.

Licensee shall have the right, at its sole option and at its sole cost and expense, to appeal, challenge or seek modification of any tax assessment or billing for which Licensee is wholly or partly responsible for payment. Licensor shall reasonably cooperate with Licensee at Licensee's expense in filing, prosecuting and perfecting any appeal or challenge to taxes as set forth in the preceding sentence. In the event that as a result of any appeal or challenge by Licensee, there is a reduction, credit or repayment received by the Licensor for any taxes previously paid by Licensee, Licensor agrees to promptly reimburse to Licensee the amount of said reduction, credit or repayment if Licensor received any such payment from Licensee.

16. **INDEMNIFICATION.** Except to the extent caused by the gross negligence or willful misconduct of Licensor, its employees, agents, representatives, volunteers, contractors, subcontractors, licensees and invitees (individually and collectively referred to as the "**Indemnified Parties**"), Licensee shall defend, indemnify and hold harmless the Indemnified Parties from all expenses, fines, liens, claims, demands, penalties, damages, and liabilities (including (i) reasonable attorneys' fees, including without limitation those at trial, and on appeal or review and (ii) reasonable consultant fees and expenses) to the full extent such arise from or are related to Licensee's, its employees, representatives, agents, contractors, subcontractors and invitees' (collectively referred to in this Section 16 as the "**Licensee Parties**") use and/or occupancy of the Premises, Licensee Parties' acts and/or omissions and/or Licensee's breach of this Agreement. Licensee's obligations under this Section 16 include, but not limited to, claims of all Licensee's employees, licensees, invitees, agents, contractors and subcontractors. Except to the extent caused by the gross negligence or willful misconduct of the Indemnified Parties, Licensee's obligations under this Section 16 shall also include claims for injuries to persons or property, and other property owned by Licensor; and the following claims arising from Licensee's acts or omissions, including trespass, nuisance, all federal, state and local taxes due and payable by Licensee, workers' compensation insurance and assessments, assessments and penalties for environmental damages and fire suppression costs. Licensee shall indemnify and hold harmless the Licensor from the consequences of all activities of the Licensee Parties on the Premises. Licensee shall, at Licensee's own

cost and expense, defend any and all actions, suits or other legal proceedings that may be brought or instituted against the Licensor on any such claims described in this Section and shall pay or satisfy any judgment, decree or settlement arising therefrom. This Section shall survive the termination of this Agreement.

17. ASSUMPTION OF RISK, WAIVER and LICENOR'S NON- LIABILITY.

To the maximum extent allowed by law, except for Licensor's gross negligence or willful misconduct, Licensee assumes any and all risk of loss, damage or injury of any kind to Licensee, Licensee's employees, licensees, invitees, agents, contractors and subcontractors or property of Licensee, Licensee's employees, licensees, invitees, agents, contractors and subcontractors that is on or about the Premises. To the maximum extent allowed by law, except for Licensor's gross negligence or willful misconduct, Licensee's assumption of risk shall include, without limitation, loss or damage caused by defects, including failure to maintain or repair the Premises, and accident, fire or other casualty associated with the same. To the maximum extent allowed by law, except for Licensor's gross negligence or willful misconduct, Licensee hereby waives all claims and demands against Licensor, its respective officials, officers, employees, volunteers and agents for injury to persons, damage to property or any other interest of Licensee sustained by Licensee or any person claiming to be Licensee resulting from any occurrence on or about the Premises.

18. LICENSEE INSURANCE. Licensee and each and every one of its contractors and subcontractors while working hereunder shall provide the Township of Upper with certificates of insurance before this Agreement is signed by the Township. Such parties shall carry the following:

(A) Workers' Compensation and Employer's Liability Insurance – covering all of the Employer's employees directly engaged in the performance of this Agreement. This insurance shall comply with the statutory requirements of the State of New Jersey and shall have an Employer's Liability Insurance limit of not less than \$1,000,000 each accident/disease/policy limits.

(B) Commercial General Liability Insurance Including Completed Operations and Contractual Liability Insurance with limits of not less than \$3,000,000 per occurrence and in the aggregate for bodily injury or property damage, including coverage for explosion, collapse, contractual liability and underground (XCU) hazards.

(C) Certificates of Insurance for items listed above must be filed with the Engineer and Licensor upon execution of this Agreement and upon written demand by the Township of Upper.

(D) Coverage shall remain in force throughout the term of this Agreement.

(E) Contractors and subcontractors shall be required by the Licensee to provide substantially the same insurance with substantially the same limits. Licensee shall not allow any contractor or subcontractor to commence work until all similar insurance required of the contractor or subcontractor has been so obtained and approved. Approval of the insurance by the Licensor shall not relieve or decrease the liability of the contractor or subcontractor hereunder.

(F) Licensee's required insurance coverage shall be primary insurance with respect to this Agreement and any coverage maintained by Licensor, its directors, officials, officers, employees, licensees, contractors, volunteers and agents.

(G) All required liability insurance shall include the Township of Upper, including all elected and appointed officials, all employees and volunteers, all boards, commissions and/or authorities and their board members, employees and volunteers as additional insureds.

19. WARRANTIES AND REPRESENTATIONS.

(A) Neither Licensor nor Licensor's agents have made any representations or promises with respect to the Premises or the Premises concerning this Agreement, except as herein expressly set forth. Licensor has not made and does not make any representation that the Premises is suitable for the conduct of Licensee's business or that the Premises may be used for the use and purposes

set forth herein, the Licensee is relying upon its own knowledge and investigation with regard thereto.

LICENSOR HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ASSOCIATED WITH THE PREMISES, BUILDING AND THE TOWER. LICENSEE, AS OF THE COMMENCEMENT DATE OF THIS AGREEMENT, HEREBY ACCEPTS THE PREMISES, BUILDING AND TOWER "AS IS, WHERE IS, WITH ALL FAULTS.

(B) The individuals executing this Agreement on behalf of their respective parties have been duly authorized to do so.

(C) Neither party has dealt with nor is any brokerage commission due to any broker in connection with the License.

20. INSPECTION RIGHTS. Notwithstanding any other provision of this License to the contrary, Licensor shall have the right to inspect Licensees' equipment, upon reasonable notice, in a manner so as not to interfere unreasonably with the conduct of Licensee's business and so long as a representative of Licensee is present, in order to investigate the possibility of any environmental condition or environmental noncompliance at, upon, about or under the Property. Licensor may exercise this right at its sole discretion.

21. LICENSOR'S RIGHT TO ENTRY. In the event of an emergency situation which poses an immediate threat of substantial harm or damage to persons or property on the Property and which requires entry onto the Premises, Licensor may enter the Premises and take actions as are reasonably required to protect individuals or personal property from immediate threat of substantial harm or damage; provided that promptly after the entry (and in no event later than 48 hours), Licensor gives notice to Licensee of Licensor's entry onto the Premises. Furthermore, Licensor shall make a good faith effort to provide Licensee with advance notice of such entry.

22. CONDEMNATION and CASUALTY.

(A) CONDEMNATION. If, during the term hereof, there shall be a "taking" by a public authority under the power of eminent domain, then this License shall cease and terminate as to the

date actual physical possession thereof shall be taken. A "taking" is defined to be the taking of the entire Premises under the power of eminent domain or a taking of so much of the Premises as to prevent or substantially impair the conduct of Licensee's business therein.

(B) CASUALTY. In the event of damage by fire or other casualty to the Tower or a portion of the Premises, through no fault of Licensee, that cannot reasonably be expected to be repaired within ninety (90) days following same or, if the Property is damaged by fire or other casualty, through no fault of Licensee, so that such damage may reasonably be expected to disrupt Licensee's operations at the Premises for more than ninety (90) days, then Licensor or Licensee may, at any time following such fire or other casualty, provided Licensor has not completed the restoration required to permit Licensee to resume its operation at the Premises, terminate this Agreement upon thirty (30) days prior written notice to Licensor. Any such notice of termination shall cause this Agreement to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Agreement and the parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Agreement. Notwithstanding the foregoing, the License Fees shall abate during the period of repair following such fire or other casualty in proportion to the degree to which Licensee's use of the Premises is impaired.

23. CONSTRUCTION LIEN. Licensee shall not suffer or permit any construction liens to be filed against the Premises or any other property of Licensor, including the Tower or any part thereof by reason of work, labor, or materials requested and supplies requested by Licensee. If a Notice of Unpaid Balance and Right to File Lien shall at any time be filed against the Property, Licensee shall cause it to be promptly removed.

24. COMPLIANCE WITH LAW. Licensee shall at all times use the Premises in a lawful manner and comply with all governmental laws, rules, regulations, and orders applicable to Licensee's use of the Premises, including all FCC rules and regulations pertaining to the Tower and equipment space. Licensee's permitted use is contingent upon maintenance of all FCC permits.

25. **TOWNSHIP LAWS.** This License is subject to federal, state, county and municipal laws, including public bidding requirements. Any proceedings arising out of this License shall be brought solely in New Jersey Superior Court in Cape May County, New Jersey.

26. **NOTICES.** Any notice, demand, request, consent, approval, communication either party desires or is required to give the other party or any other person shall be in writing and served personally or sent by prepaid, first-class mail or by commercial courier, provided the courier's regular business is delivery service and provided further that it guarantees delivery to the addressee by the end of the next business day following the courier's receipt from the sender, to the address set forth below. Either party may change its address by notifying the other party of the change of address in writing. Notice shall be deemed communicated three (3) business days from the time of mailing if mailed as provided in this Section.

If to Licensor: Township of Upper
c/o Township Clerk
2100 Tuckahoe Road
Petersburg, NJ 08250

With a copy to: Law Offices of Daniel J. Young
701 West Avenue, Suite 302
Ocean City, NJ 08226
Attn.: Daniel J. Young, Esq.

If to Licensee:

With a copy to:

27. **SEVERABILITY.** If any provision of this Agreement shall be held to be invalid, illegal and unenforceable, the remaining provisions shall be binding upon the parties and shall be enforceable as though said invalid, illegal, or unenforceable provision were not contained herein, provided, however, that if the invalid, illegal or unenforceable provision goes to the heart of this

Agreement, the Agreement may be terminated by either party on ten (10) days' prior written notice to the other part hereto.

28. **TITLE INSURANCE.** Licensee may obtain title insurance on its interest in the Premises. Licensor shall reasonably cooperate, at Licensee's expense, by executing documentation required by the title insurance company.

29. **RF EMISSIONS; HAZARDOUS MATERIALS.**

(A) If antenna power output ("RF Emissions") is presently or hereafter becomes subject to any restrictions imposed by the FCC or other applicable federal governmental agency for RF Emissions standards on Maximum Permissible Exposure ("MPE") limits, or if the Tower otherwise becomes subject to federal, state or local rules, regulations, restrictions or ordinances, Licensee shall comply with Licensor's reasonable requests for modifications to the Communications Facility which are reasonably necessary for Licensor to comply with such limits, rules, regulations, restrictions or ordinances and Licensor shall use commercially reasonable efforts to cause all other licensees of the Tower to promptly comply with same. If Licensor requires an engineering evaluation or other power density study be performed to evaluate RF Emissions compliance with MPE limits, then all reasonable costs of such an evaluation or study shall be paid proportionately by Licensee and all other licensees of the Tower within thirty (30) days of Licensor's request therefor. Licensor, however, shall not request an engineering evaluation or other power density study be performed more than one time each year. If said study or a study sponsored by any governmental agency indicates that RF Emissions at the Tower do not comply with MPE limits, then Licensee and Licensor, each for itself, shall promptly take any and all steps necessary to ensure that it is individually in compliance with such limits, up to and including cessation of operation, until a maintenance program or other mitigating measures can be implemented to comply with MPE.

(B) Licensee and Licensor each agree that it will not, and will not allow any party acting on its behalf or at its direction, to use, generate, store or dispose of any Hazardous Material on, under, about or within the Property in violation of any law or regulation. Licensor represents that, to the

best of its knowledge, without the duty of inquiry, neither Licensor nor, to Licensor's knowledge, any third party has used, generated, stored or disposed of, or permitted the use, generation, storage or disposal of, any Hazardous Material on, under, about or within the Property in violation of any law or regulation. Licensor and Licensee each agree to defend, indemnify and hold harmless the other and the other's partners, affiliates, agents and employees against any and all losses, liabilities, claims and/or costs (including reasonable attorneys' fees and costs) arising from any breach of any representation, warranty or agreement contained in this sub-section. As used in this sub-section, "Hazardous Material" shall mean petroleum or any petroleum product, asbestos, any substance known by the state in which the Property is located to cause cancer and/or reproductive toxicity, and/or any substance, chemical or waste that is identified as hazardous, toxic or dangerous in any applicable federal, state or local law or regulation. This paragraph shall survive the termination of this Agreement.

30. **RIGHT TO TERMINATE.** Notwithstanding anything to the contrary contained herein, if it is determined by a federal, state and/or local regulatory agency having jurisdiction, that termination is in the public interest because of a threat to the public safety, health or welfare, Licensor may terminate this Agreement upon at least one hundred eighty (180) days' prior written notice by Licensor to Licensee. Notwithstanding the foregoing, this License shall not be terminable by Licensor under this provision because another licensee or use of the Premises would offer greater financial gain.

31. **AMENDMENT; WAIVER.** No revision of this Agreement shall be valid unless in writing and signed by an authorized agent of each respective party. No provision may be waived except in writing signed by the party to be charged with such waiver.

32. **BIND AND BENEFIT.** All the conditions and covenants contained in this Agreement shall inure to the benefit of and be binding upon the heirs, executors, administrators, successors, and permitted assigns of the parties hereto.

33. **RIGHTS AND REMEDIES CUMULATIVE.** Except with respect to rights and remedies expressly declared to be exclusive in this Agreement, the rights and remedies of the parties are cumulative and the exercise by any party of one or more of such rights or remedies shall not preclude

the exercise by that party, at the same or different times, of any other rights or remedies for the same default or any other default by the other party.

34. **LEGAL ACTION.** In addition to any other rights or remedies, any party may take legal action, at law or at equity, to cure, correct or remedy any default, to recover damages for any default, to compel specific performance of this Agreement, to obtain injunctive relief, or to obtain any other remedy consistent with the purposes of this Agreement.

35. **ATTORNEYS' FEES.** If any party commences an action against the other party arising out of or in connection with this Agreement, the prevailing party shall be entitled to recover reasonable attorneys' fees and costs of suit from the losing party.

36. **ENTIRE AGREEMENT.** This Agreement and the exhibits attached hereto constitute the entire agreement of the parties hereto and shall supersede all prior offers, negotiations and agreements.

IN WITNESS WHEREOF, the parties have executed this Agreement the date and year first above written.

LICENSOR:

LICENSEE:

**TOWNSHIP OF UPPER,
a municipal corporation**

By: _____

By: _____

Date: _____

Date: _____

ACKNOWLEDGEMENTS

State of New Jersey)
) ss.:
County of Cape May)

On the day of , in the year 20____, before me, the undersigned, personally appeared

personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies) and that by his/her/their signature(s) on the instrument, the individual(s) or the person upon behalf of which the individual(s) acted, executed the instrument.

NOTARY PUBLIC

State of)
) ss.:
County of)

On the day of , in the year 20____, before me, the undersigned, personally appeared

personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies) and that by his/her/their signature(s) on the instrument, the individual(s) or the person upon behalf of which the individual(s) acted, executed the instrument.

NOTARY PUBLIC

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

EXHIBIT B
LICENSED PREMISES

EXHIBIT C

LICENSEE'S PERMITTED EQUIPMENT

EXHIBIT D

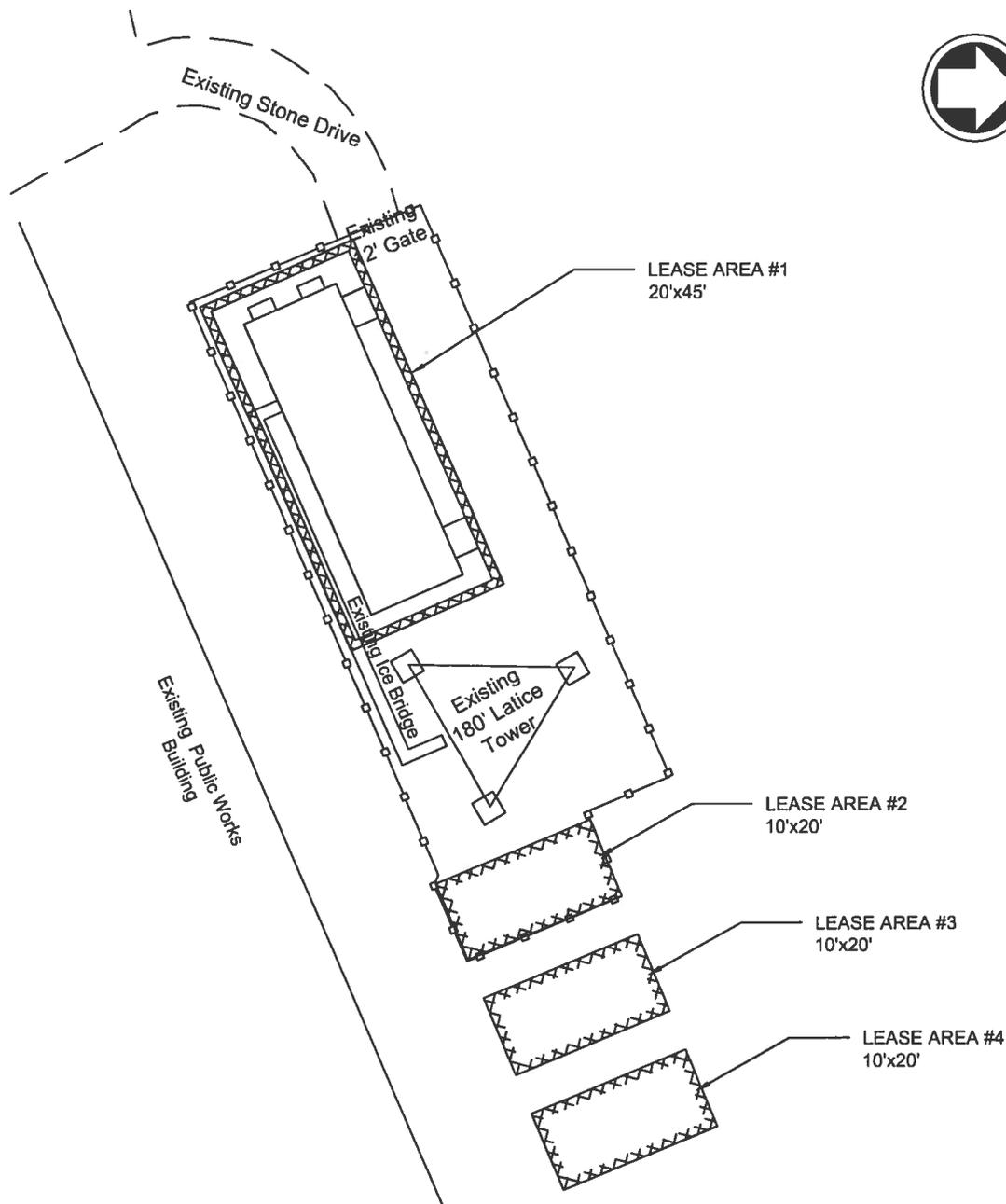
LICENSEE'S PERMITTED FREQUENCIES

Transmit:

Receive:

XI

TOWER LICENSE AREAS AVAILABLE



PREPARED BY:



UPPER TOWNSHIP ENGINEER'S OFFICE
 2100 TUCKAHOE ROAD, P.O. BOX 205
 TUCKAHOE, N.J. 08250-0205
 609-628-2011 Ext. 244 FAX 609-628-3092
 email: engineer@uppertownship.com

PAUL E. DIETRICH, SR
 PROFESSIONAL ENGINEER
 N.J.P.E. LICENSE NO. 41738

CELL TOWER LICENSE AREAS
 1721 MT. PLEASANT – TUCKAHOE ROAD
 TOWNSHIP OF UPPER
 CAPE MAY COUNTY, NEW JERSEY

DRAWN: PED

CHECKED:

DATE: 3/27/15

SCALE: N.T.S.

SHEET 1 of 1

DWG. NO.:

XII

TOWER STRUCTURAL INFORMATION

150/180' "SST"
Site: Upper Township, N.J.
Job# 8087
Erection
Metrophone/Comcast
Jan. 6, 1995



P.O. BOX 8597 FORT WORTH, TX 76124-0597
(817) 457-3060 FAX (817) 429-6010



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
350 East Broad Street Suite 500 Columbus, Ohio 43215
(614)-221-6679 FAX (614)-221-2540

Page 1 Of 2

By KPB Date 12-15-1994

Sketch No. 637 Job No. 1994994

Revision No. Date

Tower 150 FT (FUTURE 180 FT) SELF SUPPORT

Location UPPER TOWNSHIP, NEW JERSEY

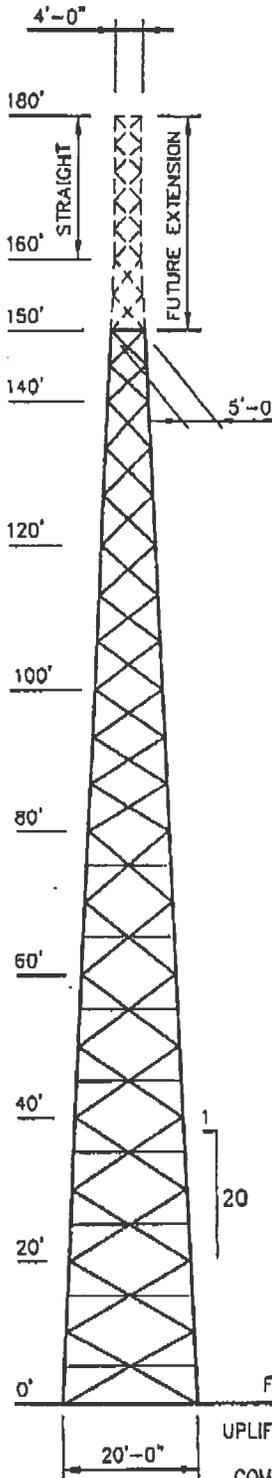
Site "TUCKAHOE" CAPE MAY COUNTY

Owner COMCAST

Design 85 MPH/74 MPH + 1/2" RADIAL ICE

According to ANSI/EIA 222-E 1991

ASTM		50KSI	A36	A325	A36
LEGS	4"φ	3 3/4"φ	3 1/2"φ	3 1/4"φ	2 3/4"φ
DIAGONALS	2x2 1/2 x 3/16	2x2 x 3/16	L2 1/2 x 2 1/2 x 3/16	L2 x 2 x 3/16	L2 x 1 1/2 x 3/16
GIRTS	L3 x 3 x 3/16	L2 1/2 x 2 1/2 x 3/16	---	---	L2 x 2 x 3/16
INT BRACING	L3 x 3 x 3/16	L2 1/2 x 2 1/2 x 3/16	---	---	L2 x 2 x 3/16
DIAG BOLTS	(1)-5/8"φ	(1)-3/4"φ	---	(1)-5/8"φ	---
GIRT BOLTS	(6)-1 1/8"φ	(6)-1"φ	---	(6)-3/4"φ	(1)-5/8"φ
SPLICE BOLTS	(6)-1 3/4"φ x 5'-10"	(6)-1"φ	---	(6)-3/4"φ	(4)-3/4"φ
ANCHOR BOLTS	(6)-1 3/4"φ x 5'-10"	(6)-1"φ	---	(6)-3/4"φ	(4)-3/4"φ



ANTENNA LIST LOAD CASE #1

NO	EL	ANTENNA	AZ	FEEDLINE
1,2	TOP	(2)DB-560	-	(2)-1 5/8"
3,4	TOP	(2)PD10017	-	(2)-7/8"
5	176'	HP-8	0°	EW52
6	176'	HP-8	180°	EW52
7	166'	HP-8	0°	EW52
8	166'	HP-8	180°	EW52
9-12	160'	(4)ALP9212	30°	(4)-1 5/8"
13-16	160'	(4)ALP9212	150°	(4)-1 5/8"
17-20	160'	(4)ALP9212	270°	(4)-1 5/8"
-	160'	SECTORIZED ANTENNA MOUNT		
21,22	150'	(2)PD400	-	(2)-7/8"
23,24	140'	(2)PD128	-	(2)-7/8"
25,26	130'	(2)PD114	-	(2)-7/8"

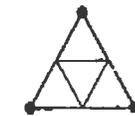
ANTENNA LIST LOAD CASE #2

NO	EL	ANTENNA	AZ	FEEDLINE
1,2	TOP	(2)DB560	-	(2)-1 5/8"
3,4	TOP	(2)PD10017	-	(2)-7/8"
5-8	TOP	(4)ALP-9212	30°	(4)-1 5/8"
9-12	TOP	(4)ALP-9212	150°	(4)-1 5/8"
13-16	TOP	(4)ALP-9212	270°	(4)-1 5/8"
-	TOP	SECTORIZED ANTENNA MOUNT		
17-20	160'	(4)ALP-9212	30°	(4)-1 5/8"
21-24	160'	(4)ALP-9212	150°	(4)-1 5/8"
25-28	160'	(4)ALP-9212	270°	(4)-1 5/8"
-	160'	SECTORIZED ANTENNA MOUNT		
29,30	150'	(2)PD400	-	(2)-7/8"
31,32	140'	(2)PD128	-	(2)-7/8"
33,34	130'	(2)PD114	-	(2)-7/8"

- TWO WAVEGUIDE SUPPORTS ONE EACH ON SEPARATE FACES

- ONE CLIMBING LADDER ON REMAINING FACE

- COAX ASSUMED EQUALLY DISTRIBUTED ON TWO FACES



INTERIOR BRACING
EL 5' TO 75'
(1)-5/8"φ BOLT

FOUNDATION REACTIONS

UPLIFT: 310 kips max. one leg

COMP: 354 kips max. one leg

HORIZ: 29.4 kips max. one leg

Paul J. Ford
12-15-94

2

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-1	3	4 in. Bar - 50KSI	20'-0"	42.7	3202	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYD1A	12	1L 2 1/2 x 2 1/2 x 3/16	10'-0"	3.07	368	
FYD1B	12	1L 2 1/2 x 2 1/2 x 3/16	9'-5 3/4"	3.07	349	
FYD1C	12	1L 2 1/2 x 2 1/2 x 3/16	9'-7"	3.07	353	
FYD1D	12	1L 2 1/2 x 2 1/2 x 3/16	9'-0 1/2"	3.07	333	
Diag. Ls Total Wt. =					1403	

Horiz. Girts

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH1A	3	1L 3 x 3 x 3/16	18'-11 1/4"	3.7	211	
FYH1B	3	1L 3 x 3 x 3/16	17'-11 1/4"	3.7	200	
Girt Ls Total Wt. =					411	

Int. Horiz. Braces

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYIH1A	3	1L 3 x 3 x 3/16	8'-9 1/2"	3.7	98	
FYIH1B	3	1L 3 x 3 x 3/16	8'-3 1/2"	3.7	92	
Int. Brace Ls Total Wt. =					190	

"X" Gusset

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
FYX1A	3	PL 1/2" x 11" x 1'-5 1/4"	20.416	80	
FYX1B	3	PL 1/2" x 11" x 1'-4 1/2"	20.416	77	
Gusset Pls Total Wt. =				157	

Int Gusset Plates

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
PL14	6	PL 1/4" x 7" x 10"	10.2	30	

Int. Clip Angles

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
IC1	6	1L 2 1/2" x 2 1/2" x 3/16" x 11"	3.1	17	

Section Estimated Wt. is:

5410 lb.

FWT Inc.

Section **1**

CKD BY: PHET SHIPPING LIST - STRUCTURAL DATE: 1/6/95

150'/180' Self Support

UPPER TOWNSHIP, N.J.

Dwg.No. FYS1

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-2	3	4 in. Bar - 50KSI	20'-0"	42.7	3202	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYD2A	12	1L 2 1/2 x 2 1/2 x 3/16	9'-2 3/4"	3.07	340	
FYD2B	12	1L 2 1/2 x 2 1/2 x 3/16	8'-8 1/2"	3.07	321	
FYD2C	12	1L 2 1/2 x 2 1/2 x 3/16	8'-10"	3.07	325	
FYD2D	12	1L 2 1/2 x 2 1/2 x 3/16	8'-3 1/2"	3.07	306	
Diag. Ls Total Wt. =					1292	

Horiz. Girts

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH2A	3	1L 3 x 3 x 3/16	16'-11 1/4"	3.7	188	
FYH2B	3	1L 3 x 3 x 3/16	15'-11 1/4"	3.7	177	
Girt Ls Total Wt. =					365	

Int. Horiz. Braces

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYIH2A	3	1L 3 x 3 x 3/16	7'-9 1/2"	3.7	87	
FYIH2B	3	1L 3 x 3 x 3/16	7'-3 1/2"	3.7	81	
Int. Brace Ls Total Wt. =					168	

"X" Gusset

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
FYX2A	3	PL 1/2" x 11" x 1'-3 3/4"	20.416	73	
FYX2B	3	PL 1/2" x 11" x 1'-3"	20.416	70	
Gusset Pls Total Wt. =				143	

Int Gusset Plates

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
PL14	6	PL 1/4" x 7" x 10"	10.2	30	

Int. Clip Angles

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
IC1	6	1L 2 1/2" x 2 1/2" x 3/16" x 11"	3.1	17	

Section Estimated Wt. Is:

5217 lb.

FWT Inc.

Section **2**

CKD BY: PHET SHIPPING LIST - STRUCTURAL DATE: 1/6/95
150'/180' Self Support

UPPER TOWNSHIP, N.J.

Dwg.No. FYS2

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-3	3	3 3/4 in. Bar - 50KSI	20'-0"	37.55	2816	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYD3A	12	1L 2 1/2 x 2 1/2 x 3/16	8'-7"	3.07	316	
FYD3B	12	1L 2 1/2 x 2 1/2 x 3/16	8'-0 1/4"	3.07	296	
FYD3C	12	1L 2 1/2 x 2 1/2 x 3/16	8'-2"	3.07	301	
FYD3D	12	1L 2 1/2 x 2 1/2 x 3/16	7'-7 1/4"	3.07	280	
Diag. Ls Total Wt. =					1193	

Horiz. Girts

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH3A	3	1L 2 1/2 x 2 1/2 x 3/16	14'-11 1/4"	3.1	138	
FYH3B	3	1L 2 1/2 x 2 1/2 x 3/16	13'-11 1/4"	3.1	128	
Girt Ls Total Wt. =					266	

Int. Horiz. Braces

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH3A	3	1L 2 1/2 x 2 1/2 x 3/16	6'-9 1/2"	3.1	63	
FYH3B	3	1L 2 1/2 x 2 1/2 x 3/16	6'-3 1/2"	3.1	58	
Int. Brace Ls Total Wt. =					121	

"X" Gusset

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
FYX3A	3	PL 1/2" x 10" x 1'-1 1/2"	20.416	57	
FYX3B	3	PL 1/2" x 10" x 1'-1"	20.416	55	
Gusset Pls Total Wt. =				112	

Int Gusset Plates

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
PL14	6	PL 1/4" x 7" x 10"	10.2	30	

Int. Clip Angles

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
IC1	6	1L 2 1/2" x 2 1/2" x 3/16" x 11"	3.1	17	

Section Estimated Wt. is:

4555 lb.

<i>FMT</i> Inc.		Section 3
CKD BY: PHET	SHIPPING LIST - STRUCTURAL	DATE: 1/6/95
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYS3

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-4	3	3 3/4 in. Bar - 50KSI	20'-0"	37.55	2816	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYD4A	12	1L 2 x 2 x 3/16	7'-10 1/2"	2.44	230	
FYD4B	12	1L 2 x 2 x 3/16	7'-3 1/2"	2.44	213	
FYD4C	12	1L 2 x 2 x 3/16	7'-6"	2.44	219	
FYD4D	12	1L 2 x 2 x 3/16	6'-10 3/4"	2.44	201	
Diag. Ls Total Wt. =					863	

Horiz. Girts

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH4A	3	1L 2 1/2 x 2 1/2 x 3/16	12'-11 1/4"	3.1	119	
FYH4B	3	1L 2 1/2 x 2 1/2 x 3/16	11'-11 1/4"	3.1	110	
Girt Ls Total Wt. =					229	

Int. Horiz. Braces

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYIH4A	3	1L 2 1/2 x 2 1/2 x 3/16	5'-9 1/2"	3.1	53	
FYIH4B	3	1L 2 1/2 x 2 1/2 x 3/16	5'-3 1/2"	3.1	49	
Int. Brace Ls Total Wt. =					102	

"X" Gusset

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
FYX4A	3	PL 1/2" x 10" x 1'-0"	20.416	51	
FYX4B	3	PL 1/2" x 10" x 11 1/4"	20.416	47	
Gusset Pls Total Wt. =				98	

Int Gusset Plates

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
PL14	6	PL 1/4" x 7" x 10"	10.2	30	

Int. Clip Angles

Mark	Qty.	Plate Description	#/ Sq.Ft.	Total Weight	Load
IC1	6	1L 2 1/2" x 2 1/2" x 3/16" x 11"	3.1	17	

Section Estimated Wt. is:

4155 lb.

FMT Inc.		Section 4
CKD BY: PHET	SHIPPING LIST : STRUCTURAL	DATE: 1/6/95
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYS4

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-5	3	3 3/4 in. Bar - 50KSI	20'-0"	37.55	2816	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Weight	Load
FYD5A	6	1L 3 x 3 x 3/16	12'-2 3/4"	3.71	272	
FYD5B	6	1L 3 x 3 x 3/16	11'-7 5/8"	3.71	259	
FYD5C	6	1L 3 x 3 x 3/16	11'-0 1/2"	3.71	246	
Diag. Ls Total Wt. =					777	

Section Estimated Weight

3593 lb.

<i>FWT</i> Inc.		Section 5
DATE: 1/6/95	SHIPPING LIST - STRUCTURAL	CKD BY: PHET
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYS5

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-6	3	3 1/2 in. Bar - 50KSI	20'-0"	32.7	2452	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Weight	Load
FYD6A	6	1L 2 1/2 x 2 1/2 x 3/16	10'-9 3/4"	3.07	199	
FYD6B	6	1L 2 1/2 x 2 1/2 x 3/16	10'-3"	3.07	189	
FYD6C	6	1L 2 1/2 x 2 1/2 x 3/16	9'-8 1/4"	3.07	178	
Diag. Ls Total Wt. =					566	

Section Estimated Weight

3018 lb.

FMT Inc.		Section 6
DATE: 1/6/95	SHIPPING LIST - STRUCTURAL	CKD BY: PHET
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYS6

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-7	3	3 1/4 in. Bar - 50KSI	20'-0"	28.2	2115	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Weight	Load
FYD7A	6	1L 2 1/2 x 2 1/2 x 3/16	9'-3 7/8"	3.07	172	
FYD7B	6	1L 2 1/2 x 2 1/2 x 3/16	8'-9 1/2"	3.07	162	
FYD7C	6	1L 2 1/2 x 2 1/2 x 3/16	8'-3 1/8"	3.07	152	
Diag. Ls Total Wt. =					486	

Section Estimated Weight

2601 lb.

<i>FMT</i> Inc.		Section	7
DATE: 1/6/95	SHIPPING LIST - STRUCTURAL	CKD BY:	PHET
150'/180' Self Support			
UPPER TOWNSHIP, N.J.		Dwg.No. FYS7	

Structural Shipping List

Columns

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYC-8	3	2 3/4 in. Bar - 50KSI	10'-0"	20.2	757	

Diagonals

Mark	Qty.	Description	Length	#/Ft.	Weight	Load
FYD8A	6	1L 2 x 2 x 3/16	6'-10 1/8"	2.44	100	
FYD8B	6	1L 2 x 2 x 3/16	6'-5 1/8"	2.44	94	

Diag. Ls Total Wt. = 194

Horz.

Mark	Qty.	Description	Length	#/Ft.	Total Weight	Load
FYH8	3	1L 2 x 2 x 3/16	4'-11"	2.44	36	

Section Estimated Weight

990 lb.

FWT Inc.		Section 8
DATE: 1/6/95	STRUCTURAL SHIPPING LIST	CKD BY: PHET
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYS8

10

LADDER SHIP, ING LST

TOWER: 150/1	MARK	QTY	DESCRIPTION	LOCATION: UPPER TOWNSHIP, N.J.
	1CL20	7	CLIMBING LADDER X 20'-0"	
	1CL10	1	CLIMBING LADDER X 10'-0"	
	W18SX20	14	WG. LAD. 18 @ 3/4" Ø HLS X 20'-0"	
	W18SX10	2	WG. LAD. 18 @ 3/4" Ø HLS X 10'-0"	
	"C"	11	CLM LAD. SUPPORT BRKT	
	"WG52"	22	W.G. LAD. SUPPORT BRKT	
	HILB2R	27	W.G. & CLM LADD. SUPPORT BRKT	
	HILB2L	27	W.G. & CLM LADD. SUPPORT BRKT	
	LSP1	44	LADDER SPLICE PL.	
		6	LADDER BASE PL.	
		6	7/8" Ø ROD X 4'-0"	
			BOLTS:	
		100	1/2" Ø X 1 1/2" B.N.L.F.W.	
		130	5/8" Ø LADDER U-BOLTS	
		120	5/8" Ø X 1 3/4" B.N.L.F.W.	
		4	CAN COLD GALV.	
		1	SERIAL PLATE	

1/6/95

SHT. #1

TOWER HT:

1

LOCATION

UPPER TOWNSHIP, N.J.
BOX

SAFETY CLIMBING DEVICES

QTY DESCRIPTION

1 TOP BRACKET ASSY

1 BOTTOM BRACKET ASSY

1 SAFETY BELT W/CONNECTOR

1 ATTACHMENT HARDWARE

8 CABLE GUIDES-INSTALL@20' INTERVALS

160 3/8"Ø CABLE EHS

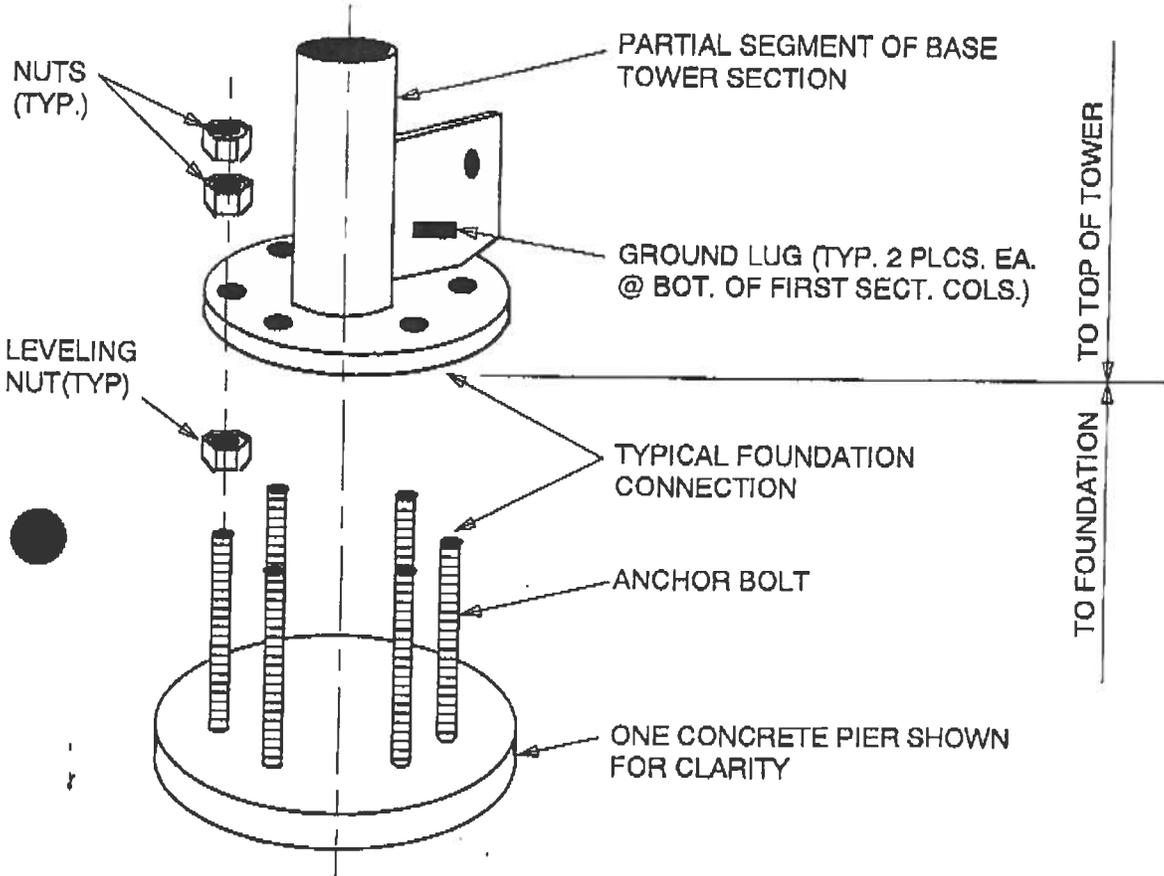
Field note:

If structural member is marked w/either a (B) or a (T) this indicates the req'd position of the piece. (B) denotes down and (T) denotes up.

<i>FWT, inc.</i>			
SCALE:	NONE	DRAWN BY:	PHET
DATE:	1-6-95	CHECKED BY:	
STRUCTURE FIELD NOTES			
150'/180' "SST" UPPER TOWNSHIP, N.J.		DRAWING NUMBER	

NOTES:

- 1) OUTSIDE VIEW OF ONE CORNER SHOWN ONLY, FOR CLARITY.
- 2) AMOUNT OF ANCHOR BOLTS MAY VARY.
- 3) ALL ANCHOR BOLTS TO BE A-36.
- 4) ALL NUTS TO BE HEAVY HEX.
- 5) WHEN ALL BOTTOM SECTION COLS. ARE SET, FILL IN SPACE BETWEEN BASE PLATE & CONCRETE PIER WITH HIGH DENSITY GROUT.



ERECTION ELEVATION

<i>FWT, inc.</i>			
SCALE:	NONE		DRAWN BY: PHET
DATE:	1-6-95		CHECKED BY:
BASE PLATE ERECTION			
150'/180' "SST" UPPER TOWNSHIP, N.J.			DRAWING NUMBER

5/8"Ø OR 3/4"Ø
BOLT

SPACER OR 2 FLAT
WASHERS BETWEEN DIAG.
MEMBERS (SEE ASS'Y)

LOCKWASHER

NUT

CONNECTION POINT @
INTERSECTION OF
DIAGONALS

DIAGONAL

LOCKWASHER

NUT

DIAGONAL

5/8"Ø OR 3/4"Ø
BOLT

LEFT
TOWER LEG

LOCKWASHER

NOTES:

1) SEE SECTION ASSEMBLY DETAILS FOR FASTENER SIZES.

TYPICAL DIAGONAL BRACING ATTACHMENT DETAIL

FWT, inc.

SCALE: NONE

DRAWN BY: PHET

DATE: 1-6-95

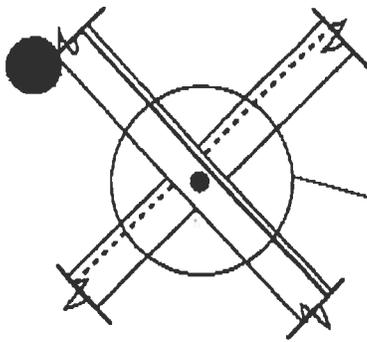
CHECKED BY:

TYPICAL DIAGONAL BRACING ATTACHMENT DETAIL

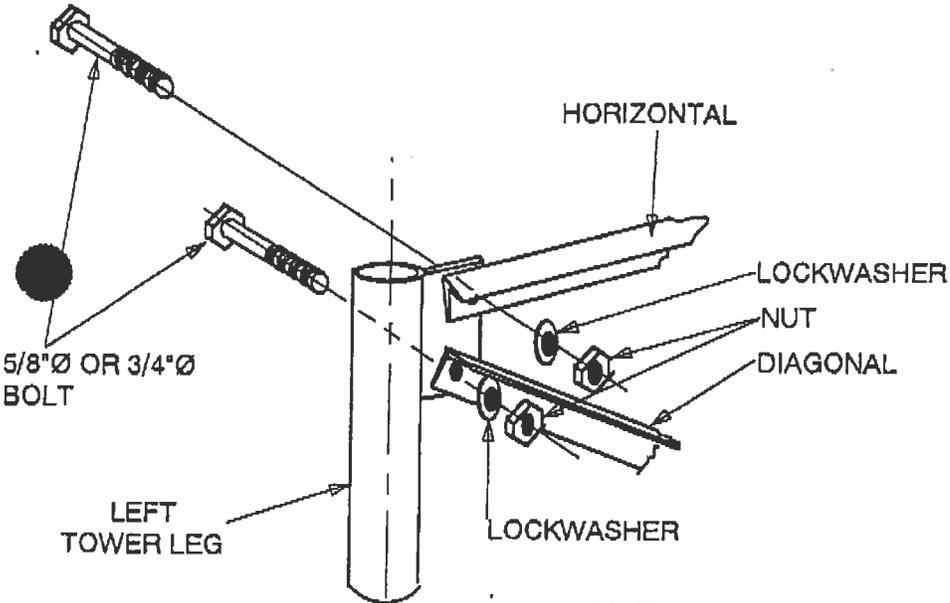
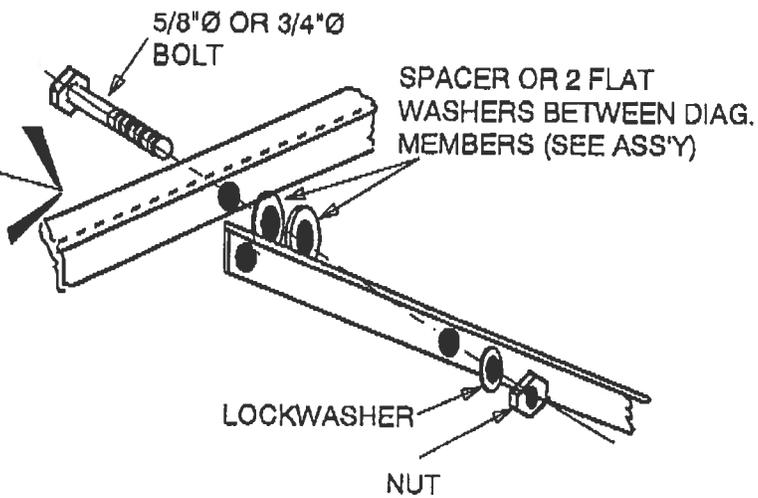
150'/180' "SST" UPPER TOWNSHIP, N.J.

DRAWING NUMBER

19



CONNECTION POINT @
INTERSECTION OF
DIAGONALS

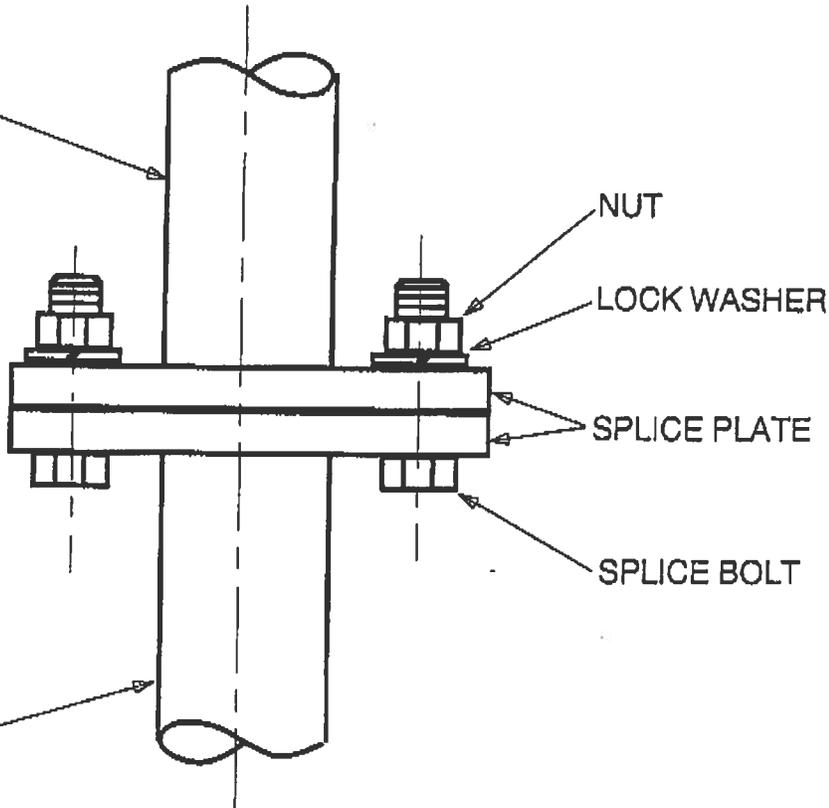


NOTES:
1) SEE SECTION ASSEMBLY DETAILS FOR FASTENER SIZES.

**TYPICAL HORIZONTAL & DIAGONAL
BRACING ATTACHMENT DETAIL**

<i>FWT, inc.</i>		
SCALE: NONE		DRAWN BY: PHET
DATE: 1-6-95		CHECKED BY:
TYP. HORIZONTAL & DIAGONAL BRACING ATTACH. DETAIL		
150'/180' "SST" UPPER TOWNSHIP, N.J.		DRAWING NUMBER

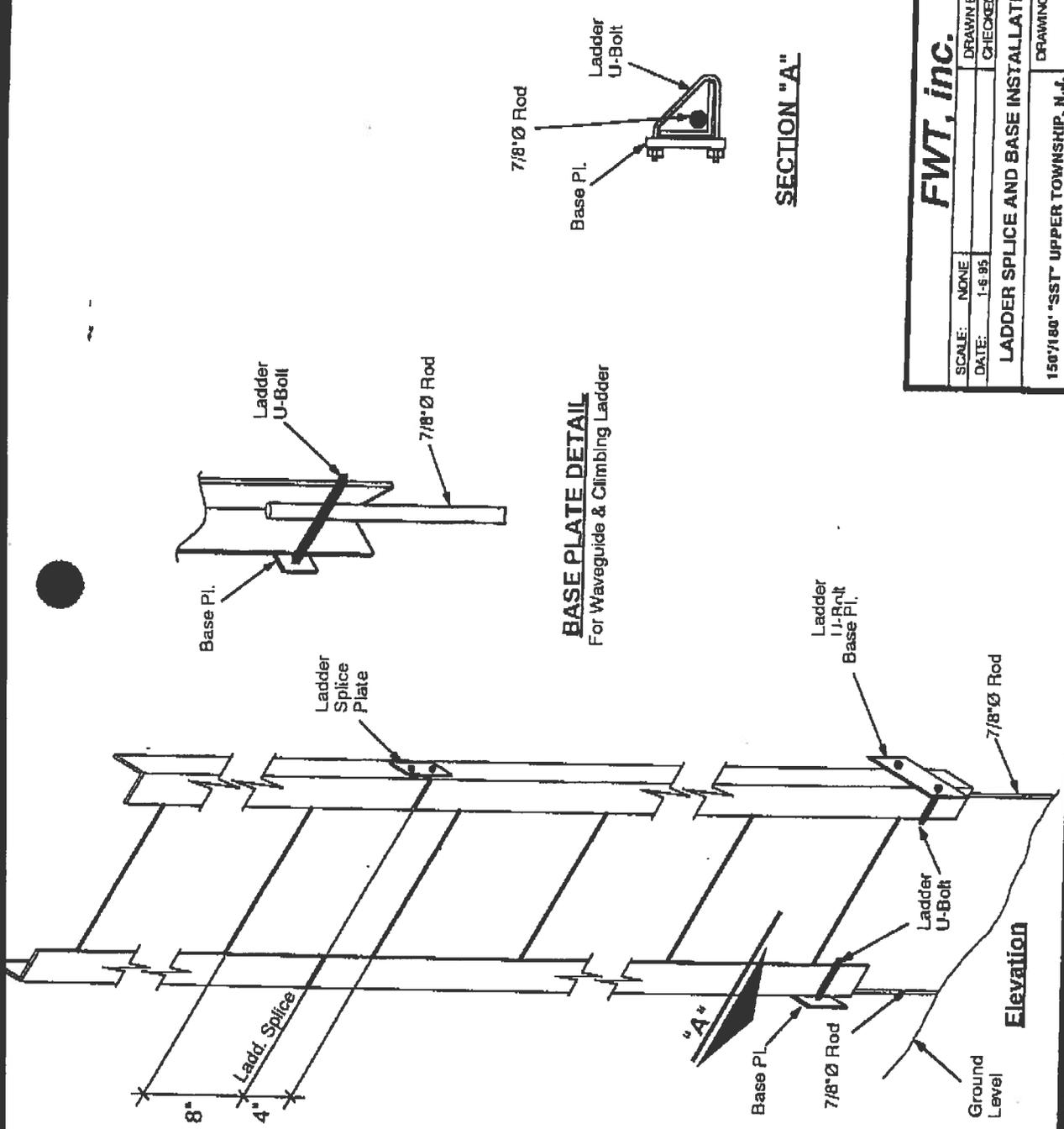
TOP
TOWER LEG



BOTTOM
TOWER LEG

TYPICAL SPLICE BOLT ASSEMBLY

<i>FWT, inc.</i>		
SCALE: NONE		DRAWN BY: PHET
DATE: 1-6-95		CHECKED BY:
TYPICAL SPLICE BOLT ASSEMBLY		
150'/180' "SST" UPPER TOWNSHIP, N.J.		DRAWING NUMBER



BASE PLATE DETAIL
For Waveguide & Climbing Ladder

SECTION "A"

FWT, inc.	
SCALE: NONE	DRAWN BY: PHET
DATE: 1-8-95	CHECKED BY:
LADDER SPLICE AND BASE INSTALLATION - (S.S.T)	
DRAWING NUMBER	
150/180 "SST" UPPER TOWNSHIP, N.J.	

1 3/4"Ø A.B.

Top Of Concrete

Top Of Finished Concrete
To Be Same Elevation
On All Three Piers.

1/4" THK
TEMPLATE

9"

NOTES:

- 1) ANCHOR BOLT TO BE SET WITH FURNISHED A.B. TEMPLATES.
- 2) PROTECT ALL PROJ. THREADS

7'-9" LG.

LEVELING
NUTS
Top Of
Anchor
Plate

5'-10"
Minimum
Embedment

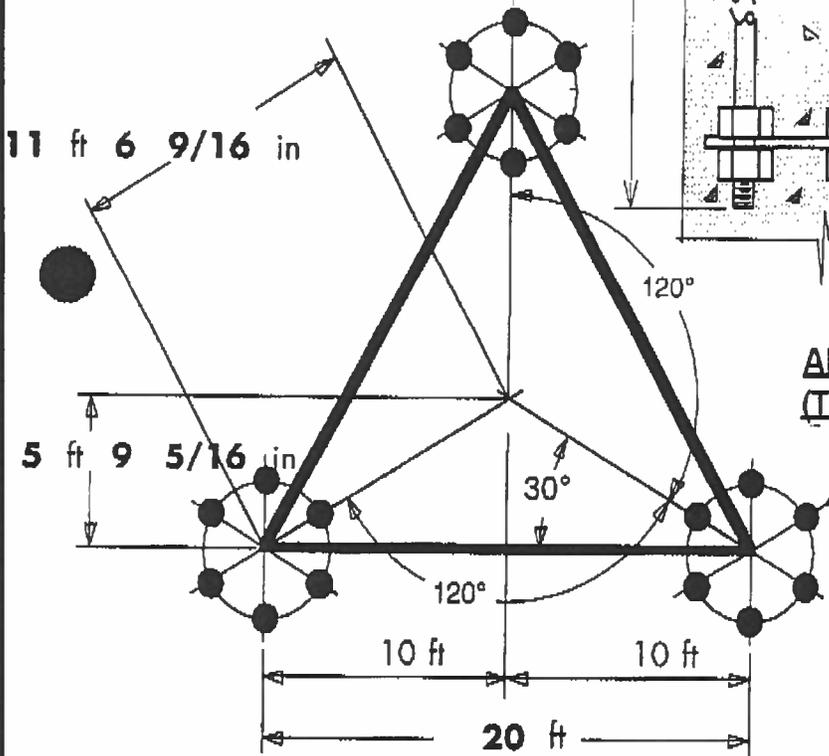
1 1/4"thk.
Embedment Plate

**ANCHOR BOLTS
(TYP. 3 PLACES)**

6 Ea. - 1 3/4"Ø A.B.
11 in Bolt Circle
Typ. 3 Places

Anchor Bolt Size	Twr. Base C/C Leg
1.75 in	20 ft

Base Section Twr. Leg Size → 4 in



FWT, inc.

SCALE: NONE

DRAWN BY: Seng

DATE: 12/14/94

CHECKED BY:

S.S.X.T. (6-BOLTS) ANCHOR BOLT SETTING PLAN

180"X" Upper Township, NJ.

TUCKAHOE-CAPE MAY COUNTY

DRAWING NUMBER

DESIGN DWG.#1994994

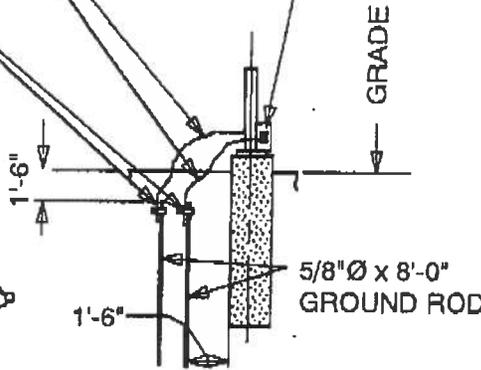
SKETCH #1963794

#6 BARE COPPER
 (TO BE RUN WITHOUT
 ANY SHARP BENDS
 & PLACED IN A MANNER
 CONSISTANT WITH
 INDUSTRY STDS. &
 CUSTOMER APPROVAL)

#6 GROUNDING LUG
 W/ 1/4"Ø x 1 1/2"
 B.N.L.F.W.(S.S)
 (2-REQ'D/TWR.LEG)

5/8" GROUND ROD
 CLAMP

5/8"Ø x 8'-0"
 GROUND ROD
 (4'-5' MIN.SEPARATION)
 (TYPICAL)



ELEVATION

#6 BARE COPPER

#6 BARE COPPER

5/8"Ø x 8'-0"
 GROUND ROD

#6 BARE COPPER

5/8"Ø x 8'-0"
 GROUND ROD

GROUNDING PLAN

FWT, inc.

SCALE: NONE

DRAWN BY: PHET

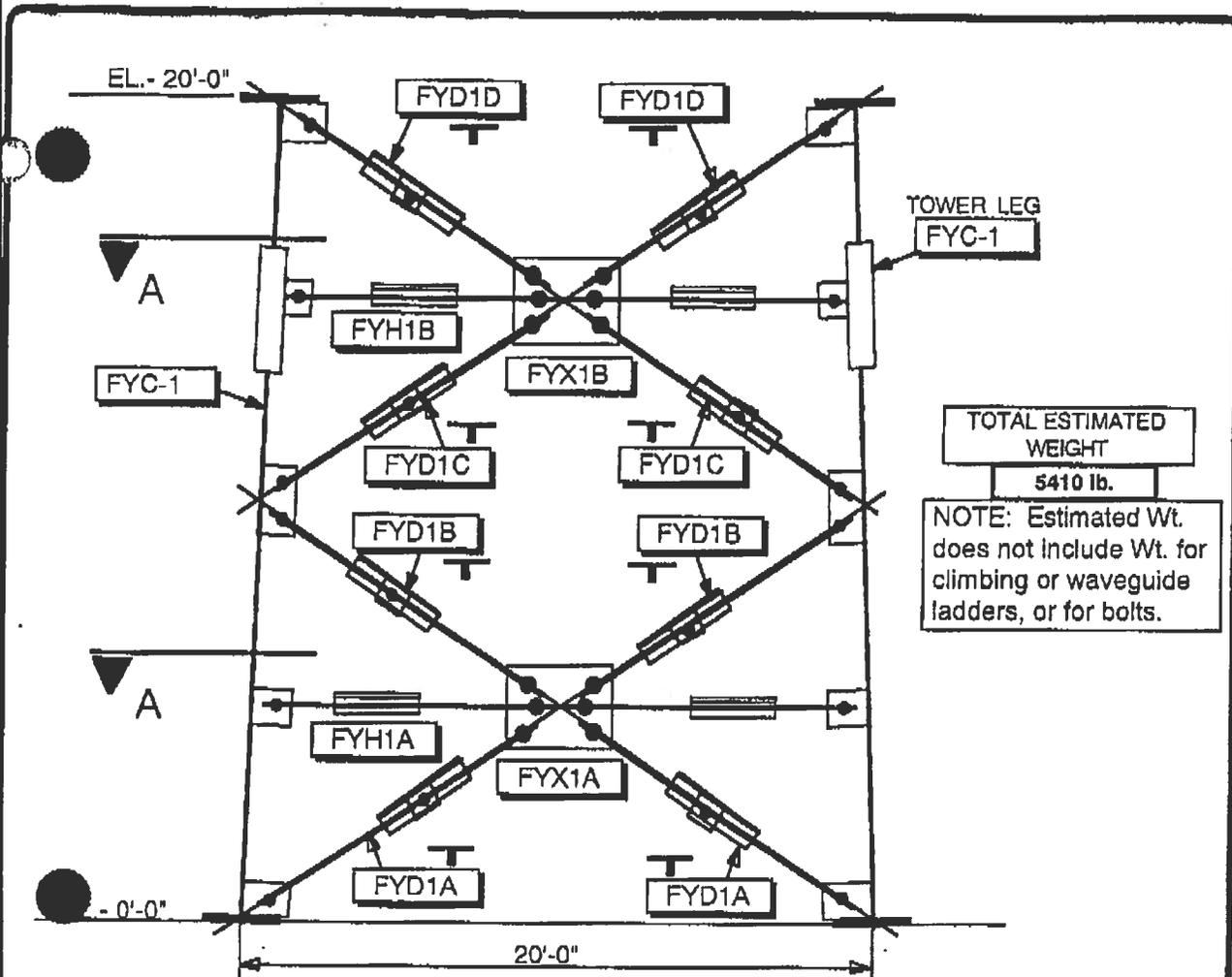
DATE: 1-6-95

CHECKED BY:

GROUNDING PLAN

150'/180" "SST" UPPER TOWNSHIP, N.J.

DRAWING NUMBER

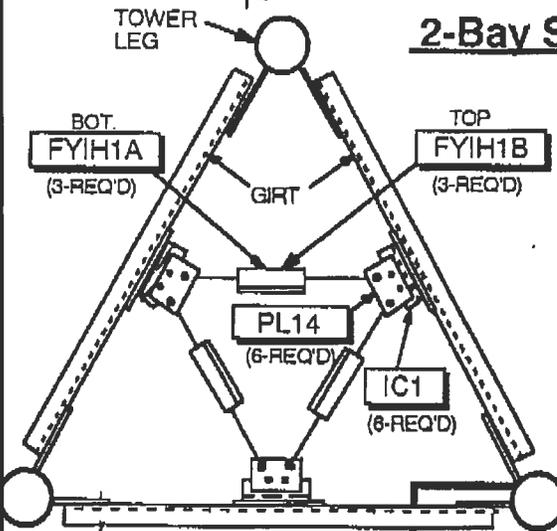


TOTAL ESTIMATED WEIGHT

5410 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

2-Bay Section



FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	1 1/8"	x 4 1/2"	B.N.L.
Diagonal Bolts	48	5/8"	x 2"	B.N.L.
Diag. Stitch Bolts	24	5/8"	x 2"	B.N.L.
Girt Bolts	12	5/8"	x 1 3/4"	B.N.L.
Int. Clip 'IC1' to Girt	12	5/8"	x 2"	B.N.L. FW.
Int. Clip 'IC1' to PL14	12	5/8"	x 1 1/2"	B.N.L.
Int. Brace Bolts	12	5/8"	x 1 3/4"	B.N.L. FW.
Int. Brace Stitch Bolts	0	Void		
Spacer Pls. (Diag.)	24	12	58	
Spacer Pls. (Int Brace.)	0	Void		
Ladder Bolts				See Ladder Ship List



Section 1

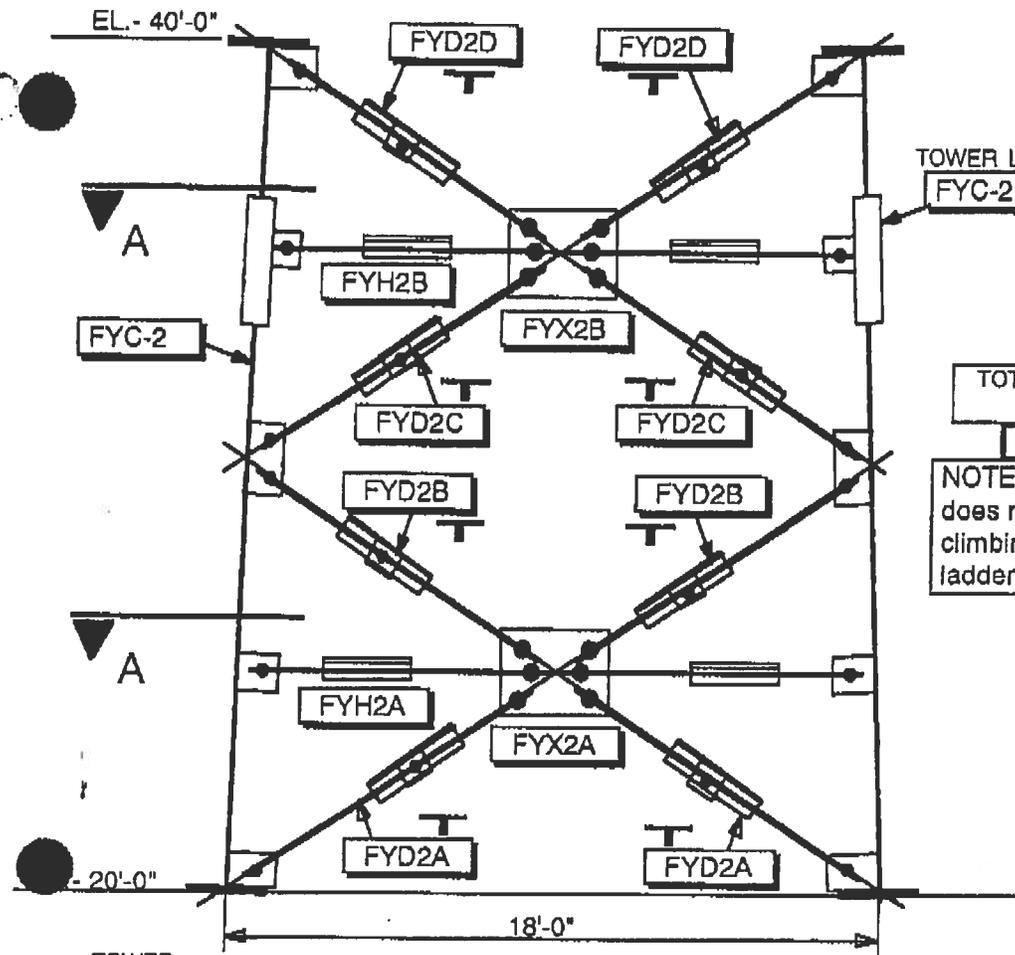
SECTION "A"
Internal Braces

CKD BY: PHET ERECTION ELEVATION: DATE: 1/6/95

150'/180' Self Support

UPPER TOWNSHIP, N.J.

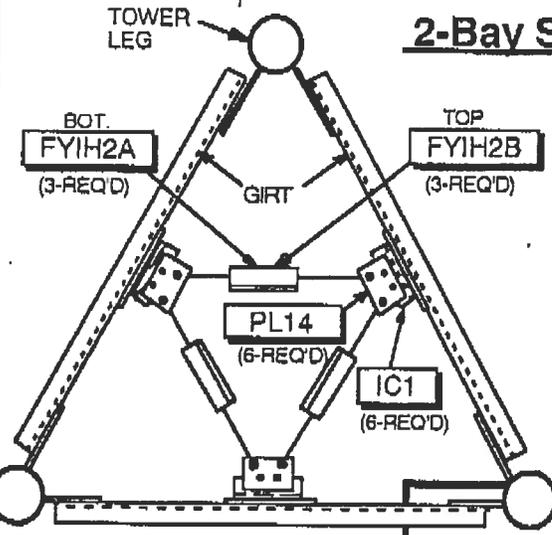
Dwg.No. FYE1



TOTAL ESTIMATED WEIGHT
5217 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

2-Bay Section



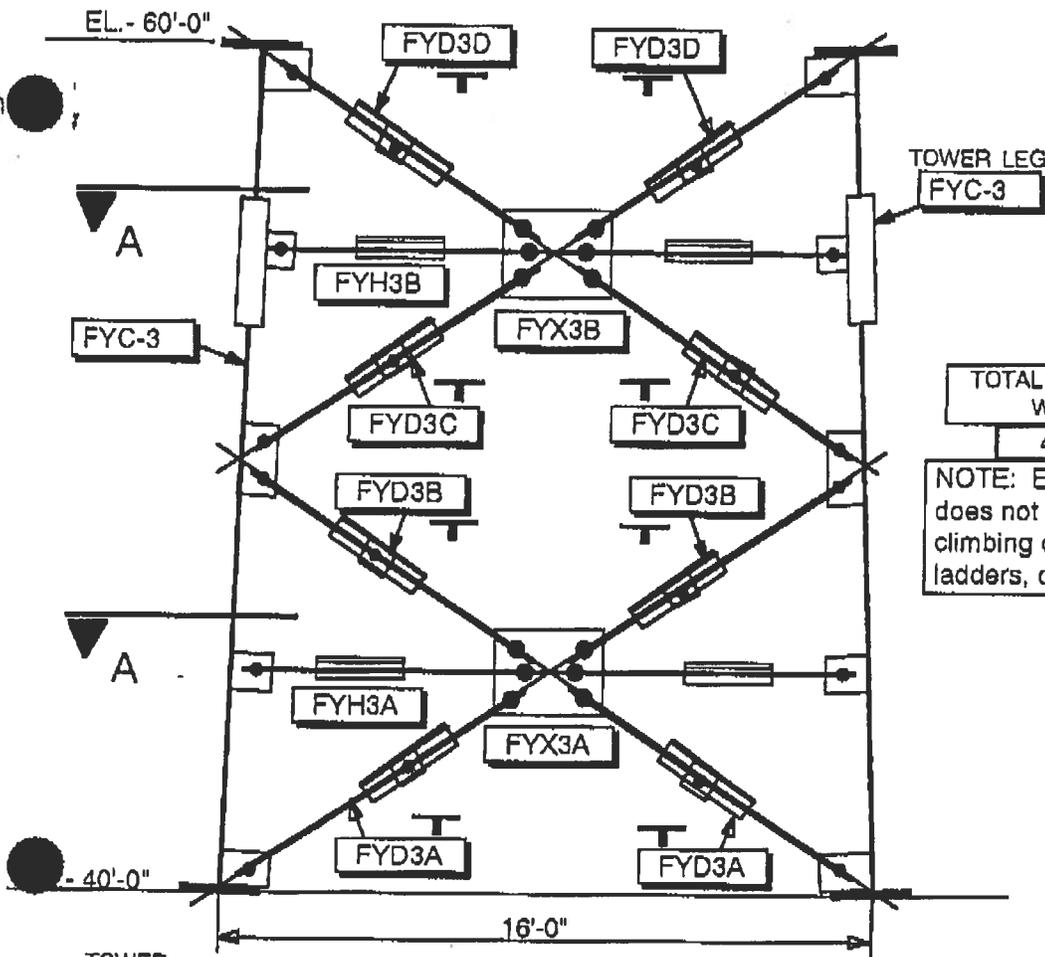
FIELD BOLTS	QTY.	Dia. Length Parts
Top Splice Bolts	18	1 1/8" x 4 1/4" B.N.L.
Diagonal Bolts	48	5/8" x 2" B.N.L.
Diag. Stitch Bolts	24	5/8" x 2" B.N.L.
Girt Bolts	12	5/8" x 1 3/4" B.N.L.
Int. Clip "IC1" to Girt	12	5/8" x 2" B.N.L. FW.
Int. Clip "IC1" to PL14	12	5/8" x 1 1/2" B.N.L.
Int. Brace Bolts	12	5/8" x 1 3/4" B.N.L. FW.
Int. Brace Stitch Bolts	0	Void
Spacer Pls. (Diag.)	24	12 58
Spacer Pls. (Int Brace.)	0	Void
Ladder Bolts		See Ladder Ship List

SECTION "A"
Internal Braces



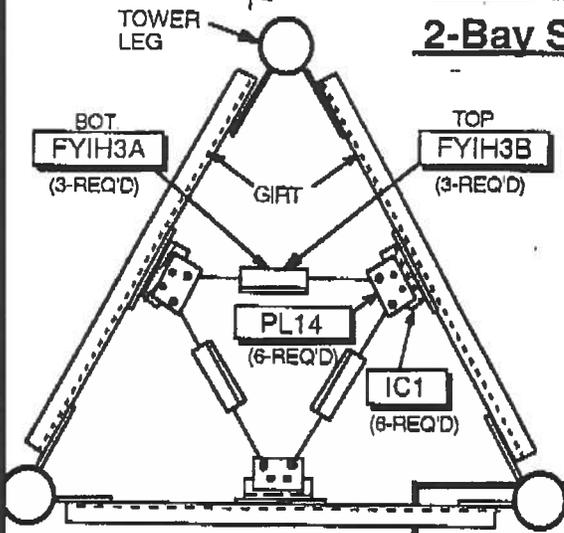
Section 2

CKD BY: PHET	ERECTION ELEVATION:	DATE: 1/6/95
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYE2



TOTAL ESTIMATED WEIGHT
4555 lb.
NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

2-Bay Section



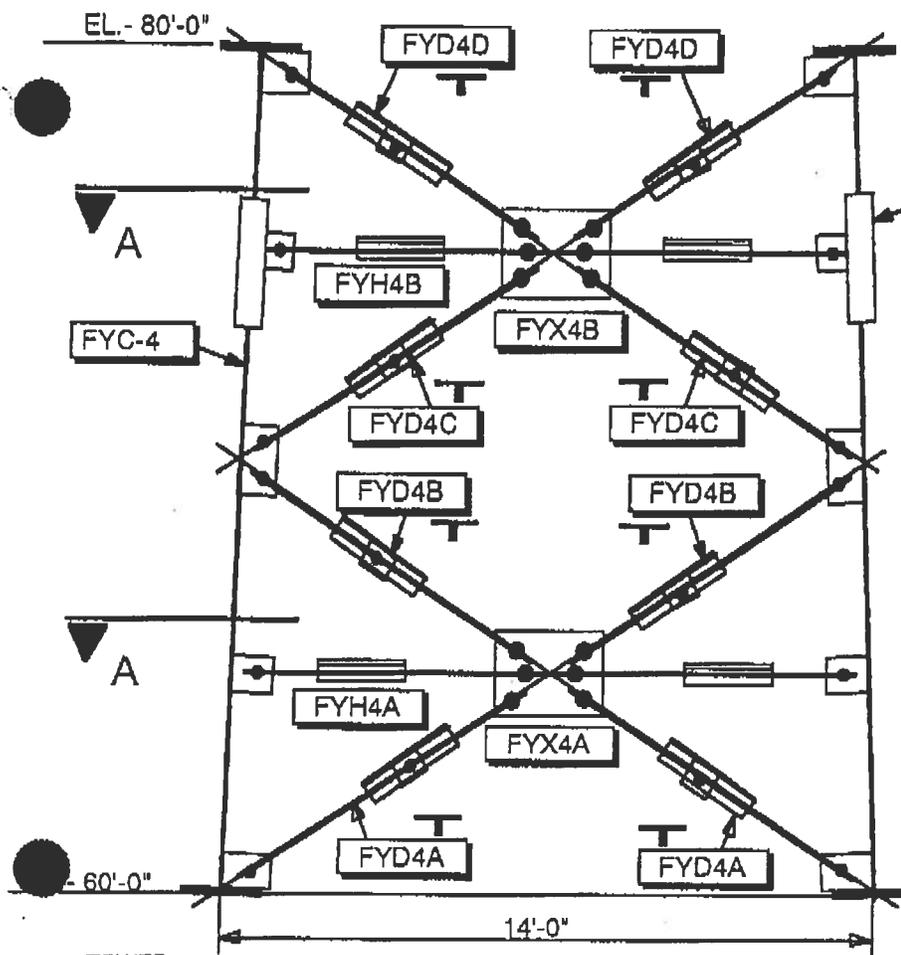
FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	1"	3 3/4"	B.N.L.
Diagonal Bolts	48	5/8"	2"	B.N.L.
Diag. Stitch Bolts	24	5/8"	2"	B.N.L.
Girt Bolts	12	5/8"	1 3/4"	B.N.L.
Int. Clip "IC1" to Girt	12	5/8"	2"	B.N.L. FW
Int. Clip "IC1" to PL14	12	5/8"	1 1/2"	B.N.L.
Int. Brace Bolts	12	5/8"	1 3/4"	B.N.L. FW
Int. Brace Stitch Bolts	0			Void
Spacer Pls. (Diag.)	24	12	58	
Spacer Pls. (Int Brace.)	0			Void
Ladder Bolts				See Ladder Ship List



Section 3

SECTION "A"
Internal Braces

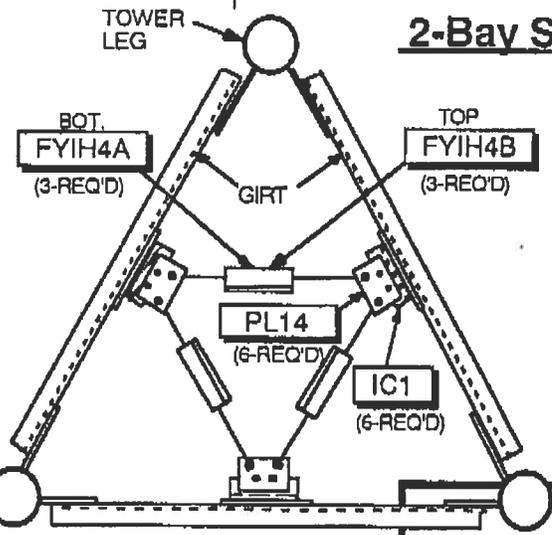
CKD BY: PHET	ERECTION ELEVATION.	DATE: 1/6/95
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYE3



TOTAL ESTIMATED WEIGHT
4155 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

2-Bay Section



FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	1"	x 4	1/2" B.N.L.
Diagonal Bolts	48	5/8"	x 2"	B.N.L.
Diag. Stitch Bolts	24	5/8"	x 2"	B.N.L.
Girt Bolts	12	5/8"	x 1 3/4"	B.N.L.
Int. Clip "IC1" to Girt	12	5/8"	x 2"	B.N.L. FW.
Int. Clip "IC1" to PL14	12	5/8"	x 1 1/2"	B.N.L.
Int. Brace Bolts	12	5/8"	x 1 3/4"	B.N.L. FW.
Int. Brace Stitch Bolts	0	Void		
Spacer Pls. (Diag.)	24	12 58		
Spacer Pls. (Int Brace.)	0	Void		
Ladder Bolts		See Ladder Ship List		

SECTION "A"
Internal Braces

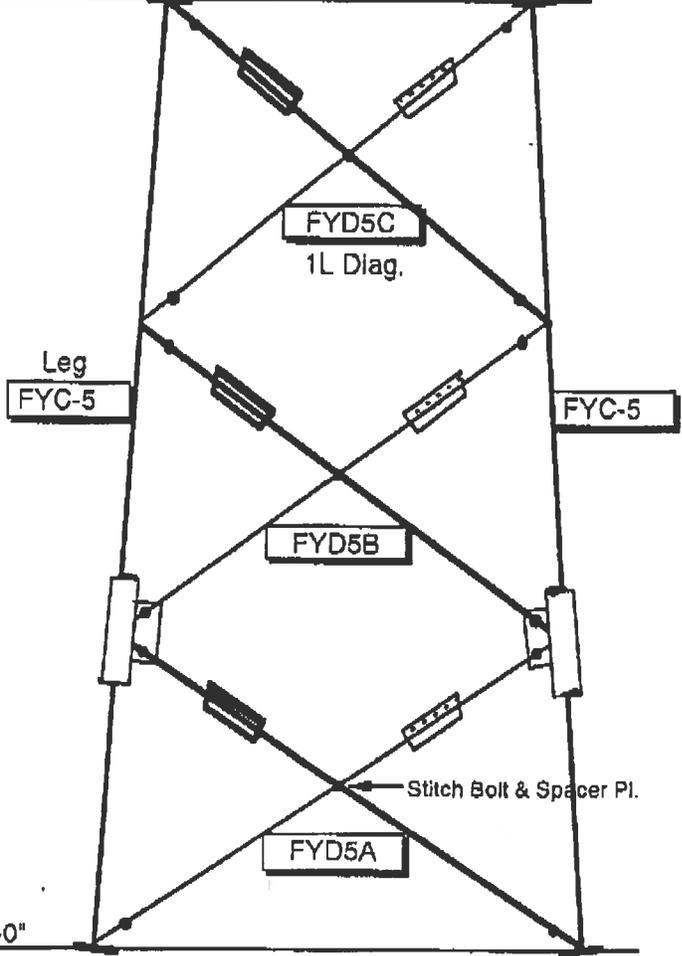


Section 4

CKD BY: PHET	ERECTION ELEVATION.	DATE: 1/6/95
150'/180' Self Support		
UPPER TOWNSHIP, N.J.	Dwg.No. FYE4	

28

EL. - 100'-0"



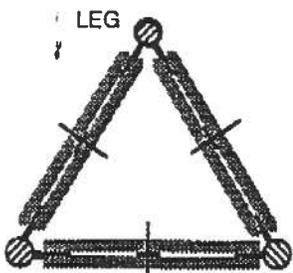
TOTAL ESTIMATED WEIGHT

3593 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

EL. - 80'-0"

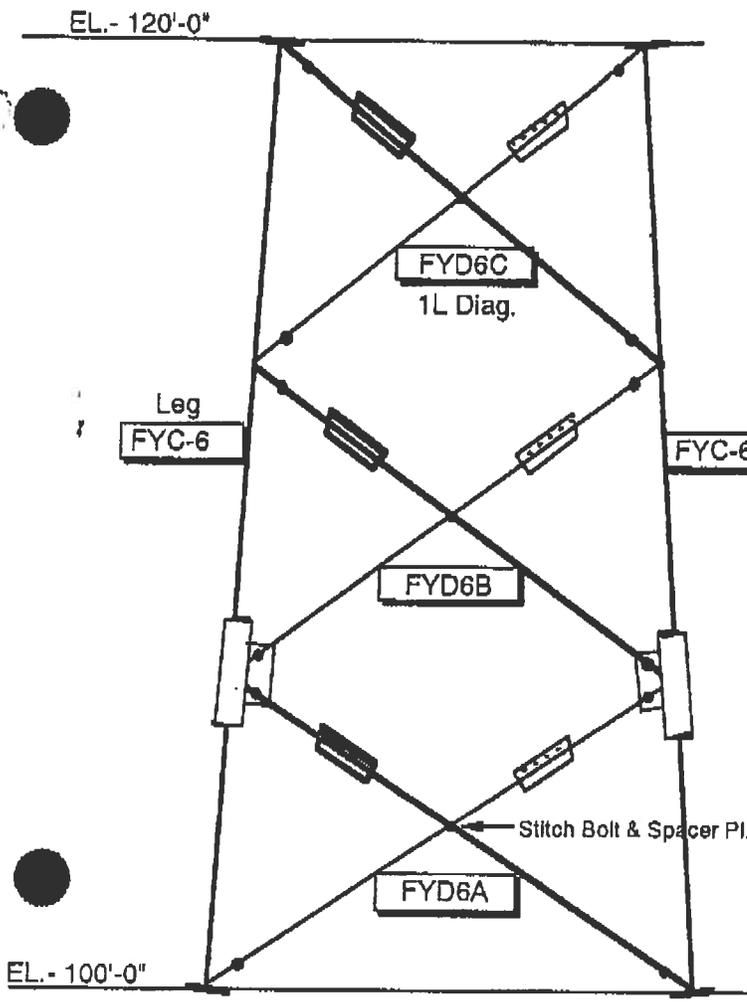
3-Bay Section



PLAN

FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	7/8"	5'	B.N.L.
Diagonal Bolts	36	3/4"	1 3/4'	B.N.L.
Diag. Stitch Bolts	9	3/4"	1 3/4'	B.N.L.
Spacer Pls. (Diag.)	9		14	34
Ladder Bolts				See Ladder Ship List

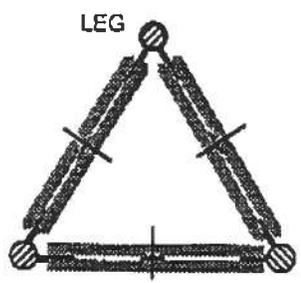
FWT Inc.		Section 5
DATE: 1/6/95	ERECTION ELEVATION .	CKD BY: PHET
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYE5



TOTAL ESTIMATED WEIGHT
3018 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

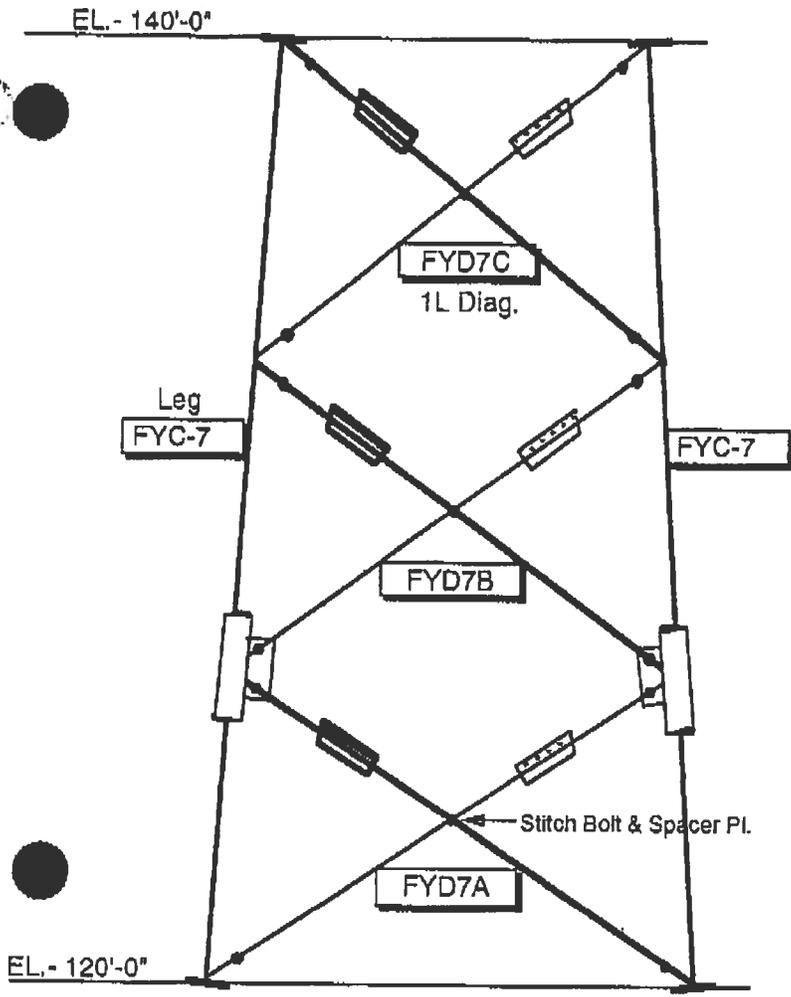
3-Bay Section



PLAN

FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	3/4"	x 4 1/2"	B.N.L.
Diagonal Bolts	36	5/8"	x 1 1/2"	B.N.L.
Diag. Stitch Bolts	9	5/8"	x 1 3/4"	B.N.L.
Spacer Pls. (Diag.)	9		14.58	
Ladder Bolts				See Ladder Ship List

FWT Inc.		Section 6
DATE: 1/6/95	ERECTION ELEVATION	CKD BY: PHET
150/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYE6

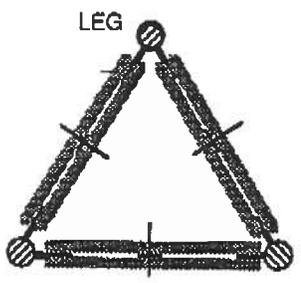


TOTAL ESTIMATED WEIGHT

2601 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

3-Bay Section



PLAN

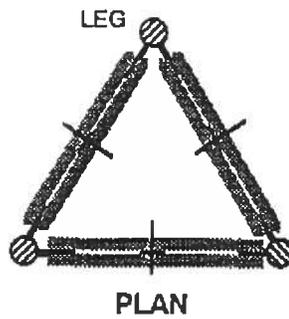
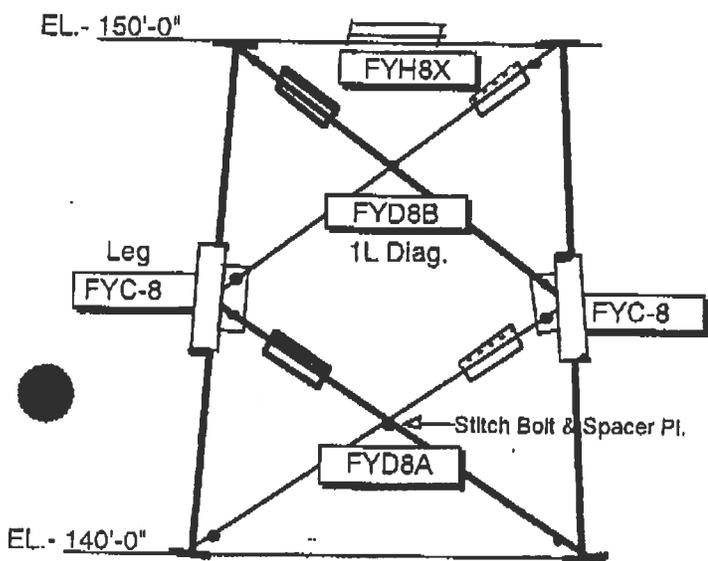
FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Splice Bolts	18	3/4"	4"	B.N.L.
Diagonal Bolts	36	5/8"	1 1/2"	B.N.L.
Diag. Stitch Bolts	9	5/8"	1 3/4"	B.N.L.
Spacer Pls. (Diag.)	9		14	58
Ladder Bolts				See Ladder Ship List

FWT Inc.		Section 7
DATE: 1/6/95	ERECTION ELEVATION	CKD BY: PHET
150'/180' Self Support		
UPPER TOWNSHIP, N.J.		Dwg.No. FYE7

TOTAL ESTIMATED WEIGHT

990 lb.

NOTE: Estimated Wt. does not include Wt. for climbing or waveguide ladders, or for bolts.

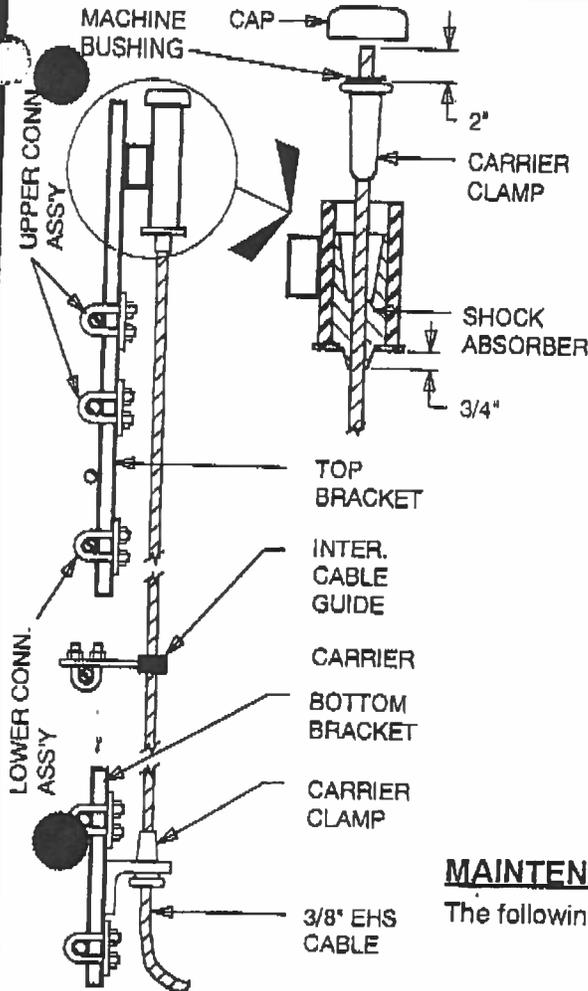


2-Bay Section

FIELD BOLTS	QTY.	Dia.	Length	Parts
Top Horz. Bolts	6	3/4"	x 3"	B.N.L.
Diagonal Bolts	24	5/8"	x 1 1/2"	B.N.L.
Diag. Stitch Bolts	6	5/8"	x 1 3/4"	B.N.L.
Spacer Pls. (Diag.)				
Ladder Bolts				See Ladder Ship List

FMT Inc.		Section	8
DATE: 1/6/95	ERECTION ELEVATION	CKD BY: PHET	
150'/180' Self Support			
UPPER TOWNSHIP, N.J.		Dwg.No. FYE8	

Instruction For Installation Of Lad-Saf System On Standard Rung-Type Ladder



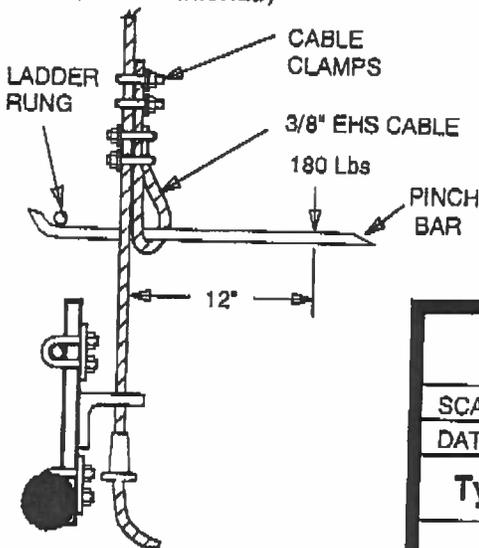
- 1 - Mount top bracket as shown on ladder.
 - 2 - Lay out cable on ground by rolling coil like a wheel. Do not pull cable out of coil. Insert one end of cable thru hole in pipe and thru shock absorber.
 - 3 - Slide carrier clamp with machine bushing onto cable allowing end of cable to project 2" thru carrier clamp.
 - 4 - Pull cable with carrier clamp down to firmly seat carrier clamp in shock absorber. Pull shock absorber into pipe with cable guard projecting 3/4" thru hole in bottom of pipe.
 - 5 - Install cap firmly on top of pipe.
 - 6 - Install intermediate cable guides at 25' spacing with cable openings facing alternately to the right and left. Guide to be offset from ladder centerline to permit cable to be straight. Clip cable into intermediate cable guides.
 - 7 - Install bottom bracket as shown.
 - 8 - If NON-DETACHABLE SAFETY SLEEVE is used, position safety sleeve on carrier.
 - 9 - Thread cable thru hole in bottom bracket angle and slide carrier clamp with machine bushing over end of cable
 - 10 - Tension cable to approx. 750 lbs. Using device shown or similar (Tensioning device not furnished.) While holding tension on cable, tap carrier clamp firmly into hole in bot. bracket angle. Release and remove tensioning device.
- NOTE: - If retensioning is necessary, the bottom bracket must be loosened and the carrier clamp tapped upward and then released by inserting a screwdriver in side slot and depressing the spring of the carrier clamp.

MAINTENANCE

The following recommendations apply to maintenance procedures:

- 1 - All fixed ladders, cages, ladder safety equipment, and platforms must be maintained in a safe condition. Inspections for rust, corrosion, and deterioration should be made at least annually with more frequent inspections to be made as determined by use and exposure.
- 2 - If grounding protection has been provided, then the ground connection (or connections) to the ladder should be inspected for continuity at least annually.
- 3 - Users should report any defects or deteriorations promptly to their supervisors.
- 4 - Records should be maintained of inspections and maintenance.
- 5 - When deemed advisable, caution signs should be provided in accordance with American National Standards Specifications for Accident Prevention signs 735 1-1972.

TENSIONING DEVICE (NOT FURNISHED)



FWT, inc.

SCALE:	NONE	DRAWN BY:	PHET
DATE:	1-6-95	CHECKED BY:	

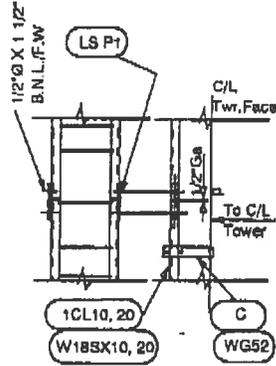
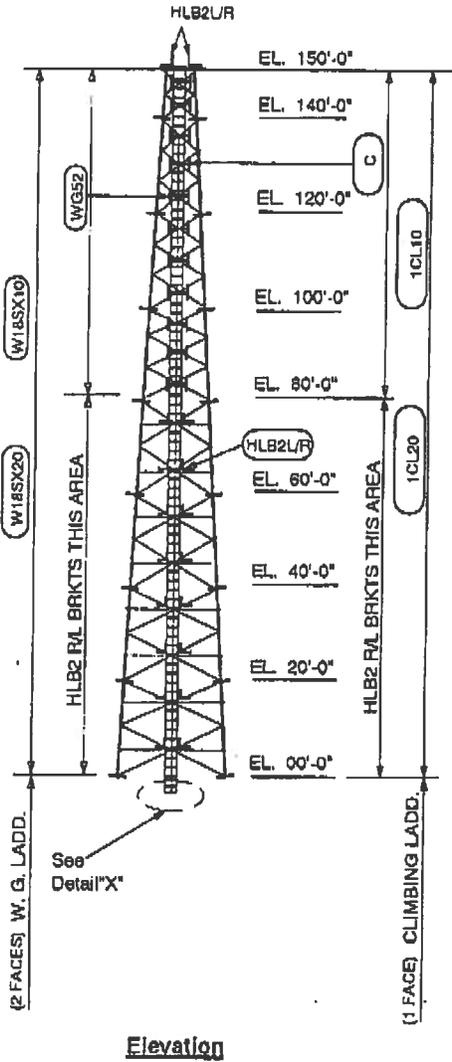
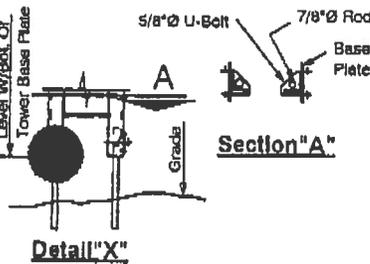
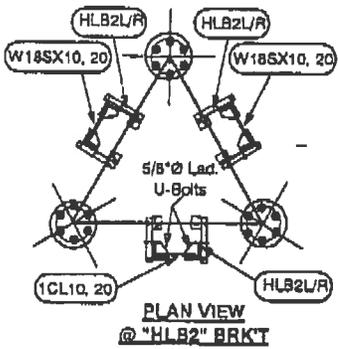
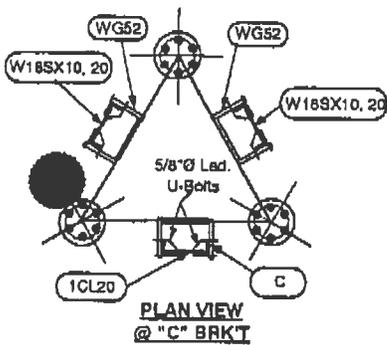
Typ. Safety Climbing Device Installation Assembly

150'/180' "SST" UPPER TOWNSHIP, N.J.

DRAWING NUMBER

BILL OF MATERIAL

MARK	QTY.	DESCRIPTION
1CL20	7	CLIMBING LADDER BRKT
1CL10	1	CLIMBING LADDER BRKT
W18SX20	14	WG. LAD. BR @ 3/4" H.S. X 20'-0"
W18SX10	2	WG. LAD. BR @ 3/4" H.S. X 10'-0"
WG52	11	CLIM LAD. SUPPORT BRKT
WG52	22	WG. LAD. SUPPORT BRKT
HLB2R	27	W.G. & CLIM LADD. SUPPORT BRKT
HLB2L	27	W.G. & CLIM LADD. SUPPORT BRKT
LSPT	52	LADDER SPLICE PL.
	6	LADDER BASE PL.
	6	7/8" ROD X 4'-0" AS REQ'D
		BOLTS:
	84	1/2" X 1 1/2" R.H.I. F.W.
	126	5/8" LADDER BOLTS
	108	5/8" X 1 1/4" R.H.I. F.W.



Field Notes:

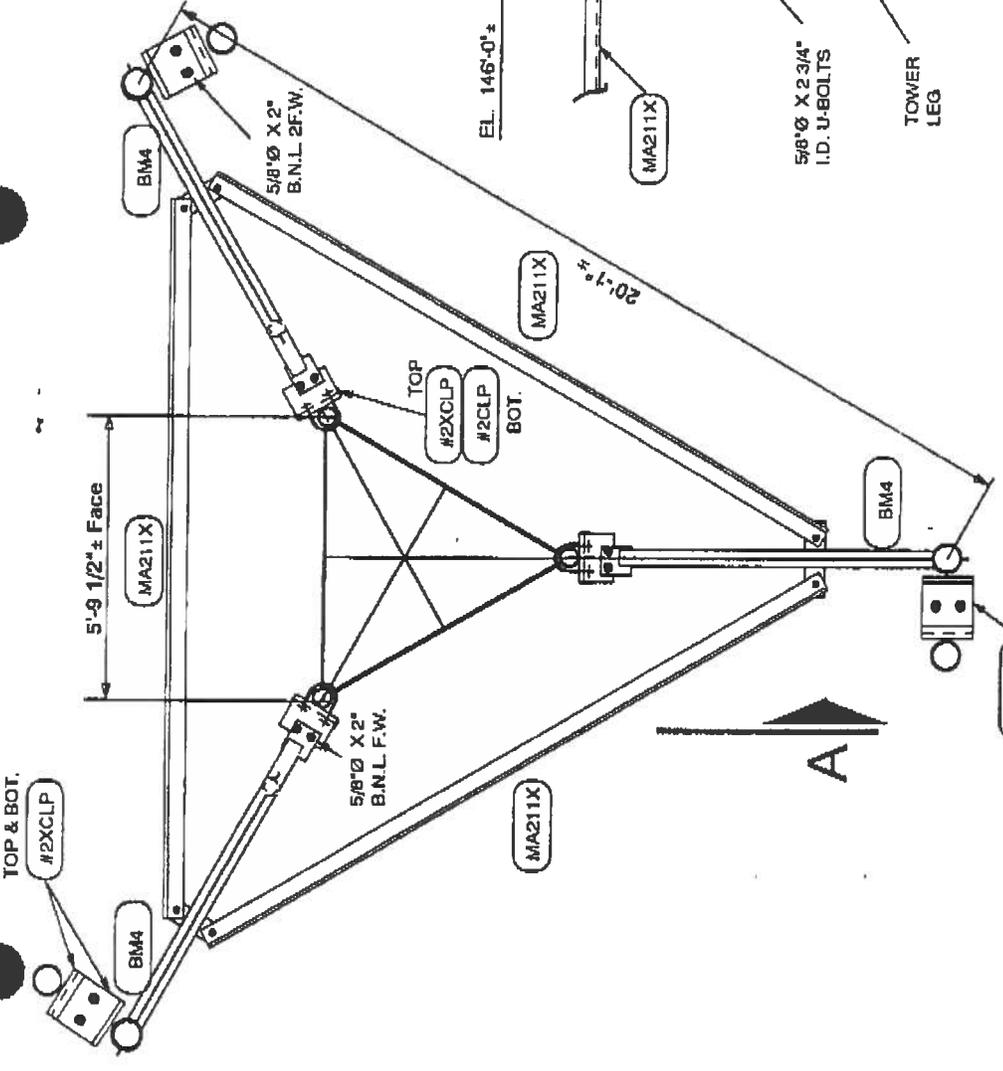
- 1) Climbing Ladder, 1CL10, 20 is Positioned On One Outside Face And W.G. Ladder, W18SX10, 20 Are Positioned On Two Other Outside Faces Of The Tower.
- 2) Ladder Support Brackets Are Positioned In The Locations AS Shown.

FWT, inc.

SCALE: NONE
DATE: 1-6-99
DRAWN BY: PHET
CHECKED BY:
Climbing & Wave Guide Ladders Ass'y
DRAWING NUMBER: 150'/180" "SST" UPPER TOWNSHIP, N.J.

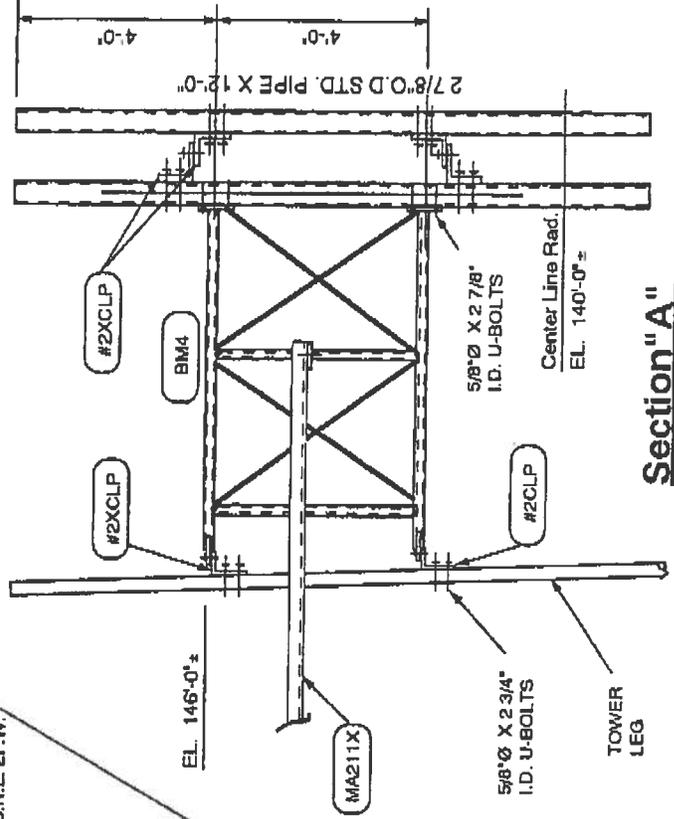
BILL OF MATERIAL

MARK	QTY	DESCRIPTION
BM4	3	6'-6" BOOM STANDOFF
MA211X	3	HORIZ BRACES
#2XCLP	3	BOOM MOUNT CLIPS
#2XCLP	15	PIPE SUPPORT CLIPS
	6	2 7/8" O.D. STD. PIPE X 12'-0"
BOLTS:		
	36	5/8"Ø X 2 7/8" I.D. U-BOLTS
	12	5/8"Ø X 2 3/4" I.D. U-BOLTS
	30	5/8"Ø X 2" B.N.L. 2F.W.



PLAN VIEW

A



Section "A"

FWT, inc.

SCALE:	NONE	DRAWN BY:	PHET
DATE:	1-6-95	CHECKED BY:	
6' - 6" BOOM STAND-OFF ASSEMBLY			
150'180" "SST" UPPER TOWNSHIP, N.J.		DRAWING NUMBER	

TOWER ACCEPTANCE FORM

FWT, INC.
 P.O. BOX 8597
 FORT WORTH, TEXAS 76124—0597

CUSTOMER _____
 JOB _____
 SITE _____
 TOWER HEIGHT _____
 ANTENNA & REFLECTORS _____ BUILDING _____

	ACCEPTED	NOT ACCEPTED (explain reason)
Tower Erection Completed:		
All Members Installed At Proper Locations.		
All Bolts Properly Torqued And Guy Clips		
Tight.		
All Guys Properly Tensioned		
Tower Plumb		
Tower Straightness		
Tower Twist		
Painting & Touch-up Completed		
Tower Lighting Installed, Connected & Operating.		
Reflector Assembled, Installed And Generally		
Pointed To Path.		
Antennas And Or Other Accessories Installed.		
Grounding & Site Clean-up Completed.		

All Work As Checked Off In Above Listing Is Completed In Good Workmanlike Manner, In Accordance With Re-
 quirements And Specifications And Is Hereby Accepted.

COMPANY: _____

Erection Foremans Signature _____

 (Representatives Signature)

DATE:

TOWER ACCEPTANCE FORM

FWT, INC.
 P.O. BOX 8597
 FORT WORTH, TEXAS 76124-0597

CUSTOMER _____
 JOB _____
 SITE _____
 TOWER HEIGHT _____
 ANTENNA & REFLECTORS _____ BUILDING _____

	ACCEPTED	NOT ACCEPTED (explain reason)
Tower Erection Completed:		
All Members Installed At Proper Locations.		
All Bolts Properly Torqued And Guy Clips		
Tight.		
All Guys Properly Tensioned		
Tower Plumb		
Tower Straightness		
Tower Twist		
Painting & Touch-up Completed		
Tower Lighting Installed, Connected & Operating.		
Reflector Assembled, Installed And Generally		
Pointed To Path.		
Antennas And Or Other Accessories Installed.		
Grounding & Site Clean-up Completed.		

All Work As Checked Off In Above Listing Is Completed In Good Workmanlike Manner, In Accordance With Re-
 quirements And Specifications And Is Hereby Accepted.

COMPANY: _____

Erection Foremans Signature _____

 (Representatives Signature)

DATE: _____

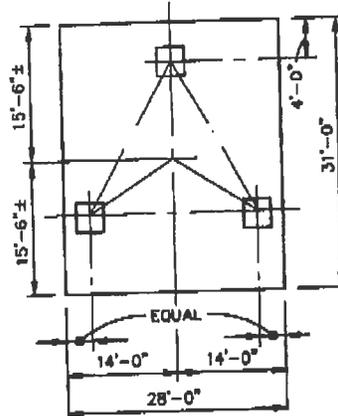
FWT

P.O. BOX 8597 FORT WORTH, TX 78124-0597
(817) 457-3080 FAX (817) 429-6010
Tower 150 FT (FUTURE 180 FT) SELF SUPPORT
Location UPPER TOWNSHIP, NEW JERSEY
Site "TUCKAHOE" - CAPE MAY COUNTY
Owner COMCAST
Design 85 MPH/74 MPH + 1/2" RADIAL ICE
According to ANSI/EIA 222-E 1991



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
350 East Broad Street Suite 500 Columbus, Ohio 43213
(614)-221-6679 FAX (614)-221-2340

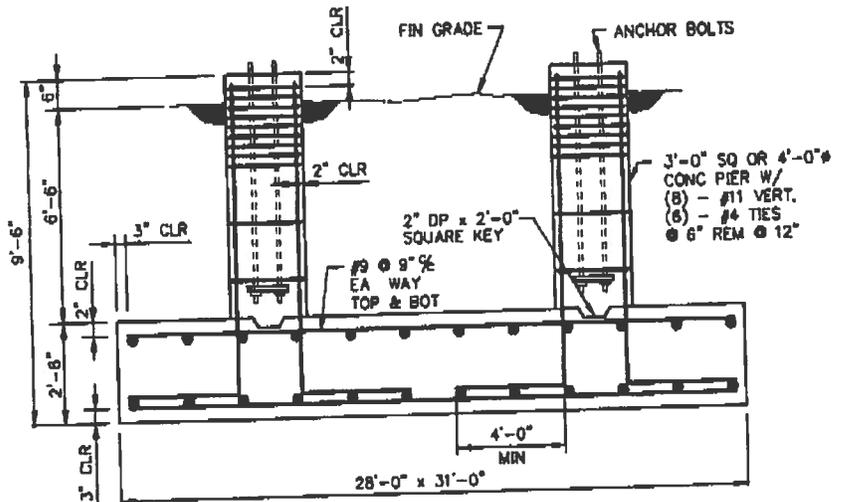
Page 2 Of 2
By KPB Date 12-15-1994
Job No. 1994994
Revision No. _____ Date _____



PLAN

NOTE: WATER TABLE 6'
TO 8.5' BELOW GRADE

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF AT LEAST 4000 PSI AT 28 DAYS.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (GRADE 60) EXCEPT PIER TIES MAY BE ASTM A615 (GRADE 40).
3. SEE PREVIOUS PAGE FOR ANCHOR BOLT SIZE AND LENGTH.
4. TOTAL CONCRETE = 88 CUBIC YARDS.
5. FOUNDATION DESIGN BASED UPON SOILS AND FOUNDATION INVESTIGATION #94.494-010A BY MELICK-TULLY AND ASSOC. INC. DATED JULY 13, 1994.



DEEP MAT FOUNDATION

Handwritten signature and date:
12-15-94

10049943



P.O. BOX 8597 FORT WORTH, TX 76124-0597
 (817) 457-3060 FAX (817) 429-6010

Tower 150 FT (FUTURE 180 FT) SELF SUPPORT

Location UPPER TOWNSHIP, NEW JERSEY

Site "TUCKAHOE" - CAPE MAY COUNTY

Owner COMCAST

Design 85 MPH/74 MPH + 1/2" RADIAL ICE

According to ANSI/EIA 222-E 1991



PAUL J. FORD AND COMPANY
 STRUCTURAL ENGINEERS

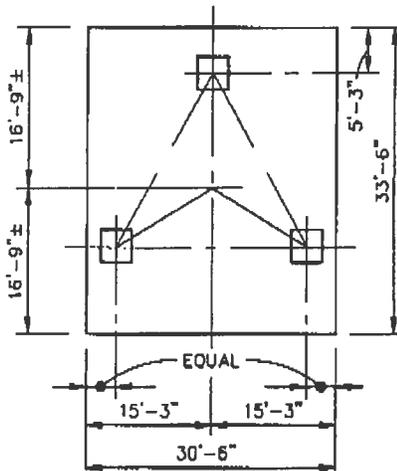
350 East Broad Street Suite 500 Columbus, Ohio 43215
 (614)-221-6679 FAX (614)-221-2540

Page 2 Of 2

By KPB Date 12-15-1994

Job No. 1994994

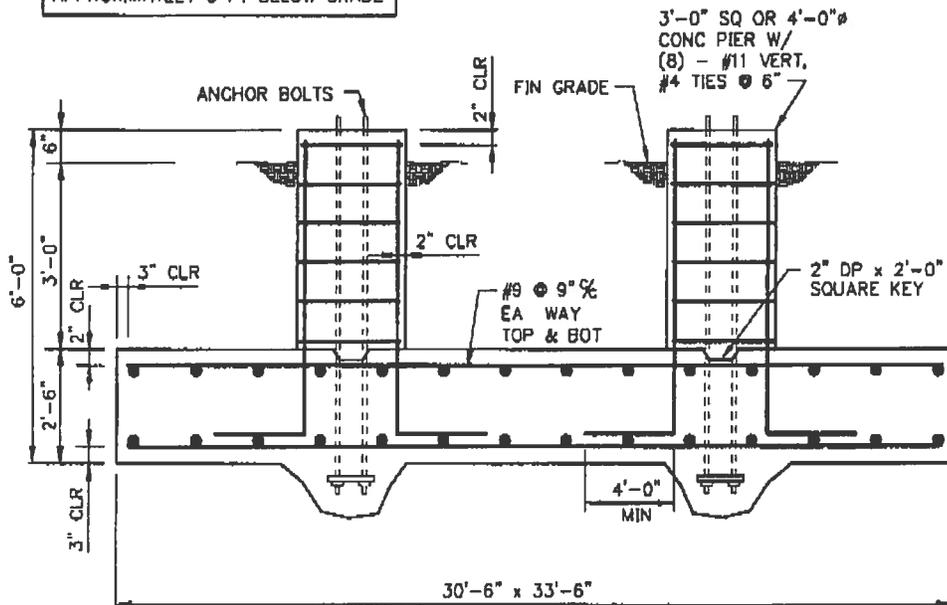
Revision No. _____ Date _____



PLAN

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF AT LEAST 4000 PSI AT 28 DAYS.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (GRADE 60) EXCEPT PIER TIES MAY BE ASTM A615 (GRADE 40).
3. SEE PREVIOUS PAGE FOR ANCHOR BOLT SIZE AND LENGTH.
4. TOTAL CONCRETE = 99 CUBIC YARDS.
5. FOUNDATION DESIGN BASED UPON GEOTECHNICAL INVESTIGATION NO. 94.494-010A BY MELICK-TULLY AND ASSOCIATES DATED JULY 13, 1994.

NOTE: WATER WAS ENCOUNTERED AT APPROXIMATELY 6 FT BELOW GRADE



SHALLOW MAT FOUNDATION

199.0942

Ken Brown
 12-15-94



P.O. BOX 8597 FORT WORTH, TX 76124-0597
 (817) 457-3060 FAX (817) 429-6010



PAUL J. FORD AND COMPANY
 STRUCTURAL ENGINEERS
 350 East Broad Street Suite 500 Columbus, Ohio 43215
 (614)-221-6679 FAX (614)-221-2540

Page 2 Of 2

By KPB Date 12-15-1994

Job No. 1994994

Revision No. _____ Date _____

Tower 150 FT (FUTURE 180 FT) SELF SUPPORT

Location UPPER TOWNSHIP, NEW JERSEY

Site "TUCKAHOE" - CAPE MAY COUNTY

Owner COMCAST

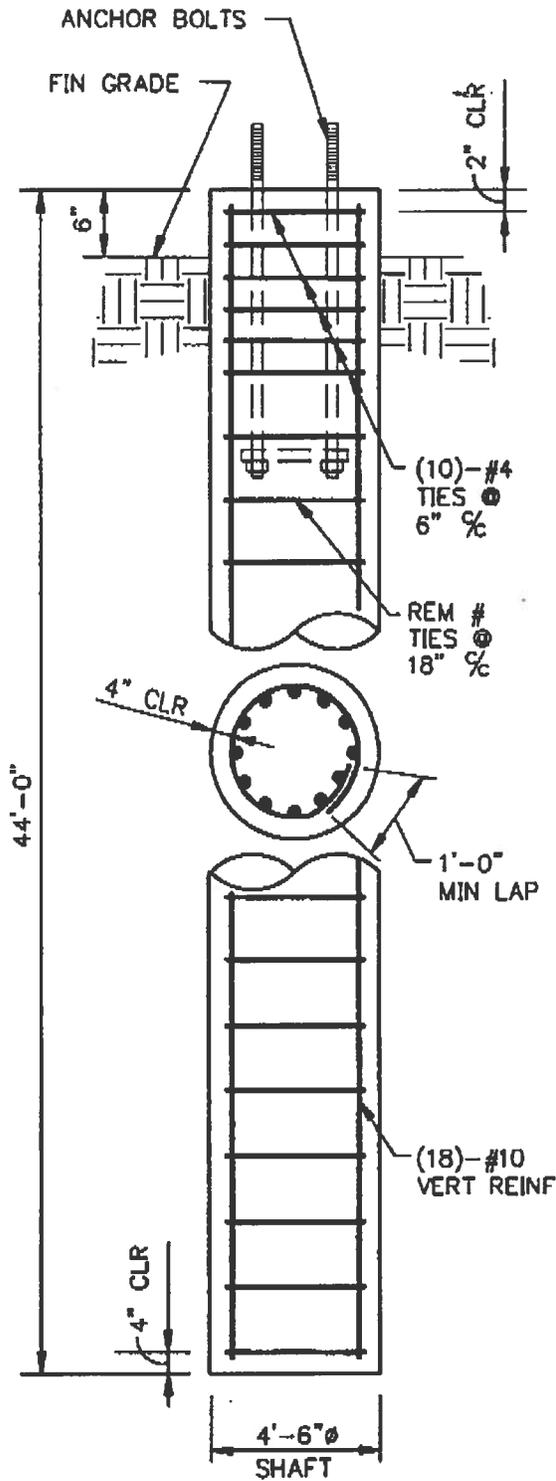
Design 85 MPH/74 MPH 1/2" RADIAL ICE

According to ANSI/EIA 222-E 1991

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
2. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615 (GRADE 60) EXCEPT THAT CAISSON TIES MAY BE ASTM A-615 (GRADE 40).
3. SEE PREVIOUS PAGE FOR ANCHOR BOLT SIZE AND LENGTH.
4. TOTAL CONCRETE = 78 CUBIC YARDS (TOTAL FOR 3 CAISSONS)
5. FOUNDATION DESIGN IS BASED UPON SOILS AND FOUNDATION INVESTIGATION #94.494-010A BY MELICK-TULLY AND ASSOC. INC. DATED JULY 13, 1994.

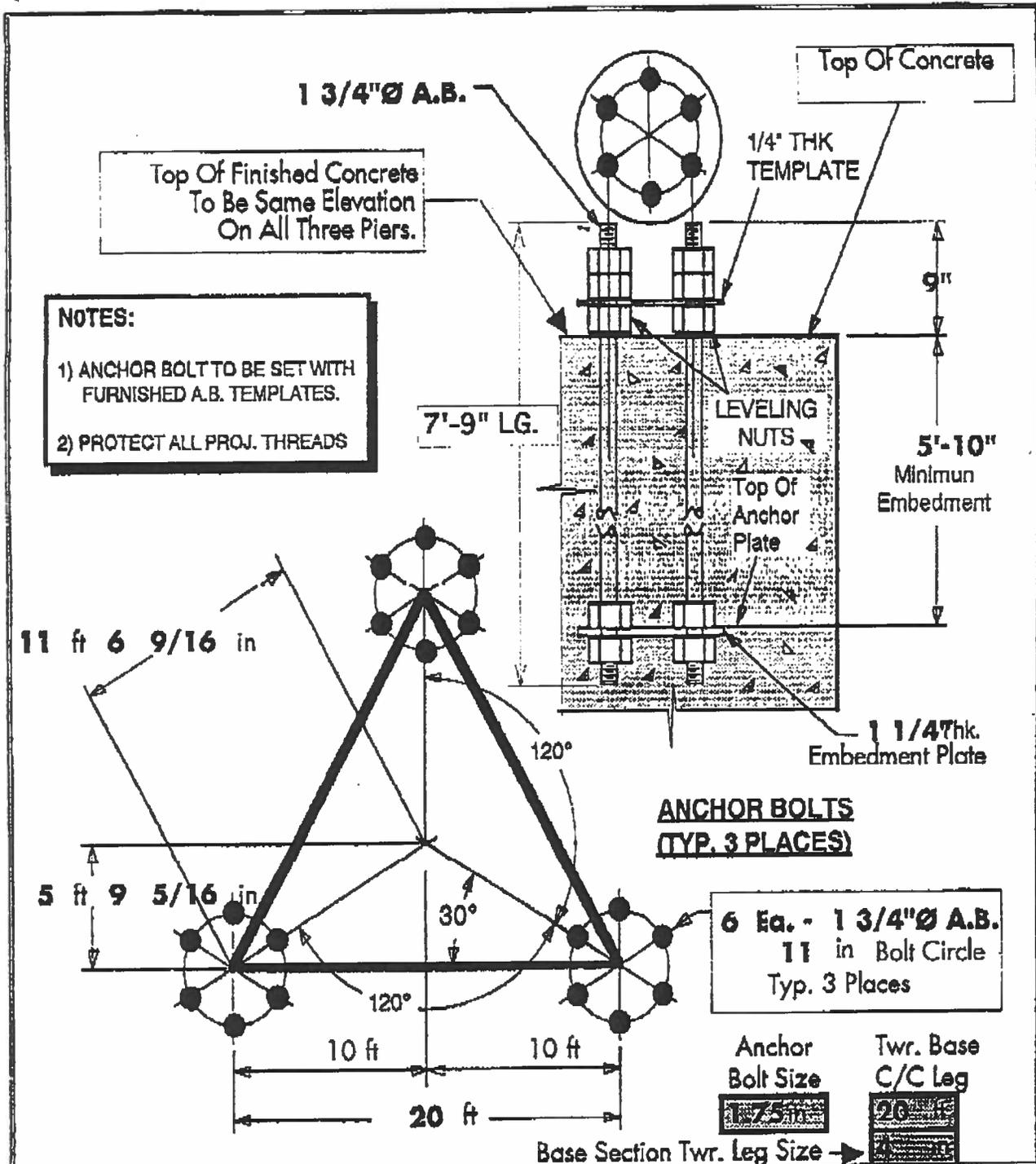
**NOTE: WATER TABLE
 6 FT BELOW GRADE**



CAISSON

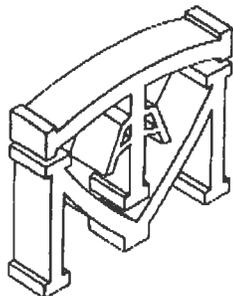
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 12-15-94

19949944



Raw
12-15-94

FWT, inc.		
SCALE: NONE		DRAWN BY: Seng
DATE: 12/14/94		CHECKED BY:
S.S.X.T. (6-BOLTS) ANCHOR BOLT SETTING PLAN		
180"X" Upper Township, NJ.		DRAWING NUMBER
TUCKAHOE-CAPE MAY COUNTY		DESIGN DWG.#1994994
		SKETCH #1963794



**MELICK-TULLY
AND ASSOCIATES, INC.**

GEOTECHNICAL ENGINEERS AND
ENVIRONMENTAL CONSULTANTS
117 CANAL RD., SOUTH BOUND BROOK, NJ 08880
(908) 356-3100 FAX: (908) 356-8054

PRINCIPALS:
THOMAS E. TULLY, P.E.
CHARLES T. MELICK, P.E.
ROBERT J. VAN ORDEN, P.E.
RAYMOND J. TULLY, P.E.
EUGENE M. GALLAGHER, JR., P.E.
ROBERT E. SCHWANKOCH, P.E.
TODD E. HOROWITZ, P.E.

ASSOCIATES:
PETER G. MICKLUS, P.E.
WILLIAM M. STRUBEL, P.E.

July 13, 1994

JGH
670 North Beers Street
Holmdel, New Jersey 07733

Attention: Mr. Thomas Wiseman

Gentlemen:

**Report
Soils and Foundation Investigation
Proposed Transmission Tower and Equipment Building
Upper Township, Cape May County, New Jersey
Comcast-Metrophone
"Tuckahoe" - JGH Job #94.494 - 010A**

Introduction

This report presents the results of a soils and foundation investigation performed for a proposed transmission tower and equipment building to be constructed in Upper Township, New Jersey. The site is located adjacent to and east of Tuckahoe-Mt. Pleasant Road (County Route 664), north of its intersection with Lincoln Avenue. The site is identified as Block 350, Lot 12 on the Upper Township tax map.

Proposed Construction

A site plan provided to us by JGH indicates that the proposed transmission tower will be a 150 feet high triangular lattice tower. Loading information provided to us by Paul J. Ford and Companies indicates that each leg of the proposed tower would be subjected to maximum compression, uplift and horizontal loads on the order of 260 kips, 230 kips and 12.5 kips, respectively.

The proposed equipment building will be a one-story rectangular structure, approximately 12 feet by 38 feet in plan dimensions, and will be located immediately west of the proposed tower location. Perimeter bearing wall foundation and ground

floor slab loads are anticipated to be relatively light. We understand that a seepage pit to collect stormwater may also be constructed at the site.

Purpose and Scope of Work

The purpose of our services was to:

- 1) explore the subsurface soil and groundwater conditions at the proposed transmission tower, equipment building and seepage pit areas;
- 2) estimate the relevant geotechnical engineering properties of the encountered materials;
- 3) evaluate the site foundation requirements considering the anticipated structural loads and encountered subsurface conditions;
- 4) provide geotechnical-related parameters for use in design of the proposed tower and equipment building foundations by others;
- 5) present recommendations relative to the support and subdrainage of the equipment building floor slab;
- 6) estimate the post-construction settlements of the recommended floor and foundation systems;
- 7) perform a soil log and percolation test in the lower portion of the proposed compound area; and
- 8) discuss appropriate earthwork operations or considerations consistent with the proposed construction and encountered subsurface conditions.

To accomplish these purposes, a subsurface exploration program consisting of two supervised test borings, one soil log and one percolation test was performed at the site. The borings were advanced using truck-mounted, rotary-wash drilling equipment, and extended to depths of 52 and 17 feet below the existing surface grades. The soil log was excavated using a conventional rubber-tire backhoe in the northwest portion of the compound area adjacent to the proposed entry gate, and extended to a depth of approximately ten feet below grade. A percolation test was performed at the soil log location at a depth of six feet. The approximate locations of the borings and soil log performed for this study are shown on the Plot Plan, Plate 1.

All field work was performed under the direct technical observation of a geotechnical engineer from Melick-Tully and Associates, Inc. Our representative located the borings and soil log in the field, maintained continuous logs of the explorations as the work proceeded, supervised the soil sampling operations so as to develop the desired subsurface information, and performed the percolation test.

Numerous soil samples suitable for identification purposes were extracted from the borings at closely-spaced intervals in accordance with the procedures of the Standard Penetration Test. Representative bulk samples were also obtained from the soil log. Detailed descriptions of the encountered subsurface conditions are shown on the Logs of Borings, Plates 2A and 2B, and the Soil Log, Plate 3. The soils encountered at the boring and soil log locations were visually classified in accordance with the Unified Soil Classification System shown on Plate 4. The results of the percolation test is presented on the soil log.

All soil samples obtained from the explorations were brought to our office where they were examined in our soil mechanics laboratory. Selected samples were subjected to mechanical grain-size analyses to assist in classification and evaluation of the materials. The results of the grain-size analyses are presented on Plates 5A and 5B, Gradation Curves.

The results of our subsurface exploration and laboratory testing programs have provided the basis for our engineering analyses and design recommendations. The following discussions of our findings and recommendations are subject to the limitations attached as an Appendix to this report.

Site Conditions

Surface Features: The proposed tower and equipment building locations are currently covered by grass and are located adjacent to and north of an existing one-story building. Topographic information provided to us indicates that the proposed

construction area slopes gently downward from south to north, from approximately Elevation +21 feet adjacent to the existing building to approximately Elevation +20 feet.

Subsurface Conditions: The subsurface conditions encountered in the borings and soil log were relatively uniform. A layer of topsoil approximately seven to eight inches in thickness was encountered at the ground surface boring B-1 and the soil log. Loose to medium dense sandy fill materials were encountered at the ground surface in B-2 and beneath the topsoil in the remaining explorations and extended to depths of 2 to 3 feet below grade. At the tower boring, loose sandy soils which may represent fill, were present to a depth of 8 feet below grade. Following completion of this boring, a test pit was excavated at the boring location to further investigate the shallow soil conditions. No evidence of fill was found below a depth of 3 feet, however, the loose consistency of the soils was confirmed by the test pit. Natural sands, typically containing variable amounts of silt, were encountered below the topsoil/fill in all of the explorations, and extended to the maximum depths explored. The natural sandy soils were medium dense in consistency, and generally became more dense with increasing depth.

Groundwater was encountered in all of the explorations at depths ranging from approximately six to six and one-half feet below the existing surface grades, corresponding to about Elevation +13.5 feet to +14 feet.

A percolation test was performed at a depth of approximately six feet below the ground surface at the Soil Log location. A percolation rate of approximately 0.4 minutes per inch was recorded. The percolation test results are presented on the Soil Log.

Conclusions and Recommendations

Proposed Transmission Tower

General: The results of our study indicate that relatively favorable subsurface conditions are present at the site, and therefore, it appears that either conventional spread foundations or drilled shaft foundations could be considered for support of the proposed transmission tower. However, the presence of relatively shallow groundwater will impact the construction of either foundation type.

Conventional Spread Foundations: The results of our borings indicate that the fill and/or loose sandy soils are present at the tower location to a depth of approximately eight feet below grade. It is our opinion that these materials are not suitable for support of the tower foundations. Conventional spread foundations should be established on the medium to dense sands encountered at depths of eight feet below grade. The foundations should be designed to impose a maximum allowable net bearing pressure of 6,000 pounds per square foot. The allowable bearing pressure may be increased by one third to resist temporary wind or earthquake loads.

Based on the magnitude of the uplift loads, we anticipate that spread foundations would have to be established at least ten feet below grade to provide adequate resistance. All excavations should be performed in accordance with the most recent OSHA excavation guidelines and other governing safety requirements. Based on the boring results, we believe that the natural sands would be considered a Type C soil by the OSHA guidelines.

Groundwater was encountered in all of the explorations performed for our study at depths ranging from approximately six to six and one-half feet below the existing surface grades, corresponding to about Elevation +13.5 feet to +14 feet. In addition, caving of the test pit walls occurred at a depth of about 8 feet. Dewatering will be required for spread foundation excavations which extend close to or below the

groundwater level to prevent disturbance to the foundation subgrade soils. Because of the porous nature of the natural sandy soils, groundwater flows will likely be rapid. We recommend the groundwater level be maintained at least two feet below the lowest excavation level until backfilling of the foundations is complete. This will minimize disturbance to the supporting capacity of the foundation subgrade soils and allow placement and compaction of backfill in a dry environment. Placement of a twelve inch (\pm) thick layer of clean crushed stone or washed gravel on the exposed subgrade soils will help minimize disturbance.

If the foundation excavations extend more than one or two feet below the groundwater level, we anticipate that continual pumping would be necessary to maintain the groundwater at the recommended levels. The contract documents should require the contractor to install all wells, wellpoints, sumps, etc., to maintain the excavations in a dry condition. The means and methods used to dewater the excavations should be left to the option of the contractor, but the dewatering components should be provided with screens or filters to prevent pumping of fines which could lead to subsidence of the existing structure.

Plans provided to us indicate the tower will be located approximately 20 feet north of an existing building. The contractor should provide excavation support, as required, to prevent undermining of the soils supporting the existing building foundations. The contractor should be required to repair any damage to the existing building caused by his excavation or dewatering operations.

Uplift forces on the spread foundations may be resisted by the weight of the foundation itself, as well as the weight of the overlying backfill. Provided the foundation backfill is installed in thin layers and compacted to at least 90 percent of the ASTM D-1557 maximum dry density, we believe that a total unit weight of 120 pounds per cubic foot may be assumed for the natural sandy soils above the groundwater level.

An effective unit weight of 60 pounds per cubic foot should be assumed for backfill below the groundwater level. The zone of soil to be used in calculating the uplift resistance may be defined by extending a line upward and outward from the edge of the foundation at a slope of 20 degrees from vertical.

The materials obtained from the foundation excavations will consist of sandy soils which will be well-suited for use as foundation backfill, provided they are spread at moisture contents which will allow compaction to the required densities. It should be anticipated that aeration and drying of materials obtained from close to or below the groundwater level will be required to attain the required degree of compaction.

A coefficient of friction of 0.45 may be assumed between mass concrete and the underlying natural sandy soils in calculating the sliding resistance. Horizontal loads on the foundations could also be resisted by the passive soil pressures acting on the sides of the foundations. If passive pressures are to be utilized in resisting horizontal forces, the backfill between the foundation and the excavation sidewalls should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. A coefficient of passive pressure of 3.0 should be used in calculating passive pressure within the upper 8 feet of soil and a coefficient of passive pressure of 3.5 may be assumed for the soils deeper than eight feet below grade.

Estimated post-construction settlements of foundations designed and installed in accordance with our recommendations are on the order of one-half inch.

Drilled Shaft Foundations: We believe that the following geotechnical parameters may be used for design of drilled shaft foundations:

Drilled Shaft Foundations

Soil Type	Depth (ft.)	Total Unit Weight (pcf)	Angle of Internal Friction (degrees)	Cohesion (psf)	Ultimate Side Resistance (tsf)	Ultimate End-Bearing (tsf)
Fill and Loose sands	0 - 8	120	30	0	0	0
Medium dense sands	8 - 20	125	34	0	0.60	6*
Dense to very dense sands	20 - 30	125	34	0	0.80	6*
	30 - 40	125	34	0	0.88	6*
	40 - 50	125	34	0	0.93	45

* A loose to medium dense sand layer was encountered at 40 feet blow grade. The end bearing for soils above this level should be limited unless analyses of a layered system indicates higher values are appropriate.

The ultimate side friction and end-bearing values are based on the methods outlined in The U.S. Department of Transportation, FHA Publication No. HI-88-042 entitled "Drilled Shafts: Construction Procedures and Design Methods", August 1988. The ultimate end bearing values for drilled shafts with base diameters greater than 50 inches should be reduced by the factor $50/D_b$, where D_b equals the actual base diameter in inches. We recommend that a minimum factor of safety of three be applied to the ultimate capacities presented. Settlement calculations should be performed based on the actual vertical loads and drilled shaft diameter, to confirm that settlements will be within acceptable limits.

Groundwater was encountered at a depth of approximately six to six and one-half feet below grade in the borings, corresponding to about Elevation +13.5 to +14 feet. Due to the presence of relatively shallow groundwater and sandy soils, it is our opinion that use of a drilling slurry and/or casing will be necessary to advance drilled shafts.

Proposed Equipment Building

Site Preparation and Earthwork: Prior to commencement of construction, the topsoil should be stripped for its full depth from within and at least five feet beyond the

proposed equipment building limits. The topsoil would not be suitable for reuse as controlled compacted fill, but could be reused as fill in nonstructural areas, if desired.

Following topsoil stripping, and prior to fill placement, the exposed subgrade materials within the proposed equipment building area should be recompacted to a dense and unyielding condition using at least ten passes of a heavy, self-propelled vibrating drum compactor (Dynapac CA-25, or equivalent). This will provide a uniform density of the upper sandy fill soils found to blanket this area. Any subgrade materials which cannot be compacted to a dense and unyielding condition should be locally excavated to the surface of stable soils and backfilled using granular controlled compacted fill. We anticipate that little or no overexcavation of the exposed subgrade materials will be required provided the earthwork is performed during periods of favorable weather conditions.

Following compaction of the exposed subgrades, fill should be placed as required to reach the design floor slab subgrade level. Plans provided to us indicate that the ground floor of the proposed equipment building will be established at Elevation +22 feet, up to approximately two and one-half feet above the existing surface grades. The materials generated from any required site excavations will consist primarily of sandy soils which will be well-suited for use as controlled compacted fill, provided they are spread at moisture contents which will allow compaction to the required densities.

Any imported fill required to complete the site grading should consist of uncontaminated, relatively well-graded sand or gravel containing less than 15 percent by weight of materials passing a U.S. Standard No. 200 sieve with a maximum particle size of six inches. Documentation of the environmental quality of the imported fill should include a written certification from the fill supplier stating that the fill is virgin material from a commercial or non-commercial source. The physical geotechnical

characteristics of all materials proposed for use as fill (on-site or imported) should be evaluated by a qualified geotechnical engineer at the time of construction.

All fill and backfill placed within the proposed building area or areas supporting surface improvements such as pavements, etc., should consist of controlled compacted fill. Mass fill should be spread in layers on the order of twelve inches in loose thickness and uniformly compacted to a dense and unyielding condition, and to at least 95 percent of the ASTM D-1557 maximum dry density. Backfill placed in confined areas (i.e., adjacent to foundations, within utility trenches, etc.) should be spread in thinner layers and uniformly compacted to similar densities using manually-operated compaction equipment.

We do not anticipate that groundwater will pose major construction-related problems within the proposed equipment building area, provided the required excavations are no deeper than approximately four to five feet.

Foundation Design Criteria: The proposed equipment building may be supported by conventional spread foundations established on the undisturbed natural sandy soils or densified fill materials. The equipment building foundations may be designed to impose a maximum allowable net bearing pressure of up to 3,000 pounds per square foot. All foundations should be established at least three feet below the adjacent exterior grades to provide protection from frost penetration.

Estimated post-construction settlements of foundations designed and installed in accordance with our recommendations are on the order of one-half of one inch, and would occur rapidly, practically upon application of load.

Floor Slab Design Criteria: Following the previously recommended subgrade preparation activities, the floor slab of the proposed equipment building may be supported at-grade by the recompacted existing fill material, or additional controlled compacted fill placed to reach the floor subgrade level. Post-construction settlements

JGH
July 13, 1994
Page 11

of the floor slab supported by materials prepared in accordance with our recommendations are anticipated to be negligible.

Soil Log/Percolation Testing: As part of our study, one soil log was performed in the northwest portion of the site as shown on the Plot Plan. The soil log encountered subsurface conditions similar to those encountered in the test borings. Groundwater was encountered in the Soil Log at a depth of six and one-half feet below the existing ground surface, corresponding to about Elevation +13.5 feet.

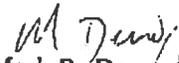
A percolation test was performed at the Soil Logs location at a depth of approximately six and one-half feet below grade, and a percolation rate of approximately 0.4 minutes per inch recorded. The soil log and percolation test results are presented on Plate 3.

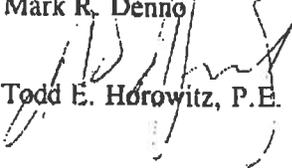
The following Plates and Appendix are attached and complete this report:

Plate 1 - Plot Plan
Plates 2A and 2B - Logs of Borings
Plate 3 - Soil Log
Plate 4 - Unified Soil Classification System
Plates 5A and 5B - Gradation Curves
Appendix - Limitations

Very truly yours,

MELICK-TULLY and ASSOCIATES, INC.


Mark R. Denno


Todd E. Horowitz, P.E.

MRD:TEH/cr
4900-027

cc: Metrophone

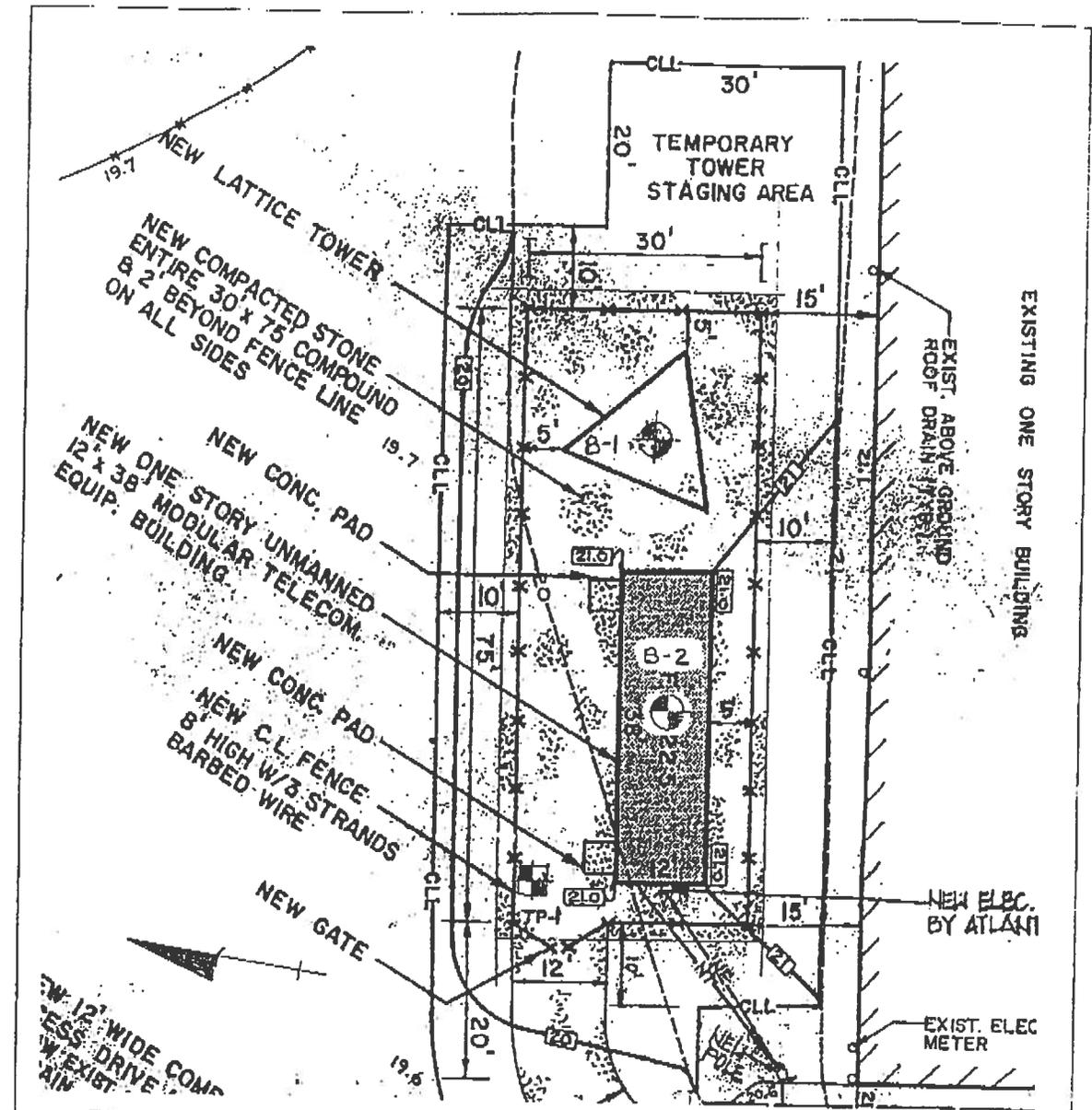
Attn: Mr. Charlie Krudner (1)
Mr. Pat Lamb (1)

JGH
Attn: Mr. Al Galdi (2)
Arcnet

Attn: Mr. Rich Daniels (1)

Papay Engineering & Construction
Attn: Mr. Pete Papay (1)

Lapatka Associates, Inc.
Attn: Mr. Skot Koenig (3)



KEY:

-  B-1 NUMBER AND APPROX. LOCATION OF TEST BORINGS PERFORMED FOR THIS STUDY.
-  TP-1 NUMBER AND APPROX. LOCATION OF SOIL LOG AND PERCOLATION TEST PERFORMED FOR THIS STUDY
- EXISTING CONTOUR

PLAT PLAN

PROPOSED TRANSMISSION TOWER
 UNINCORPORATED TOWNSHIP NEW JERSEY
 COMCAST METROPHONE

MELICK - TULLY AND ASSOCIATES
 117 CANAL ROAD
 SOUTH BOUND BROOK, NEW JERSEY
 908-356-3400

JOB NO. 4900-077		SEQ. NO. 10510	
DR. BY HRD	CHK. BY TCM	SCALE 1"=20'	DATE 7-1-94
PLATE 1			

LOG OF BORING

BORING NO. B-1
 SURFACE ELEV. +20 ft. (±)
 COMPLETION DATE 6/28/94

WATER LEVEL: 6'-0"
 DATE : 6/28/94
 JOB NUMBER : 4900-028

D E P T H F T	S A M P L E S	S P R E E S T E I N S T R U C T I O N	M C O O N S T R U C T I O N	S Y M B O L	D E S C R I P T I O N
0-	▪	42			7" Topsoil
5-	▪	12	14.4	SM	FILL - Brown fine to medium sand, little silt, little fine to coarse gravel (moist)(dense)
10-	▪	2	18.3	SP/SM	Orange-brown and dark gray fine to coarse sand, some silt, trace fine gravel (moist to wet) (loose)(Possible FILL) - grading to fine to coarse sand, little silt, some gravel @ 5'
15-	▪	25	19.5	SP/SM	Yellow-brown fine to medium sand, trace silt (wet)(medium dense)
20-	▪	29	22.9		- grading dense @ 20'
25-	▪	45			- grading very dense @ 25'
30-	▪	63			- grading to gray in color @ 30'
35-	▪	60			- grading dense @ 35'
40-	▪	38			- grading to gray fine to medium sand, some silty clay (wet)(medium dense) @ 39'
45-	▪	10		SC	- grading to gray fine to coarse sand, trace silt (wet)(very dense) @ 43'
50-	▪	93		SP/SM	- grading to little silt @ 48'
55-	▪	99		SM	
					BORING COMPLETED @ 52'-0"

LOG OF BORING

BORING NO. B-2
 SURFACE ELEV. +20 ft. (±)
 COMPLETION DATE 6/28/94

WATER LEVEL: 6'-6"
 DATE : 6/28/94
 JOB NUMBER : 4900-027

DEPTH FEET	SAMPLES	SPRINGS TESTS PARTS PER CENT AGE	CON- TENTS PER CENT	SYMBOL	DESCRIPTION
0-		35			FILL - Brown fine to coarse sand, little silt, little fine to coarse gravel (moist)(dense)
5-		23		SM	Orange-brown fine to coarse sand, little silt, - grading to yellow-brown @ 8'6"
10-		35			
15-		30			
20-		38			
25-					
30-					
35-					
40-					
45-					
50-					
					BORING COMPLETED @ 17'-0"

SOIL LOG

SOIL LOG NO. 1

JOB NUMBER: 4900-027

SURFACE ELEV. +20 ft. (±)

COMPLETION DATE: 6/28/94

DEPTH FT	SAMPLES	MOISTURE (%)	SYMBOL	DESCRIPTION
0				8" Topsoil
5			SP/SM	FILL - Dark yellowish brown (10YR 4/4) fine to coarse sand, little silt with occasional asphalt fragments (moist)(medium dense to dense)
			SM/GM	Yellowish-brown (10YR 5/8) fine to medium sand, trace silt, little fine to medium gravel (moist)(medium dense)
10			SP/SM	Strong brown (7.5 YR 4/6) fine to coarse sand, little silt, and gravel, partially cemented
15				Very pale brown (10YR 7/3) fine to medium sand, trace silt, trace fine gravel (wet)(medium dense) strong brown 7.5YR 4/6 mottles - Pit caving @ 8'
20				TEST PIT COMPLETED @ 10' PERCOLATION TEST RESULTS: 0.4 minutes/inch @ 6' GROUNDWATER SEEPAGE ENCOUNTERED @ 6.5 FT.
MELICK - TULLY and ASSOCIATES, INC.				

TEST PIT NO.

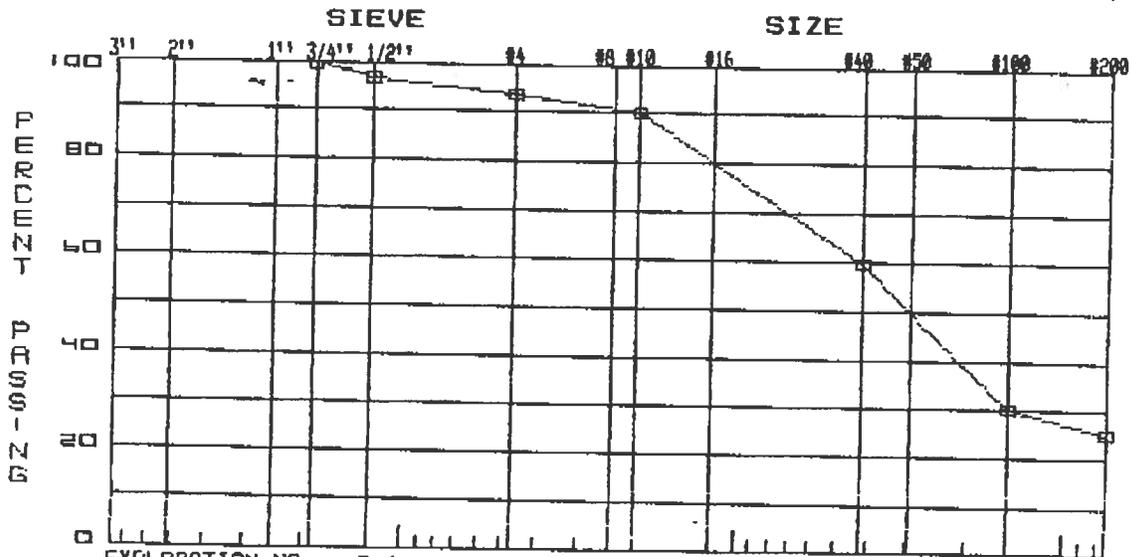
SURFACE ELEV.

COMPLETION DATE:

DEPTH FT	SAMPLES	MOISTURE (%)	SYMBOL	DESCRIPTION
0				
5				
10				
15				
MELICK - TULLY and ASSOCIATES, INC.				
- PLATE 2				

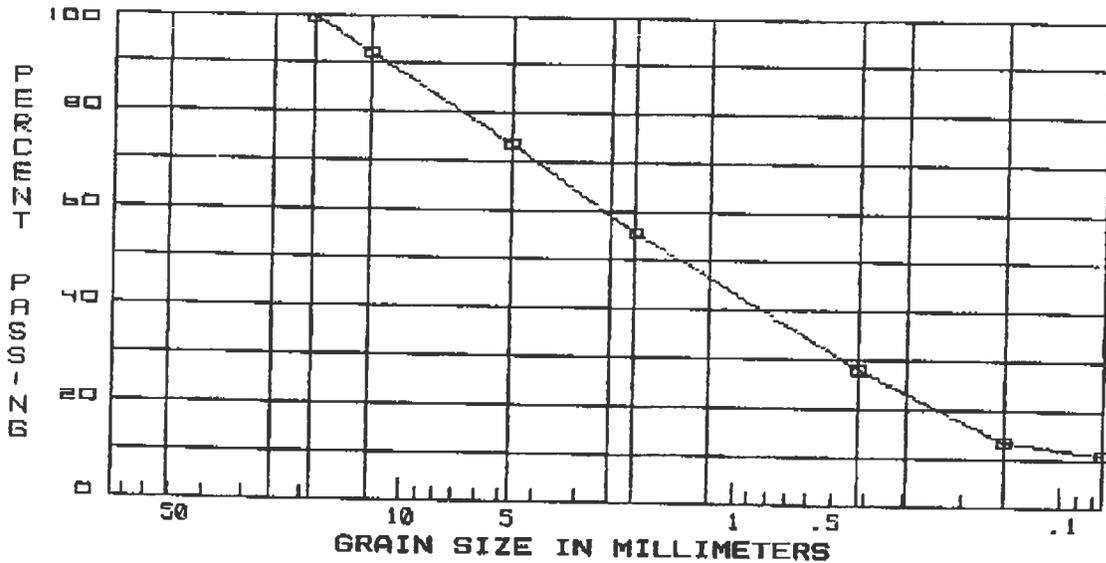
UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL				SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE			



EXPLORATION NO. : B-1
 DEPTH : 2'-4'
 SYMBOL : FILL
 DESCRIPTION : FINE TO MEDIUM SAND, SOME SILT, TRACE FINE GRAVEL

LL (%) : --
 PL (%) : --
 MC (%) : 14.4



EXPLORATION NO. : B-1
 DEPTH : 5'-7'
 SYMBOL : SP/SM
 DESCRIPTION : FINE TO COARSE SAND, SOME FINE GRAVEL, LITTLE SILT

LL (%) : --
 PL (%) : --
 MC (%) : 18.3

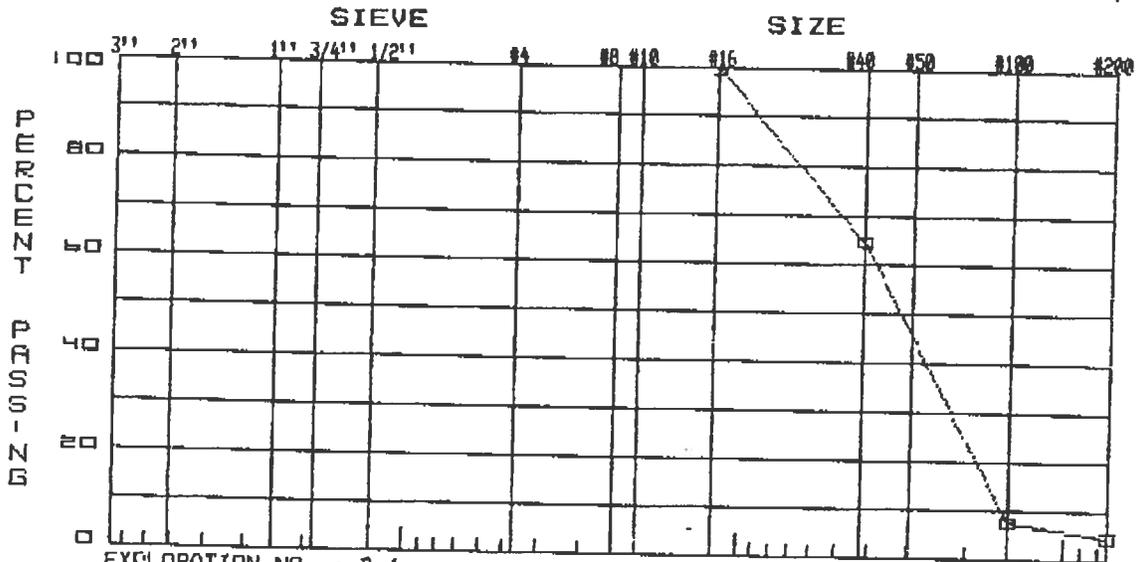
GRADATION CURVES

JOB NO. 4900-027 MELICK-TULLY AND ASSOCIATES, INC.

PLATE 5A

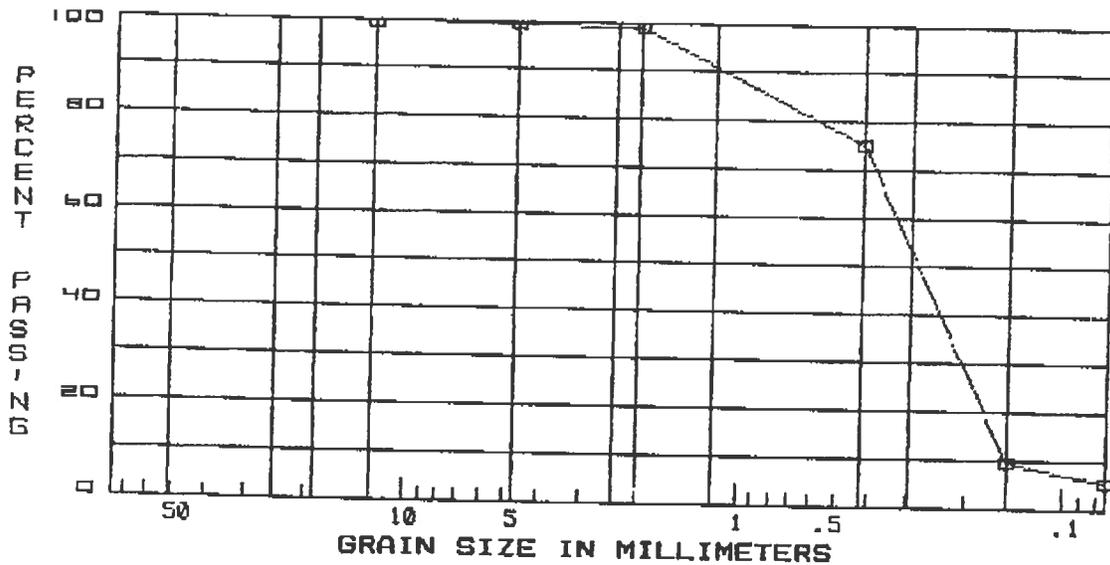
UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL				SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE			



EXPLORATION NO. : B-1
 DEPTH : 10'-12'
 SYMBOL : SP/SM
 DESCRIPTION : FINE TO MEDIUM SAND, TRACE SILT

LL (%) : --
 PL (%) : --
 MC (%) : 19.5



EXPLORATION NO. : B-1
 DEPTH : 15'-17'
 SYMBOL : SP/SM
 DESCRIPTION : FINE TO MEDIUM SAND, TRACE SILT

LL (%) : --
 PL (%) : --
 MC (%) : 22.9

GRADATION CURVES

JOB NO. 4900-027 MELICK-TULLY AND ASSOCIATES, INC.

PLATE 5B

APPENDIX I

APPENDIX
LIMITATIONS

A. SUBSURFACE INFORMATION

Locations: The locations of the explorations were determined by tape measurement from existing surface features. Elevations of the explorations were approximately determined by interpolation between contours shown on topographic plans provided to us by the JGH Architect. The locations and elevations of the explorations should be considered accurate only to the degree implied by the method used.

Interface of Strata: The stratification lines shown on the individual Logs of the subsurface explorations represent the approximate boundary between soil types, and the transition may be gradual.

Field Logs/Final Logs: A field log was prepared for each exploration by a member of our staff. The field log contains factual information and interpretation of the soil conditions between samples.

We must emphasize that our recommendations are based on the final logs and the information contained therein, and not on the field logs.

The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and tests of the field samples. The final logs are included in the engineering report.

Water Levels: Water level readings have been made in the explorations at times and under conditions stated on the individual logs. These data have been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tides, temperature, and other factors at the time measurements were made.

Pollution/Contamination: Unless specifically indicated to the contrary in this report, the scope of our services was limited only to investigation and evaluation of the geotechnical engineering aspects of the site conditions, and did not include any consideration of potential site pollution or contamination resulting from the presence of chemicals, metals, radioactive elements, etc. This report offers no facts or opinions related to potential pollution/contamination of the site.

Environmental Considerations: Unless specifically indicated to the contrary in this report, this report does not address environmental considerations which may affect the site development, e.g., wetlands determinations, flora and fauna, wildlife, etc. The conclusions and recommendations of this report are not intended to supersede any environmental conditions which should be reflected in the site planning.

B. APPLICABILITY OF REPORT

This report has been prepared in accordance with generally accepted soils and foundation engineering practices for the exclusive use of Comcast Metrophone for specific application to design of the proposed Transmission Tower and equipment building. No other warranty, expressed or implied, is made.

This report may be referred to in the project specifications for general information purposes only, but should not be used as the technical specifications for the work, as it was prepared for design purposes exclusively.

C. REINTERPRETATION OF RECOMMENDATIONS

Change in Location or Nature of Facilities: In the event that any changes in the nature, design or location of the facilities are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

Changed Conditions During Construction: The analyses and recommendations submitted in this report are based in part upon the data obtained from two widely-spaced test borings and one soil log performed for this study. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

Changes in State-of-the-Art: The conclusions and recommendations contained in this report are based upon the applicable standards of our profession at the time this report was prepared.

D. USE OF REPORT BY PROSPECTIVE BIDDERS

This soil and foundation engineering report was prepared for the project by Melick-Tully and Associates, Inc. for design purposes only, and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the express understanding that its scope is limited to design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

E. CONSTRUCTION OBSERVATION

We recommend that Melick-Tully and Associates, Inc. be retained to provide continuous on-site soils engineering services during the earthwork construction and foundation phases of the work. This is to observe compliance with the design concepts and to allow changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

PROJECT DESCRIPTION
MODIFICATION TO EXISTING TELECOM FACILITY COMPRISING OF EQUIPMENT, ANTENNAS AND ASSOCIATED CABLES

PROJECT INFORMATION

SCOPE OF WORK: MODIFICATION TO EXIST ANTENNAS ON LATTICE TOWER AND EXIST EQUIPMENT SHELTER
 SITE ADDRESS: MOUNT PLEASANT - TUCKAHOE ROAD
 TUCKAHOE, NJ 08250
 PROPERTY OWNER: TOWNSHIP OF UPPER
 P.O. BOX 703
 TUCKAHOE, NJ 08250
 APPLICANT: NEW CIRCULAR WIRELESS PCS, LLC ('AT&T')
 200 NORTH WARNER ROAD
 KING OF PRUSSIA, PA 19406
 LATITUDE: 39° 17' 10.61" N
 LONGITUDE: 74° 45' 14.62" W
 LAT/LONG TYPE: (NAD 83)
 ELEVATION: 21' AMSL
 JURISDICTION: TOWNSHIP OF UPPER
 COUNTY: ATLANTIC
 TAX I.D.: BLOCK: 350, LOT: 12
 POWER COMPANY: PECO
 (800) 456-7734
 HANDICAP REQUIREMENT: FACILITY IS UNHANCED AND NOT FOR HUMAN HABITATION
 HANDICAP ACCESS NOT REQUIRED.

A/E DOCUMENT REVIEW STATUS
 25736-425-C0-0000-00280-001
 Status Code:
 1 Accepted - with minor or no comments, construction may proceed
 2 Not Accepted - Please resolve comments and resubmit
 Acceptance does not constitute approval of design details, calculations, analysis, test methods or materials developed or selected by the subcontractor and does not relieve subcontractor from full compliance with contractual obligations.
 Reviewed: ENG CONST SA TELCO
 JDS
 BY: Ray Weitzel DATE: 3/18/13



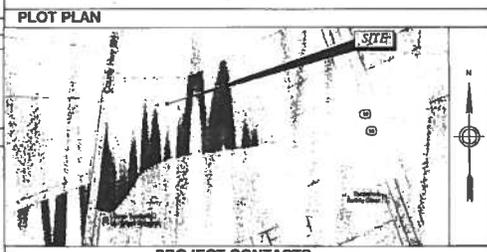
at&t
CONSTRUCTION DRAWINGS
 SITE NUMBER: NJL03105
 FA NUMBER: 10009992
 SITE NAME: TUCKAHOE

DIRECTIONS
 FROM WILMINGTON TAKE RIGHT OVER DELAWARE MEMORIAL BRIDGE TO RTE 40E TO RTE 50S FOLLOW RTE 50S TO TOWN OF TUCKAHOE AT MASONIC LODGE BEAR RIGHT AT FORK OFF RTE 50 SITE IS ON THE LEFT APPROX 14 MILES AT MUNICIPAL BUILDING AFTER TOWN

APPLICABLE BUILDING CODES AND STANDARDS
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (LAU) FOR THE LOCATION. THE EDITION OF THE A&U ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 NJ ADOPTED CODES AND STANDARDS:
 INTERNATIONAL BUILDING CODE - IBC ED. 2009
 NATIONAL ELECTRICAL CODE, 2011
 INTERNATIONAL FIRE CODE, NEW JERSEY EDITION 2008
 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
 ANS/ISA 231-4, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES
 ISA 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 C2 NATIONAL ELECTRIC SAFETY CODE, LATEST VERSION
 TELECOMMUNICATIONS INSTALLATION REQUIREMENTS
 ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM ENVIRONMENTAL PROTECTION
 FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIALS, 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.

REFERENCE DETAILS (LATEST REVISION)

DETAIL NO.	NAME
1104	ALCATEL-LUCENT 9442 REMOTE RADIO HEAD (RRH)
1405	LTE FIBER TRUNK CONNECTION CODE
14011A	CONNECTION DIAGRAM DC SURGE PROTECTION BOX DC2-48-80-83 W/FIBER IN CONDUIT
1417	CONNECTION DIAGRAM FIBER OPTIC & POWER DISTRIBUTION BOX FC12-PC6-10E
1422	LTE FRAME GROUNDING-ALL
1530	ANTENNA MOUNTING DETAIL



DRAWING INDEX

	REV.
T01	TITLE SHEET
A01	SITE PLAN & GENERAL NOTES
A02	ELEVATION, ANTENNA PLAN & DETAILS
A03	EQUIPMENT SHELTER PLAN & HATCH DETAILS
A04	DC9 DOME DETAILS
A05	RRH DETAILS
A06	GPS DETAILS
A07	CSRF COLOR CODE
A08	CSRF JUMPER CONFIGURATION
A09	CONNECTION DIAGRAMS
A10	CONNECTION DIAGRAMS
A11	NOTES
E01	GROUNDING DETAILS & NOTES
E02	GROUNDING DETAILS & NOTES
E03	SYSTEM DIAGRAM
E04	WIRING DIAGRAM
E05	NOTES, ABBREVIATIONS & SYMBOLS

PROJECT CONTACTS

NAME	COMPANY	NUMBER
LTE CON MGR	ROBERT RUIZ	AT&T 610 995 5088
A/E	MIKE PATEL	TECTONIC 645 567 6656
CON	DAVE SHEVINSKI	BECHTEL 484 580 8477
ENGR	SCOTT HEALEY	BECHTEL 484 238 9377
CELL TECH	EDWARD TOCARCHECK	AT&T 215 272 1237

DO NOT SCALE DRAWINGS
 THESE DRAWINGS ARE FORMATTED FOR 22"x34"
 OTHER SIZED VERSIONS ARE NOT PRINTED TO THE SCALE SHOWN.



ANTONIO A. GUALTIERI P.E.
 TECTONIC
 3/1/13
 NJ LICENSE NO. 845204452600

TECTONIC
 Planning
 Design
 Construction Management
 180000 Engineering & Surveying Consultants P.C. Phone: (603) 897-8888
 1579 Route 200 Fax: (603) 897-8700
 Portsmouth, NH 02870 www.itectonic.com

TUCKAHOE
 FA NO. 10009992
 SITE NO. NJL03105
 MOUNT PLEASANT - TUCKAHOE ROAD
 TUCKAHOE, NJ 08250, NJ 08252

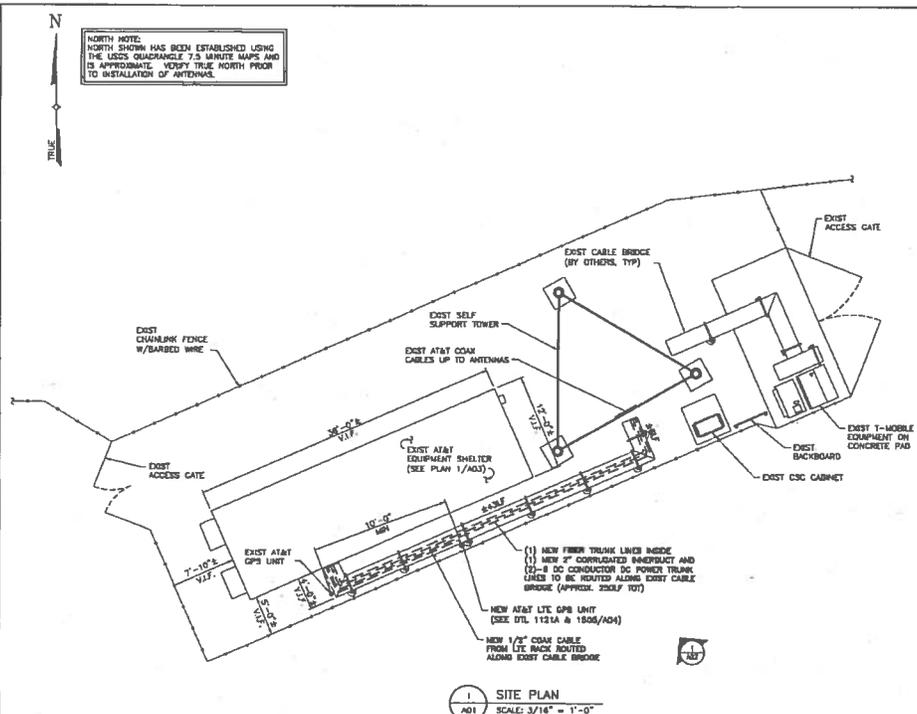


SCALE AS NOTED	DESIGNED BY	MP	DRAWN BY
1	AP/TC	GENERAL REVIEW	NO
2	AP/TC	ISSUED FOR CONSTRUCTION	NO
NO	DATE	REVISIONS	BY DATE

ORIGINAL SIZE IN INCHES
TECTONIC
 TITLE SHEET
 SHEET NO. T01
 PROJECT NO. 25736-425

NORTH NOTE:
NORTH SHOWN HAS BEEN ESTABLISHED USING THE LOCAL QUADRANGLE 7.3 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

- NOTES:**
1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR - RECFIT
SUBCONTRACTOR - GENERAL CONTRACTOR (CONTRACTOR)
OWNER - AT&T MOBILITY
OEM - ORIGINAL EQUIPMENT MANUFACTURER
 2. 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.
 3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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. 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 DRAWING.
 5. DELETED.
 6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
 7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
 8. THE SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, EXISTING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELLER PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHES SHALL BE APPROVED BY CONTRACTOR.
 9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PARTY SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
 10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER DEBRIS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
 11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
 12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
 13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH 18. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.
 14. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25736-000-3P1-002-00001, "GENERAL CONSTRUCTION SERVICES".
 15. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONGRUOUS 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.
 16. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER HOURS.
 17. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO RADIATION. PERSONNEL BY EXPOSURE MONITORS ARE REQUIRED TO BE ALERT TO ALERT OF ANY UNEXPECTED EXPOSURE LEVELS.
 18. THE SUBCONTRACTOR SHALL NOT USE OR INSTALL ANY MATERIAL CONTAINING ASBESTOS OR LEAD PAINT CONTENT. THE USE OF SUCH MATERIAL IS STRICTLY PROHIBITED.



1 SITE PLAN
A01 SCALE: 3/16" = 1'-0"

DO NOT SCALE DRAWINGS
THESE DRAWINGS ARE FORMATTED FOR 22"x34"
OTHER SIZED VERSIONS ARE NOT PRINTED TO
THE SCALE SHOWN

TECTONIC
Professional Engineering & Surveying Consultants P.C.
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Newburgh, NY 12550
Phone: (845) 842-6666
Fax: (845) 842-6793
www.tectonicengineering.com

NY CERTIFICATE OF AUTHORIZATION: 0100965011

TUCKAHOE
FA NO. 10009992
SITE NO. NUL03108
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08220, NJ 08262



NO.	DATE	REVISION	BY	CHK'D BY
1	5/7/03	ISSUED FOR CONSTRUCTION	JR	
2	5/7/03	ISSUED FOR CONSTRUCTION	JR	

SCALE AS NOTED

ANTONIO A. GUALTIERI, P.E.
Professional Engineer
State of New York
No. 10009992
Exp. 12/31/03

3/1/03

DETAIL 1006
A01

0 1 2 3 4
ORIGINAL SIZE IN INCHES

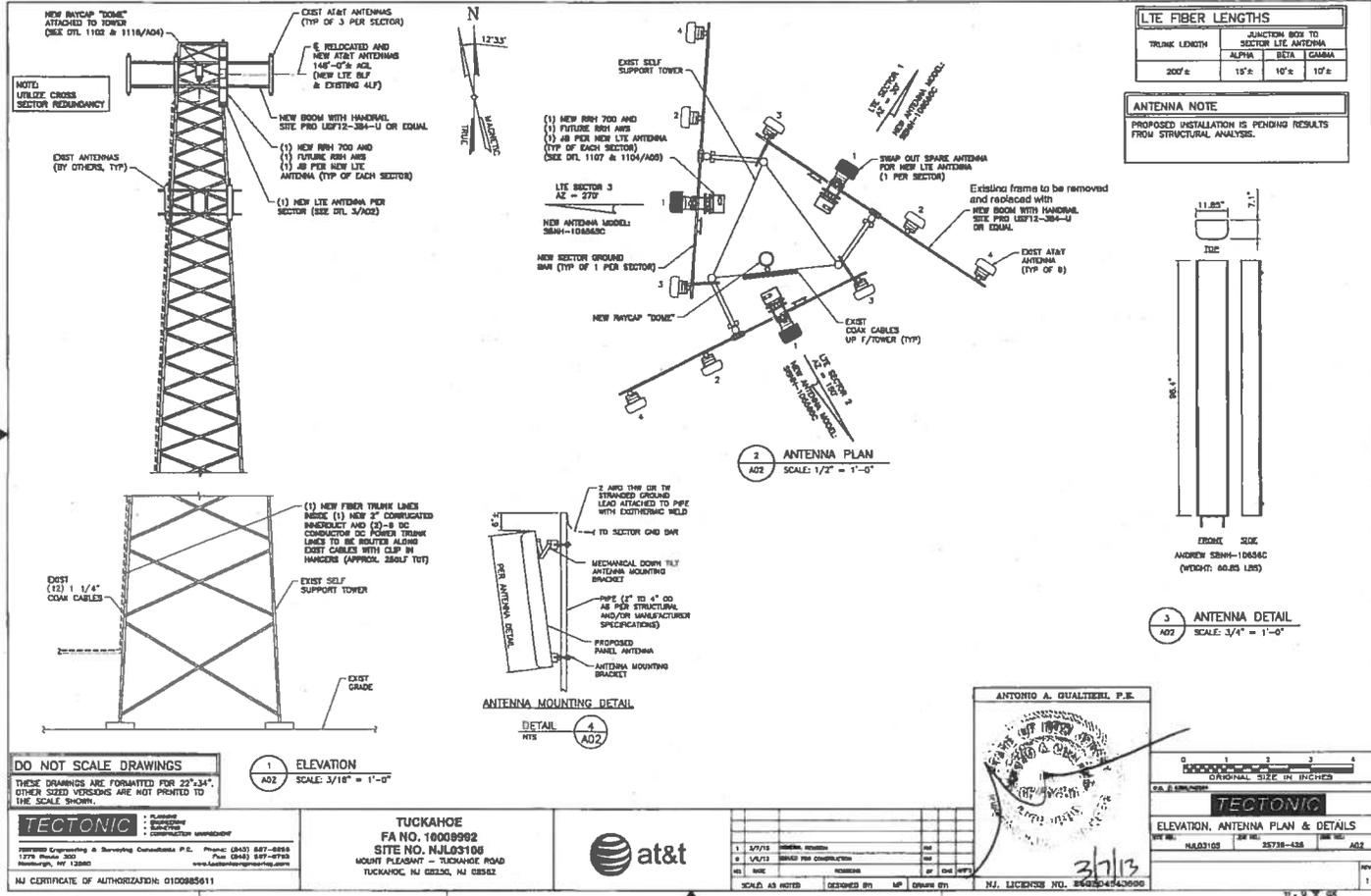
S.A. & EMPLOYER:
TECTONIC

SITE PLAN AND GENERAL NOTES

DATE: AUGUST 11, 2003
JOB NO.: 28736-000
REV. NO.: A01

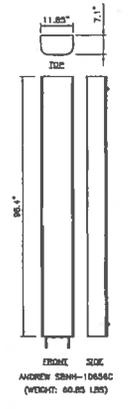
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NY LICENSE NO. 8460048436600

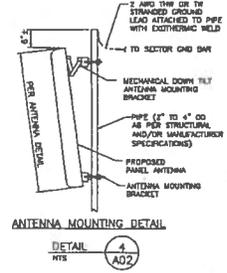


LTE FIBER LENGTHS			
TRUNK LENGTH	JUNCTION BOX TO SECTOR LITE ANTENNA		
	ALPHA	BETA	GAMMA
200' ±	15' ±	10' ±	10' ±

ANTENNA NOTE
 PROPOSED INSTALLATION IS PENDING RESULTS FROM STRUCTURAL ANALYSIS.



3 ANTENNA DETAIL
 A02 SCALE: 3/4\"/>



4 ANTENNA MOUNTING DETAIL
 A02

DO NOT SCALE DRAWINGS
 THESE DRAWINGS ARE FORWARDED FOR 22\"/>

1 ELEVATION
 A02 SCALE: 3/16\"/>

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 Newburgh, NY 12550
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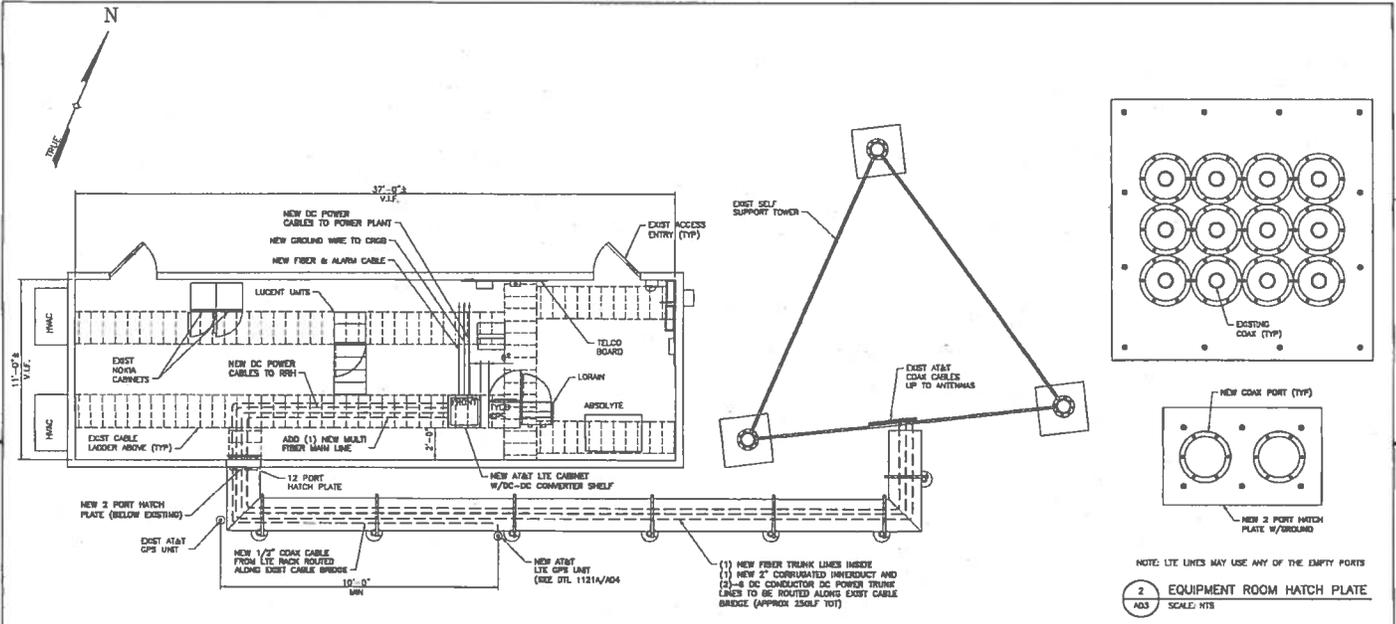
TUCKAHOE
 FA NO. 10009982
 SITE NO. NJL03106
 SOUTH PLEASANT - TUCKAHOE ROAD
 TUCKAHOE, NJ 08038, NJ 08032



NO.	DATE	REVISION	BY	CHKD BY
1	5/7/13	ISSUE FOR REVIEW	AS	
2	5/13/13	ISSUE FOR CONSTRUCTION	AS	
NO.	DATE	REVISION	BY	CHKD BY



0 1 2 3 4			
ORIGINAL SIZE IN INCHES			
TECTONIC			
ELEVATION, ANTENNA PLAN & DETAILS			
WT NO.	DATE	REV NO.	A02
NA03102	25730-128		
REV			1



1 EQUIPMENT ROOM PLAN
SCALE: 3/8" = 1'-0"

2 EQUIPMENT ROOM HATCH PLATE
SCALE: NTS

DO NOT SCALE DRAWINGS
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THE SCALE SHOWN.

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PLANNING
DESIGNING
CONSTRUCTION ADMINISTRATION
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1276 Route 308
Rocky Hill, NY 12288
Phone: (845) 867-6888
Fax: (845) 397-9768
www.rockyhillTECTONIC.com

TUCKAHOE
FA NO. 10009992
SITE NO. NJL03105
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08250, NJ DESK2



1	1/2/11	DESIGN REVIEW	ME	
2	1/1/13	ISSUE FOR CONSTRUCTION	ME	
3		REVISION	BY	CHK
4		SCALE AS NOTED	DESIGNED BY:	MP
5			CONTR. BY:	



ORIGINAL SIZE IN INCHES			
TECTONIC			
EQUIP. SHELTER PLAN & HATCH DETAILS			
DATE:	NO.:	REV. NO.:	REV. BY:
11/03/05	35738-425	001	ADD
NJ LICENSE NO. 24620-45-43800			1

6

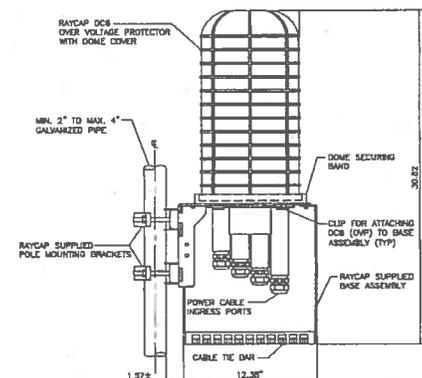
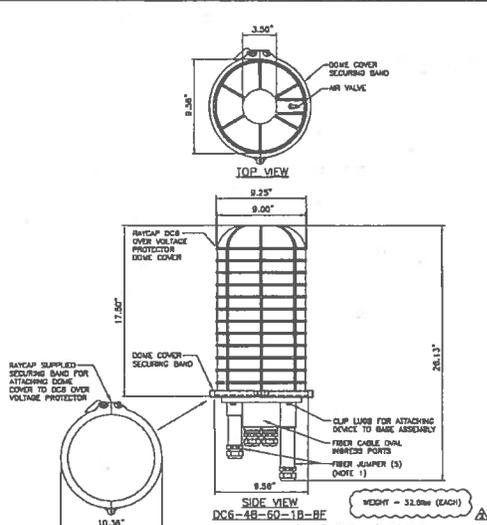
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4

3

2

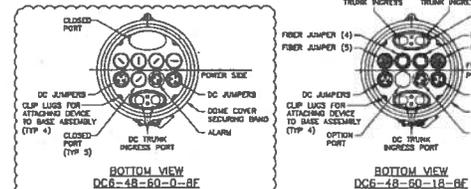
UT 11 11 05



NOTES:
 1. RAYCAP MA AT&T SUPPLIES THE DCS OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

RAYCAP DC6-48-60-18-BE
 DC POWER OVER VOLTAGE PROTECTOR (OVP)
 POLE MOUNT BASE ASSEMBLY

DETAIL 1118
 AD4
 NTS



RAYCAP DC6-48-60-18-BE AND
 RAYCAP DC6-48-60-0-BE
 DC POWER OVER VOLTAGE PROTECTOR (OVP)

DETAIL 1102
 AD4
 NTS

NOTES:
 1. REMOVE CABLE SEALING GLAND AND INSTALL 1/2" X 1/2" METRIC-10-1" NPT ADAPTER (COOPER CRUSON-POWER P/N CAP 740 954 OR EQUIVALENT MET) WHEN CONNECTING CONDUIT TO OVP.

ANTONIO A. QUALTIERI, P.E.
 TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C.
 1179 Route 390
 Newburgh, NY 12550

ORIGINAL SIZE IN INCHES			
TECTONIC			
RRH MOUNT AND DC6 DOME DETAILS			
DWG NO.	REV NO.	REV DATE	REV BY
NA03105	001	2013-03-05	AD4
SCALE: AS NOTED			DESIGNED BY: HP
DRAWN BY: JF			DATE: 3/1/13
NJ LICENSE NO. 24C004643600			REV 1

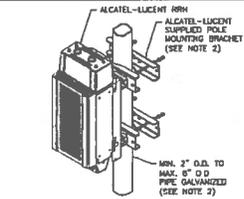
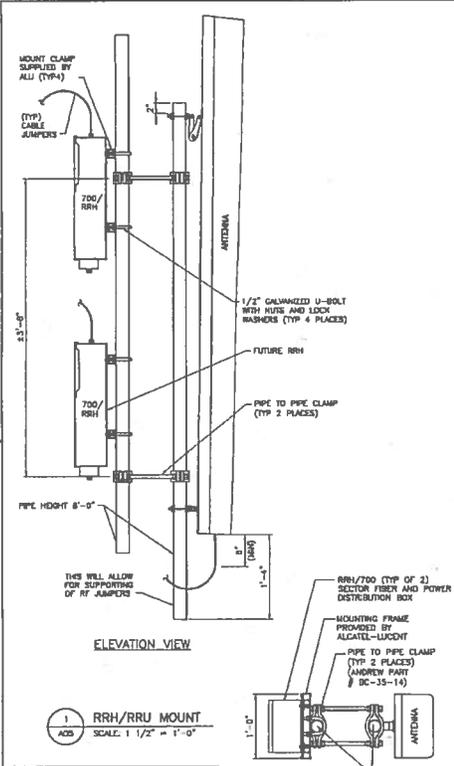
DO NOT SCALE DRAWINGS
 THESE DRAWINGS ARE FORMATTED FOR 22"x34". OTHER SIZED VERSIONS ARE NOT PRINTED TO THE SCALE SHOWN.

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 1179 Route 390
 Newburgh, NY 12550
 Phone: (845) 567-8888
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 www.tectoniceng.com

TUCKAHOE
 FA NO. 10009992
 SITE NO. N.J.B3105
 MOUNT PLEASANT - TUCKAHOE ROAD
 TUCKAHOE, NJ 08330, NJ C5882



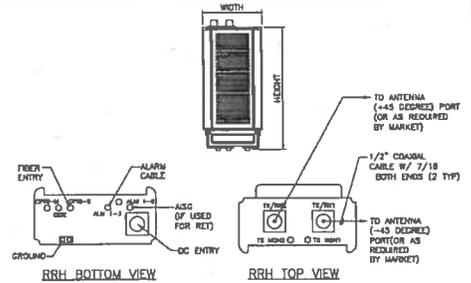
DATE	SCALE	AS NOTED
DESIGNED BY	HP	
DRAWN BY	JF	



- NOTES:**
- ALCATEL-LUCENT (ALL) VIA A&T SUPPLIES RRH, RRH POLE-MOUNTING BRACKET. SUBCONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ALL RRH POLE-MOUNTING BRACKET. ALL INSTALLS RRH AND MAKES CABLE TERMINATIONS.
 - FOR POLE DIAMETERS FROM 6" TO 15", ALCATEL-LUCENT CAN SUPPLY A PAIR OF POLE MOUNTING METAL BANDS WITH BOLTING WELDMENT.
 - NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED.

ALCATEL-LUCENT 9442
REMOTE RADIO HEAD (RRH) POLE MOUNT

DETAIL 1107 A
A05



SIZE AND WEIGHT TABLE

RRH	WIDTH	DEPTH	HEIGHT W/O CABLE MANAGEMENT COVER	WEIGHT W/O BRACKET
RRH 700 MHz ZK40 (RDW)	12.2"	10.6"	21"	51 LBS.
RRH 400 MHz ZK40 (RDW)	12"	8"	25"	43 LBS. (W/O SOLAR SHIELD)

NOTE: DIMENSIONS INCLUDE MOUNTING BRACKET, SOLAR SHIELD AND CONNECTORS.

MINIMUM CLEARANCE TABLE

RRH CABINET	CLEARANCES (INCHES)	COMMENTS
FRONT	36"	INSTALLATION ACCESS
REAR	2"	ZERO REAR CLEARANCE IS ALLOWED USING SUPPLIED MOUNTING BRACKETS
RIGHT	4"	AIR FLOW
LEFT	4"	AIR FLOW
TOP	12"	AIR FLOW
BOTTOM	12"	CONDUIT ROUTING

ALCATEL-LUCENT 9442
REMOTE RADIO HEAD (RRH)

DETAIL 1104
A05

1 RRH/RRU MOUNT
SCALE: 1 1/2" = 1'-0"

DO NOT SCALE DRAWINGS
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Horseshoe, NJ 07636
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Fax: (848) 367-6783
www.tectonicengineering.com

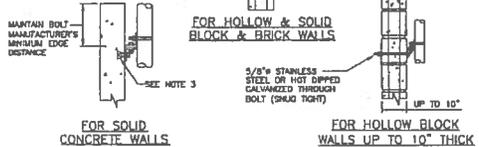
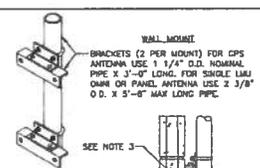
TUCKAHOE
FA NO. 10009982
SITE NO. NJL03105
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08256, NJ 08582

at&t

NO.	DATE	REVISION	BY	CHK	APP
1	3/7/13	ISSUE FOR PERMIT	ME		
2	3/7/13	ISSUE FOR CONSTRUCTION	ME		

ANTONIO A. GUALTIERI, P.E.
Professional Engineer Seal
NJ License No. 34713

TECTONIC
RRH DETAILS
DWG NO. NJL03105 250 NO. 25738-426 REV NO. A05
SCALE: 1 1/2" = 1'-0"

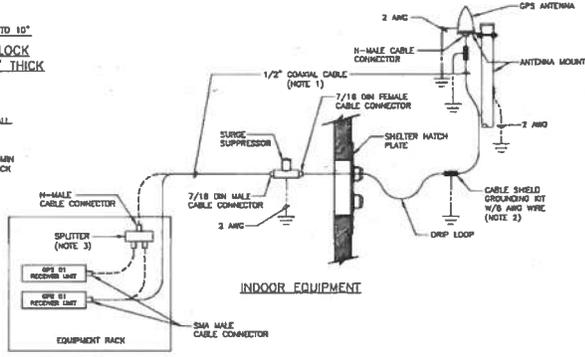


- NOTES:
- THIS DETAIL CAN ALSO BE USED TO MOUNT THE GPS OR LWA ANTENNAS INDIVIDUALLY TO A WALL.
 - THE WEIGHT OF THE ANTENNA MOUNT IS 70 LBS (INCLUDES 9'-8" LENGTH OF PIPE)
 - (1) 1/2" HLT HT HY 20 HAS 316 STAINLESS STEEL OR EQUIV. STAINLESS STEEL 1/3 3/8" MIN DIAMETER. INSTALL (1) ANCHOR PER BRICK/BLOCK. MINIMUM EDGE DISTANCE OF 2 BRICK/BLOCK OR 18" (WHICHEVER IS LESS) FROM EDGE OF STRUCTURE.

ANCHOR TABLE	
SOLID CONCRETE WALLS (UNCRACKED)	① HLT HT TZ (EXPANSION) ② HLT HT 150 MAX (INJECTION)
HOLLOW CONCRETE BLOCK	HLT HT 70 (INJECTION W/SCREEN TUBS)
SOLID BLOCK	① HLT HT TZ (EXPANSION) ② HLT HT 150 MAX (INJECTION)
HOLLOW AND SOLID BLOCK	HLT HT 70 (INJECTION W/SCREEN TUBS)

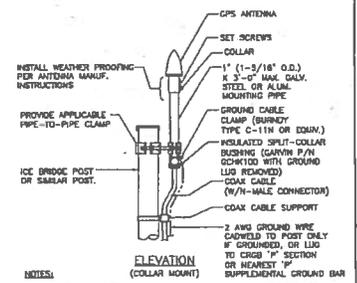
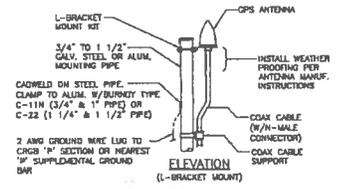
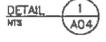
NOTE: GPS MOUNT TO WALL/SHELTER USE PART #3 GPS & STK1 OR EQUAL CONTINUATOR TO SUPPLY WALL ANCHORS

GPS OR LWA ANTENNA WALL MOUNT



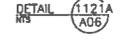
- NOTES:
- MAXIMUM COMBINED LENGTH OF LDF4 COAXIAL CABLE IS 328 FEET WHEN USING A 3368 GPS ANTENNA.
 - INSTALL CABLE SHIELD GROUNDING KIT APPROXIMATELY 3 FEET FROM THE SURGE SUPPRESSOR AND FROM THE GPS ANTENNA. WHEN THE CABLE EXCEEDS 60 FEET, INSTALL A GROUNDING KIT AT APPROXIMATELY 100 FOOT INTERVALS.
 - PROVIDE SIGNAL SPLITTER WHEN TWO GPS OR RSSI ARE USED.

LTE GPS ANTENNA CONNECTIONS



- NOTES:
- LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY OBSTACLES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
 - 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.
 - CADWELDING SHALL NOT BE PERFORMED ON ROOFTOPS.
 - LTE-GPS ANTENNA SHALL BE LOCATED 10' FROM ALL ANTENNAS.

LTE-GPS ANTENNAPIPE & L-BRACKET MOUNT



DO NOT SCALE DRAWINGS
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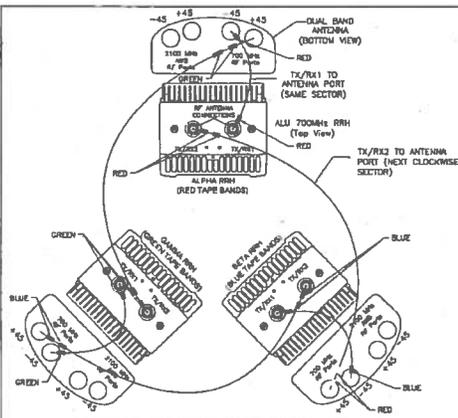
TUCKAHOE
FA NO. 10009952
SITE NO. NJL03105
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08250, NJ 08562

at&t

NO.	DATE	REVISION	BY	CHK.	APPV.
1	1/27/12	GENERAL REVISION	MS		
2	1/27/12	ISSUED FOR CONSTRUCTION	MS		

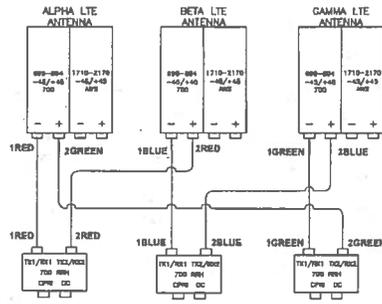
ANTONIO A. GUALTERI, P.E.
Professional Engineer
NJ License No. 240004842600

TECTONIC
GPS DETAILS
DATE: MAR2012
JOB NO: 25738-126
SHEET NO: A06



REFERENCES: AT&T MOBILITY PROJECT STANDARD NOTES, SYMBOLS AND DETAILS: 25736-000-A3J-0000-00001, DETAILS 1506 AND 1506A.

1 CSRF COLOR CODING
SCALE: NTS



700 MHz DIAGRAM

2 CSRF PLUMBING DIAGRAM
SCALE: NTS

SECTOR A

RRU/RRU PORT	TAPE BAND COLOR: RED & WHITE
700MHz TX1/RX1	(1) RED
700MHz TX2/RX2	(2) RED
2100 MHz TX1/RX1	(3) RED
2100 MHz TX2/RX2	(4) RED
850 MHz TX1/RX1	(1) RED, (1) WHITE
850 MHz TX2/RX2	(2) RED, (2) WHITE
1800 MHz TX1/RX1	(1) RED, (1) WHITE, (1) RED
1800 MHz TX2/RX2	(1) RED, (1) WHITE, (1) RED, (1) WHITE

SECTOR D

RRU/RRU PORT	TAPE BAND COLOR: YELLOW & WHITE
700MHz TX1/RX1	(1) YELLOW
700MHz TX2/RX2	(2) YELLOW
2100 MHz TX1/RX1	(3) YELLOW
2100 MHz TX2/RX2	(4) YELLOW
850 MHz TX1/RX1	(1) YELLOW, (1) WHITE
850 MHz TX2/RX2	(2) YELLOW, (2) WHITE
1800 MHz TX1/RX1	(1) YELLOW, (1) WHITE, (1) YELLOW
1800 MHz TX2/RX2	(1) YELLOW, (1) WHITE, (1) YELLOW, (1) WHITE

SECTOR B

RRU/RRU PORT	TAPE BAND COLOR: BLUE & YELLOW
700MHz TX1/RX1	(1) BLUE
700MHz TX2/RX2	(2) BLUE
2100 MHz TX1/RX1	(3) BLUE
2100 MHz TX2/RX2	(4) BLUE
850 MHz TX1/RX1	(1) BLUE, (1) YELLOW
850 MHz TX2/RX2	(2) BLUE, (2) YELLOW
1800 MHz TX1/RX1	(1) BLUE, (1) YELLOW, (1) BLUE
1800 MHz TX2/RX2	(1) BLUE, (1) YELLOW, (1) BLUE, (1) YELLOW

SECTOR E

RRU/RRU PORT	TAPE BAND COLOR: WHITE & BROWN
700MHz TX1/RX1	(1) WHITE
700MHz TX2/RX2	(2) WHITE
2100 MHz TX1/RX1	(3) WHITE
2100 MHz TX2/RX2	(4) WHITE
850 MHz TX1/RX1	(1) WHITE, (1) BROWN
850 MHz TX2/RX2	(2) WHITE, (2) BROWN
1800 MHz TX1/RX1	(1) WHITE, (1) BROWN, (1) WHITE
1800 MHz TX2/RX2	(1) WHITE, (1) BROWN, (1) WHITE, (1) BROWN

SECTOR C

RRU/RRU PORT	TAPE BAND COLOR: GREEN & BROWN
700MHz TX1/RX1	(1) GREEN
700MHz TX2/RX2	(2) GREEN
2100 MHz TX1/RX1	(3) GREEN
2100 MHz TX2/RX2	(4) GREEN
850 MHz TX1/RX1	(1) GREEN, (1) BROWN
850 MHz TX2/RX2	(2) GREEN, (2) BROWN
1800 MHz TX1/RX1	(1) GREEN, (1) BROWN, (1) GREEN
1800 MHz TX2/RX2	(1) GREEN, (1) BROWN, (1) GREEN, (1) BROWN

SECTOR F

RRU/RRU PORT	TAPE BAND COLOR: ORANGE & BLUE
700MHz TX1/RX1	(1) ORANGE
700MHz TX2/RX2	(2) ORANGE
2100 MHz TX1/RX1	(3) ORANGE
2100 MHz TX2/RX2	(4) ORANGE
850 MHz TX1/RX1	(1) ORANGE, (1) BLUE
850 MHz TX2/RX2	(2) ORANGE, (2) BLUE
1800 MHz TX1/RX1	(1) ORANGE, (1) BLUE, (1) ORANGE
1800 MHz TX2/RX2	(1) ORANGE, (1) BLUE, (1) ORANGE, (1) BLUE

CSRF JUMPER COAX COLOR CODE

DETAIL 1506A
SCALE: NTS



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1579 Route 1, 2007 Flemington, NJ 08822 Fax: (248) 387-6763
www.tectonicengineering.com

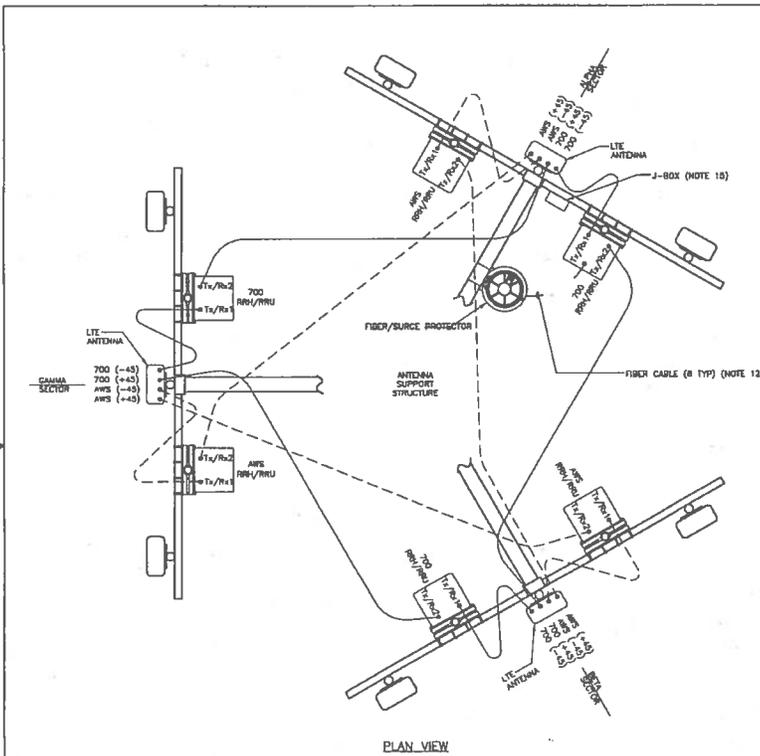
NEW JERSEY CERTIFICATE OF AUTHORIZATION: 0100865011

TUCKAHOE
FA NO. 10009992
SITE NO. NJL03106
MOBILITY PLUMBING - TUCKAHOE ROAD
TUCKAHOE, NJ 08250, NJ 08292

at&t

SCALE: AS NOTED
DESIGNED BY: MP
DRAWN BY: N.J. LACROIX NO. 240804543000

TECTONIC
CSRF COLOR CODE
SCALE: ORIGINAL SIZE IN INCHES
DATE: 04/03/13
JOB NO.: 25736-000
JOB TITLE: A07



NOTES

1. THE CROSS SECTOR REDUNDANCY FEATURE (CSRF) SHALL BE IMPLEMENTED ONLY ON TOWER SITES, WHERE THE REMOTE RADIOS (RRH/RRU) ARE MOUNTED ON THE TOP OF THE TOWER. CSRF SHALL NOT BE DEPLOYED ON ROOFTOP SITES, DAS SYSTEMS, OR WHERE THE RRH/RRU IS MOUNTED ON THE GROUND.
2. CSRF SHALL NOT BE DEPLOYED ON TOWER TOP SITES, WHICH HAVE TWO DIFFERENT RADIATION CENTER LINES ACROSS ANY TWO OR MORE SECTORS.
3. CONSULT WITH AT&T MARKET PERSONNEL TO DETERMINE UPON WHICH LTE BARE, THE CSRF WILL BE DEPLOYED.
4. THE MAXIMUM JUMPER LENGTH SHOULD NOT EXCEED 35 FEET FOR 700 MHz AND AWS FREQUENCIES. (CONSULT WITH LOCAL MARKET RF FOR ADDITIONAL GUIDANCE).
5. IN THE EVENT TOWER TOP SITES CANNOT MEET THESE IMPLEMENTATION RESTRICTIONS, THE RRH/RRU SHALL BE CONNECTED TO THE ANTENNA IN THE TRADITIONAL CONFIGURATION. (E.G. LOW RF HEIGHT ON A SELF SUPPORT TOWER, WHERE THE DISTANCE BETWEEN SECTORS WOULD REQUIRE EXCESSIVELY LONG JUMPERS BETWEEN ADJACENT SECTORS.)
6. ALL RF CABLE (JUMPER) LENGTHS SHALL BE WITHIN 8 FEET OF EACH OTHER ACROSS ALL SECTORS. FOR EXAMPLE, ALPHA SECTORS SHORTEST JUMPER IS 8 FEET IN LENGTH. THEREFORE, GAMMA SECTORS LONGEST JUMPER CAN BE NO MORE THAN 15 FEET LONG (8 + 8 = 15).
7. FOR SITES WHERE CSRF WILL BE IMPLEMENTED WITH EXISTING LTE EQUIPMENT, EXISTING RF JUMPER MAY BE REUSED. INSTALLER SHALL MEASURE JUMPERS AND ENSURE LENGTHS COMPLY WITH NOTE 6.
8. ALL RF CABLES JUMPERS SHALL USE PRE-MADE JUMPERS WITH PRE-INSTALLED CONNECTORS ON BOTH ENDS.
9. ALL RF JUMPERS SHALL BE LDF OR LDF12 JUMPERS FROM APPROVED RF JUMPER CABLE MANUFACTURERS (ANDREW AND RFS). DO NOT USE SUPERFLEX. ⚠
10. RF JUMPER CONNECTORS SHALL BE INSTALLED WITH PROPER TORQUE AND WEATHERPROOFING.
11. JUMPERS SHALL HAVE RF SWEEP PERFORMED.
12. ALL FIBER CABLES SHALL BE OF THE SAME LENGTH FROM THE FIBER/DIC SURGE PROTECTION BOX TO THE RRH/RRU. ANY EXCESS FIBER SHOULD BE SPOOLED IN THE FIBER MANAGEMENT BOX.
13. JUMPERS SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 3 FEET.
14. THIS DETAIL SHOWS LTE RF JUMPER CONNECTION, ROUTING IS SCHEMATIC. SEE ANTENNA PLAN IN THIS SET OF DRAWINGS FOR ACTUAL LOCATION OF ANTENNAS AND REMOTE RADIOS.
15. WHEN CONSULT AND JUNCTION BOXES (1 PER SECTOR) ARE SCOPED BY MARKET, COIL EXCESS FIBER CABLE IN JUNCTION BOX. ⚠
16. DO NOT DEPLOY CSRF ON THE SECOND CARRIER LTE. ⚠

LEGEND:

AWS RRH/RRU COAX CABLE JUMPER	-----
700 MHz RRH/RRU COAX CABLE JUMPER	—————

LTE CROSS SECTOR REDUNDANCY FEATURE (CSRF) JUMPER CONFIGURATION

DETAIL 1506
HTS AOB ⚠

ANTONIO A. GUALTIERI, P.E.

ORIGINAL SIZE IN INCHES			
TECTONIC			
CSRF JUMPER CONFIGURATION			
DATE	PROJECT NO.	REV. NO.	REV. DATE
03/01/13	28738-425	001	ADD

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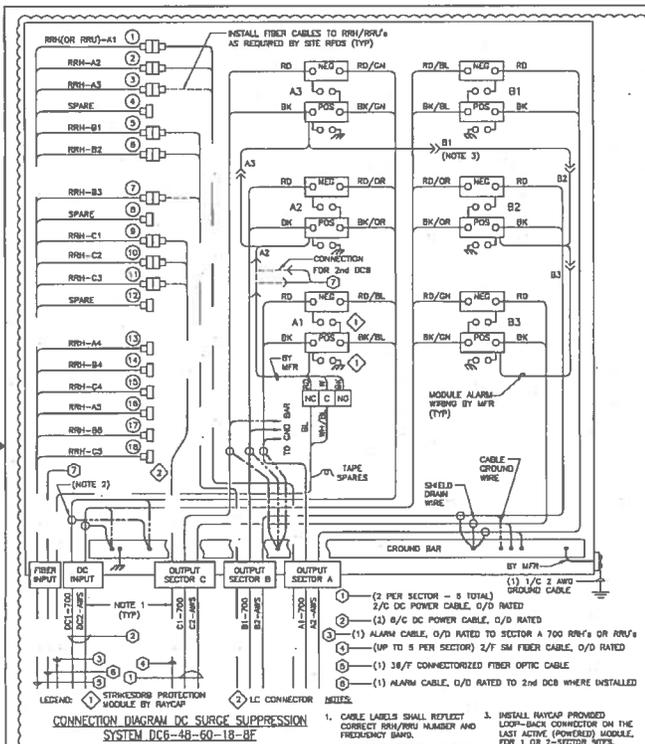
TUCKAHOE
FA NO. 10009992
SITE NO. NJL03103
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08130, NJ 08562



1	1/17/13	BOOK, REVISION	BY	DATE
2	1/21/13	GROUP FOR CORRECTIONS	BY	DATE
3			BY	DATE
4			BY	DATE

SCALE AS NOTED DESIGNED BY: [] CHECKED BY: [] DATE: []

N.J. LICENSE NO. 34620-643800



FIBER TRUNK CHANNEL	TECHNOLOGY	FREQUENCY BAND	SECTOR	RRU NUMBER	RADIO NAME	RRU FIBER ID#	DC TRUNK #1	DC TRUNK #2	DC TRUNK #3	DC TRUNK #4	DC TRUNK #1 SUPPLEMENTARY POSITION	DC TRUNK #2 SUPPLEMENTARY POSITION	(NOTE 2)
1	LTE	700	A	RRH-A1	LTE-700-A-RRH-A1	A1-700	RD/BL BK/BL/BL				A-1		
2	LTE	XXXX	A	RRH-A2	LTE-XXXX-A-RRH-A2	A2-XXXX	RD/BL BK/BL/BL				B-1		(NOTE 1)
3	LTE OR UMTS	XXXX	A	RRH-A3	LTE OR UMTS-XXXX-A-RRH-A3	A3-XXXX	RD/BL BK/BL/BL						A-1
4	SPARE	N/A	A	N/A	SECTOR A SPARE		(NOTE 1)						
5	LTE	700	B	RRH-B1	LTE-700-B-RRH-B1	B1-700	RD/OR BK/OR				A-2		
6	LTE	XXXX	B	RRH-B2	LTE-XXXX-B-RRH-B2	B2-XXXX	RD/OR BK/OR				B-2		(NOTE 1)
7	LTE OR UMTS	XXXX	B	RRH-B3	LTE OR UMTS-XXXX-B-RRH-B3	B3-XXXX	RD/OR BK/OR						A-2
8	SPARE	N/A	B	N/A	SECTOR B SPARE		(NOTE 1)						
9	LTE	700	C	RRH-C1	LTE-700-C-RRH-C1	C1-700	RD/OR BK/OR				A-3		
10	LTE	XXXX	C	RRH-C2	LTE-XXXX-C-RRH-C2	C2-XXXX	RD/OR BK/OR				B-3		(NOTE 1)
11	LTE OR UMTS	XXXX	C	RRH-C3	LTE OR UMTS-XXXX-C-RRH-C3	C3-XXXX	RD/OR BK/OR						A-3
12	SPARE	N/A	C	N/A	SECTOR C SPARE		(NOTE 1)						
13	LTE OR UMTS	XXXX	A	RRH-A4	LTE OR UMTS-XXXX-A-RRH-A4	A4-XXXX	RD/BL BK/BL/BL				B-1		
14	LTE OR UMTS	XXXX	B	RRH-B4	LTE OR UMTS-XXXX-B-RRH-B4	B4-XXXX	RD/OR BK/OR						B-2
15	LTE OR UMTS	XXXX	C	RRH-C4	LTE OR UMTS-XXXX-C-RRH-C4	C4-XXXX	RD/OR BK/OR						B-3
16	LTE OR UMTS	XXXX	A	RRH-A5	LTE OR UMTS-XXXX-A-RRH-A5	A5-XXXX							FUTURE
17	LTE OR UMTS	XXXX	B	RRH-B5	LTE OR UMTS-XXXX-B-RRH-B5	B5-XXXX							FUTURE
18	LTE OR UMTS	XXXX	C	RRH-C5	LTE OR UMTS-XXXX-C-RRH-C5	C5-XXXX							FUTURE

- NOTES:
- SUPPRESSORS B1, B2 & B3 OF THE FIRST UNIT SHALL BE USED FOR SECOND TECHNOLOGY INSTALLED.
 - INSTALLATION OF A SECOND SURGE SUPPRESSION UNIT (MAYCAP MODEL DC6-4000-0-0F) WILL BE REQUIRED TO SUPPORT THIRD AND FORTH CHANNEL RESPECTIVE RADIO HEADS.

REPLACE XXXX WITH CORRECT FREQUENCY BAND.

LTE FIBER TRUNK CONNECTION CODE

DETAIL 1405 A09

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DETAIL 1410 A09

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TUCKAHOE
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MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08256, NJ 08262

at&t

DATE	REVISION	BY	CHK
1/17/13	ISSUED FOR CONSTRUCTION	MS	
1/16/13	ISSUED FOR CONSTRUCTION	MS	
06/06/12	ISSUED FOR CONSTRUCTION	MS	

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NJ License No. 94820443800

ORIGINAL SIZE IN INCHES
TECTONIC
CONNECTION DIAGRAMS
SCALE AS NOTED
DESIGNED BY: MS
DRAWN BY: MS
DATE: 1/17/13

NOTES:

- ACTUAL CABLE LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR.
- THE DESIGN IS BASED ON RF DATA SHEETS, SPEC'D AND APPROVED.
- RADIO SIGNAL CABLE AND RADIATION SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.
- ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G., OUTDOORS, INDOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLenums, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.
- HARDLINE AND JUMPER CABLES SHALL BE SUPPORTED WITH HANGERS AND AT INTERVALS AS REQUIRED BY THE MANUFACTURER FOR 125 MPH WIND SPEED AND EXPOSED ICE CONDITIONS. FOR SITES WITH TOWER HEIGHT OVER 300' OR ARE LOCATED IN THE EXTREME WEATHER/OPERATION AREAS, THE WORST CASE SCENARIO FOR 150 MPH WIND SPEED AND 1" ICE CONDITION SHOULD BE APPLIED. ALL CABLES SHOULD BE SUPPORTED AT HALF THE DISTANCE OF THE MANUFACTURER SPACING FROM THE CABLE CONNECTOR. LOCATION TO THE 1ST HANGER MANUFACTURER RECOMMENDED CABLE SUPPORT ACCESSORIES SHALL BE USED. PLASTIC CABLE TIES ARE NOT ACCEPTABLE. HANGER STACKING LIMIT SHOULD ALSO REFER TO VENDOR'S RECOMMENDATION.
- THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT
- DROP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM THE BUILDING OR OUTDOOR ETS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE
- ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 IN CABLE CONNECTORS THAT MEET IP68
- CONNECTORS IN INDOOR APPLICATIONS REQUIRE NO WEATHERPROOFING. OUTDOOR APPLICATIONS REQUIRE RE-ENTERABLE AND RE-SEALABLE PLASTIC ENCLOSURE APPROVED BY CABLE MANUFACTURER AND ALSO ACCEPTABLE IS THE USE OF BUTYL RUBBER WEATHERPROOFING NOT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR. START BUTYL RUBBER TAPE APPROXIMATELY 3 INCHES FROM THE CONNECTOR AND PEEL 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP, TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER TWO INCHES. FINISH WITH TWO LAYERS OF VINYL TAPE. COLD SHRINK IS STRICTLY PROHIBITED. SELF-BONDING, AMALGAMATING TAPE MAYBE USED AS AN ALTERNATIVE TO BUTYL RUBBER TAPE.
- ANTENNAS SHALL BE PAINTED, WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACE PREPARATION AND PAINTING
- CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDING AT THE TOP OF THE TOWER, WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 8 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDING AT THE MIDPOINT OF TOWERS THAT ARE BETWEEN 100 FEET AND 300 FEET HIGH, AND AT INTERVALS OF 100 FEET OR LESS ON TOWERS
- APPROVED GROUNDING KITS, WHICH INCLUDE GROUNDING STRAPS, SHALL BE USED TO GROUND THE COAXIAL CABLE SHIELDS, AND CONDUITS, THE GROUND CONDUCTORS FOR THE KITS AT THE TOP OF THE TOWER, AND IN THE MIDDLE SECTION OF THE TOWER, ARE BONDED DIRECTLY TO TOWER STEEL USING BOLTED, OR APPROVED CLAMP CONNECTIONS. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE
- ALL RADIO SIGNAL CABLE SHALL BE LABELED AND COLOR CODED PER MARKET REQUIREMENTS.
- MSA/IMA'S TO BE INSTALLED AT TOWER TOP, SHALL BE SUPPLIED TO THE SUBCONTRACTOR (WHICH REQUIRED) AND INSTALLED BY THE SUBCONTRACTOR. THE GROUND CONDUCTORS OF THE TAP MAY BE BONDED DIRECTLY TO THE TOWER STEEL (USING BOLTED, OR APPROVED CLAMP CONNECTIONS). EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTOR'S STRUCTURAL ENGINEER.
- ANTENNA FEED LINE SYSTEM SWEEP TESTING SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF PROJECT SPECIFICATIONS. CONTRACTOR WILL NOT ACCEPT A RADIO SIGNAL CABLE INSTALLATION WITH UNSATISFACTORY SWEEP TEST RESULTS.
- RFM TESTS SHALL BE PERFORMED ON NEW AND MOVED OR MODIFIED COAXIAL CABLE INSTALLATIONS. TEST SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
- DC CONNECTORS AT OUTDOOR BMS-76 OR DUPLEXER/TRIPLEXER PORTS SHALL BE WEATHERPROOFED PER
- ALSO CONNECTIONS DO NOT REQUIRE ADDITIONAL WEATHERPROOFING UNLESS RECOMMENDED BY

18. INSTALL ONLY STANDARD RF JUMPER CABLES (e.g. LDF4 OR LCF12) AT TOWER-TOP APPLICATIONS. FLEXIBLE RF CABLES (e.g. F3J4 OR SF212) SHALL NOT BE USED.

20. CABLES AND CONNECTORS MUST BE PREPARED AND INSTALLED USING THE TOOLS RECOMMENDED BY THE COAXIAL CABLE MANUFACTURER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE CORRECT TOOLS ARE USED FOR THE SIZE AND TYPE OF COAX AND CONNECTOR. ALL ASPECTS OF INSTALLATION OF ALL COAXIAL CABLE SHALL FOLLOW THE CABLE MANUFACTURER'S RECOMMENDATIONS, INCLUDING THOSE FOR PULLING, MOUNTING AND GROUNDING

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (LAJ) FOR THE LOCATION. THE EDITION OF THE LAJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:
INTERNATIONAL BUILDING CODE (IBC), 2009
ELECTRICAL CODE:
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 - 2011, NATIONAL ELECTRICAL CODE
LIGHTNING PROTECTION CODE:
NFPA 780 - 2011, LIGHTNING PROTECTION CODE

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, FOURTH EDITION
ANSI/ISA 22.6-0, STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
ISA 907, 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 C2 NATIONAL ELECTRIC SAFETY CODE, LATEST VERSION
TELECOMIA GR-123, GENERAL INSTALLATION REQUIREMENTS
ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOMIA ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHOD 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.

APPLICABLE BUILDING CODES & STANDARDS

RF NOTES

DETAIL 1004
NTS A11

NOTES:

- FIELD VERIFICATION:**
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:**
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.
- CABLE LADDER RACK:**
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION

CONSTRUCTION NOTES

DETAIL 1007
A11

DETAIL 1001
NTS A11

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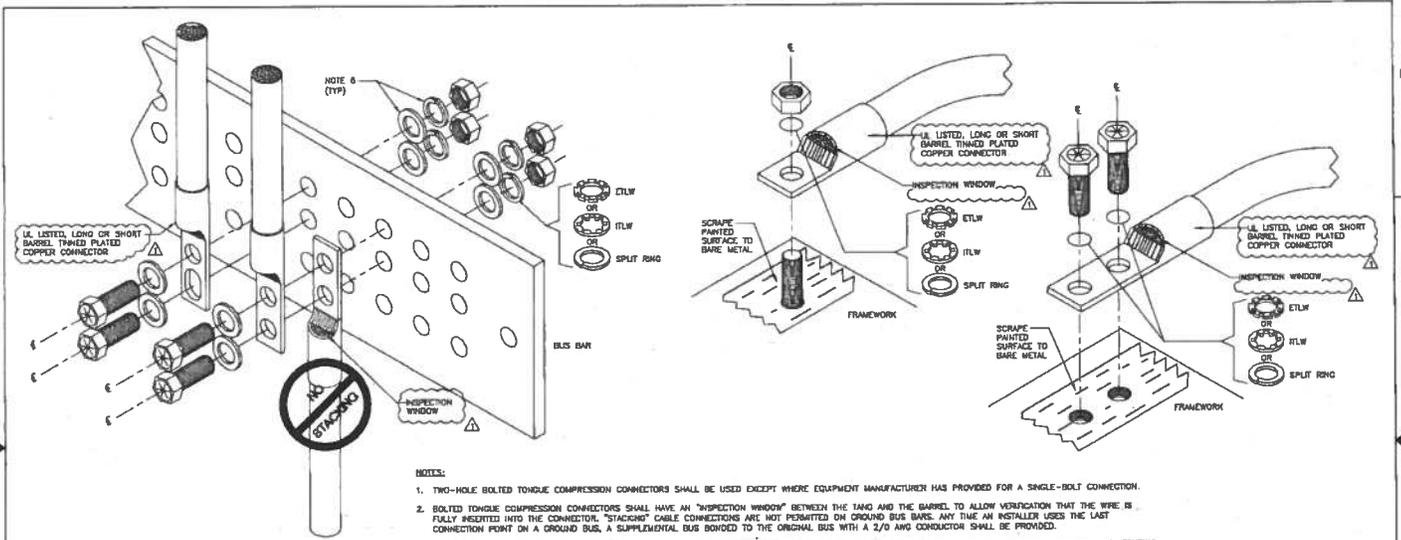
TUCKAHOE
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SITE NO. NJL03108
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TUCKAHOE, NJ 08050, NJ 08382

at&t

NO.	DATE	REVISION	BY	CHK	APPV.
1	1/17/13	ISSUE FOR DESIGN	ME		
2	1/17/13	ISSUE FOR CONSTRUCTION	ME		

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NJ License No. 24024843800

ORIGINAL SIZE IN INCHES
TECTONIC
NOTES
REV. NO. N.E.03108 228 TAC 28734-158 SHEET NO. A11



- NOTES:**
1. TWO-HOLE BOLTED TONGUE COMPRESSION CONNECTORS SHALL BE USED EXCEPT WHERE EQUIPMENT MANUFACTURER HAS PROVIDED FOR A SINGLE-BOLT CONNECTION.
 2. BOLTED TONGUE COMPRESSION CONNECTORS SHALL HAVE AN "INSPECTION WINDOW" BETWEEN THE TANG AND THE BARREL TO ALLOW VERIFICATION THAT THE WIRE IS FULLY INSERTED INTO THE CONNECTOR. "STACKING" CABLE CONNECTIONS ARE NOT PERMITTED ON GROUND BUS BARS. ANY TIME AN INSTALLER USES THE LAST CONNECTION POINT ON A GROUND BUS, A SUPPLEMENTAL BUS BONDED TO THE ORIGINAL BUS WITH A 2/0 AWG CONDUCTOR SHALL BE PROVIDED.
 3. IF A SINGLE HOLE CONNECTOR IS SPECIFIED, AND THE SURFACE IS NOT PREPARED BY CLEANING AND THE APPLICATION OF AN ANTI-OXIDANT COMPOUND, THE SECURING HARDWARE SHALL INCLUDE AN EXTERNAL TOOTH TYPE LOCK WASHER (STAR WASHER) PLACED BETWEEN THE CONNECTOR AND THE SURFACE TO WHICH THE CONNECTOR IS SECURED. THE CONNECTION SHALL ALSO HAVE A SPLIT RING OR EXTERNAL TOOTH LOCK WASHER INSTALLED BETWEEN THE LUG AND THE BOLT HEAD SECURING IT.
 4. A THIN LAYER OF CONDUCTIVE ANTI-OXIDANT COMPOUND SHALL BE APPLIED TO MATING SURFACES AND USE STAINLESS STEEL BOLTS, NUTS AND WASHERS FOR ALL CONNECTIONS OF DISSIMILAR METALS.
 5. PAINT REMOVED FROM OUTDOOR SURFACES SHALL BE TOUCHED-UP AFTER CROWDING CONNECTION IS MADE.
 6. CORRECTLY SIZED WASHERS SHOULD BE USED WITH A NUT AND BOLT. THE WASHER SHOULD CARRY THE SAME SIZE DESIGNATION AS THE BOLT, SUCH AS 1/4 INCH. USING A WASHER THAT IS TOO LARGE MAY CAUSE THE BOLT OR NUT TO PULL THROUGH THE WASHER OR TO MAKE FULL CONTACT WITH ITS INTENDED SURFACE.
 7. UN-TINNED COPPER BUS BAR SHALL BE BURNISHED TO A BRIGHT FINISH BEFORE ANTI-OXIDANT IS APPLIED AND TERMINATIONS COMPLETED.

GROUNDING DETAILS AND NOTES

DETAIL 1197
NTS E01

ANTONIO A. GUALTIERI, P.E.

3/7/13

ORIGINAL SIZE IN INCHES

TECTONIC

GROUNDING DETAILS AND NOTES

REV	NO.	DATE	DESCRIPTION
1	1	03/07/13	ISSUED FOR CONSTRUCTION
2	2	03/07/13	REVISED

SCALE AS NOTED

DESIGNED BY: [Signature]

DRAWN BY: [Signature]

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TUCKAHOE

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1	03/07/13	ISSUED FOR CONSTRUCTION	NTS
2	03/07/13	REVISED	NTS

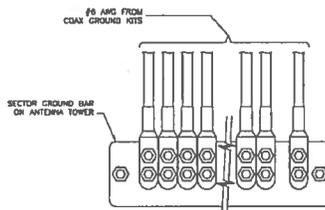
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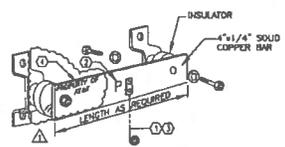
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2



- NOTES:**
- GROUND BARS AT THE BOTTOM OF TOWERS/MONOPOLS SHALL USE EXOTHERMIC WELDS ONLY.
 - ATTACH "DO NOT DISCONNECT" LABELS TO GROUND BARS. CAN USE BRASS TAG "DO NOT DISCONNECT" AT EACH COAXIAL GROUND POINT OR BACK-TO-LITE LABEL ON GROUND BAR.
 - CONNECT SECURED BOLT/WASHER/NO-DX/GROUND BAR/NO-DX/WASHER/LOCKER-WASHER/NUIT. THIS IS REPEATED FOR EACH LUG CONNECTION POINT.
 - ANTENNA GROUND BAR WITHOUT INSULATORS, BONDED DIRECTLY TO TOP OF MONOPOLE OR TOWER. FOR ROOFTOPS, RUN #2 GREEN GROUND BACK TO EXISTING MASTER GROUND BAR.

SECTOR GROUND BAR DETAIL
NOT TO SCALE



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL INDICATE ITS ORDER AND DESTINATION.

CONNECTION FOR:
COAXIAL CABLE SURGE SUPPRESSORS
CABLE ENTRY PORTS (MATCH PLATES)
2RV & 4KV DC POWER RETURN BAR
TELED GROUND BAR
RECTIFIER FRAMES
GENERATOR FRAME WORK
MASTER GROUND BAR

DETAIL NOTES:

- TWO-HOLE LONG BARREL COMPRESSION LUG WITH 2 AWG STRANDED COPPER CONDUCTOR AND GREEN THIN INSULATION TO GROUND BAR. ROUTE CONDUCTOR AS APPLICABLE TO BURIED GROUND CONDUCTOR OR MASTER GROUND BAR AND CONNECT WITH TWO-HOLE LUG TO "P" SECTION.
- USE PERMANENT MARKER TO LABEL THE WHOLE BAR AS "P" WITH 1" HIGH LETTERS.
- FOR GROUND BAR LOCATED OUTDOORS, ON-GRADE ONLY, EXOTHERMICALLY WELD A 2 AWG BARE TINED COPPER CONDUCTOR TO GROUND BAR AND EXOTHERMICALLY WELD TO BURIED GROUND CONDUCTOR.
- GROUND BARS SHALL BE THINNED COPPER AND SHALL BE ENGRAVED OR IMPRESSED "STOLEN-DO NOT RECYCLE" AND/OR "PROPERTY OF AT&T, ETCHED OR STAMPED WITH SITE FA LOCATION AND SECURED WITH ANTI-THEFT HARDWARE.

SUPPLEMENTAL/SECTOR GROUND BAR



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, LPL, OR NFPA) (CONTINUED) PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELLERDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER (E/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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT PROCEDURES FOR TESTING OF FACILITY GROUNDING FOR CELL SITES.
- 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 ITS EQUIPMENT.
- EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 8 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 ANTI-OXIDANT 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 WITH STAINLESS STEEL HARDWARE 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 AND TRAY SHALL BE GROUNDING AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 8 AWG COPPER WIRE OR APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222 FOR TOWERS BEING BUILT TO REV D OF THE STANDARD. THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM 8 FEET TO 10 FEET.

GROUNDING NOTES



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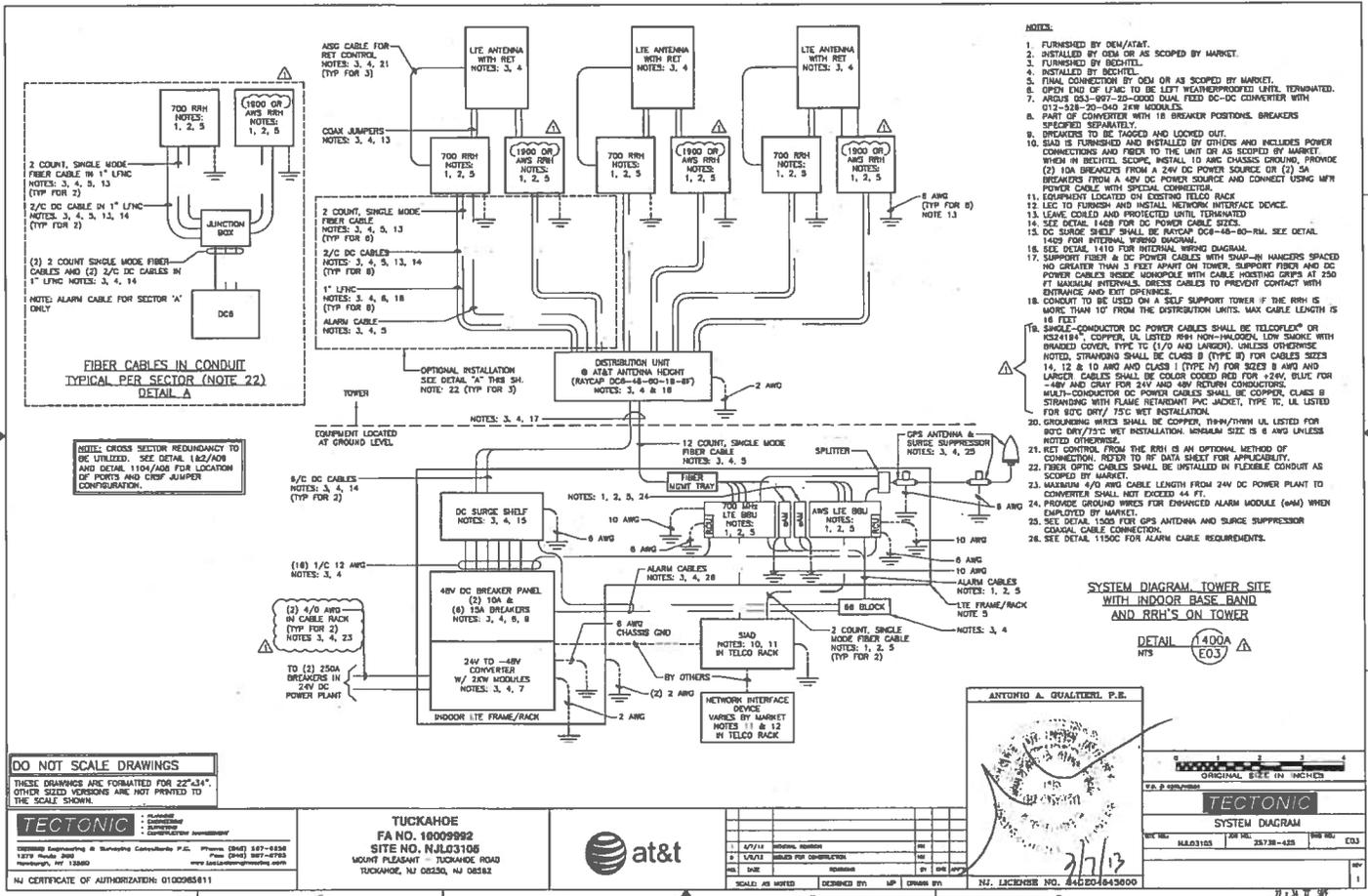
TUCKAHOE
FA NO. 10009992
SITE NO. NJL03108
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08250, NJ 08391

NO.	DATE	REVISION	BY	CHK	APP
1	6/27/13	DESIGN REVISION	MS		
2	6/27/13	REVISION	MS		

SCALE AS NOTED
DESIGNED BY: MS
CHECKED BY: MS
DATE: 6/27/13

ANTONIO A. GUALTIERI, P.E.
Professional Engineer
State of New Jersey
No. 37713

TECTONIC
GROUNDING DETAILS AND NOTES
REV: 1
DATE: 6/27/13
JOB NO: 29738-435
SHEET NO: E02



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 Fax: (609) 587-0933
 www.tectonic-engineering.com

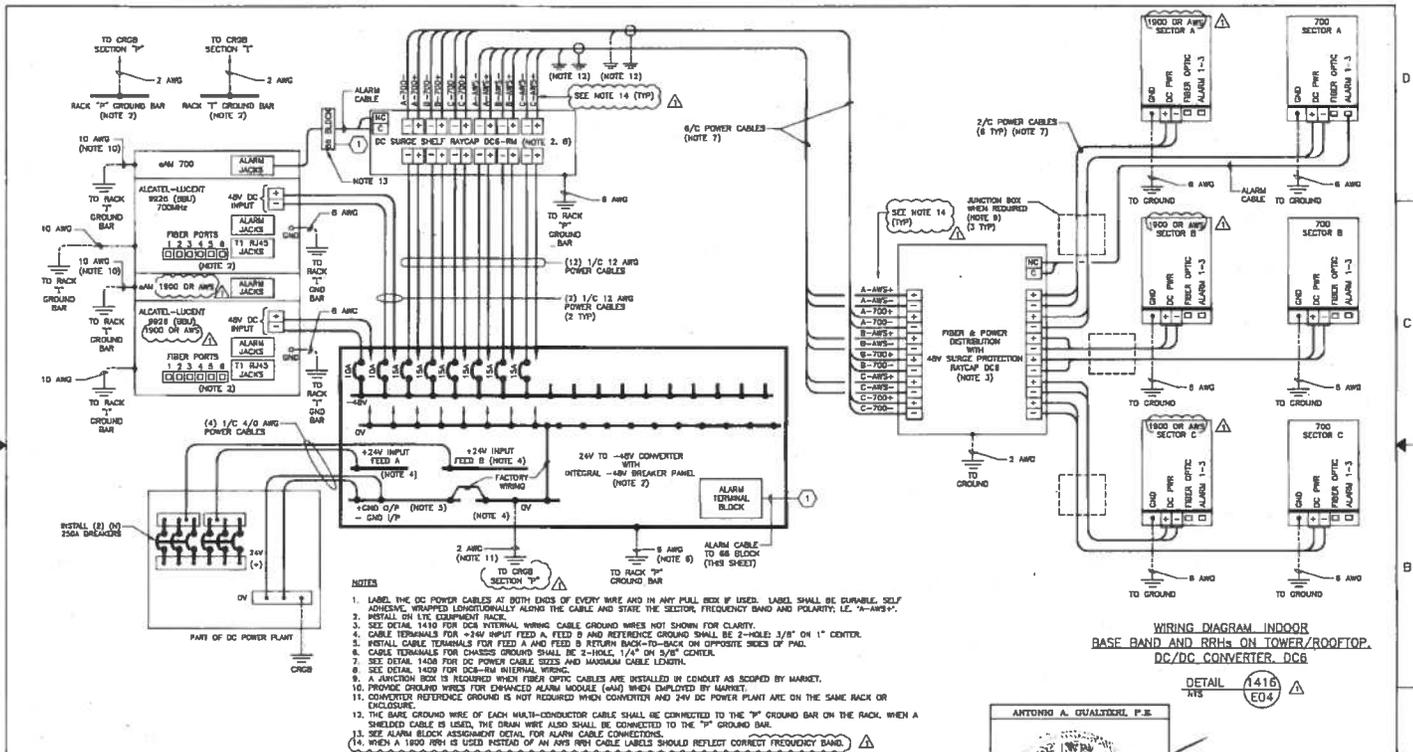
TUCKAHOE
 FA NO. 10009992
 SITE NO. NJL03106
 MOUNT PLEASANT TUCKAHOE ROAD
 TUCKAHOE, NJ 08250, NJ 08252

at&t

NO.	DATE	DESCRIPTION	BY	CHKD BY
1	4/27/13	ORIGINAL DESIGN	HE	HE
2	4/27/13	ISSUED FOR CONSTRUCTION	HE	HE
3				
4				

ANTONIO A. QUALTIERI, P.E.
 3/21/13

TECTONIC
 SYSTEM DIAGRAM
 SHEET NO. M.E.031105 JOB NO. 25718-025 SHEET NO. E03



- NOTES**
1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LENGTHWISELY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY, I.E. "A-RRH-1".
 2. INSTALL ON LITE EQUIPMENT RACK.
 3. SEE DETAIL 1410 FOR DCX INTERNAL WIRING CABLE GROUND WIRES NOT SHOWN FOR CLARITY.
 4. CABLE TERMINALS FOR +24V INPUT FEED A, FEED B AND REFERENCE GROUND SHALL BE 2-HOLE 3/8" ON 1" CENTER.
 5. INSTALL CABLE TERMINALS FOR FEED A AND FEED B RETURN BACK-TO-BACK ON OPPOSITE SIDES OF PANEL.
 6. CABLE TERMINALS FOR CHASSIS GROUND SHALL BE 2-HOLE 1/4" ON 5/8" CENTER.
 7. SEE DETAIL 1408 FOR DC POWER CABLE SIZES AND MAXIMUM CABLE LENGTH.
 8. SEE DETAIL 1409 FOR DC6-RM INTERNAL WIRING.
 9. A JUNCTION BOX IS REQUIRED WHEN FIBER OPTIC CABLES ARE INSTALLED IN CONDUIT AS SCOPED BY MARKET.
 10. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (EAM) WHEN EMPLOYED BY MARKET.
 11. CONVERTER REFERENCE GROUND IS NOT REQUIRED WHEN CONVERTER AND 24V DC POWER PLANT ARE ON THE SAME RACK OR ENCLOSURE.
 12. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "7" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "7" GROUND BAR.
 13. SEE ALARM BLOCK ASSIGNMENT DETAIL FOR ALARM CABLE CONNECTIONS.
 14. WHEN A 1800 RRH IS USED INSTEAD OF AN RRH CABLE LABELS SHOULD REFLECT CORRECT FREQUENCY BAND.

WIRING DIAGRAM - INDOOR
BASE BAND AND RRH ON TOWER/ROOFTOP
DC/DC CONVERTER, DCX

DO NOT SCALE DRAWINGS
THESE DRAWINGS ARE FORMATTED FOR 22"x34"
OTHER SIZED VERSIONS ARE NOT PRINTED TO
THE SCALE SHOWN

TECTONIC
199999 Engineering & Surveying Consultants P.L.C. Phone (0464) 837-4884
1978 Winkle 303 Fax (0464) 837-8760
Newington, NY 12550 www.lectonictesting.com

TUCKAHOE
FA NO. 10009982
SITE NO. NJL03105
MOUNT PLEASANT - TUCKAHOE ROAD
TUCKAHOE, NJ 08250, NJ 08282



11	5/17/13	ISSUED DESIGN	MS		
10	1/17/13	DESIGN FOR COMPLETION	MS		
09		ISSUED	MS		
08		DESIGNED BY	MP	DESIGN BY	MS



DETAIL 1416
E04

ORIGINAL SIZE IN INCHES

TECTONIC

WIRING DIAGRAM

DATE: 11/03/10 JOB NO: 25734-425 DRAWING NO: EDA

SCALE: AS NOTED DESIGNED BY: MP DRAWN BY: MS

N.J. LICENSE NO. ENG02-6643000

REV 1

NOTES

1. WIRING, RACKING, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELECOM.
2. SUBCONTRACTOR SHALL VERIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSMIT CABLES TO THE NEW ITS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.
3. ALL CIRCUITS SHALL BE SECURED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELECOM.
4. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STILE CABLE TRAY FINES.
5. EACH END OF EVERY POWER, GROUNDING, AND IT CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & ISHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
6. POWER PHASE CONDUCTORS (I.E., HOT) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & ISHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT #12).
8. PANELBOARDS (O MOUNTING) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS.
9. DELETED
10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (12 AWG OR LARGER), 800 V, OIL RESISTANT THHN OR THHN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (192 °F) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACKING SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (8 AWG OR LARGER), 800 V, OIL RESISTANT THHN OR THHN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (192 °F) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACKING SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR 2 AWG SOLID THREADED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
13. POWER WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (12 AWG OR LARGER), 800 V, OIL RESISTANT THHN OR THHN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (192 °F) AND 90 °C OPERATION; WITH GUTTER JACKETS LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STILE, COMPRESSION TYPE LUGS AND WRENCHES BY TITANUS AND BETTS (OR EQUAL). LUGS AND WRENCHES SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (165°F IF AVAILABLE).
15. RACKING AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA 1A, ANSI/AEIE, AND NEC.
16. NEW RACKING OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
17. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (RNC) RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
18. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RNC) RIGID PVC SCHEDULE 40 SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) OR GALVANIZED STEEL OR ALUMINUM RIGID CONDUIT (RMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
20. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNIDIRECTIONAL STREET BUREAU, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR EXPOSED IN REINFORCED CONCRETE AREAS OF HEAVY VEHICLE TRAFFIC.

21. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
22. CONDUIT AND BUSHING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
23. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA 1A, ANSI/AEIE, AND NEC.
24. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
25. WIREWAYS SHALL BE EPoxy-COATED (GPOV) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD. SHALL BE PANELOUT TYPE E (OR EQUAL), AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
26. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPoxy-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
27. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPoxy-COATED, OR NON-CORROSION. SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
28. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
30. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAPPING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST FIRE AND PROPERTY.
31. LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT MAY BE USED WHERE WATER OR DAMPNESS INDOORS AND OUTDOORS AND WHERE NOT SUBJECT TO PHYSICAL DAMAGE. ALL FITTINGS SHALL BE PRESSURE-TYPE, NOT ELDED, POLYESTER THREADED UNLESS PRIOR APPROVAL IS OBTAINED.
32. CABLES SHALL BE BUNDLED AND/OR SECURED TO THE CABLE RACK OF EQUIPMENT RACK USING 9-PLY WAVED POLYESTER THREADED UNLESS PRIOR APPROVAL IS OBTAINED.
33. NYLON CABLE TIES MAY BE USED FOR TEMPORARILY SECURING CABLES DURING THE INSTALLATION. PERMANENT USE OF NYLON CABLE TIES SHALL NOT BE USED UNLESS PRIOR APPROVAL IS OBTAINED FOR SECURING COAXIAL CABLES, OPTICAL FIBER CABLES, BATTERY CABLES AND CABLES TO DISTRIBUTION FRAMES OR ON CABLE RACKS. NYLON CABLE TIES MAY BE USED FOR DISCONNECTING GROUNDING CONNECTIONS TO SHIELDS AND EQUIPMENT FRAME.
34. NYLON CABLE TIES SHALL BE OF AN ADEQUATE SIZE, TYPE, STRENGTH, UV RESISTANT ETC. FOR THE PARTICULAR APPLICATION. TIES SHALL BE TIGHTENED TO WITHIN 1/32 INCH USING A TOOL SPECIFICALLY DESIGNED FOR TIGHTENING AND CUTTING NYLON CABLE TIES.

ELECTRICAL INSTALLATION NOTES

DETAIL 1009
E05

SYMBOLS

- Ⓢ SOLID GROUND BUS BAR
- Ⓣ SOLID NEUTRAL BUS BAR
- SUPPLEMENTAL GROUND BAR
- Ⓢ CHEMICAL GROUND ROD
- Ⓢ GROUND ROD
- Ⓢ CABLED TYPE CONNECTION
- Ⓢ COMPRESSION TYPE CONNECTION
- GROUNDING WIRE

ABBREVIATIONS

- AGL ABOVE GRADE LEVEL
- BTS BASE TRANSDUCER STATION
- (E) EXISTING
- (N) NEW
- MIN MINIMUM
- N.T.S. NOT TO SCALE
- REF REFERENCE
- RF RADIO FREQUENCY
- TYT TYPICAL
- RDR REDUCED
- EQR EQUIPMENT GROUND RING
- AWG AMERICAN WIRE GAUGE
- CRGB CELL REFERENCE GROUND BAR (MASTER GROUND BAR)
- EGD EQUIPMENT GROUND
- ECW ENAMEL COPPER WIRE
- SIAD SMART INTEGRATED ACCESS DEVICE
- GEN GENERATOR
- IRR INTERIOR GROUND RING (HALD)
- RBS RACK BASE STATION

DETAIL 1
E05

DO NOT SCALE DRAWINGS
THESE DRAWINGS ARE FORMATTED FOR 22"x34"
OTHER SIZED VERSIONS ARE NOT PRINTED TO THE SCALE SHOWN

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www.tectonicelectrical.com

TUCKAHOE
FA NO. 10009982
SITE NO. NJL03105
MOUNT PLEASANT TUCKAHOE ROAD
TUCKAHOE, NJ 08050, NJ 08052



NO.	DATE	REVISIONS	BY	CHK
11	12/12	ISSUED FOR CONSTRUCTION		
12	12/12	ISSUED FOR CONSTRUCTION		

ANTONIO A. GUALTIERI, P.E.
Professional Engineer
NJ License No. 242804540800
3/7/13

TECTONIC
NOTES, ABBREVIATIONS & SYMBOLS
SCALE: AS SHOWN
DRAWN BY: []
CHECKED BY: []
DATE: []

25736-425-SSA-0000-00368 -000 JDS Site Acquisition OK
with attached email

Received

Received/Resubmit

NAME: Pete Starks DATE: 3/22/13



AMERICAN TOWER[®]
CORPORATION

Structural Analysis Report

Structure : 150 ft Self Supported Tower

ATC Site Name : Tuckahoe, NJ

ATC Site Number : 306701

Engineering Number : 51334921

Proposed Carrier : AT&T Mobility

Carrier Site Name : Tuckahoe

Carrier Site Number : 10009992/NJLO3105

Site Location : Mt Pleasant - Tuckahoe Road
Woodbine, NJ 08270-3226
39.286278,-74.754100

County : Cape May

Date : November 9, 2012

Max Usage : 56%

Result : Pass

Tyler M. Barker
Design Engineer





AMERICAN TOWER®
CORPORATION

Structural Analysis Report

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Tyler M. Barker
Design Engineer



Eng. Number 51334921
November 9, 2012

Table of Contents

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Supporting Documents	1
Analysis	1
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Proposed Equipment	2
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Deflection, Twist, and Sway.....	3
Standard Conditions	4
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft self supported tower to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	FWT, Paul J Ford Job #1994994, dated December 15, 1994
Foundation Drawing	FWT, Paul J Ford Job #1994994, dated December 15, 1994
Geotechnical Report	JGH Job #94.494 - 010A, dated July 13, 1994

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	115 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2009 IBC
Structure Class:	II
Exposure Category:	B
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact me via email at tyler.barker@americantower.com or call 919-466-5061.



Existing and Reserved Equipment

Mount Elev. ¹ (ft)	Qty.	Antenna	Mount Type	Lines	Carrier
144.0	6	CSS DUO1417-8686	Rigid Side Arms	(12) 1 1/4" Coax	AT&T Mobility
	6	Powerwave LGP17201			
	3	Powerwave 7750.00			
129.0	3	RFS APX16DWV-16DWV-S-E-ACU	Sector Frames	(18) 1 1/4" Coax	T-Mobile
	6	EMS RR90-17-02DP			
	9	Ericsson KRY 112 144/1			

Proposed Equipment

Elevation ¹ (ft)		Qty.	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
144.0	144.0	3	Alcatel-Lucent RRH2x40-AWS	Rigid Side Arms	(2) 0.78" Cable (1) 2" Conduit (1) 0.40" Fiber	AT&T Mobility
		3	Alcatel-Lucent 9442 RRH 700 MH			
		1	Raycap DCG-48-60-18-8F			
		3	Andrew SBNH-1D6565C			
		6	ADC Dual Band 800/1900			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside conduit alongside existing AT&T Mobility coax.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	47%	Pass
Diagonals	56%	Pass
Horizontals	4%	Pass
Anchor Bolts	34%	Pass
Leg Bolts	38%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Uplift (Kips)	310.0	418.5	179.2	43%
Axial (Kips)	354.0	477.9	214.6	45%
Shear (Kips)	29.4	39.7	24.0	61%

* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are less than those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
144.0	0.083	0.003	0.050

*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

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

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Della Selva, Joseph

From: Ryan Peterson [Ryan.Peterson@AmericanTower.com]
Sent: Thursday, March 07, 2013 3:07 PM
To: Pat Marquis
Cc: Della Selva, Joseph
Subject: RE: Tuckahoe: Need to change booms on antenna array.

It is my understanding that our sector frames are equivalent to your boom mount. This SA was correct based upon what was on the application. I can an opinion ordered to verify this will passed at no cost

Ryan Peterson
Account Project Manager - Northeast
American Tower Corporation
10 Presidential Way
Woburn, MA 01801
Direct Dial - 781-926-4747
Fax - 781-926-4545
ryan.peterson@americantower.com

JDS 3/8/13



From: Pat Marquis [mailto:pmarquis@nbcllc.com]
Sent: Wednesday, March 06, 2013 5:46 PM
To: Ryan Peterson
Cc: Della Selva, Joseph (jdellase@bechtel.com)
Subject: FW: Tuckahoe: Need to change booms on antenna array.

Ryan, see below. On the application for this site, we put that we wanted to change from an H-Frame to a boom mount. We were told that we should select T-Arms on the app(since you do not have a boom mount drop down) The SA for this site has rigid side arms. Can we have the SA revised?

Thanks

Pat

Patricia A. Marquis

Project Manager

PLEASE NOTE NEW ADDRESS*****

NETWORK BUILDING & CONSULTING, LLC
Representing Bechtel/AT&T
1777 Sentry Parkway West, Dublin- Suite 210, Blue Bell, PA 19422

XIII

Bid Document Submission Checklist

Township of Upper

License of Space on Ground and Tower
at 1721 Mt. Pleasant Road, Tuckahoe, Township of Upper, Cape May County, NJ

A. Failure to submit the following documents are mandatory cause for the bid to be rejected (N.J.S.A. 40A:11-23.2).

Document	Bidders Initials
Form of Bid (IV)	_____
Guarantee/Bid Bond	_____
Certification of Stockholder Ownership (V)	_____
Acknowledgement of receipt of any notice(s) or Revisions(s) or addenda (if appropriate)	_____
NJ Business Registration Form	_____

Failure to submit the following documents may be cause for the bid to be rejected (N.J.S.A. 40A:11-23.1b).

Document	Bidders Initials
Non-Collusion Affidavit (VI)	_____
A Certificate of Authority from Surety (if appropriate)	_____
Affirmative Action Requirements (VIII)	_____
Two (2) copies & 1 Electronic Copy of Bid Package	_____
Disclosure of Investment in Iran (VII)	_____
Bid Document Submission Checklist	_____

B. Signature: The undersigned hereby acknowledges and has submitted the above listed requirements.

Name of Bidder: _____

By Authorized Representative:

Signature: _____

Print Name & Title: _____

Date: _____

XIV

BILL OF SALE FOR TOWER

AT&T Site Name Tuckahoe
Fixed Asset #10009992

BILL OF SALE

WHEREAS, New Cingular Wireless PCS, LLC a Delaware limited liability corporation ("Seller") agrees to sell the Township of Upper, a Municipal Corporation ("Purchaser"), for an in consideration of the sum of One Dollars (\$1.00) and other good and valuable in hand paid, the receipt and sufficiency of which is hereby acknowledged, that certain tower owned by Seller (the "Transferred Asset"), being more particular described in Attachment A hereto and incorporated herein by reference for all purposes.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, that, for and in consideration of the above sum, Seller hereby CONVEYS, GRANTS, SELLS, TRANSFERS AND ASSIGNS the Transferred Asset unto Purchaser. Seller and Purchaser acknowledge that it is Seller's intent to herein convey to Purchaser, Seller's entire right, title and interest in and to the aforementioned Transferred Asset and that despite Seller's good faith efforts to describe such Transferred Asset herein in its entirety, there may be errors, omissions or discrepancies in such description. If any errors, omissions or discrepancies in such description are discovered by Purchaser, Seller will execute and deliver any instrument reasonably necessary to remedy or correct such error, omission or discrepancy, and, on condition that Seller does so, such errors, omissions or discrepancies will not constitute a breach by Seller of this Bill of Sale.

SELLER MAKES NO WARRANTIES REGARDING THE TRANSFERRED ASSET AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS OF SUCH TRANSFERRED ASSET FOR THEIR INTENDED USE. SELLER CONVEYS THE TRANSFERRED ASSET AS-IS, WHERE-IS. SELLER WARRANTS THAT IT OWNS THE TRANSFERRED ASSET AND THAT THE SAME ARE CONVEYED TO PURCHASER FREE OF ALL LIENS AND ENCUMBRANCES. FURTHER, THE TRANSFERRED ASSET WILL NOT BE CONVEYED IN VIOLATION OF ANY RIGHTS OF THIRD PARTIES.

TO HAVE AND TO HOLD the Transferred Asset unto Purchaser, its successors, legal representatives and assigns, forever.

EXECUTED as of this 24th day of August, 2015.

SELLER:

New Cingular Wireless PCS, LLC
Corporation
a Delaware limited liability company
By AT&T Mobility Corporation, its Manager

By: 
Printed Name: John Green
Title: Area Manager, Construction & Engineering
Date: 8-11-2015

PURCHASER:

Township of Upper, a Municipal

By: 
Printed Name: Richard Palombo
Title: Mayor
Date: 8-24-15

ATTACHMENT A

A 150' self-supporting tower located on Lot 12, Block 350, 1721 Mt. Pleasant Road, Tuckahoe, New Jersey.