Planned Development Guideline Specifications

BERKELEY ELECTRIC COOPERATIVE

TMS Number:
280-00-00-081

PROPERTY:
1509 Main Street
John's Island SC 29407

HELLMAN YATES & TISDALE
ATTORNEYS & COUNSELORS AT LAW

HELLMAN YATES & TISDALE, PA
105 BROAD STREET, THIRD FLOOR
CHARLESTON, SOUTH CAROLINA 29401

PLANNED DEVELOPMENT GUIDELINE SPECIFICATIONS BY BERKELEY ELECTRIC COOPERATIVE

PURSUANT TO THE ZONING AND LAND DEVELOPMENT REGULATIONS OF CHARLESTON COUNTY, SOUTH CAROLINA ("ZLDR")

PLANNED DEVELOPMENT GUIDELINE SPECIFICATIONS BY BERKELEY ELECTRIC COOPERATIVE

PURSUANT TO THE ZONING AND LAND DEVELOPMENT REGULATIONS OF CHARLESTON COUNTY, SOUTH CAROLINA ("ZLDR")

I. OVERVIEW.

A. PURPOSE

1. This is an application by Berkeley Electric Cooperative ("BEC") seeking to rezone its property located at 1509 Main Road, Johns Island, South Carolina, bearing Tax Map number 280-00-00-081, from Rural Residential District ("RR-3") to Planned Development ("PD") pursuant to the ZLDR. The property presently contains a 240' communications tower and related support facility. This request will allow for the replacement of an existing guy tower and provide for improved communications within BEC's system and for other emergency related uses complementary to BEC's utility services as further described herein.

2. The primary focus, intent, and results of the rezoning is to:

    - Allow for the placement of one self-support communication tower with maximum heights not to exceed 250 feet, above ground level ("AGL"), exclusive of required lighting and lightning rod, which will be used by BEC and other communication providers;
    - Allow for associated equipment, structures, and power supply for the communication tower users;
    - Allow for the communication tower to be utilized by commercial and non-commercial providers;
    - Allow for access on the proposed communications facilities for governmental and non-commercial communication infrastructure, support technologies, and other related uses;
    - Allow for improvement of critical radio communication for the Smart Grid and other related services thereto;
    - Allow for emergency outdoors storage of power transmission equipment and materials, emergency management offices, and vehicle and equipment staging, which relate to utility and communication operations and will be placed on the site as indicated in the Exhibits included herewith; and
    - Allow for Emergency Command Center and temporary equipment staging.

- This rezoning meets the objectives, intent, and results of ZLDR Section 4.23.4 as follows:

    a. A maximum choice in the types of environment available tot the public by allowing a development that would not be possible under the strict application of the standard of this Ordinance that were designated primarily for development on individual lots;

    This development would not be possible under strict application standards of this Ordinance as the individual lots would be required to be zoned for other more intensive uses.

    b. A greater freedom in selecting the means to provide access, light, open space and design amenities;

    Due to the unique nature of the permitted uses, there is greater freedom allowed.

    c. Quality design and environmentally sensitive development by allowing development to take advantage of special site characteristics, locations and land use arrangements;

    Due to the odd shape of the parcel being rezoned, the designated area for specific uses will permit the communication uses to be centrally located, opening the perimeter of the parcel for emergency uses.

    d. Development pattern in harmony with the applicable goals and strategies of the Comprehensive Plan;

    The development pattern is in harmony with the applicable goals and strategies of the Comprehensive Plan as it provides for effective communications to the surrounding area and emergency staging to more efficiently restore utility service in times of peril.

    e. The permanent preservation of common open space, recreation areas and facilities;

    The area immediately surrounding the communications use will remain as open space.

f. An efficient use of the land resulting in more economical networks of utilities, streets, schools, public grounds and buildings, and other facilities;

The type of communications tower permitted will provide more open space on the property and will benefit utility deployment in the surrounding vicinity.

g. A creative approach to the use of land and related physical facilities that results in better development and design and the construction of amenities; and

By limiting uses as opposed to more intensive zoning districts, the property can be designed specifically for the allowed uses with special setbacks and other requirements that will benefit not only adjacent properties, but also the surrounding vicinity.

h. A development pattern that incorporates adequate public safety and transportation-related measures in its design and compliments the developed properties in the vicinity and the natural features of the site.

The purpose of this development is to provide enhanced utility service in the John's Island and Wadmalaw Island areas.

3. All matters not addressed in the Planned Development shall comply with the then current requirements of the ZLDR in effect as of the date of any such future application.

B. OWNERSHIP/OPERATION.

1. The subject property is owned by BEC.

2. BEC or its designees, successors, or assignees will manage the communications tower facility.

C. SITE INFORMATION

1. The total property consists of approximately 2.07 acres.

2. At the time of the Proposed Development application, the property contains a communications tower and related support facility.

D. LOCATION

1. The subject property is located at 1509 Main Road, Johns Island, South Carolina, being shown on the tax map of the County of Charleston as tax map number 280-00-00-081. The closest residential structure will be outside the fall zone of the proposed self-support tower.

E. ZONING

1. The subject property is currently in the RR-3 district.

F. CURRENT USE OF THE SUBJECT PROPERTY

1. The subject property is currently used as a communications and tower facility.

2. Pictures of the subject property and its current improvements are attached hereto as Exhibit 9 and incorporated herein by reference.

II. PROPOSED USES.

A. PERMITTED USES.

1. The subject property is currently used as a communications and tower facility, which are legal non-conforming uses. BEC intends to use the subject property for a communications facility and related support structures, buildings, parking area, and associated equipment.

2. The proposed uses are related to utility and communication operations and other permitted uses, include, temporary emergency outdoor storage of electrical transmission equipment and materials, and vehicular storage and staging areas. There is of limit to the foreseeability of necessary uses in each and every type of emergency and therefore flexibility is paramount.

B. COMMUNICATIONS FACILITY USE.

1. Allow for the placement of one self-support communication tower with a maximum height not to exceed 250' AGL, with the exception of required lighting and lightning protection device, of not more than ten (10') feet.

2. Allow for associated equipment, structures, and power supply for the communication tower users.

3. Allow the communication tower to be utilized by governmental, commercial, and non-commercial providers

4. Allow for facilities and structures to enable government, commercial, and non-commercial communication infrastructure, support technologies, and other related uses

5. Maintain existing vegetation on subject property to the extent practicable. Provide additional buffering by understory trees and/or shrubs along Main Road.

C. EMERGENCY COMMAND CENTER

1. Allow for temporary uses such as an emergency command center, or mobile office trailer, for use in emergency situations such as hurricanes, floods, etc., and also the temporary staging of materials and equipment including poles, wire, and the various machinery used in their installation, and all offices, storage, staging, etc. are related to communication operations.

2. Allow for required parking, if any, under the ZLDR for such uses.

D. OUTSIDE STORAGE

1. Allow for temporary, or short-term, and emergency storage of items and materials related to power transmission, which are related to utility and communications operations.

III. COMPLIANCE WITH SECTION 4.23 OF THE ZLDR

A. Development of the subject property will comply with processes included in the ZLDR that are not mentioned in the PD stipulations. All provisions not described within the PD for the subject property shall comply with the ZLDR for RR-3 zoning district, and Zoning Classification requirements where other provisions have not been included in the PD.

B. BEC agrees to proceed with the proposed development in accordance with the provisions of these zoning regulations, and with such conditions as may be attached to any rezoning to the proposed PD District.

C. The provisions of Article 3.10, Variances, of the ZLDR shall not apply to the proposed planned development and Charleston County Council must

approve all major changes to the planned development. Tree variances may be granted in accordance with this Article and all other sections of the ZLDR.

IV. ARCHITECTURAL GUIDELINES.

A. The Architectural Guidelines of ZLDR Art. 9.6 shall apply to the proposed development, as required by the ZLDR Art. 4.23. The self-support tower will be constructed of a light grey galvanized metal.

V. AREAS DESIGNATED FOR FUTURE USE.

A. All areas designated for future expansion or not intended for immediate improvement or development shall remain in a natural state until such time as development permits are approved.

VI. SETBACKS & LOT COVERAGE.

A. The subject property currently has a minimum front street setback of fifty (50') feet (a reduction from the required 75' buffer), a minimum interior side setback of fifteen (15') feet, and a minimum rear setback of thirty (30') feet. These setbacks will only apply to principal communications structures. All other structures and uses of this PD must have a minimum front setback of fifty (50') feet to comply with the Main Road buffer requirement, and a minimum side and rear setback of twenty (20') feet.

B. These setback requirements will remain the same after re-zoning to PD.

C. Maximum lot coverage shall be thirty (30%) percent of the lot, unless RR-3 allows a higher lot coverage percentage. Maximum lot coverage shall not apply in times of emergency.

VII. LIGHTING PLAN.

A. The ZLDR will apply to the proposed development and BEC shall complete the site plan review process.

B. Site compound will be lit with exterior street light(s) placed within the compound. The lights will be placed with either existing wooden and metal poles or new wood or metal poles. The direct use of the light will be for workers safety and security within the compound and access way. Adjacent properties have similar type lighting.

C. Any additional lighting will be added to the subject property only pursuant to the requirements of the Federal Aviation Administration or the security needs of the users of the subject property.

VIII. PARKING CRITERIA.

A. The ZLDR will apply to the proposed development and BEC shall complete the site plan review process.

B. Two (2) parking spaces will be provided on site as shown in Exhibit 2. Parking is limited to service vehicles. This use will occur infrequently.

IX. TREE PROTECTION.

A. The proposed development complies with the Tree Protection and Preservation requirements of the ZLDR.

B. There are no trees on the property and shown on Exhibit 2.

C. No grand trees are affected by this project.

X. SCREENING AND BUFFERING

A. The subject property is mainly covered in grass.

B. The current planned additional improvements will have no adverse impact on the natural buffering that exists around the perimeter of the subject property. A vegetated buffer of at least 20' shall be provided on the sides and rear of the property and shall consist of primarily evergreen trees around the fenced area as an effective screen from adjacent property owners. The buffer requirement along Main Road shall be 50', a reduction from the required 75' per the *Zoning and Land Development Regulations Ordinance* (*ZLDR*). The 50-foot right-of-way buffer shall contain the amount of plant material required in the 75-foot Main Road buffer (buffer type S5). Development shall also comply with all Site Plan Review requirements.

C. The proposed development will not substantially detract from the aesthetics and neighborhood character or impair the use of neighboring properties and will benefit from the removal of guy wires upon removal of the existing tower.

D. The proposed development will meet the current adopted ZLDR in effect and BEC shall complete the site plan review process.

XI. FENCES AND WALLS.

A. The existing communications tower facility is enclosed with a chain link fence ranging from 7-8 feet tall and is non-climbable. Chain link with barbed wired fences shall be permitted in accordance with the *Charleston County Zoning and Land Development Regulations Ordinance (ZLDR*).

XII. SIGNS.

Development will comply with ZLDR Art. 9.11, Signs. BEC does not plan to add any additional signage to the subject property except for those signs that may be required by the Federal Communications Commission or any public safety or regulatory agency.

XIII. HISTORIC AND ARCHAEOLOGICAL SURVEY

A. The subject property does not contain any historic and cultural sites, structures, or landscape. See the Tower Exclusions Checklist, Appendix D, attached hereto as Exhibit 3 and incorporated herein by reference.

XIV. LETTERS OF COORDINATION.

A. The required letters of coordination are attached hereto as Exhibit 4 and incorporated herein by reference.

XV. COMMUNICATIONS TOWER ZONING REQUIREMENTS.

A. Prior to permitting any new or replacement towers on the subject property, a Fall Zone Letter shall be provided that confirms that the Fall Zone area is within the property boundaries of this Planned Development.

B. Any future towers are exempt from Sec. 6.4.5 of the Zoning and Land Development Regulations Ordinance if replacing the existing tower and such tower is within the parameters (height, etc.) of the existing tower.

XVI. DEVELOPMENT SCHEDULE

A. Construction will commence as soon as practicable upon receipt of all necessary permits.

XVII. COMPLIANCE WITH SECTION 4.23 OF THE ZLDR

A. The proposed development will encompass quality design and environmentally sensitive development by allowing development to take advantage of special site characteristics, locations and land use arrangements as the subject property has been utilized for a communication tower facility for many years.

B. The proposed development presents a development pattern that incorporates adequate public safety and transportation-related measures in its design and compliments the developed properties in the vicinity and the

natural features of the site by providing effective communications for Smart Grid purposes to the surrounding area.

XVIII. COMPLIANCE WITH APPROVAL CRITERIA OF SECTION 4.23.9 (E)(9) OF THE ZLDR

A. The proposed PD fully complies with the standards of section 4.23 of the ZLDR.

B. The proposed PD Development is consistent with the intent of the Charleston County Comprehensive Plan and other adopted policy documents.

C. It is clear from the attached letters of coordination that Charleston County and other agencies will be able to provide necessary public services, facilities, and programs to serve the development proposed, at the time the property is developed.

XIX. ANALYSIS PURSUANT TO SECTION 4.23.9(E)(4)(A)(VII)

A. The proposed development will have absolutely no impact on existing public facilities and services, as it is an unmanned communications facility.

B. The proposed development will not change the current traffic pattern of the subject property. After a forty-five to sixty day construction period, the proposed development will only generate one to two trips per user per month for general maintenance.

C. Emergency command center uses are on a temporary, emergency basis and this will have no permanent impact on existing public facilities and services.

D. Sewer and septic services for emergency offices located on the property will be accommodated through the use of portable toilets providing for off-site removal of waste.

XX. ADDITIONAL SUPPORTING DOCUMENTATION

A. Photo Simulations are attached as Exhibit 9 and incorporated herein by reference.

B. Fall Zone Letter is attached as Exhibit 6 and incorporated herein by reference.

C. Memorandum of Community Meeting is attached as Exhibit 7 and incorporated herein by reference.

D. A Wetlands Survey is attached as Exhibit 8 and incorporated herein by reference.

E. Memorandum of Dennis Grant, BEC, P.E., Telecommunications Engineer, Berkley Electric Cooperative, Inc. is attached as Exhibit 9 and incorporated herein by reference.

F. Typical specifications for Mobile Emergency Command Center are attached hereto as Exhibit 10 and incorporated herein by reference.

XXI. SUCCESSORS AND ASSIGNS

A. Any reference to BEC shall include, but not be limited to, any successor, assign, tenant, licensee, and affiliate of BEC.

INDEX OF EXHIBITS

EXHIBIT 1


State Rd S-10-20
Main Rd
State Rd S-10-20


6191 Chisolm Rd
Johns Island, SC 29455 – approximate address
Main Rd
Street View - Jul 2013


1510 Main Rd
Johns Island, SC 29455 – approximate address
Main Rd
Street View - Jul 2013

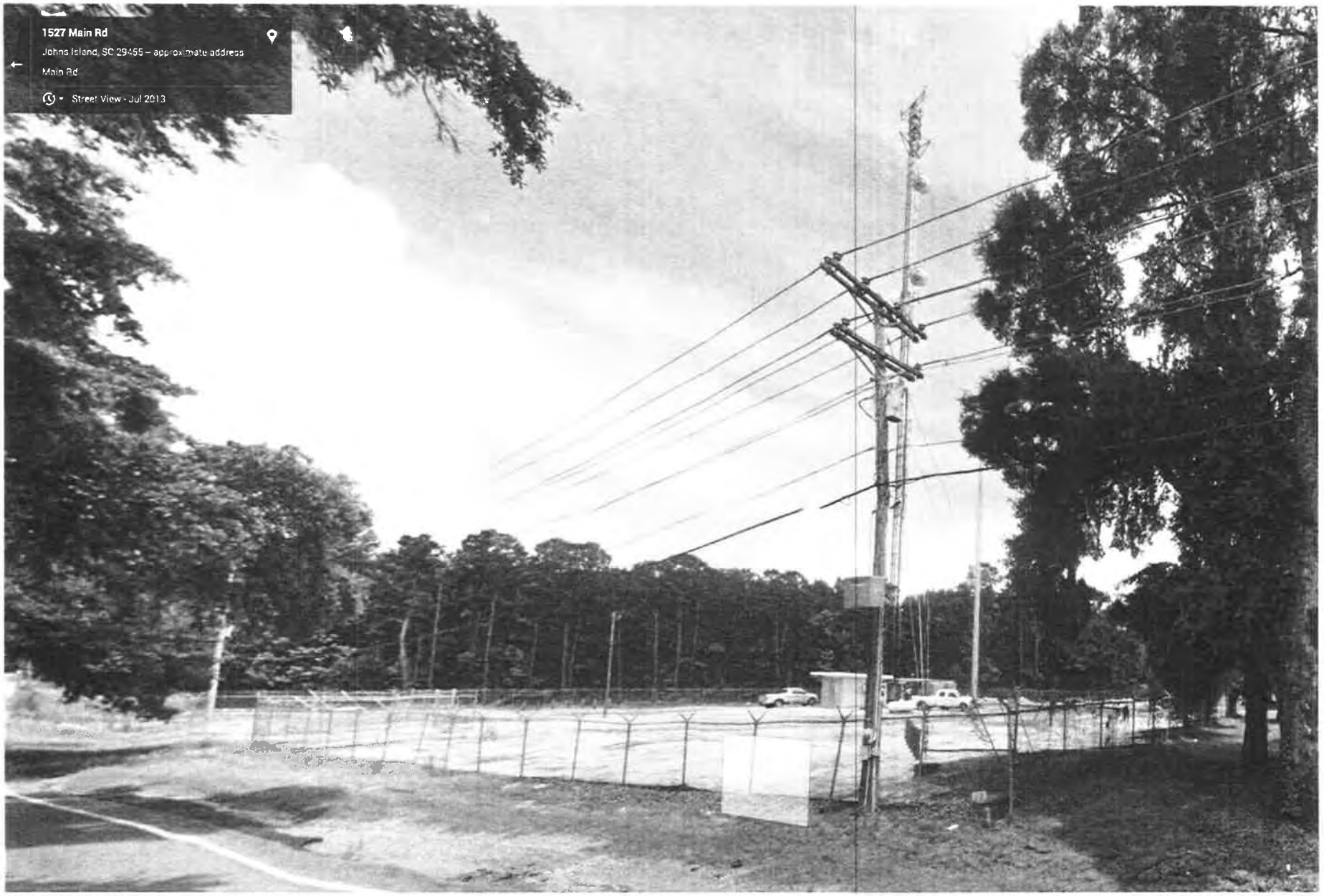
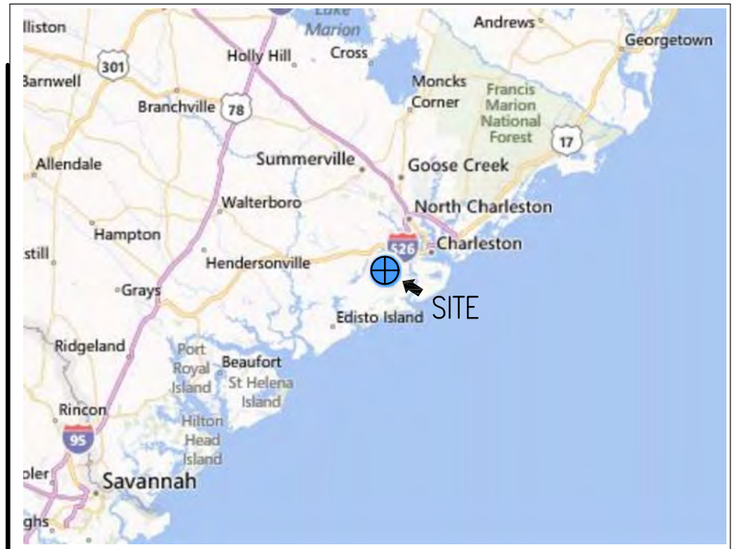

1527 Main Rd
Johns Island, SC 29455 – approximate address
Main Rd
Street View - Jul 2013

EXHIBIT 2

SITE NAME: JOHN'S ISLAND

SITE NUMBER: 449



VICINITY MAP — SCALE: 1" = 30 MILES — NORTH

LOCAL MAP — SCALE: 1" = 3000' — NORTH

DIRECTIONS TO SITE:

FROM JOHN'S ISLAND, SC: HEAD NORTHEAST ON BOHICKET RD TOWARD HOOPSTICK ISLAND RD. tHE SITE (1509 MAIN RD) WILL BE ON THE RIGHT.

811 Know what's below. Call before you dig.

BERKELEY ELECTRIC COOPERATIVE

PROPOSED 240' SELF SUPPORT TOWER TO REPLACE AN EXISTING 240' GUY TOWER

DIG ALERT:

CALL PUPS FOR UNDERGROUND UTILITIES PRIOR TO DIGGING (888) 721-7877

EMERGENCY:

CALL 911

APPROVAL

OWNER'S AGENT APPROVAL	SIGNATURE	PHONE NUMBER	DATE
ATC CONSTRUCTION COORDINATOR	SIGNATURE	PHONE NUMBER	DATE
ATC APPROVAL	SIGNATURE	PHONE NUMBER	DATE

SET NO.	DESCRIPTION	BY	DATE	SET NO.	DESCRIPTION	BY	DATE
1	ADD USE PLAN	AGT	10-31-14	5			
2	REVISE USE PLAN	DS	11-26-14	6			
3				7			
4				8			

CONSULTING TEAM

ARCHITECTURAL AND ENGINEERING FIRM:
BC ARCHITECTS ENGINEERS, PLC
5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000 CONTACT: CHRIS MORIN
FAX: (703) 671-6300

SURVEYOR:
RONALD D. PLATNER, PLS
1 WISE FERRY COURT
LEXINGTON, SC 29072
TEL: (803) 315-1238 CONTACT: RONALD D. PLATNER

STRUCTURAL ENGINEER:
BC ARCHITECTS ENGINEERS, PLC
5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000 CONTACT: CHRIS MORIN
FAX: (703) 671-6300

UTILITIES:
POWER COMPANY:
COMPANY NAME: BERKELEY ELECTRIC COOPERATIVE, INC.
CONTACT: CUSTOMER SERVICE
TEL: (888) 253-4232

TELEPHONE COMPANY:
COMPANY NAME: AT&T
CONTACT: CUSTOMER SERVICE
TEL: (800) 331-0500

PROJECT SUMMARY

SITE NAME:
JOHN'S ISLAND
SITE NUMBER:
449
SITE ADDRESS:
1509 MAIN RD
JOHNS ISLAND, SC 29455

PROPERTY OWNER:
BERKELEY ELECTRIC COOPERATIVE, INC.
551 REMBERT C. DENNIS BLVD.
P.O. BOX 1234
MONCKS CORNER, SC 29461
CONTACT: CUSTOMER SERVICE
TEL: (843) 761-8200

APPLICANT BUILDING INFO:
BERKELEY ELECTRIC COOPERATIVE, INC.
551 REMBERT C. DENNIS BLVD.
P.O. BOX 1234
MONCKS CORNER, SC 29461
TEL: (843) 761-8200 CONTACT: CUSTOMER SERVICE

PROJECT DESCRIPTION:
PROPOSED 240' SELF SUPPORT TOWER (250' OVERALL) TO REPLACE AN EXISTING 240' GUY TOWER

ADA COMPLIANCE:
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

PROJECT DATA:

ZONING:	RR-3
JURISDICTION:	CHARLESTON COUNTY
TAX MAP PARCEL NO:	280-00-00-081
FCC REGISTRATION:	1045146

GEOGRAPHIC COORDINATES:

LATITUDE:	32° 43' 36.396"
LONGITUDE:	80° 05' 56.473"
1A GROUND ELEVATION:	16.85'± AMSL

SHEET INDEX

SHEET NUMBER:	DESCRIPTION:
T-1	TITLE SHEET, VICINITY MAP AND GENERAL INFORMATION
C1	SURVEY
A-0	SITE PLAN
A-1	COMPOIUND PLAN & ELEVATION
A-2	ICEBRIDGE DETAIL

BERKELEY ELECTRIC COOPERATIVE
551 REMBERT C. DENNIS BLVD.
P.O. BOX 1234
MONCKS CORNER, SC 29461

BC architects engineers
5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000
FAX: (703) 671-6300

SHEET REVISION

NO.	DESCRIPTION	BY	DATE
1	CORRECT TOWER	DS	11-26-14
2			
3			
4			
5			
6			

SITE NUMBER: **449**

SITE NAME: **JOHN'S ISLAND**

SITE ADDRESS:
1509 MAIN RD
JOHNS ISLAND, SC 29455

STAMP HERE:

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 20052
10.31.14
CHRISTOPHER D. MORIN

DRAWN BY:	GMW
CHECKED BY:	CDM
DATE DRAWN:	08-27-14
SUBMISSION:	FZD'S

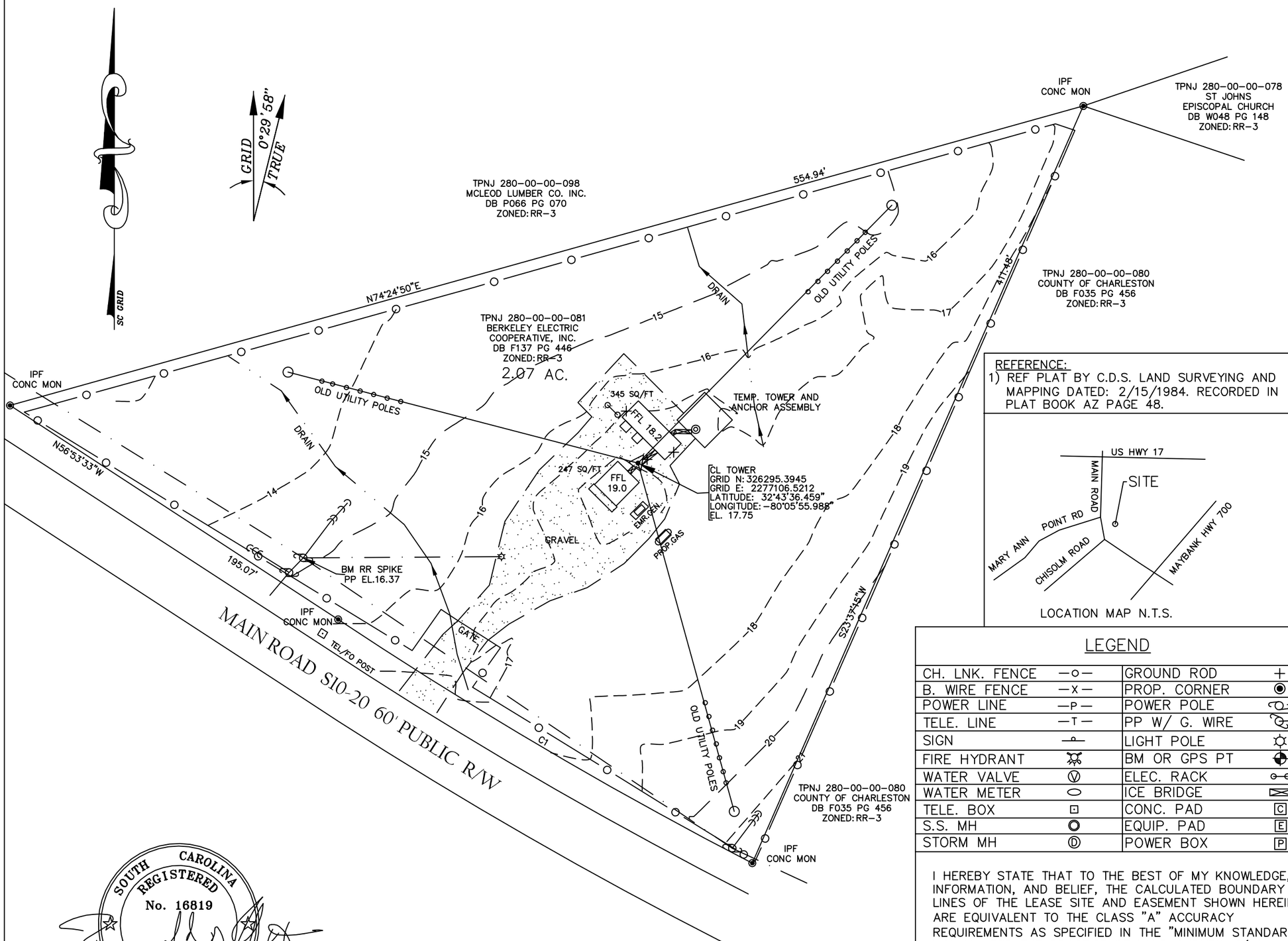
SHEET TITLE:

TITLE SHEET, VICINITY MAP AND GENERAL INFORMATION

SHEET NUMBER: T-1 REV. # 1

COA C02248

10-31-14 ARNOLD 12:22:04 Y:/Drawings - 2014/Berkley Electric/John's Island/_Zoning - REV 0 - 2014-08-27/T1.dwg



CURVE TABLE				
CURVE	LENGTH	RADIUS	BEARING	CHORD
C1	239.43	2179.63	S59°31'50"E	239.31

SOUTH CAROLINA REGISTERED No. 16819 LAND SURVEYOR RONALD D. PLATNER

REVISIONS			
0		PERMIT APPROVAL	
NO.	DATE	DESCRIPTION	BY

NOTES:
1) THIS EXHIBIT REPRESENTS THE EXISTING CONDITIONS AND LAND USE OF THE EXISTING PARCEL AND IS NOT INTENDED FOR ANY OTHER USE.
2) ALL BEARINGS ARE SOUTH CAROLINA STATE GRID, ALL COORDINATES ARE NAD 83 AND ALL ELEVATIONS ARE NAVD 88.
3) TAX MAP PARCEL NO. 280-00-00-081
4) THIS PROPERTY IS CURRENTLY ZONED: RR-3 ZONING. (PER CHARLESTON COUNTY OFFICIALS)
5) RATIO OF PRECISION = 1/10,000.
6) AREA BY COORDINATE METHOD.
7) THE LOCATIONS OF ANY UNDERGROUND UTILITIES IF SHOWN ARE BASED ON PAINTED MARKINGS OBSERVED IN THE FIELD AND/OR ARE APPROXIMATE.
8) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT WHICH MAY REVEAL ADDITIONAL CONVEYANCES, EASEMENTS OR RIGHTS-OF-WAY NOT SHOWN HEREIN.

REFERENCE:
1) REF PLAT BY C.D.S. LAND SURVEYING AND MAPPING DATED: 2/15/1984. RECORDED IN PLAT BOOK AZ PAGE 48.

LOCATION MAP N.T.S.

NOTE:
THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY BY RONALD PLATNER, PROPERTY LINES WERE TAKEN FROM EXISTING FIELD EVIDENCE. EXISTING DEEDS AND PLATS OF PUBLIC RECORD FROM SURVEYS AND DOCUMENTS PROVIDED TO THE SURVEYOR BY THE OWNER OR CLIENT.

I HEREBY CERTIFY THAT I HAVE CONSULTED THE FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP NO. 45019C0655J DATED 11/17/2004: AND TO THE BEST OF MY KNOWLEDGE AND BELIEF THE SUBJECT PROPERTY IS LOCATED IN "ZONE X" WHICH IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE A, B, OR V.

LEGEND

CH. LNK. FENCE	—o—	GROUND ROD	+
B. WIRE FENCE	—x—	PROP. CORNER	◉
POWER LINE	—P—	POWER POLE	
TELE. LINE	—T—	PP W/ G. WIRE	
SIGN	—▫—	LIGHT POLE	☼
FIRE HYDRANT		BM OR GPS PT	
WATER VALVE	Ⓥ	ELEC. RACK	
WATER METER	⬭	ICE BRIDGE	
TELE. BOX	⊡	CONC. PAD	C
S.S. MH	Ⓢ	EQUIP. PAD	E
STORM MH	Ⓓ	POWER BOX	P

I HEREBY STATE THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THE CALCULATED BOUNDARY LINES OF THE LEASE SITE AND EASEMENT SHOWN HEREIN ARE EQUIVALENT TO THE CLASS "A" ACCURACY REQUIREMENTS AS SPECIFIED IN THE "MINIMUM STANDARDS MANUAL FOR THE PRACTICE OF LAND SURVEYING IN SOUTH CAROLINA."

RONALD D. PLATNER, P.L.S. NO. 16819

ASBUILT EXHIBIT

PREPARED FOR

BC ARCHITECTS ENGINEERS, PLC

JOHNS ISLAND
TOWER SITE
SITE ID#: 449

JOHNS ISLAND, CHARLESTON COUNTY, SOUTH CAROLINA

RONALD D. PLATNER, PLS
1 WISE FERRY COURT
LEXINGTON, S.C. 29072
TELE. (803) 315-1238

SCALE: 1" = 50' — 0' 25' 50' 100'

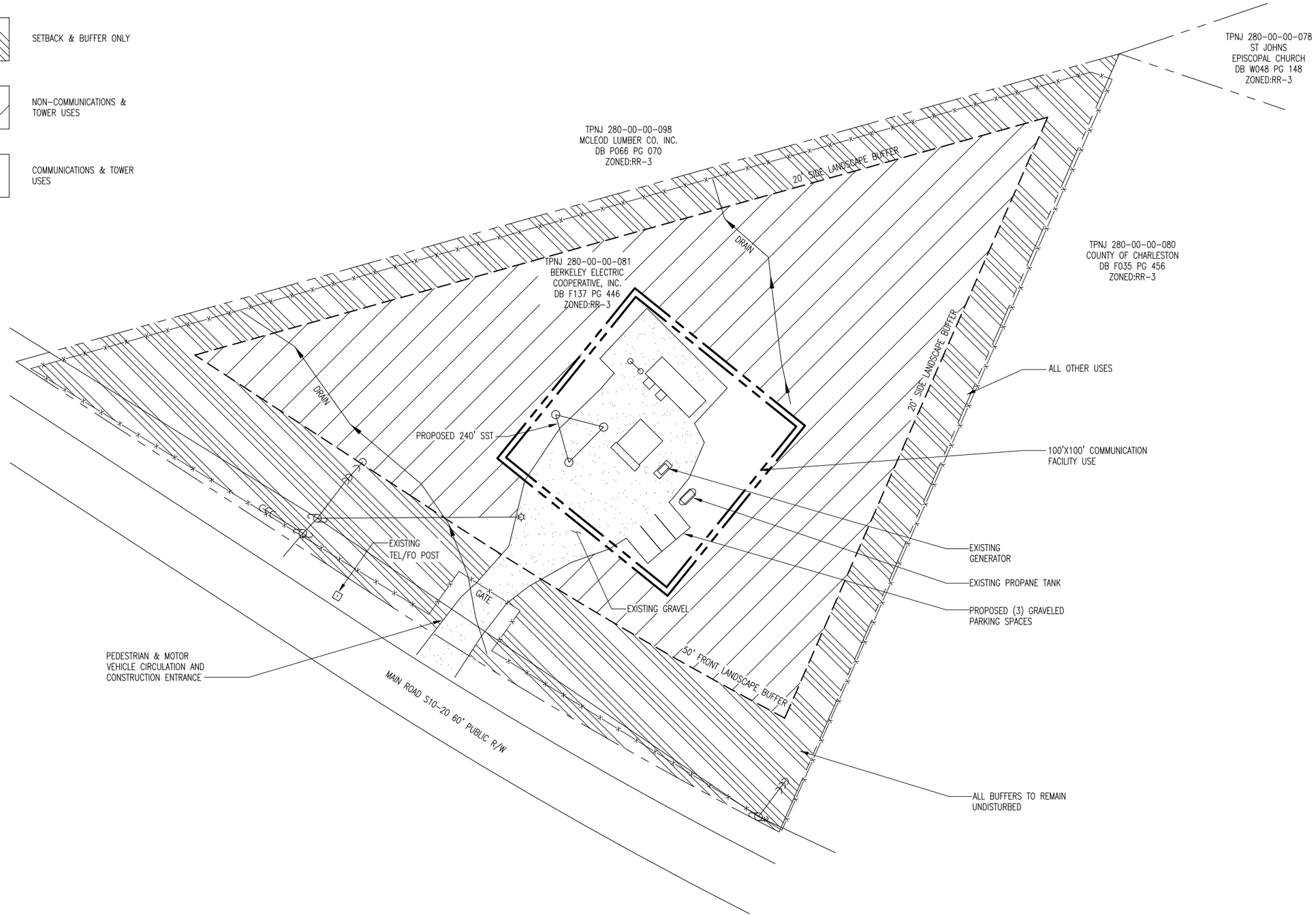
DRAWING NAME	DATE	SHEET NO.
JOHNS ISL..DWG	FEB. 06, 2014	C1
PROJECT NO. JOHNS ISLAND	FIELD BOOK NO. (SEE FILE)	

LEGEND:

SETBACK & BUFFER ONLY

NON-COMMUNICATIONS & TOWER USES

COMMUNICATIONS & TOWER USES



SCALE IN FEET

0 25 50 100 150

1"=50'

TRUE NORTH

USE PLAN

1

11-26-14 ARNOLD 09:56:47 Y:/Drawings - 2014/Berkley Electric/John's Island/_Zoning - REV 0 - 2014-08-27/A0.1.dwg

BERKELEY ELECTRIC COOPERATIVE

551 REMBERT C. DENNIS BLVD.
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BC architects engineers

5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000
FAX: (703) 671-6300

SHEET REVISION

NO.	DESCRIPTION	BY	DATE
1	ADD USE PLAN	AGT	10-31-14
2	ADD COMMENTS	DS	11-26-14
3			
4			
5			
6			

SITE NUMBER:
449

SITE NAME:
JOHN'S ISLAND

SITE ADDRESS:
1509 MAIN RD
JOHNS ISLAND, SC 29455

STAMP HERE:

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER D. MORIN
No. 20052
10.31.14

COA C02248

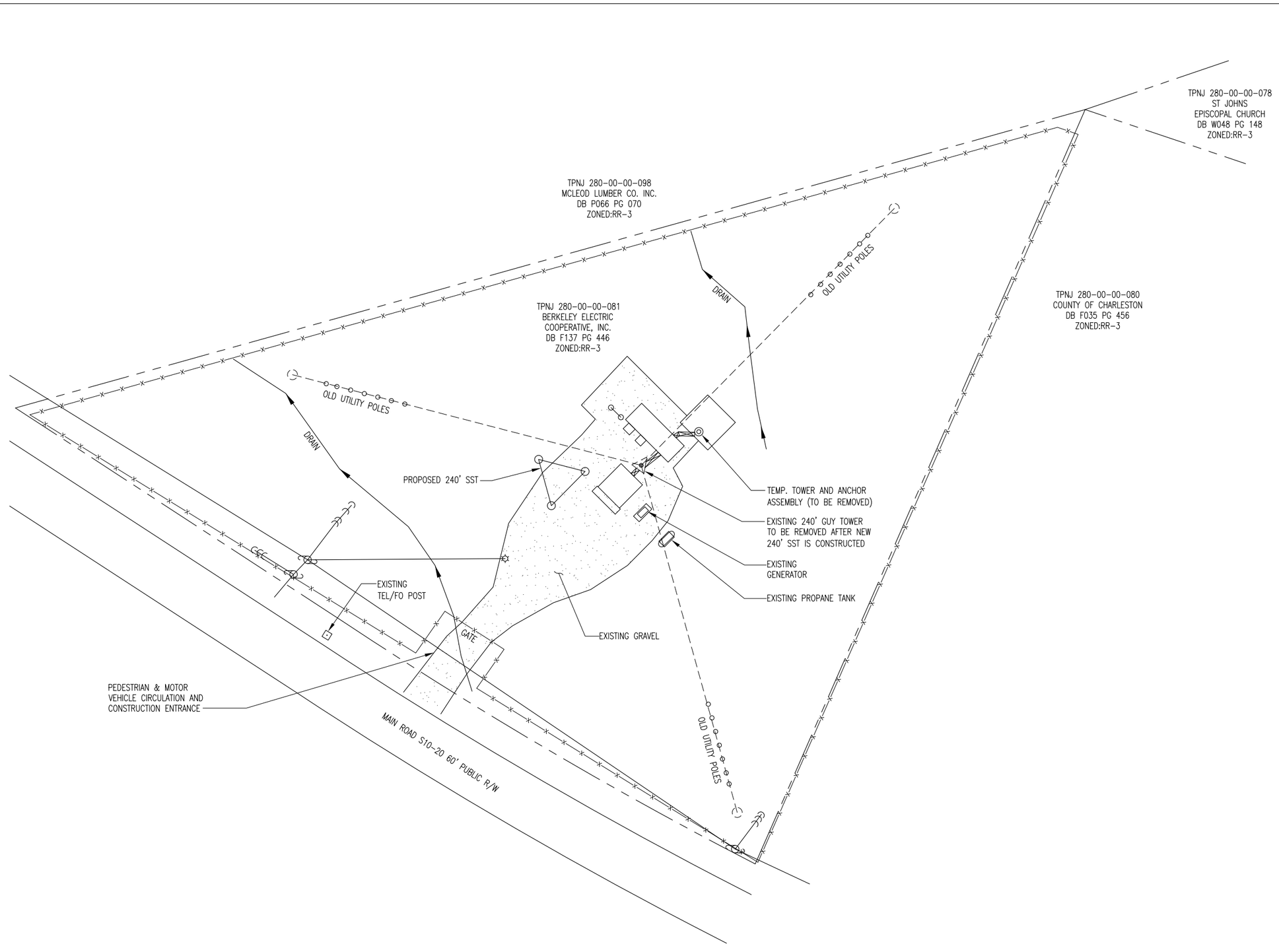
DRAWN BY:	GMW
CHECKED BY:	CDM
DATE DRAWN:	08-27-14
SUBMISSION:	FZD'S

SHEET TITLE:

USE PLAN

SHEET NUMBER: A-0.1 (1, 2)

REV. # 2



1"=50'

SITE PLAN

1

08-27-14 ALAN VALVERDE 11:39:08 Y:/Drawings - 2014/Berkley Electric/John's Island/_Zoning - REV 0 - 2014-08-27/A0.dwg

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SITE NUMBER:
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JOHNS ISLAND, SC 29455

STAMP HERE:

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 20052
10.31.14
CHRISTOPHER D. MORIN

COA C02248

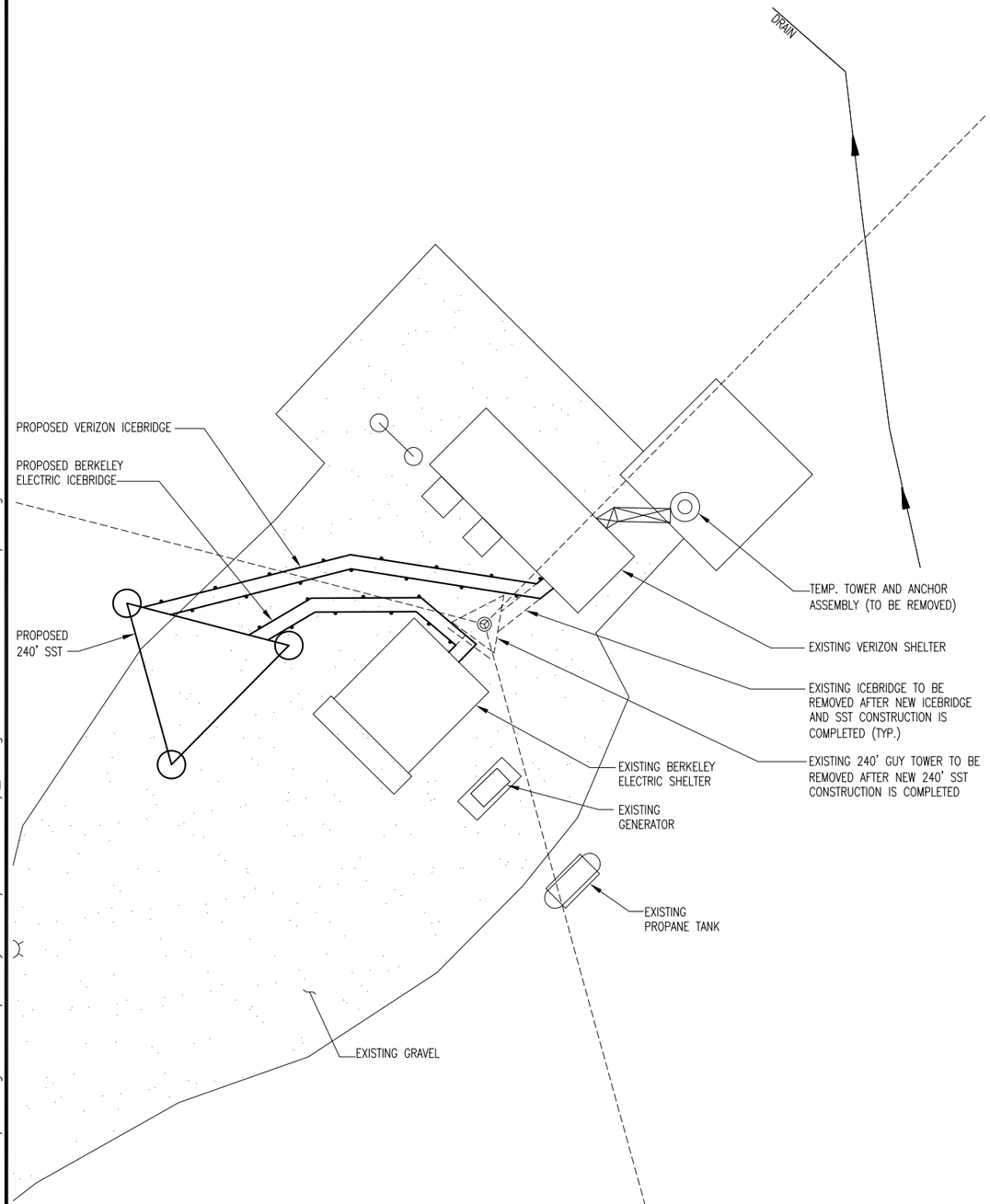
DRAWN BY:	GMW
CHECKED BY:	CDM
DATE DRAWN:	08-27-14
SUBMISSION:	FZD'S

SHEET TITLE:

SITE PLAN

SHEET NUMBER: A-0 (1)

REV. # 1

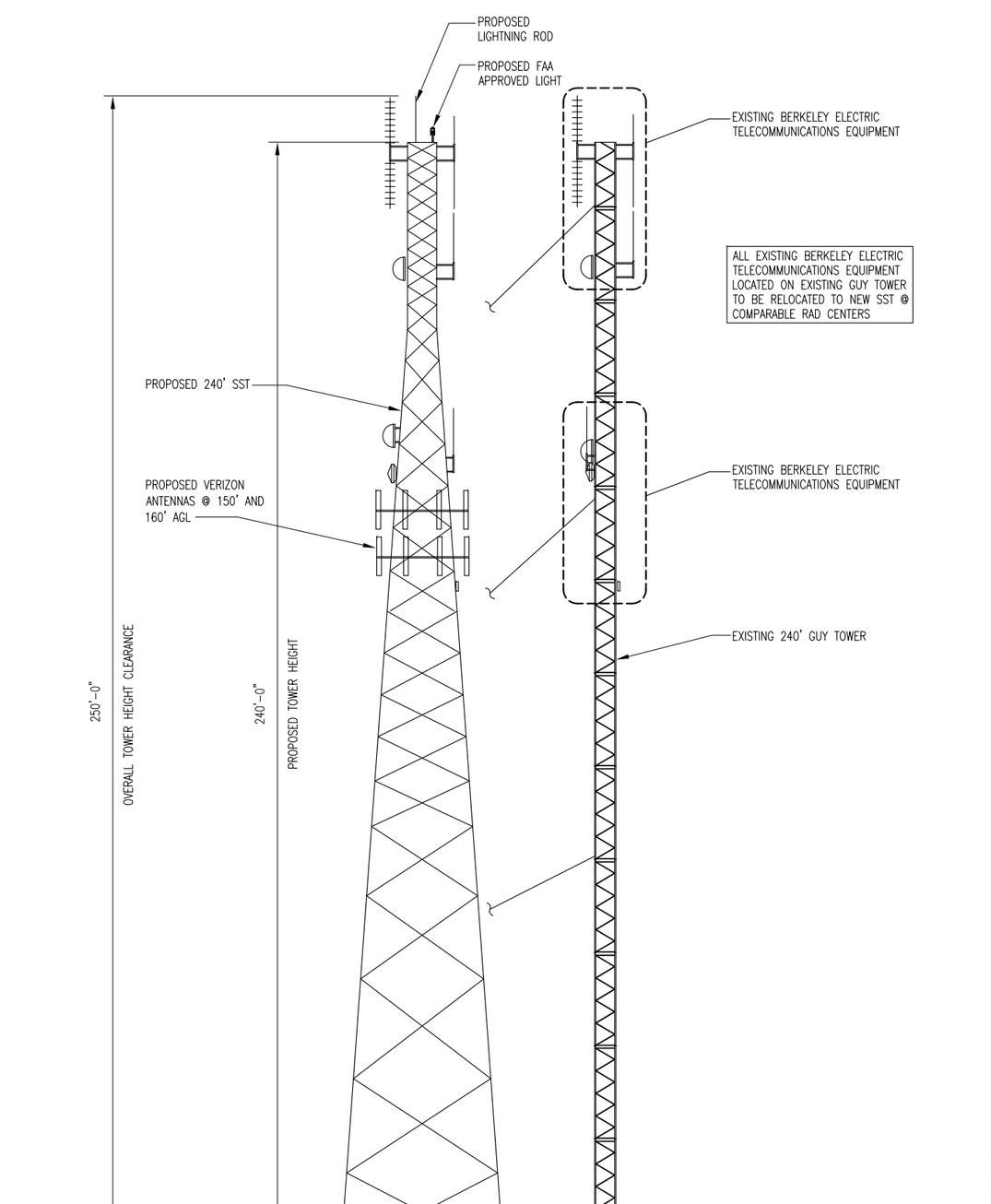


SCALE IN FEET

0 10 20 40 60

TRUE NORTH

1"=20' | ENLARGED SITE PLAN | 1



SCALE IN FEET

0 15 30 60 90

1"=30' | ELEVATION | 2

BERKELEY ELECTRIC COOPERATIVE

551 REMBERT C. DENNIS BLVD.
P.O. BOX 1234
MONCKS CORNER, SC 29461

BC architects engineers

5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000
FAX: (703) 671-6300

SHEET REVISION

NO.	DESCRIPTION	BY	DATE
1	CORRECT TOWER	DS	11-26-14
2			
3			
4			
5			
6			

SITE NUMBER:
449

SITE NAME:
JOHN'S ISLAND

SITE ADDRESS:
1509 MAIN RD
JOHNS ISLAND, SC 29455

STAMP HERE:

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 20052
10.31.14
CHRISTOPHER D. MORIN

DRAWN BY:	GMW
CHECKED BY:	CDM
DATE DRAWN:	08-27-14
SUBMISSION:	FZD'S

SHEET TITLE:

ENLARGED SITE PLAN & ELEVATION

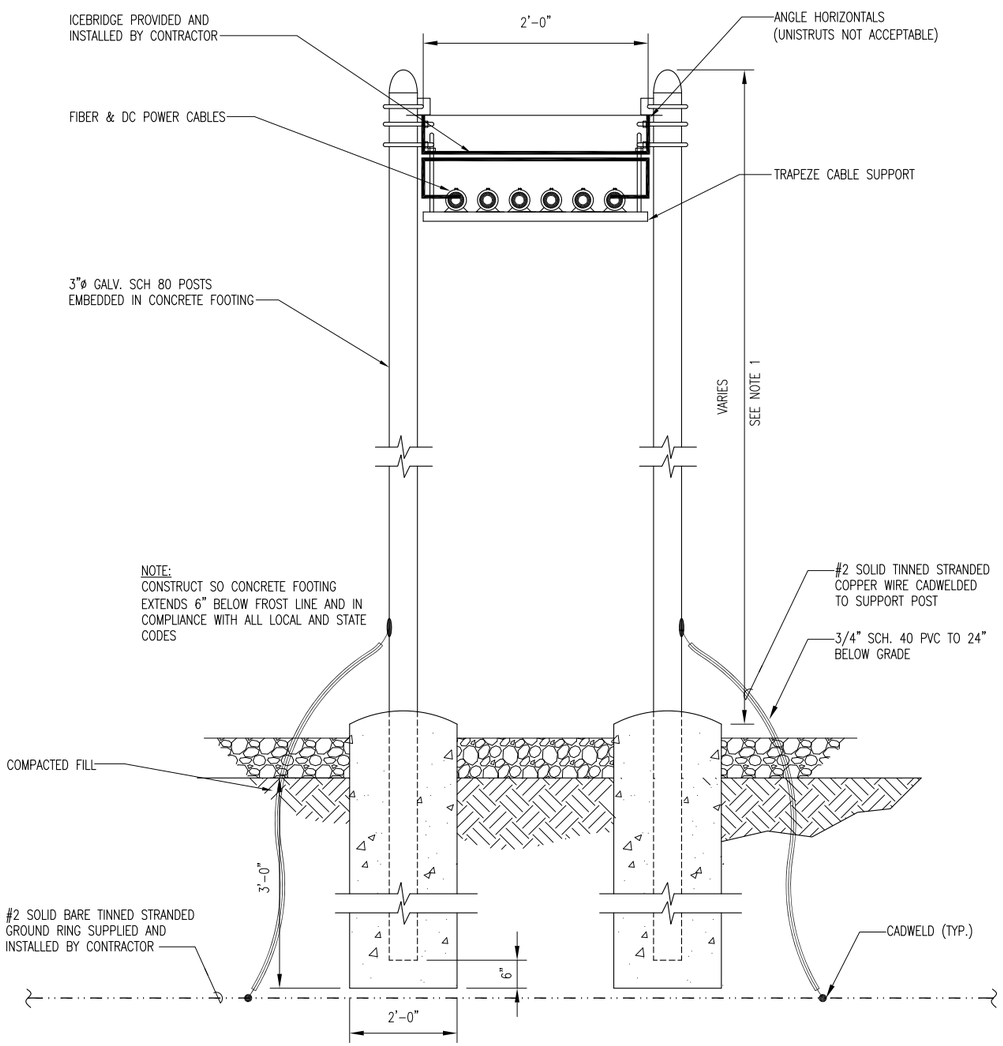
SHEET NUMBER: A-1 | REV. # 1

COA C02248

08-27-14 ALAN VALVERDE 11:39:14 Y:/Drawings - 2014/Berkley Electric/John's Island/_Zoning - REV 0 - 2014-08-27/A1.dwg

NOTES:

1. DESIGN REQUIREMENTS ARE PER LOCAL BUILDING CODE/1994 ANSI/ASCE7, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES AND ALL APPLICABLE STATE AND LOCAL CODES. THE BASIC GROUND WIND SPEED UTILIZED FOR DESIGN IS 100 MPH.
2. REFER TO THE SITE PLAN PREPARED BY OTHERS FOR BOUNDARY SURVEY AND SITE TOPOGRAPHY.
3. CONCRETE EQUIPMENT PAD SHALL BE PLACED OVER UNDISTURBED OR WELL COMPACTED SOIL, SEE NOTE 4.
4. EXISTING VEGETATION AND ORGANIC MATERIALS SHALL BE REMOVED FROM THE CONCRETE EQUIPMENT PAD AREAS. FILL SITE TO ORIGINAL ELEVATION WITH CLEAN SANDY SOIL. COMPACT TO OBTAIN 2500 PSF BEARING CAPACITY.
5. ALL THREADED STRUCTURAL FASTENERS FOR ANTENNA SUPPORT ASSEMBLIES SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8" MINIMUM DIAMETER BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE. ALL EXPOSED FASTENERS, NUTS AND WASHERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. CONCRETE EXPANSION ANCHORS SHALL BE HILTI KWIK BOLTS OR EQUIVALENT UNLESS OTHERWISE NOTED.
6. TRANSMITTER EQUIPMENT SHALL BE FURNISHED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF OWNER PROVIDED HARDWARE IS ATTACHED TO BID DOCUMENTS (SEE ATTACHMENT E) ALL OTHER HARDWARE TO BE FURNISHED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
7. SUPPORT POSTS SHALL BE SPACED 4'-0" MAX.
8. CABLE SUPPORT SPACING SHALL BE 3'-0" MAX.
9. ICE BRIDGE SHALL BE GALVANIZED GRIP-STRUT.
10. CONTRACTOR SHALL FURNISH AND INSTALL ICE BRIDGE STRUCTURE.



N.T.S. | ICEBRIDGE DETAIL | 1

08-27-14 ALAN VALVERDE 11:39:17 Y:/Drawings - 2014/Berkley Electric/John's Island/_Zoning - REV 0 - 2014-08-27/A2.dwg

BERKELEY ELECTRIC COOPERATIVE

551 REMBERT C. DENNIS BLVD.
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BC architects engineers

5661 COLUMBIA PIKE, SUITE 200
FALLS CHURCH, VA 22041-2868
TEL: (703) 671-6000
FAX: (703) 671-6300

SHEET REVISION

NO.	DESCRIPTION	BY	DATE
1			
2			
3			
4			
5			
6			

SITE NUMBER:
449

SITE NAME:
JOHN'S ISLAND

SITE ADDRESS:
1509 MAIN RD
JOHNS ISLAND, SC 29455

STAMP HERE:

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 20052
10.31.14
CHRISTOPHER D. MORIN

COA C02248

DRAWN BY:	GMW
CHECKED BY:	CDM
DATE DRAWN:	08-27-14
SUBMISSION:	FZD'S

SHEET TITLE:
ICEBRIDGE DETAIL

SHEET NUMBER:	REV. #
A-2	

EXHIBIT 3

ENVIRONMENTAL CORPORATION OF AMERICA

ENVIRONMENTAL | GEOTECHNICAL | WETLANDS | ECOLOGY | CULTURAL RESOURCES

FCC NEPA Environmental Checklist Report

Berkeley Electric Cooperative, Inc. – Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

ECA Project No. Q0519

SUBMITTED TO:

BC Architects Engineers, PLC
5661 Columbia Pike, Suite 200
Falls Church, VA 22041-2882

PREPARED BY:

Environmental Corporation of America
1375 Union Hill Industrial Court, Suite A
Alpharetta, GA 30004

April 11, 2014

BC Architects Engineers, PLC
5661 Columbia Pike, Suite 200
Falls Church, VA 22041-2882

Attention: Mr. Christopher Morin

Subject: FCC NEPA Environmental Checklist
Replacement of an Existing 260-Foot (Overall Height) Guyed Tower
With a Proposed 250-Foot Self-Supporting Lattice Telecommunications Structure
(254-Foot Overall Height with Appurtenances)
Berkeley Electric Cooperative, Inc. – Johns Island
1509 Main Road
Johns Island, Charleston County, South Carolina
ECA Project #: Q0519

Dear Mr. Morin:

Environmental Corporation of America (ECA) is pleased to provide this FCC NEPA Environmental Checklist report for the replacement of the existing guyed telecommunications structure. ECA understands that the existing 260-foot (overall height) guyed tower, which was constructed in 1984, is to be replaced by a 250-foot (254-feet overall height with appurtenances) self-supporting lattice tower to be located within 50-feet of the existing guyed tower, within an existing fenced compound area. The facility is located on a parcel owned by Berkeley Electric Cooperative, Inc. Wireless ground-level equipment would be placed within an existing building located near the base of the existing guyed tower. The project area location is shown on Figure 1 of Appendix A.

ECA has used the *FCC Environmental Compliance Checklist* in our evaluation of the undertaking for FCC Environmental Compliance (Appendix B). Where applicable, we have consulted the Agency sources indicated in Appendices A through F.

The subject property is privately owned. ECA reviewed the Legareville, SC (1959, photorevised 1971) USGS 7.5 Minute Topographic Quadrangle Map and the NationalAtlas.gov GIS mapper, Federal Lands and Wilderness Preservation System layers for identified officially designated wilderness areas or wildlife preserves within a one-mile radius of the project area. No federal wilderness areas or wildlife preserves were identified on the USGS Topographic Map or NationalAtlas.gov GIS mapper reviewed. Based on this information, ECA believes the proposed facility would not be located in an officially designated wilderness area or wildlife preserve.

The South Carolina Field Office of the US Fish and Wildlife Service (USFWS) specifies that for new construction projects that would not affect federally threatened and endangered species and that

meet one of the four Project Design and Maintenance criteria, "no further coordination with the Service is necessary". A "no effect" determination is made when there is no suitable habitat for federally threatened and endangered species within the project area. If suitable habitat for federally threatened and endangered species is present within the project area or the project does not meet one of the four Project Design and Maintenance criteria set forth by the South Carolina Field Office, then the USFWS must be consulted. ECA has found that the proposed undertaking is unlikely to affect federally threatened and endangered species or designated critical habitat and also meets one of the four Project Design and Maintenance criteria. Therefore, no documentation was sent to the USFWS. Documentation of our findings is included in Appendix C.

The *Nationwide Programmatic Agreement for Review Under the National Preservation Act; Final Rule* (NPA) signed into effect on March 7, 2005 stipulates that certain federal undertakings are not subject to Section 106 Review by the State Historic Preservation Office (SHPO) / Tribal Historic Preservation Office (THPO) pursuant to the Federal Communications Commission (FCC) environmental rules because certain types of undertakings are deemed unlikely to adversely impact Historic Properties. The proposed replacement tower meets all of the requirements found within Section III.B. of the NPA. Therefore the replacement tower is exempt from individual Section 106 Review and Tribal consultation requirements that would typically be applicable to new telecommunications facilities. ECA has used a *Replacement Tower Exclusion Checklist* in our evaluation of the proposed undertaking (Appendix D).

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 45019C0655J, dated November 17, 2004, indicates the project area is not located within a Special Flood Hazard Area of the 100-year floodplain (Appendix E). Based on the research performed and our site visit, it does not appear that jurisdictional waters or wetlands would be impacted by the proposed facility (Appendix F).

We understand that high intensity white lights would not be deployed in conjunction with the proposed undertaking. Further, this NEPA Review includes evaluation of impacts or effects relative to RF Exposure. For RF Exposure assessment, ECA relies solely on the project RF Engineers.

In summary, ECA has found no evidence that adverse environmental impacts or effects, as defined in the FCC Rules contained in 47 CFR Sections 1.1301 through 1.1319, would result from the proposed tower construction.

We appreciate this opportunity to provide you with these professional services. If you have any questions regarding this report or the project in general, please call at your convenience.

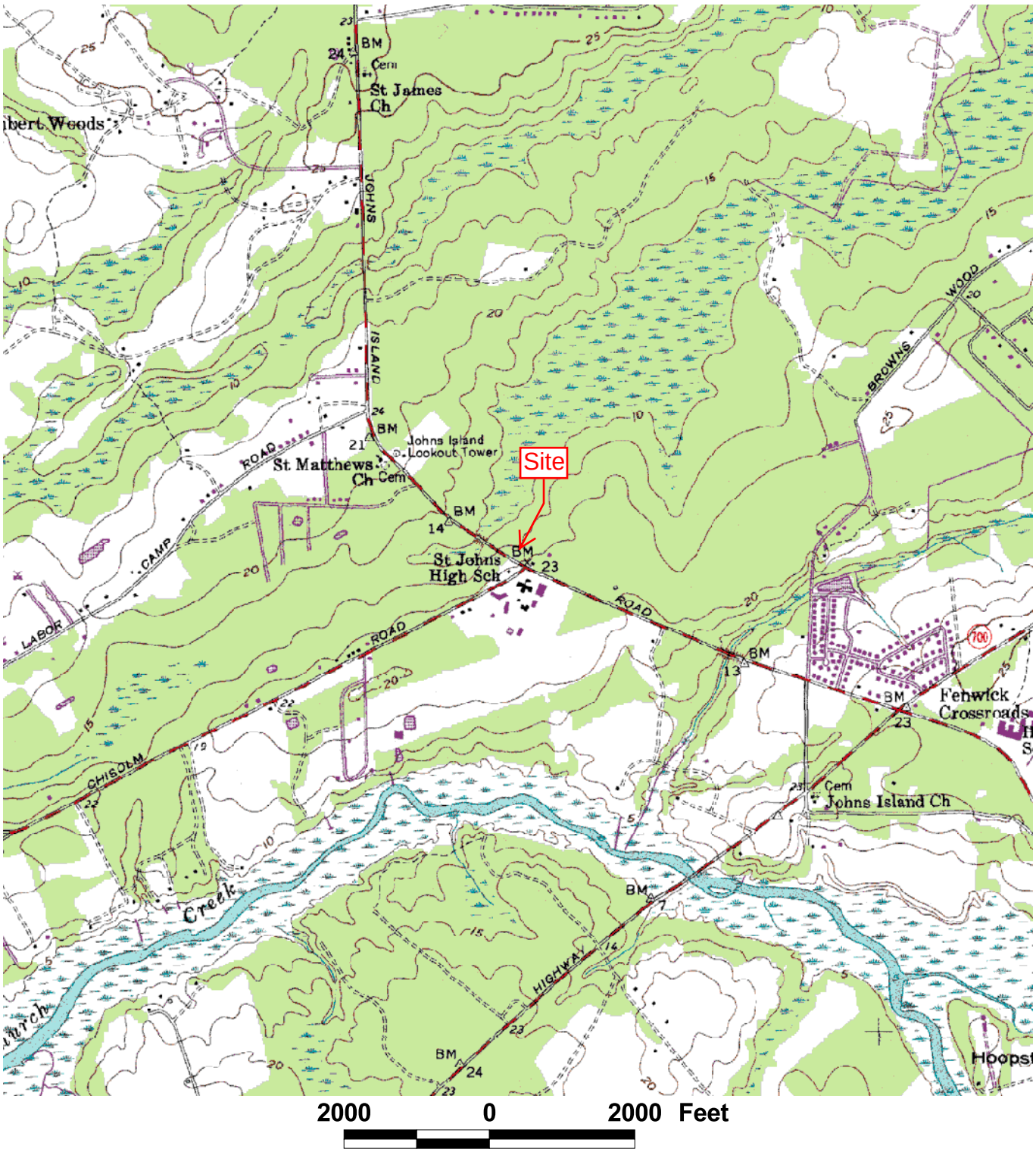
Sincerely,
Environmental Corporation of America

Matthew Fields
Project Manager

Ben Salter
Principal Scientist

APPENDIX A

USGS Topographic Quadrangle Map



Source: USGS Topographic Quadrangle Map, 7.5 Minute Series, Legareville, SC (1959, photorevised 1971).

N

Berkeley Electric Cooperative, Inc. – Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

Figure 1: Site Location Plan

ECA Proj. #: Q0519

APPENDIX B

FCC NEPA Environmental Compliance Checklist

FCC Environmental Compliance Checklist

Site Name: Berkeley Electric Cooperative, Inc. – Johns Island
ECA Project No.: Q0519
Date: April 7, 2014

YES	NO		
____	X	1.	Will the facility be located in an officially designated wilderness area?
____	X	2.	Will the facility be located in an officially designated wildlife preserve?
____	X	3.	Will the facility affect federally listed, threatened or endangered species or designated critical habitats?
____	X	4.	Is the facility likely to jeopardize the continued existence of any federally proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats?
____	X*	5.	Will the facility affect districts, sites, buildings, structures, objects, or other cultural resources listed, or eligible for listing, in the National Register of Historic Places? * The *Nationwide Programmatic Agreement for Review Under the National Preservation Act* (NPA) signed into effect on March 7, 2005 stipulates certain federal undertakings are not subject to Section 106 Review by the State Historic Preservation Office (SHPO). This undertaking meets the exclusion. See Attachment D for documentation.
____	X*	6.	Will the facility affect Indian religious sites? * The *Nationwide Programmatic Agreement for Review Under the National Preservation Act* (NPA) signed into effect on March 7, 2005 stipulates certain federal undertakings are not subject to the procedures for Native American consultation. This undertaking meets the exclusion.
____	X	7.	Will the facility be located in a 100-year floodplain?
____	X	8.	Will the construction of the facility involve a significant change in surface features (e.g., wetland fill, deforestation, or water division)?
____	X	9.	Will the antenna or tower and/or supporting structure be equipped with high intensity white lights and be located in or near a residential neighborhood, as defined by the applicable zoning law?
____	X	10.	Will the proposed facility fall within the categories listed in Table 1 of Section 1.1307(b) and cause exposure of workers or general public to levels of radio-frequency radiation in excess of the limits in Section 1.1310?

IF ALL THE QUESTIONS ABOVE WERE ANSWERED "NO", NO FURTHER ACTION IS REQUIRED FOR FCC ENVIRONMENTAL PURPOSES.

PROJECT MANAGER

REVIEWED BY

APPENDIX C

Protected Species Information

April 7, 2014

BC Architects Engineers, PLC
5661 Columbia Pike, Suite 200
Falls Church, VA 22041-2882

Attention: **Mr. Christopher Morin**

Subject: **Informal Biological Assessment**
Replacement of an Existing 260-Foot (Overall Height) Guyed Tower
With a Proposed 250-Foot Self-Supporting Lattice Telecommunications Structure
(254-Foot Overall Height with Appurtenances)
Berkeley Electric Cooperative, Inc. – Johns Island
1509 Main Road
Johns Island, Charleston County, South Carolina
USGS Legareville, SC 7.5-minute Quadrangle Map
N 32° 43' 36.4" W 80° 05' 56.5"
ECA Project #: Q0519

Dear Mr. Morin:

Environmental Corporation of America (ECA) is assisting BC Architects Engineers, PLC (on behalf of Berkeley Electric Cooperative, Inc.) with environmental due diligence for the proposed project in conjunction with the preparation of an FCC NEPA Environmental Checklist in accordance with 47 CFR Section 1.1307.

For new construction projects, the South Carolina Field Office of the US Fish and Wildlife Service (USFWS) specifies for projects that would not effect federally listed species and that would meet one of the four Project Design and Maintenance criteria, "*no further coordination with the Service is necessary*" (see Appendix D). A "no effect" determination is made when there is no suitable habitat for federally threatened and endangered species within the project area. If suitable habitat for federally threatened and endangered species is present within the project area or the project does not meet one of the four Project Design and Maintenance criteria set forth by the South Carolina Field Office, then the USFWS must be consulted.

No habitat suitable for federally threatened and endangered species listed as occurring within Charleston County, South Carolina or critical habitat is present within the project area. Further, the proposed undertaking meets Project Design and Maintenance criteria #4. The proposed replacement tower would

not increase the height of the existing tower above 400 feet or increase its footprint into natural vegetative communities. In addition, no bald eagle habitat appears to be present in the project vicinity and no evidence of bald eagle nesting was observed. Therefore, no documentation was sent to the USFWS and this communication documents our finding of "no effect" for federally threatened and endangered species and critical habitat.

Background

The project area location is shown on Figure 1 of Appendix A. Figure 2 is a survey of the project area provided to ECA by BC Architects Engineers, PLC. Figure 3 is a recent aerial photograph of the site area. Berkeley Electric Cooperative, Inc. plans to replace an existing 260-foot (overall height) guyed tower with a 250-foot (254-feet overall height with appurtenances) self-supporting lattice tower that would be located within 50-feet of the existing guyed tower, within an existing fenced compound area. The proposed structure would be fitted with dual red/white, medium intensity flashing strobes with steady burning red side markers, and guy wires would not be used.

The project area includes a 2.07 acre (90,169 ft^2) compound area. The proposed project area is currently occupied by a graveled area cleared of trees. Photographs of the project area are provided in Appendix B. Descriptions of the photographs are provided underneath each photograph and photograph locations are graphically depicted on Figure 2.

Based on National Wetlands Inventory data, the project area is not mapped as a wetland. Further, ECA observed no evidence within the project impact area suggesting the presence of surface waters or of the three indicators required for an area to be characterized as wetland. Therefore, it appears that the proposed undertaking would not impact jurisdictional waters or wetlands.

Purpose

The purpose of this letter is to provide BC Architects Engineers, PLC (on behalf of Berkeley Electric Cooperative, Inc.) with documentation of our investigations and findings relative to federally threatened and endangered species within the project area

Review of Available Documentation and Site Inspection

ECA has reviewed the most current USFWS County List of Protected Species for Charleston County, South Carolina and the Critical Habitat Mapper (see Appendix C). ECA has also reviewed information from various sources pertaining to the habitat requirements of the listed species. Habitat at the site was evaluated during our March 19, 2014 site visit, which was conducted by Rachel Sudnik of ECA.

Discussion of Findings

Because the proposed undertaking would not impact surface waters or wetlands, aquatic species are not a concern for this undertaking. The nearest surface water is Church Creek located approximately 3,350 feet south of the proposed compound area. Non-aquatic species recognized by the U.S. Fish and Wildlife Service as inhabiting Charleston County, South Carolina are listed in the table below along with a

habitat description and a finding of effect for each. No designated critical habitat was identified in the project area vicinity.

Common Name	Scientific Name	Federal Status*	Habitat	Finding of Effect
Bald Eagle	*Haliaeetus leucocephalus*	BGEPA and MBTA	Requires tall trees along open waters for nesting and avoids areas where the habitat has been disturbed by humans.	No suitable habitat present; No Effect
Wood stork	*Mycteria americana*	E	High quality freshwater and brackish wetlands	No suitable habitat present; No Effect
Red-cockaded woodpecker	*Picoides borealis*	E	Generally nests in mature pine with low understory vegetation and forages in large pine and pine hardwood stands greater than 30 years in age and preferably greater than 10 inches in diameter	No suitable habitat present; No Effect
Bachman's warbler	*Vermivora bachmanii*	E	Typically nests in low, wet, forested areas containing variable amounts of water (usually with some permanent water) with openings in the forest canopy with a dense ground cover; migratory habitat preferences include floodplain forests and areas with a forest canopy, and also scrub vegetation on the coast; winter habitat includes dry, semi-deciduous forest, forested wetlands and forested urban areas	No suitable habitat present; No Effect
Canby's dropwort	*Oxypolis canbyi*	E	Typically grows in wet meadows, wet pineland savannas, ditches, sloughs and around the edges of Cypress-pine ponds; according to available species descriptions, the healthiest populations seem to occur in open bays or ponds which are wet most of the year and have little or no canopy cover; ideal soils for Canby's dropwort have a medium to high organic content and a high water table, and are also acidic, deep, and poorly drained	No suitable habitat present; No Effect
Chaffseed	*Schwalbea americana*	E	Typically found in sandy (sandy peat, sandy loam), acidic, seasonally moist to dry soils; generally found in habitats described as open, moist pine flatwoods, fire-maintained savannas, ecotonal areas between peaty wetlands and xeric sandy soils, and other open grass-sedge systems	No suitable habitat present; No Effect
Flatwoods salamander	*Ambystoma cingulatum*	T	Prefer open longleaf pine or slash pine flatwoods or savannas with wiregrass	No suitable habitat present; No Effect
Seabeach amaranth	*Amaranthus pumilus*	T	Typically found on overwash flats at accreting ends of islands and lower foredunes and upper strands of non-eroding beaches; occasionally establishes small temporary populations in other habitats including sound-side beaches, blowouts in foredunes, and sand and shell material placed as beach replenishment or dredge spoil; seems to require extensive areas of barrier island beaches and inlets	No suitable habitat present; No Effect

* BGEPA – Bald and Golden Eagle Protection Act; MBTA – Migratory Bird Treaty Act;
E – Endangered; T – Threatened

ECA also reviewed the South Carolina DNR Heritage Trust Program database for wood stork or other colonial wading bird nesting colonies within 3-miles of the project area. According to Heritage Trust Program records, no nesting colonies are located within 3-miles of the project area.

Conclusions

Based on the information reviewed and our site inspections, ECA has found no evidence to indicate that federally threatened and endangered species inhabit the project area (impact zone) or that designated critical habitat is present in the project vicinity.

We have therefore determined that the proposed undertaking would have no effect on federally threatened and endangered species or designated critical habitat. A Tower Site Evaluation Form is included in Appendix D.

Closure

Rachel Sudnik of ECA conducted the site visit and area inspection; Matthew Fields collected the applicable information and compiled this report. Ben Salter, a degreed biologist, reviewed this report. His resume is included in Appendix E.

Mr. Salter has determined a finding of "no effect" concerning federally threatened and endangered species and designated critical habitat. Based on this finding and project specifications, no consultation with the USFWS is required. If you have any questions or concerns regarding this documentation please contact our office at (828) 505-0755.

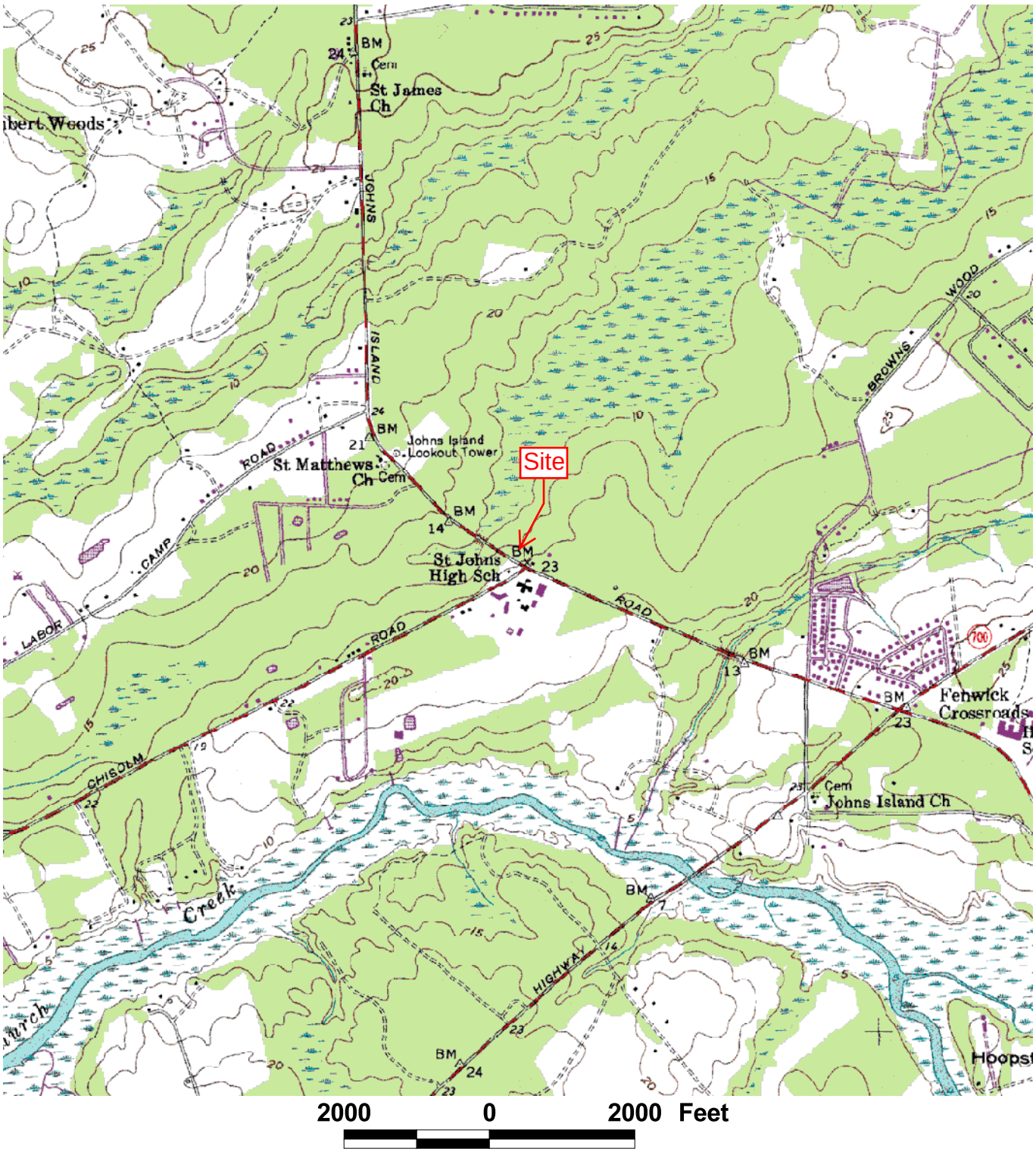
Sincerely,
Environmental Corporation of America

Matthew Fields
Project Scientist

Ben Salter
Principal Biologist

APPENDIX A

Figures



Source: USGS Topographic Quadrangle Map, 7.5 Minute Series, Legareville, SC (1959, photorevised 1971).

N

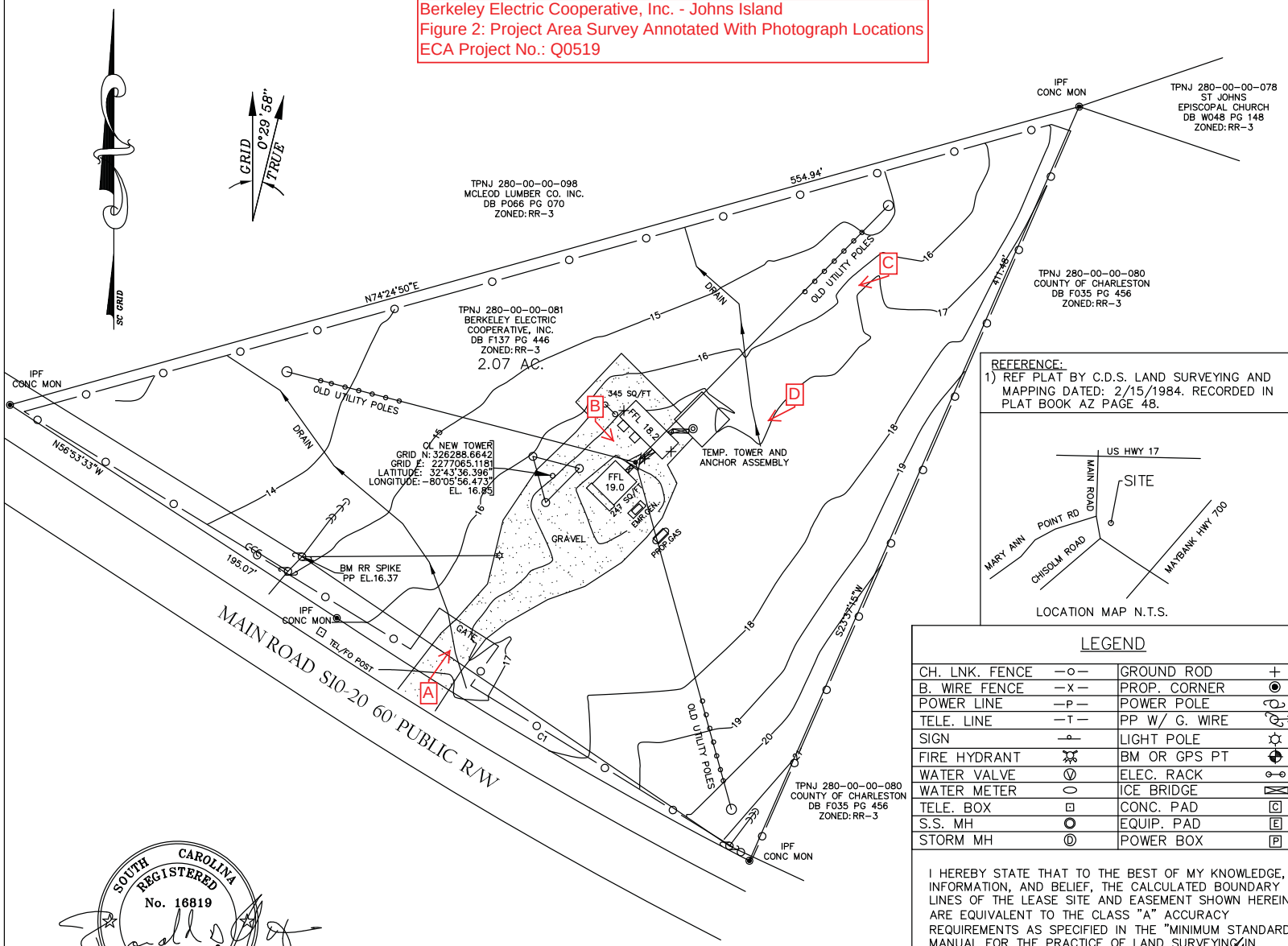
Berkeley Electric Cooperative, Inc. – Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

Figure 1: Site Location Plan

ECA Proj. #: Q0519

Berkeley Electric Cooperative, Inc. - Johns Island
Figure 2: Project Area Survey Annotated With Photograph Locations
ECA Project No.: Q0519



CURVE TABLE				
CURVE	LENGTH	RADIUS	BEARING	CHORD
C1	239.43	2179.63	S59°31'50"E	239.31

REVISIONS			
1	3/3/14	ADD NEW TOWER LOCATION	BB
NO.	DATE	DESCRIPTION	BY

NOTES:
1) THIS EXHIBIT REPRESENTS THE EXISTING CONDITIONS AND LAND USE OF THE EXISTING PARCEL AND IS NOT INTENDED FOR ANY OTHER USE.
2) ALL BEARINGS ARE SOUTH CAROLINA STATE GRID, ALL COORDINATES ARE NAD 83 AND ALL ELEVATIONS ARE NAVD 88.
3) TAX MAP PARCEL NO. 280-00-00-081
4) THIS PROPERTY IS CURRENTLY ZONED: RR-3 ZONING. (PER CHARLESTON COUNTY OFFICIALS)
5) RATIO OF PRECISION = 1/10,000.
6) AREA BY COORDINATE METHOD.
7) THE LOCATIONS OF ANY UNDERGROUND UTILITIES IF SHOWN ARE BASED ON PAINTED MARKINGS OBSERVED IN THE FIELD AND/OR ARE APPROXIMATE.
8) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT WHICH MAY REVEAL ADDITIONAL CONVEYANCES, EASEMENTS OR RIGHTS-OF-WAY NOT SHOWN HEREIN.

REFERENCE:
1) REF PLAT BY C.D.S. LAND SURVEYING AND MAPPING DATED: 2/15/1984. RECORDED IN PLAT BOOK AZ PAGE 48.

LOCATION MAP N.T.S.

NOTE:
THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY BY RONALD PLATNER, PROPERTY LINES WERE TAKEN FROM EXISTING FIELD EVIDENCE. EXISTING DEEDS AND PLATS OF PUBLIC RECORD FROM SURVEYS AND DOCUMENTS PROVIDED TO THE SURVEYOR BY THE OWNER OR CLIENT.

I HEREBY CERTIFY THAT I HAVE CONSULTED THE FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP NO. 45019C0655J DATED 11/17/2004: AND TO THE BEST OF MY KNOWLEDGE AND BELIEF THE SUBJECT PROPERTY IS LOCATED IN "ZONE X" WHICH IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE A, B, OR V.

LEGEND

CH. LNK. FENCE	—o—	GROUND ROD	+
B. WIRE FENCE	—x—	PROP. CORNER	◉
POWER LINE	—P—	POWER POLE	
TELE. LINE	—T—	PP W/ G. WIRE	
SIGN	—▫—	LIGHT POLE	☼
FIRE HYDRANT		BM OR GPS PT	
WATER VALVE	Ⓥ	ELEC. RACK	
WATER METER	⬭	ICE BRIDGE	
TELE. BOX	⊡	CONC. PAD	C
S.S. MH	Ⓢ	EQUIP. PAD	E
STORM MH	Ⓓ	POWER BOX	P

I HEREBY STATE THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THE CALCULATED BOUNDARY LINES OF THE LEASE SITE AND EASEMENT SHOWN HEREIN ARE EQUIVALENT TO THE CLASS "A" ACCURACY REQUIREMENTS AS SPECIFIED IN THE "MINIMUM STANDARDS MANUAL FOR THE PRACTICE OF LAND SURVEYING IN SOUTH CAROLINA."

RONALD D. PLATNER, P.L.S. NO. 16819

SOUTH CAROLINA REGISTERED No. 16819 LAND SURVEYOR RONALD D. PLATNER

ASBUILT EXHIBIT

PREPARED FOR

BC ARCHITECTS ENGINEERS, PLC

JOHNS ISLAND
TOWER SITE
SITE ID#: 449

JOHNS ISLAND, CHARLESTON COUNTY, SOUTH CAROLINA

RONALD D. PLATNER, PLS
1 WISE FERRY COURT
LEXINGTON, S.C. 29072
TELE. (803) 315-1238

SCALE: 1" = 50' 0' 25' 50' 100'

DRAWING NAME	DATE	SHEET NO.
JOHNS ISL..DWG	FEB. 06, 2014	C1
PROJECT NO. JOHNS ISLAND	FIELD BOOK NO. (SEE FILE)	

Source: Google Earth Aerial Photograph (2013).

N

Berkeley Electric Cooperative, Inc. – Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

Figure 3: Aerial Photograph

ECA Proj. #: Q0519

U.S. Fish and Wildlife Service

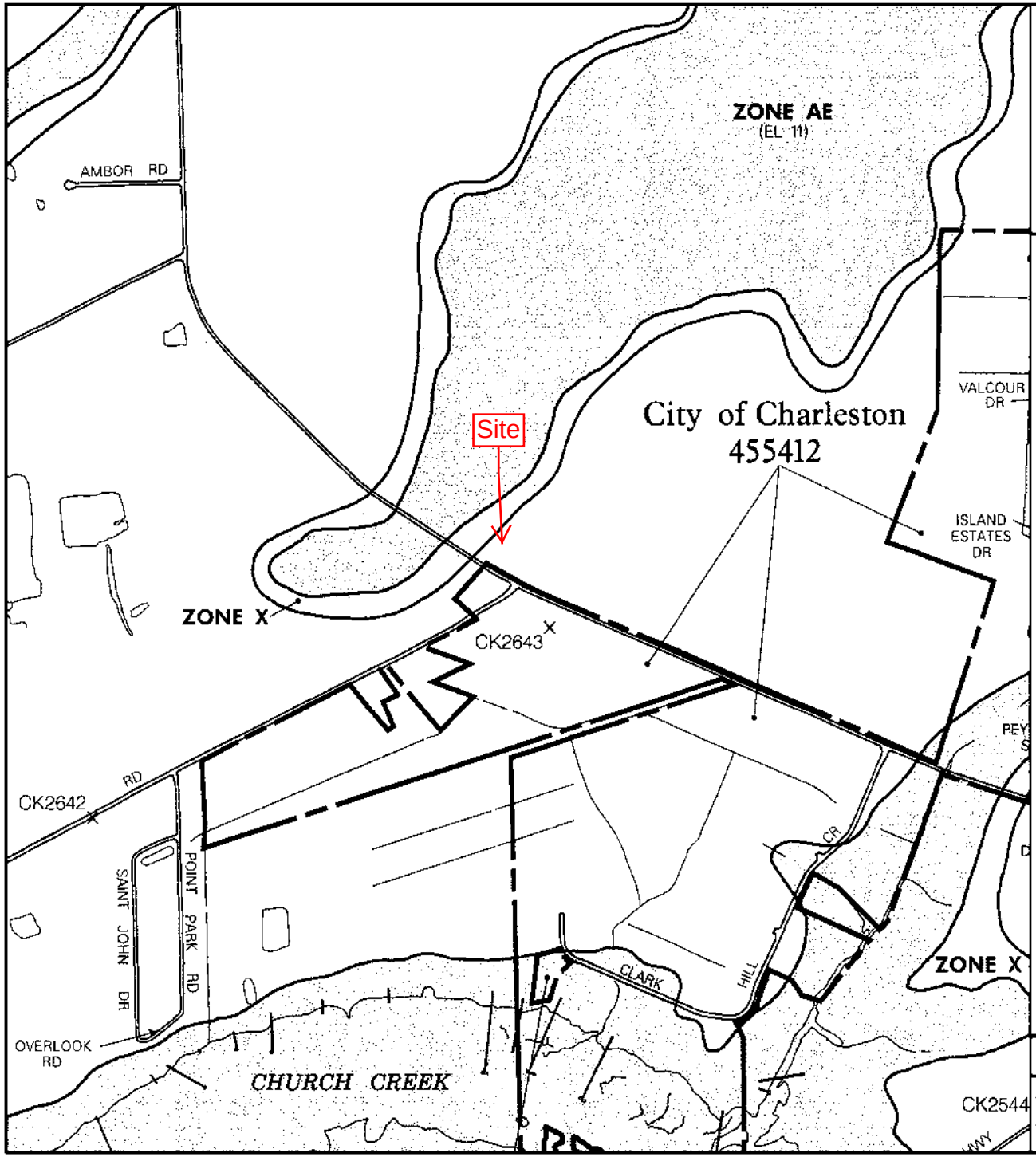
National Wetlands Inventory

Johns Island

Mar 17, 2014

No operational layers selected or no legend available

User Remarks:



APPROXIMATE SCALE

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

ME

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CHARLESTON COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS

PANEL 655 OF 855

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHARLESTON, CITY OF	455412	0655	J
CHARLESTON, COUNTY	455413	0655	J

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
45019C0655J

EFFECTIVE DATE:
NOVEMBER 17, 2004

Federal Emergency Management Agency

APPENDIX B

Photographs

A: Northeasterly View of the Existing Telecommunications Facility

B: Southeasterly View of the Existing Guyed Tower

Berkeley Electric Cooperative, Inc. - Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

Photographs

ECA Proj. #: Q0519

C: Southwesterly View of the Existing Telecommunications Facility

D: Southwesterly View of the Existing Telecommunications Facility

Berkeley Electric Cooperative, Inc. - Johns Island

1509 Main Road
Johns Island, Charleston County, South Carolina

Photographs

ECA Proj. #: Q0519

APPENDIX C

Protected Species Information

Rare, Threatened, and Endangered Species and Communities Known to Occur in Charleston County
March 13, 2012

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Vertebrate Animals					
Accipiter cooperii	Cooper's Hawk			G5	S3?
Acipenser brevirostrum	Shortnose Sturgeon	LE: Endangered	SE: Endangered	G3	S3
Acris crepitans	Northern Cricket Frog			G5	S5
Aimophila aestivalis	Bachman's Sparrow			G3	S3
Ambystoma cingulatum	Flatwoods Salamander	LT: Threatened	SE: Endangered	G2	S1
Ambystoma tigrinum tigrinum	Eastern Tiger Salamander			G5T5	S2S3
Caretta caretta	Loggerhead	LT: Threatened	ST: Threatened	G3	S3
Charadrius wilsonia	Wilson's Plover		ST: Threatened	G5	S3?
Clemmys guttata	Spotted Turtle		ST: Threatened	G5	S5
Condylura cristata	Star-nosed Mole			G5	S3?
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat		SE: Endangered	G3G4	S2?
Crotalus horridus	Timber Rattlesnake			G4	SNR
Dendroica virens	Black-throated Green Warbler			G5	S4
Elanoides forficatus	American Swallow-tailed Kite	SC: Sp. of Concern	SE: Endangered	G5	S2
Haliaeetus leucocephalus	Bald Eagle		ST: Threatened	G5	S2
Heterodon simus	Southern Hognose Snake			G2	SNR
Ictinia mississippiensis	Mississippi Kite			G5	S4
Lasiurus cinereus	Hoary Bat			G5	SNR
Limnothlypis swainsonii	Swainson's Warbler			G4	S4
Melanerpes erythrocephalus	Red-headed Woodpecker			G5	SNR
Microtus pennsylvanicus	Meadow Vole			G5	SNR
Micrurus fulvius	Eastern Coral Snake			G5	S2
Mycteria americana	Wood Stork	LE: Endangered	SE: Endangered	G4	S1S2
Myotis austroriparius	Southeastern Bat			G3G4	S1
Neotoma floridana	Eastern Woodrat			G5	S3S4
Neotoma floridana floridana	Eastern Woodrat			G5T5	S3S4
Ophisaurus compressus	Island Glass Lizard			G3G4	S1S2
Pelecanus occidentalis	Brown Pelican			G4	S1S2
Phoca vitulina	Harbor Seal			G5	SNA
Picoides borealis	Red-cockaded Woodpecker	LE: Endangered	SE: Endangered	G3	S2
Plegadis falcinellus	Glossy Ibis			G5	SHB,SNRN
Pseudobranchus striatus	Dwarf Siren		ST: Threatened	G5	S2

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Rana capito	Gopher Frog		SE: Endangered	G3	S1
Sciurus niger	Eastern Fox Squirrel			G5	S4
Seminatrix pygaea	Black Swamp Snake			G5	SNR
Sterna antillarum	Least Tern		ST: Threatened	G4	S3
Tyto alba	Barn-owl			G5	S4
Ursus americanus	Black Bear			G5	S3?
Vermivora bachmanii	Bachman's Warbler	LE: Endangered	SE: Endangered	GH	SX
Animal Assemblage					
Waterbird Colony				GNR	SNR
Vascular Plants					
Agalinis linifolia	Flax Leaf False-foxglove			G4?	SNR
Agrimonia incisa	Incised Groovebur			G3	S2
Amaranthus pumilus	Seabeach Amaranth	LT: Threatened		G2	S1
Amphicarpum muehlenbergianum	Blue Maiden-cane			G4	S2S3
Anthaenantia rufa	Purple Silkyscale			G5	S2
Asclepias pedicellata	Savannah Milkweed			G4	S2
Botrychium lunarioides	Winter Grape-fern			G4?	S1
Calopogon barbatus	Bearded Grass-pink			G4?	S2
Canna flaccida	Bandana-of-the-everglades			G4?	S2
Carex decomposita	Cypress-knee Sedge			G3	S2
Carex elliottii	Elliott's Sedge			G4?	S1
Chasmanthium nitidum	Shiny Spikegrass			G3	S1
Coreopsis gladiata	Southeastern Tickseed			G4G5	SNR
Coreopsis integrifolia	Ciliate-leaf Tickseed			G1G2	S1
Cornus racemosa	Stiff Dogwood			G5?	S1?
Cyperus tetragonus	Piedmont Flatsedge			G4?	S2
Dionaea muscipula	Venus' Fly-trap			G3	S3
Eleocharis tricostata	Three-angle Spikerush			G4	S2?
Eleocharis vivipara	Viviparous Spike-rush			G5	S1
Eryngium aquaticum var. *ravenelii*	Ravenel's Eryngo			G4T2T4Q	S1
Eupatorium anomalum	Florida Thorough-wort			G2G3	S1?
Eupatorium fistulosum	Hollow Joe-pye Weed			G5?	SNR
Forestiera godfreyi	Godfrey's Privet			G2	S1
Galactia elliottii	Elliott's Milkpea			G5	S1
Helenium pinnatifidum	Southeastern Sneezeweed			G4	S2
Hypericum nitidum	Carolina St. John's-wort			G4	S1

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Ipomoea macrorhiza	Large-stem Morning-glory			G3G5	S1
Ipomoea stolonifera	Beach Morning-glory			G5?	SNR
Iris hexagona	Walter's Iris			G4G5	S1
Lepuropetalon spathulatum	Southern Lepuropetalon			G4G5	S2
Lilaeopsis carolinensis	Carolina Lilaeopsis			G3G5	S2
Listera australis	Southern Twayblade			G4	S2
Litsea aestivalis	Pondspice			G3	S3
Lobelia boykinii	Boykin's Lobelia			G2G3	S3
Ludwigia lanceolata	Lance-leaf Seedbox			G3	S1
Lysimachia hybrida	Lance-leaf Loosestrife			G5	S1
Monotropsis odorata	Sweet Pinesap			G3	S2
Muhlenbergia filipes	Bentgrass			G5?Q	S3S4
Orobanche uniflora	One-flowered Broomrape			G5	S2
Oxypolis canbyi	Canby's Dropwort	LE: Endangered		G2	S2
Paspalum bifidum	Bead-grass			G5	S2
Peltandra sagittifolia	Spoon-flower			G3G4	S2
Physostegia leptophylla	Slender-leaved Dragon-head			G4?	SNR
Pieris phillyreifolia	Climbing Fetter-bush			G3	S1
Plantago sparsiflora	Pineland Plantain			G3	S2
Platanthera integra	Yellow Fringeless Orchid			G3G4	S1
Psilotum nudum	Whisk Fern			G5	S1
Pteroglossaspis ecristata	Crestless Plume Orchid			G2G3	S2
Quercus austrina	Bluff Oak			G4?	S1
Rhexia aristosa	Awned Meadowbeauty			G3	S3
Rhynchospora breviseta	Short-bristle Baldrush			G3G4	S1
Rhynchospora careyana	Horned Beakrush			G4?Q	S3
Rhynchospora globularis var. *pinetorum*	Beakrush			G5?T3?	S1
Rhynchospora harperi	Harper Beakrush			G4?	S1
Rhynchospora inundata	Drowned Hornedrush			G4?	S2?
Rhynchospora tracyi	Tracy Beakrush			G4	S3
Sageretia minutiflora	Tiny-leaved Buckthorn			G4	S3
Sarracenia rubra	Sweet Pitcher-plant			G4	S3S4
Schwalbea americana	Chaffseed	LE: Endangered		G2G3	S3
Scleria baldwinii	Baldwin Nutrush			G4	S2
Spiranthes laciniata	Lace-lip Ladies'-tresses			G4G5	S1S2

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Tridens carolinianus	Carolina Fluff Grass			G3G4	S1
Tridens chapmanii	Chapman's Redtop			G3	S1
Triphora trianthophora	Nodding Pogonia			G3G4	S2
Xyris brevifolia	Short-leaved Yellow-eyed Grass			G4G5	S1
Xyris difformis var. *floridana*	Florida Yellow-eyed Grass			G5T4T5	S2
Xyris elliottii	Elliott Yellow-eyed Grass			G4	S2
Xyris stricta	Pineland Yellow-eyed Grass			G4	S1
Communities					
Atlantic coastal plain depression meadow	Depression Meadow			G5	SNR
Bald cypress - tupelo gum swamp				G5	S4
Bald cypress - water tupelo swamp	Bald Cypress - Tupelo Gum Swamp			G5	SNR
Bottomland hardwoods				G5	S4
Carolina bay				GNR	SNR
Depression meadow				G3	S2
Estuarine intertidal mud flat	Intertidal Mud/sand Flat			G5	SNR
High pocosin	Pocosin			G3G4	SNR
Interior freshwater marsh				G3	SNR
Juniperus virginiana var. silicicola - zanthoxylum clava-herculis - quercus virginiana - (sabal palmetto) / sageretia minutiflora - (sideroxylon tenax) woodland	South Atlantic Coastal Shell Midden Woodland			G2?	SNR
Longleaf pine flatwoods				GNR	SNR
Maritime forest				G2	S2
Maritime shrub thicket				G4	S2S3
Mesic mixed hardwood forest				G5	S4
Middens				GNR	S3
Non-alluvial swamp forest				G5	S4S5
Pine - scrub oak sandhill				G4	S4
Pine flatwoods				G5	S3S4
Pocosin				G3G4	S3S4
Pond cypress pond				G4	S4
Pond cypress savanna				G3	S2
Pond pine woodland				G4G5	S3

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
Salt flat (allard)	Salt Flat			G5	SNR
Salt marsh				G5	S5
Salt shrub thicket (allard)	Salt Shrub Thicket			G5	SNR
South atlantic inland maritime forest	Maritime Forest			G2	SNR
Spruce pine - mixed hardwood forest				G3	S2
Spruce pine / mixed hardwood				GNR	SNR
Swamp tupelo pond				G3	S3
Tidal freshwater marsh				G3	S3
Geological					
Carolina bay				GNR	SNR

APPENDIX D

USFWS Guidance

TOWER SITE EVALUATION FORM

1. Location (Provide maps if possible):
   State: SC County: Charleston
   Latitude/Longitude/GPS Grid: N 32° 43' 36.4" W 80° 05' 56.5"
   Directions: From Johns Island, SC: Head northeast on Bohicket Rd toward Hoopstick Island Rd; The site (1509 Main Road) will be on the right.

2. Elevation above mean sea level: ~17 feet

3. Will the equipment be co-located on an existing FCC licensed tower or other existing structure (building, billboard, etc.)? (y/n) No If yes, type of structure: _____

   If yes, no further information is required.

4. If no, provide proposed specifications for new tower:
   Height: 254' Construction type (lattice, monopole, etc.): Self-Supporting Lattice
   Guy-wired? (y/n) No No. Bands: NA Total No. Wires: NA
   Lighting (Security & Aviation): dual red/white, medium intensity flashing strobes with steady burning red side markers

If tower will be lighted or guy-wired, complete items 5-20. If not, complete only items 19 and 20.

5. Area of tower footprint in acres or square feet: 2.07 acres

6. Length and width of access road in feet: ~50' long by 20' wide

7. General description of terrain – mountainous, rolling hills, flat to undulation, etc. Photographs of the site and surrounding area are beneficial: coastal

8. Meteorological conditions (incidence of fog, low ceilings, etc.): _____

9. Soil type(s): Wando loamy fine sand and Leon fine sand

10. Habitat types and land use on and adjacent to the site, by acreage and percentage of total: 100% graveled area cleared of trees within the existing telecommunications compound

11. Dominant vegetative species in each habitat: NA

12. Average diameter breast height of dominant tree species in forested areas: NA

13. Will construction at this site cause fragmentation of a larger block of habitat into two or more smaller blocks? (y/n) No If yes, describe:

14. Is evidence of birds roosts or rookeries present? (y/n) No If yes, describe:

15. Distance to nearest wetland area (forested swamp, march, riparian, marine, etc.), and coastline if applicable: forested wetland area located approximately 425 feet to the northwest of the proposed replacement tower center

16. Distance to nearest telecommunications tower: Unknown

17. Potential for co-location of antennas on existing towers or other structures: No

18. Have measures been incorporated to minimizing impacts to migratory birds? (y/n) Yes, no guy wires would be used; the tower would be less than 450 feet, the height at which the FCC requires that an EA be prepared to address the potential for migratory bird impacts

19. Has an evaluation been made to determine if proposed facility may affect listed or proposed endangered or threatened species or their habitat as required by FCC regulation at 47 CFR 1.1307(a)(3)? (y/n) Yes If, yes present findings: See Report

20. Additional information required:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

U.S. Fish and Wildlife Service Clearance to Proceed with Communication Tower Projects

The U.S. Fish and Wildlife Service (Service) is one of two Federal Agencies responsible for the protection and conservation of Federal trust resources, such as threatened and endangered species and migratory birds, in accordance with the following Acts:

- Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA):
- Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) (Eagle Act); and
- Migratory Bird Treaty Act (16 U.S.C. 701 *et seq.*) (MBTA).

Included in this mandate is the review of communication tower projects. The Federal Communications Commission (FCC) authorizes these projects as part of its authorization and obligations under the ESA and National Environmental Policy Act (NEPA) requires an environmental impact review. These projects primarily involve new tower construction, co-location of antennas on existing communication towers or other structures, and the repair, maintenance, or relicensing of existing structures.

With the recent and continuing advances in cellular communication technology, and resulting widespread consumer demand for this service, the South Carolina Ecological Services Field Office has experienced a significant increase in the number of requests for review of these projects. To fulfill our statutory obligations under the ESA in a timely, consistent manner, and to assist communication companies in addressing FCC and NEPA environmental impact review requirements, we provide the following guidance and clearance. The guidance is the Service's "Interim Guidelines for Recommendations on Communication Tower Siting, Construction, Operation, and Decommissioning." This document may be found at http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

Federally Listed Species Assessment

For new tower construction and related activities, applicants an initial assessment and site survey to determine if any federally listed species occur within, or in proximity to, the project footprint. Our Web site, http://www.fws.gov/charleston, contains information on species such as the Wood Stork (*Mycteria americana*), the Carolina Heelsplitter (*Lasmigona decorata*), and federally protected plants in South Carolina. For projects located in suitable nesting or foraging habitat for the Red-cockaded Woodpecker (*Picoides borealis*) that are on public lands, contact the landowner/manager for location information. On private lands, please go to http://www.fws.gov/rcwrecovery/recovery_plan.html to find the survey protocol. In addition, we recommend that you consult the Service's migratory bird Web site (http://www.fws.gov/migratorybirds/), which provides useful migratory bird information. If the site assessment and/or survey reveal listed species within the project footprint, the applicant must submit the project to our office for further evaluation and possible consultation.

The Service delisted the Bald Eagle from the protections of the ESA in August 2007; however, a final Rule published in the *Federal Register* on September 11, 2009, implemented a permit program designed to protect Bald and Golden Eagle populations in the future. These final regulations authorize the limited take of Bald and Golden Eagles through the issuance of permits under the Eagle Act where the take to be authorized is associated with otherwise lawful activities. These regulations also establish permit provisions for intentional take of Eagle nests where necessary to ensure public health and safety, and in other limited circumstances. Please refer to the following Web site for more information and application procedures: http://www.fws.gov/migratorybirds/baldeagle.htm. For any questions regarding this rule or Bald Eagle protection issues, please contact the Migratory Birds Division at (703) 358-1714. Please note that ospreys (*Pandion haliaetus*) frequently nest on communication towers, and the nesting in South Carolina may extend throughout all months of the year. Confirmed nests that are inactive (no eggs or young in nest) have no special protections under the MBTA, and although nest removal is allowed, we recommend nest removal only be undertaken if there are no alternatives to the required work. Where the proposed work is associated with an existing tower supporting an active osprey nest, refer to our National Migratory Bird Web site, and/or contact our Southeastern Regional Division of Migratory Birds in Atlanta, GA at (404) 679-7049 for further guidance prior to any work.

Project Design and Maintenance

For new construction projects, if an assessment or survey does not detect federally listed species within the project footprint and the projects meet the criteria listed below, *no further coordination with the Service is necessary*. This guidance is a general clearance for all future projects meeting these criteria. You might also visit http://www.fws.gov/habitatconservation/communicationtowers.html.

1. The construction of lattice or monopole design communication towers less than 200 feet in total height that do not contain guy wires. The tower must be in previously disturbed, urbanized, or developed areas or areas that do not represent potential habitat for federally listed species. In addition, the tower must be at least 3 miles away from any active Wood Stork rookery or 2,500 feet from other wading bird nesting colonies.

2. The construction of guyed communication towers between 200 and 400 feet tall as outlined above, and provided the guy wires are equipped with bird diverter devices and the tower is lighted with a white or red strobe light operating at the minimum allowable intensity. This type of lighting is far less attractive to migratory birds than continuous or pulsating, incandescent red or white lights, regardless of their intensity or frequency or duration of pulsation. The same provisions outlined above regarding Bald Eagle nests and Wood Stork and other wading bird breeding colonies apply.

3. The co-location of a new antenna on an existing communication tower (e.g., light pole, billboard, water tower, building) must not increase the tower height above 400 feet, require the construction of a new access road, nor result in additional disturbance of the site; and

4. The repair, maintenance, or replacement of an existing communication tower, if the activity does not increase the height of the tower above 400 feet or increase its footprint into natural vegetative communities, and occurs outside of the October 15 – May 1 nesting season of any Bald Eagle nesting on the structure.

For existing towers that do *not* include any modification, footprint expansion or construction, *no* further coordination with the Service is necessary. This includes those projects for relicensing of existing towers. Therefore, this guidance is a general clearance for all existing projects meeting these criteria as outlined in the Project Design and Maintenance Section.

For those projects that do not meet the above criteria, we recommend modifications to the project to:

1. Reduce the height of the tower; and/or

2. Install a white or red strobe light operating at the minimum allowable intensity.

3. Consider co-location onto an existing communications tower.

4. Confine construction to previously disturbed areas.

If the applicant cannot modify or design the project to negate impacts to federally listed species, the applicant must submit the project plans to our office for further evaluation and consultation.

The Service appreciates your cooperation in the protection of federally listed species and migratory birds in South Carolina.

Sincerely,

Jay B. Herrington
Field Supervisor

United States Department of Interior
Fish and Wildlife Service
Washington, DC 20240

September 14, 2000

To: Regional Directors
From: Director /s/ Jamie Rappaport Clark
Subject: Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers

Construction of communications towers (including radio, television, cellular, and microwave) in the United States has been growing at an exponential rate, increasing at an estimated 6 percent to 8 percent annually. According to the Federal Communication Commission's *2000 Antenna Structure Registry*, the number of lighted towers greater than 199 feet above ground level (AGL) currently number over 45,000 and the total number of towers over 74,000. Non-compliance with the registry program is estimated at 24 percent to 38 percent, bringing the total to 92,000 to 102,000. By 2003, all television stations must be digital, adding potentially 1,000 new towers exceeding 1,000 feet AGL.

The construction of new towers creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. Communications towers are estimated to kill 4-5 million birds per year, which violates the spirit and the intent of the Migratory Bird Treaty Act and the Code of Federal Regulations at Part 50 designed to implement the MBTA. Some of the species affected are also protected under the Endangered Species Act and Bald and Golden Eagle Act.

Service personnel may become involved in the review of proposed tower sitings and/or in the evaluation of tower impacts on migratory birds through National Environmental Policy Act review; specifically, Sections 1501.6, opportunity to be a cooperating agency, and 1503.4, duty to comment on federally-licensed activities for agencies with jurisdiction by law, in this case the MBTA, or because of special expertise. Also, the National Wildlife Refuge System Improvement Act requires that any activity on Refuge lands be determined as compatible with the Refuge system mission and the Refuge purpose(s). In addition, the Service is required by the ESA to assist other Federal agencies in ensuring that any action they authorize, implement, or fund will not jeopardize the continued existence of any Federally endangered or threatened species.

A Communication Tower Working Group composed of government agencies, industry, academic researchers and NGO's has been formed to develop and implement a research protocol to determine the best ways to construct and operate towers to prevent bird strikes. Until the research study is completed, or until research efforts uncover significant new mitigation measures, all Service personnel involved in the review of proposed tower sitings and/or the evaluation of the impacts of towers on migratory birds should use the attached interim guidelines when making recommendations to all companies, license applicants, or licensees proposing new tower sitings. These guidelines were developed by Service personnel from research conducted in several eastern, midwestern, and southern states, and have been refined through Regional review. They are based on the best information available at this time, and are the most prudent and effective measures for avoiding bird strikes at towers. We believe that they will provide significant protection for migratory birds pending completion of the Working Group's recommendations. As new information becomes available, the guidelines will be updated accordingly.

Implementation of these guidelines by the communications industry is voluntary, and our recommendations must be balanced with Federal Aviation Administration requirements and local

community concerns where necessary. Field offices have discretion in the use of these guidelines on a case by case basis, and may also have additional recommendations to add which are specific to their geographic area.

Also attached is a Tower Site Evaluation Form which may prove useful in evaluating proposed towers and in streamlining the evaluation process. Copies may be provided to consultants or tower companies who regularly submit requests for consultation, as well as to those who submit individual requests that do not contain sufficient information to allow adequate evaluation. This form is for discretionary use, and may be modified as necessary.

The Migratory Bird Treaty Act (16 U.S.C. 703-712) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the Act has no provision for allowing unauthorized take, it must be recognized that some birds may be killed at structures such as communications towers even if all reasonable measures to avoid it are implemented. The Service's Division of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. While it is not possible under the Act to absolve individuals or companies from liability if they follow these recommended guidelines, the Division of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals or companies who have made good faith efforts to avoid the take of migratory birds.

Please ensure that all field personnel involved in review of FCC licensed communications tower proposals receive copies of this memorandum. Questions regarding this issue should be directed to Dr. Benjamin Tuggle, Chief, Division of Habitat Conservation, at (703)358-2161, or Jon Andrew, Chief, Division of Migratory Bird Management, at (703)358-1714. These guidelines will be incorporated in a Director's Order and placed in the Fish and Wildlife Service Manual at a future date.

Service Interim Guidelines For Recommendations On

Communications Tower Siting, Construction, Operation, and Decommissioning

1. Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to collocate the communications equipment on an existing communication tower or other structure (*e.g.*, billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may collocate on an existing tower.

2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (*e.g.*, use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.

3. If constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.

4. If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentration areas (*e.g.*, state or

Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

5. If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.

6. Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. (For guidance on markers, see *Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute, Washington, D.C., 78 pp,* and *Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines. Edison Electric Institute/Raptor Research Foundation, Washington, D.C., 128 pp.* Copies can be obtained via the Internet at http://www.eei.org/resources/pubcat/enviro/, or by calling 1-800/334-5453).

7. Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower “footprint”. However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.

8. If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site should be recommended. If this is not an option, seasonal restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.

9. In order to reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee’s antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

10. Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.

11. If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group should be allowed access to the site to evaluate bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.

12. Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

In order to obtain information on the extent to which these guidelines are being implemented, and to identify any recurring problems with their implementation which may necessitate modifications, letters provided in response to requests for evaluation of proposed towers should contain the following request:

> "In order to obtain information on the usefulness of these guidelines in preventing bird strikes, and to identify any recurring problems with their implementation which may necessitate modifications, please advise us of the final location and specifications of the proposed tower, and which of the measures recommended for the protection of migratory birds were implemented. If any of the recommended measures can not be implemented, please explain why they were not feasible."

Return to Home Page

APPENDIX E

Qualified Biologist Resume

Ben Salter, REP, PWS

Principal Scientist
1340 Patton Avenue, Suite K, Asheville, NC 28806
(828) 505-0755
ben.salter@eca-usa.com

EDUCATION

Western Carolina University — Cullowhee, NC
Master of Science, Biology, August 2004

Georgia College & State University — Milledgeville, GA
Bachelor of Science, Biology, December 1998
Chemistry Minor

Short Courses/Specialized Training
Applying the NEPA Process and Writing Effective NEPA Documents, 2013
Interagency Coordination for Endangered Species, 2013
NEPA Cumulative Effects Analysis, 2013
SonoBat Workshop, 2013
Overview of NHPA Section 106, 2013
GA DOT Coastal Wetland Plant Identification w/ Dr. Bob Mohlenbrock, 2010
Airports Council International – North American NEPA Workshop, 2009
NC State Stream Restoration Design Principles, 2007
Rosgen Level 1 – Applied Fluvial Geomorphology, 2006
VDEQ Stream Impact and Compensation Assessment Manual Workshop, 2006
VIMS Perennial Stream Workshop, 2005

PROFESSIONAL REGISTRATIONS

National Registry of Environmental Professionals, Registered Environmental Professional, 2007 to present
Society of Wetland Scientists, Professional Wetland Scientist, 2012 to present

PROFESSIONAL EXPERIENCE

November 2007 – Present **Environmental Corporation of America** Asheville, NC
Position: Principal Scientist, Office Manager
Responsibilities:
Principal Scientist for Phase I ESA, NEPA, Ecological, and Wetlands related projects; Manager of ECA's Asheville, NC office; Responsible for client management, final review, oversight, and/or field effort for ecological and wetlands related projects, preparation of wetlands and ecological permitting documents; review of Phase I ESA, environmental, and NEPA documents.

April 2006 – November 2007 **Blue Ridge Ecological** Waynesville, NC
Position: Principal Scientist, Partner
Responsibilities:
Partner/Principal Scientist in natural resource management firm focused on fisheries/lake management, watershed assessment, water quality monitoring, and biological assessment.

January 2005 – November 2007 **Malcolm Pirnie, Inc.** Newport News, VA
Position: Project Environmental Scientist
Responsibilities:
Wetland and Stream Scientist, National Environmental Policy Act Specialist, and Environmental Scientist; Primary responsibilities included EA and EIS writer, wetland and stream field scientist, and environmental site assessor.

August 2002 – December 2004 **Western Carolina University** Cullowhee, NC
Position: Research and Teaching Assistant
Responsibilities:
Fisheries Scientist and Biology/Ecology Laboratory Instructor

May 2003 – September 2003 **United States Forest Service** Asheville, NC
Position: Biological Science Technician
Responsibilities:
Fisheries scientist for southern Appalachian brook trout project. Collected brook trout tissue samples in headwater streams throughout Western North Carolina and conducted genetic analysis for determining origin.

January 1999 – May 2001 **Environmental Corporation of America** Alpharetta, GA
Position: Project Scientist/Manager
Responsibilities:
Project manager for environmental projects including Phase I and II Environmental Assessments, FCC NEPA assessment, asbestos and lead-based paint inspection, and abatement monitoring and specification preparation, cultural resource assessments, threatened and endangered species surveys, wetland delineation, groundwater monitoring and remediation system installation, geotechnical investigation, construction materials testing, and telecommunications tower construction plan review.

JOURNAL PUBLICATIONS

Miller, JR, **EB Salter**, JB Anderson, PJ Lechler, SL Kondrad, PF Galbreath. 2005. Influence of Temporal Variations in Water Chemistry on the Pb Isotopic Compositions of Rainbow Trout (*Oncorhynchus mykiss*). Science of the Total Environment, 350, p. 204-224.

REPRESTATIVE EXPERIENCE

USACE and NC DWQ Individual Section 404/401 Permits and CAMA Consistency
Proposed Telecommunications Facility, Carteret County, North Carolina

USFWS Consultation and Florida Panther Habitat Mitigation
Proposed Communications Facility, Naples, Florida

US Forest Service Biological Evaluation
Proposed Communications Tower, Colville National Forest, Colville, Washington

US Forest Service Biological Evaluation
Proposed Eastern Band of Cherokee Indians Snowbird Community Center, Nantahala National Forest, Robbinsville, North Carolina

Protected Species Biological Assessments / USFWS and State Wildlife Agency Consultations
Combined Project Manager and Principal Biologist Participation in Thousands of Projects Nationwide

Instream Structure and Bank Stabilization USACE Permitting and Post-Construction Monitoring
Proposed Eastern Band of Cherokee Indians Old River Road Reconstruction

Assessment of Culverts for Fish Passage
Eastern Band of Cherokee Indians Reservation, Cherokee, North Carolina

Blue Ridge National Heritage Area / NCDOT Heritage Trails NEPA Categorical Exclusion
Throughout Western North Carolina

FEMA/Union Pacific Harahan Bridge Security NEPA Environmental Assessment
Memphis, Tennessee

Wetland Delineation and Mapping of Eastern Band of Cherokee Indians Reservation
Field Scientist and Project Principal for Delineation of Over 70 Individual Wetland Systems, Cherokee, North Carolina

Burrowing Owl Pre-Construction Survey
Proposed Telecommunications Tower, Perris, California

Bureau of Land Management Biological Assessment
Right of Way Assignment Effects on *Sclerocactus glaucus*, Grand Junction, Colorado

Indiana Bat Roosting Habitat and Emergence Surveys
Multiple Sites throughout the Southeastern United States

Environmental Impact Statement / Feasibility Study for Flood Damage Reduction and Ecosystem Restoration, US Army Corps of Engineers and James River Water Development District, James River, South Dakota

Critical Habitat Consultation
Proposed Telecommunications Tower Facility, Norman, Oklahoma

US Department of Housing and Urban Development NEPA Environmental Assessment
Proposed Old #4 Sewer Line Replacement, Cherokee, North Carolina

US Army Corps of Engineers and Virginia Port Authority Environmental Impact Statement
Craney Island Dredged Material Disposal Area Expansion and Subsequent Virginia Port Authority Craney Island Terminal Construction, Portsmouth, Virginia

EPA 319 Watershed Management Plan
Chestatee-Chattahoochee RC&D Mud and Little Mud Creek, Habersham County, Georgia

USACE Wetland/Stream Delineations and USACE/State Section 404/401 Permitting
Alabama, Delaware, Georgia, Florida, Illinois, Louisiana, Mississippi, North Carolina, New York, Ohio, South Carolina, South Dakota, Virginia, and West Virginia

US Department of Justice NEPA Environmental Assessment
Proposed Eastern Band of Cherokee Indians Correctional Facility, Cherokee, NC

Wetlands Delineation
Over 2000 acres, City of Jacksonville Land Treatment System Expansion, Onslow County, North Carolina

Bureau of Indian Affairs NEPA Environmental Assessment
Mary Lambert Farm Road Improvement Project, Cherokee, North Carolina

FCC NEPA Evaluation and Environmental Assessment and USACE Section 404 Permitting
Proposed Telecommunications Facility, Mecklenburg County, North Carolina

US Economic Development Administration, NEPA Environmental Assessment
Proposed Eastern Band of Cherokee Indians Lower Soco Creek Sewer Line Replacement, Cherokee, North Carolina

Federal Highway Administration NEPA Environmental Assessment
Old River Road Improvement Project, Cherokee, NC

US Forest Service NEPA Environmental Assessment
Proposed Eastern Band of Cherokee Indians Snowbird Community Center, Nantahala National Forest, Robbinsville, North Carolina

Osprey Nest Activity Monitoring
Field Observer and Principal Scientist for numerous active/inactive osprey nest observation projects throughout Southeast

Individual Permit Application and State Environmental Policy Act Documentation
City of Jacksonville Land Treatment System Expansion, Onslow County, North Carolina

USACE and FDEP Wetlands Individual Permit and Mitigation
Proposed Telecommunications Facility, Walton County, Florida

USACE and St. Johns River Water Management District Wetlands Permitting and Mitigation
Proposed Telecommunications Facility, Fellsmere, FL

USACE and St. Johns River Water Management District Wetlands Permitting and Mitigation
Proposed Telecommunications Facility, Jacksonville, FL

Bureau of Indian Affairs NEPA Environmental Assessment
Hunting Boy Branch Road Improvement Project, Graham County, North Carolina

Federal Communications Commission NEPA Investigations
Combined Project Manager and Project Principal Participation in Thousands of Projects Nationwide

Intensive Survey for the Federally Threatened Dwarf-Flowered Heartleaf
Multiple Projects, Western North Carolina

Evaluation of Ecosystem Restoration and Flood Damage Reduction Measures on the Federally Endangered Topeka Shiner
James River Basin, South Dakota

Communications Antenna Support Structure Osprey Nest Activity Surveys
Field Scientist and Project Principal Participation in Many Sites Throughout the Southeastern US

Phase I Environmental Site Assessments
Combined Project Manager and Project Principal Participation in Thousands of Projects Nationwide

Phase II Environmental Assessments, UST Removals, Groundwater Monitoring Events, and Petroleum and Chlorinated Solvent Remediation System Installations
Multiple Projects in Southeastern and Midwestern United States

Baseline Water Quality Testing and Benthic and Fish Assemblage Assessment
City of Hiawassee, Hiawassee, Georgia

Ecological Risk Assessment
Brown's Lake, Fort Eustis, Newport News, Virginia

Benthic, Geomorphology, and Water Quality Evaluation
Upper Occoquan Sewage Authority, Bull Run, Manassas, Virginia

Fisheries Assessment and Management Plan Development
750-Acre Lake Lure, North Carolina

Fisheries Assessment and Management Plan Development
Lake Ravenel, Highlands, North Carolina

Brook Trout Genetic Typing, Population Estimate, Habitat Survey, and Restoration
Multiple Projects throughout Western North Carolina

VA Environmental Impact Reports
Multiple Projects for Virginia Port Authority and Virginia Department of Juvenile Justice

Evaluation of Lead Isotopic Composition of Freshwater Snails of Richland Creek Basin
Masters Thesis, Waynesville, North Carolina

Asbestos and Lead-Based Paint Inspections, Abatement Monitoring, and Preparation of Abatement Specifications
Multiple Projects throughout Georgia

Geotechnical Investigations and Construction Materials Testing
Cell Tower and Fiber Optic Communications Infrastructure – Multiple Projects Nationwide

APPENDIX D

Replacement Tower Exclusion Checklist

ENVIRONMENTAL CORPORATION OF AMERICA

Replacement Tower Exclusion Checklist

Site Name: **Berkeley Electric Cooperative, Inc. – Johns Island**
Tower Height: **250' (254' overall height with appurtenances)**
Site Address: **1509 Main Road, Johns Island, Charleston County, South Carolina**
Tower Owner: **Berkeley Electric Cooperative, Inc.**
Construction Date: **1984**
Please fill out the following form by checking the appropriate boxes.

☐YES☒NO 1. Will the replacement tower result in a substantial increase in size from the existing tower[1]?

☐YES☒NO 2. Will the replacement tower result in excavation outside the current boundaries of the site or leased or owned property surrounding the tower site (plus 30 feet in any direction)?

☐YES☒NO 3. Was the tower constructed after March 16, 2001? Proceed to Question 4 if answered "Yes".

☒NA ☐YES☐NO 4. Has the tower completed the Section 106 Review process? Section 106 Review is required if answered "No".

If any questions 1 through 3 are answered "YES," consultation with the SHPO is required prior to constructing a replacement tower.

I, the undersigned, have reviewed and completed this checklist and certify that the answers contained herein are truthful and accurate to the best of my knowledge.

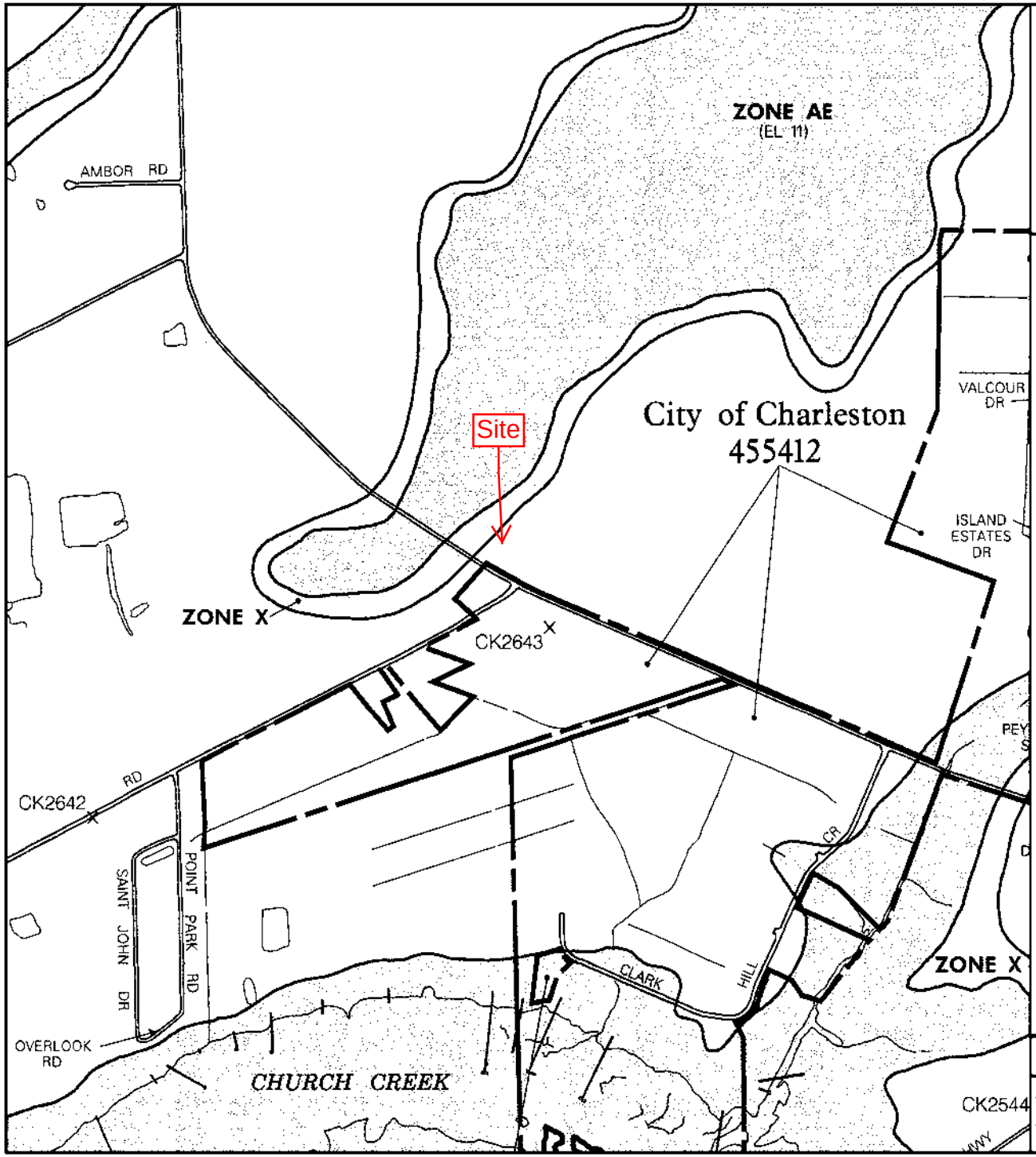
Environmental Corporation of America (Consultant) M Fields

(Date) April 7, 2014

[1] "Substantial increase in size of the tower" means: 1) an increase in the tower height of more than 10% or by the height of one antenna array with a separation distance from the nearest existing array not to exceed 20 feet, whichever is greater; 2) the installation of more than 4 new equipment cabinets or more than 1 new equipment building; 3) the addition of an appurtenance that would protrude from the edge of the tower more than 20 feet or more than the width of the tower at the level of the appurtenance, whichever is greater.

APPENDIX E

Floodplain Information



APPROXIMATE SCALE

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

ME

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CHARLESTON COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS

PANEL 655 OF 855

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHARLESTON, CITY OF	455412	0655	J
CHARLESTON, COUNTY	455413	0655	J

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
45019C0655J

EFFECTIVE DATE:
NOVEMBER 17, 2004

Federal Emergency Management Agency

APPENDIX F

Wetlands Information

U.S. Fish and Wildlife Service

National Wetlands Inventory

Johns Island

Mar 17, 2014

No operational layers selected or no legend available

User Remarks:

EXHIBIT 4

BERKELEY
ELECTRIC COOPERATIVE, INC.

www.bec.coop Your Touchstone Energy Partner

October 28, 2014

Hellman, Yates and Tisdale
C/O: Elizabeth Hodges
105 Broad St., 3rd. Floor
Charleston, SC 29401

RE: Power Availability for 1509 Main Rd.
Charleston County, SC
TMS 280-00-00-081

Dear Elizabeth:

Berkeley Electric Cooperative will supply the electrical distribution requirements for the above referenced location and we look forward to extending our facilities to meet the needs of this development.

All services that are rendered will be under our Service Rules and Regulations at the time of service. If you have any questions, please don't hesitate to give me a call.

Sincerely,

John Hall

John Hall
Manager of Construction and Design

JH/ts

Cc: Tim Mobley, V.P. of Engineering and Operations
Kevin Varner, Supervisor of Distribution Design
File

Post Office Box 1234
Moncks Corner, SC 29461
(843) 761-8200 / (843) 825-3383
Fax (843) 572-1280

Post Office Box 128
Johns Island, SC 29457
(843) 559-2458
Fax (843) 559-3876

Post Office Box 1549
Goose Creek, SC 29445
(843) 553-5020
Fax (843) 553-6761

Post Office Box 340
Awendaw, SC 29429
(843) 884-7525
Fax (843) 884-3044

BELLSOUTH

BellSouth Telecommunications, Inc.
2600 Meeting Street Road
Charleston, SC 29405-8307

October 31, 2014

Re: Service Availability for Telephone

To: Miss Elizabeth Hodges

This is to confirm that AT&T will be able to provide telephone service to the property of and around Charleston County Tax Map #280-00-00-081 in the Johns Island area. Service is contingent upon our receiving detailed plans of the development with utility easements granted, proper lead-time to install these services (10 months), and the correct 911 street addresses. The placement of cable would be at no cost to the land owner. Plans should be submitted to Alan Squires (tel.# 843-722-5179) at the following address 385 Meeting St., Charleston, S.C. 29403- 6248 or email to js0590@att.com

Should you have any questions or concerns, please contact me.

Sincerely,

Alan Squires

Alan Squires
Designer-AT&T

ST. JOHN'S FIRE DISTRICT

P.O. BOX 56
3327 Maybank Hwy.
JOHNS ISLAND, S.C. 29455
PHONE: (843) 559-9194
FAX: (843) 559-3687

Colleen Walz
Fire Chief

October 30, 2014

Ms. Elizabeth W. Hodges
Legal Assistant
Hellman Yates & Tisdale PA
105 Broad Street, Third Floor
Charleston, South Carolina 29401

Re: 1509 Main Road Tower Site

Dear Ms. Hodges:

The St. John's Fire District provides emergency services to the communications tower site located at 1509 Main Road, John's Island, South Carolina.

If you have any questions, please contact me at 843-559-9194.

Sincerely,

James T. Ghi
Battalion Chief, Fire Prevention Division

J. Al Cannon, Jr., Esq.
Sheriff, Charleston County

3505 Pinehaven Drive
Charleston Heights, SC 29405-7789

October 24, 2014

RE: 1509 Main Street, John's Island, SC

Dear Sir or Madam,

Please accept this letter as confirmation that the Charleston County Sheriff's Office will be providing police services to a new communications tower located at 1509 Main Road, John's Island, SC.

If you have any questions, please don't hesitate to call my office at (843) 554-2485.

Sincerely,

J. Al Cannon, Jr.
Sheriff

EXHIBIT 5

BERKELEY
ELECTRIC
COOPERATIVE

John's Island Site #449

1509 Main Road, John's Island, SC 29455

240ft. TOWER REPLACEMENT

Simulation

View from Main Road
approximately 600ft. southeast of site

EXHIBIT 6

Sabre Industries™
Towers and Poles

March 13, 2015

Mr. Brett Slough
Verizon Wireless
Accounts Payable
PO Box 2167
Folsom, CA 95763

RE: Proposed 240' Sabre self-supporting tower for Fenwick Crossroads, SC (#101214 Revision B)

Dear Mr. Slough,

As shown in our Structural Design Report #101214 Revision B, dated March 13, 2015, the above referenced tower has been designed for a Basic Wind Speed of 112 mph with no ice and 40 mph with 1/4" ice, Structure Class II, Exposure Category C, and Topographic Category 1, in accordance with the Telecommunications Industry Association Standard ANSI/TIA-222-G, "Structural Standard for Antenna Supporting Structures and Antennas" and an Ultimate Wind Speed of 145 mph (Risk Category II), in accordance with the 2012 International Building Code.

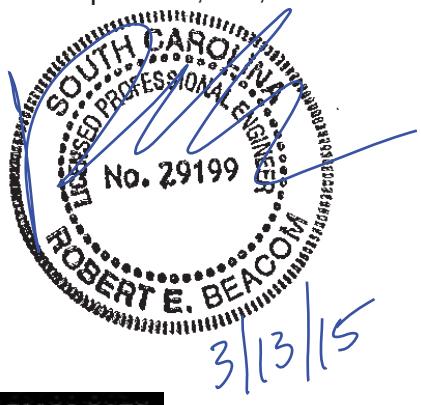
When designed according to this standard, the wind pressures and steel strength capacities include several safety factors, resulting in an overall minimum safety factor of 25%. Therefore, it is highly unlikely that the tower will fail structurally in a wind event where the design wind speed is exceeded within the range of the built-in safety factors.

Should the wind speed increase beyond the capacity of the built-in safety factors, to the point of failure of one or more structural elements, the most likely location of the failure would be within one or more of the tower members in the upper portion. This would result in a buckling failure mode, where the loaded member would bend beyond its elastic limit (beyond the point where the member would return to its original shape upon removal of the wind load).

Therefore, it is likely that the overall effect of such an extreme wind event would be localized buckling of a tower section. Assuming that the wind pressure profile is similar to that used to design the tower, the tower is most likely to buckle at the location of the highest combined stress ratio in the upper portion of the tower. This would result in the portion of the tower above the failure location "folding over" onto the portion of the tower below the failure location. **Please note that this letter only applies to the above referenced tower designed and manufactured by Sabre Towers & Poles.** In the unlikely event of total separation, this, in turn, would result in collapse of the section above, within a radius less than 75 feet.

Sincerely,

Robert E. Beacom, P.E.
Design Engineer II



Sabre Industries™
Towers and Poles

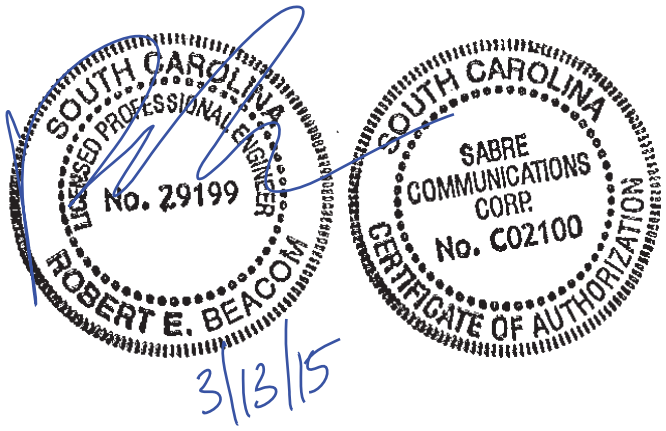
Structural Design Report

240' S3R Series SD Self-Supporting Tower
Site: Fenwick Crossroads, SC

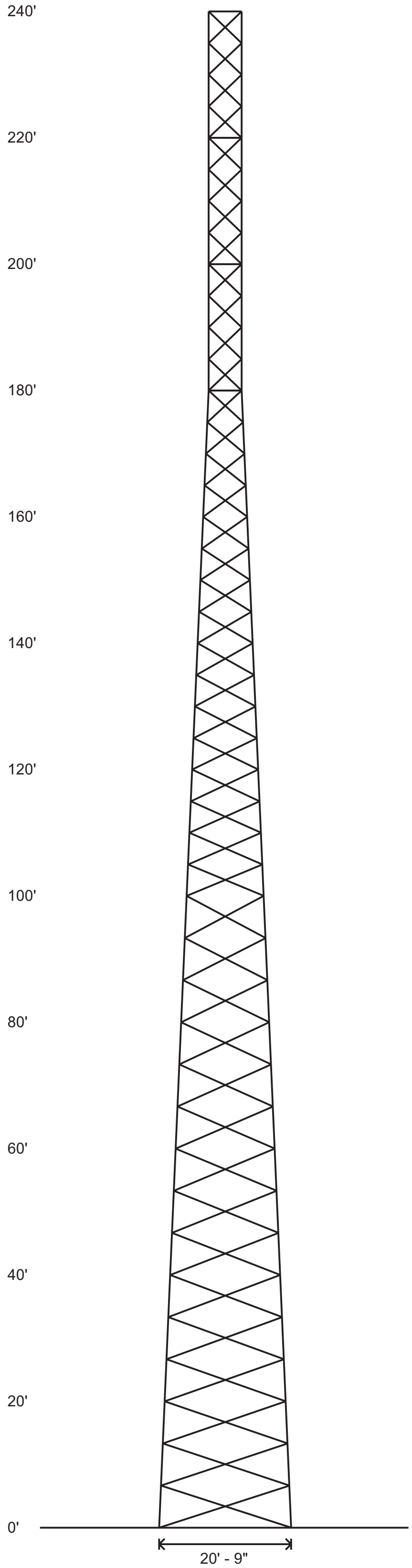
Prepared for: VERIZON WIRELESS
by: Sabre Towers & Poles ™

Job Number: 101214
Revision B

March 13, 2015



Legs	Diagonals	Horizontals	Brace Bolts	Top Face Width	Panel Count/Height	Section Weight
1.75 S.R.	L 2 X 2 X 1/8	NONE A	(1) 5/8"	5'	28 @ 5'	1000
2.25 S.R.	L 2 X 2 X 3/16	NONE B				1496
2.75 S.R.		NONE B				1949
3.0 S.R.	L 2 X 2 X 1/8	A				2084
3.25 S.R.	L 2 X 2 X 1/4			6.75'		2696
3.5 S.R.	L 2 1/2 X 2 1/2 X 1/4			8.5'		3371
3.75 S.R.				10.25'		3911
4.25 S.R.	L 3 X 3 X 3/16	NONE		12'		4456
4.5 S.R.	L 3 X 3 X 1/4		(1) 3/4"	13.75'	15 @ 6.6667'	5340
	L 3 1/2 X 3 1/2 X 1/4			15.5'		5778
4.75 S.R.				17.25'		6329
	L 4 X 4 X 1/4			19'		6811



Base Reactions

Total Foundation		Individual Footing	
Shear (kips)	85.36	Shear (kips)	49.31
Axial (kips)	92.09	Compression (kips)	567
Moment (ft-kips)	10168	Uplift (kips)	515
Torsion (ft-kips)	-55.5		

Material List

Display	Value
A	L 2 X 2 X 1/8
B	L 2 X 2 X 3/16

Notes

1) All legs are 50 ksi.
2) All braces are 36 ksi.
3) All brace bolts are A325-X.
4) The tower model is S3R Series SD.
5) Transmission lines are to be attached to standard 12 hole waveguide ladders with stackable hangers.
6) Azimuths are relative (not based on true north).
7) Foundation loads shown are maximums.
8) (6) 1 1/2" dia. F1554 grade 105 anchor bolts per leg. Minimum 57.5" embedment from top of concrete to top of nut.
9) All unequal angles are oriented with the short leg vertical.
10) Weights shown are estimates. Final weights may vary.
11) This tower was designed for a basic wind speed of 112 mph with 0" of radial ice, and 30 mph with 1/4" of radial ice, in accordance with ANSI/TIA-222-G, Structure Class II, Exposure Category C, Topographic Category 1.
12) The foundation loads shown are factored loads.
13) The tower was also designed for an ultimate wind speed of 145 mph, in accordance with the 2012 International Building Code.

Sabre Industries Towers and Poles

Sabre Communications Corporation
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	101214B
Customer:	VERIZON WIRELESS
Site Name:	Fenwick Crossroads, SC
Description:	240' S3R
Date:	3/13/2015
By:	REB

Designed Appurtenance Loading

Elev	Description	Tx-Line
251	(1) DB264	
242.5	(1) 5' x 3in Omni	
242	(1) 4' x 3in Whip	
240	3ft Sidearm	
240	6ft Sidearm	
240	6ft Sidearm	
240		(1) 1 5/8"
240		(1) 7/8"
240		(1) 7/8"
240		(1) 7/8"
230	(1) 20' x 3in Omni	
220	(2) Flush Mount	
220	(2) T09125P10006s	(2) 7/8"
215	(1) DB264	
210	Leg Dish Mount	
210	(1) 8' Solid Dish w/ Radome	(1) EW63
207	(1) 20' x 3in Whip	
204	3ft Sidearm	
204		(1) 7/8"
200	(3) Leg Dish Mount	
200	(3) RRU (14.6"x12.6"x7.76")s	(3) 1/2"
200	(3) 3' H.P. Dishes	(3) Cat 5
197	3ft Sidearm	

Elev	Description	Tx-Line
197		(1) 7/8"
171	Leg Dish Mount	
171	(1) 8' Solid Dish w/ Radome	(1) EW63
161	Leg Dish Mount	
161	(1) 6' Solid Dish w/ Radome	(1) 7/8"
160	3T-Boom(R) - 12ft Face - 3ft Standoff	
160	(6) FDL85002/1C-3Ls	
160	(6) RRUS AWS A2s	
160	(3) RxxDC-1064-PF-48s	(1) 1 5/8"
160	(3) DBXNH-6565B-VTMs	(6) 7/8"
160	(3) SBNHH-1D65Cs	(6) 7/8"
150	3T-Boom(R) - 12ft Face - 3ft Standoff	
150	(3) RxxDC-1064-PF-48s	
150	(6) RRUS AWS A2s	
150	(3) SBNHH-1D65Cs	(6) 1 5/8"
150	(3) DBXNH-6565B-VTMs	(6) 1 5/8"
150	(6) FDL85002/1C-3Ls	
122	Leg Dish Mount	
122	(2) RRU (14.6"x12.6"x7.76")s	
122	(1) 3' H.P. Dish	(2) 1/2"
108	Leg Dish Mount	
108	(2) RRU (14.6"x12.6"x7.76")s	
108	(1) 2' Solid Dish	(2) 1/2"

Sabre Industries
Towers and Poles

Sabre Communications Corporation
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	**101214B**
Customer:	VERIZON WIRELESS
Site Name:	Fenwick Crossroads, SC
Description:	240' S3R
Date:	3/13/2015 By: REB

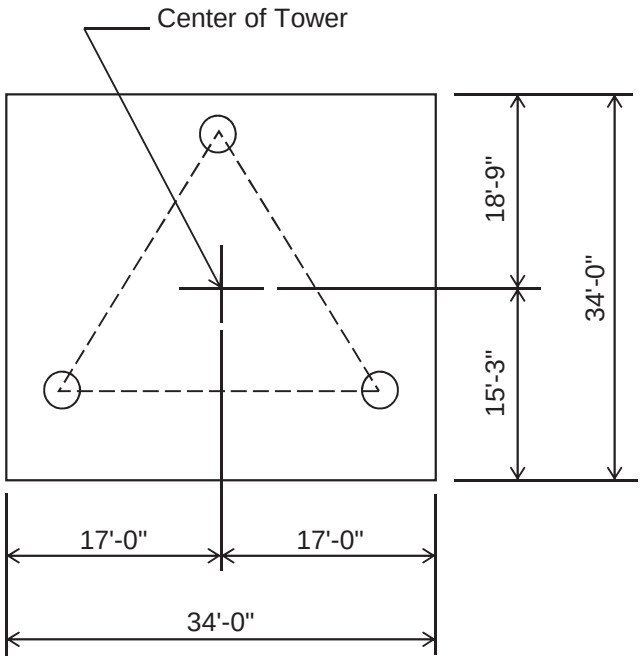
Sabre Industries™
Towers and Poles

No.: 101214

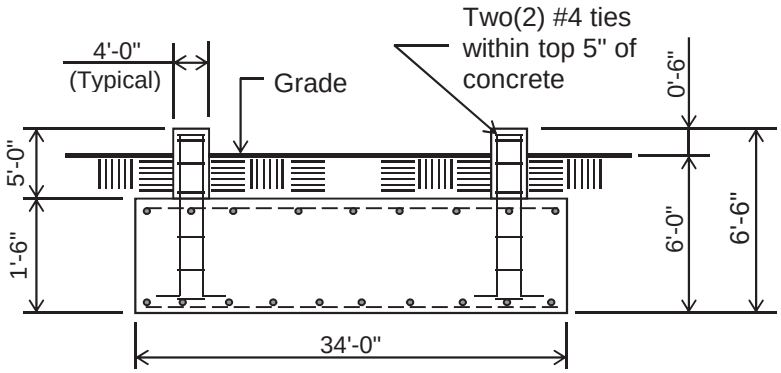
Date: 3/13/15
By: TTW
Revision B

Customer: VERIZON WIRELESS
Site: Fenwick Crossroads, SC

240 ft. Model S3R Series SD Self Supporting Tower At
112 mph Wind with no ice and 30 mph Wind with 0.25 in. Ice per ANSI/TIA-222-G.
Antenna Loading per Page 1



PLAN VIEW



ELEVATION VIEW

(71.2 Cu. Yds.)
(1 REQD.; NOT TO SCALE)

CAUTION: Center of tower is not in center of slab.

Notes:

1). Concrete shall have a minimum 28-day compressive strength of 4500 PSI, in accordance with ACI 318-05.

2). Rebar to conform to ASTM specification A615 Grade 60.

3). All rebar to have a minimum of 3" concrete cover.

4). All exposed concrete corners to be chamfered 3/4".

5). The foundation design is based on the geotechnical report by ECS Carolinas, Project No. 34.1537, dated February 28, 2014.

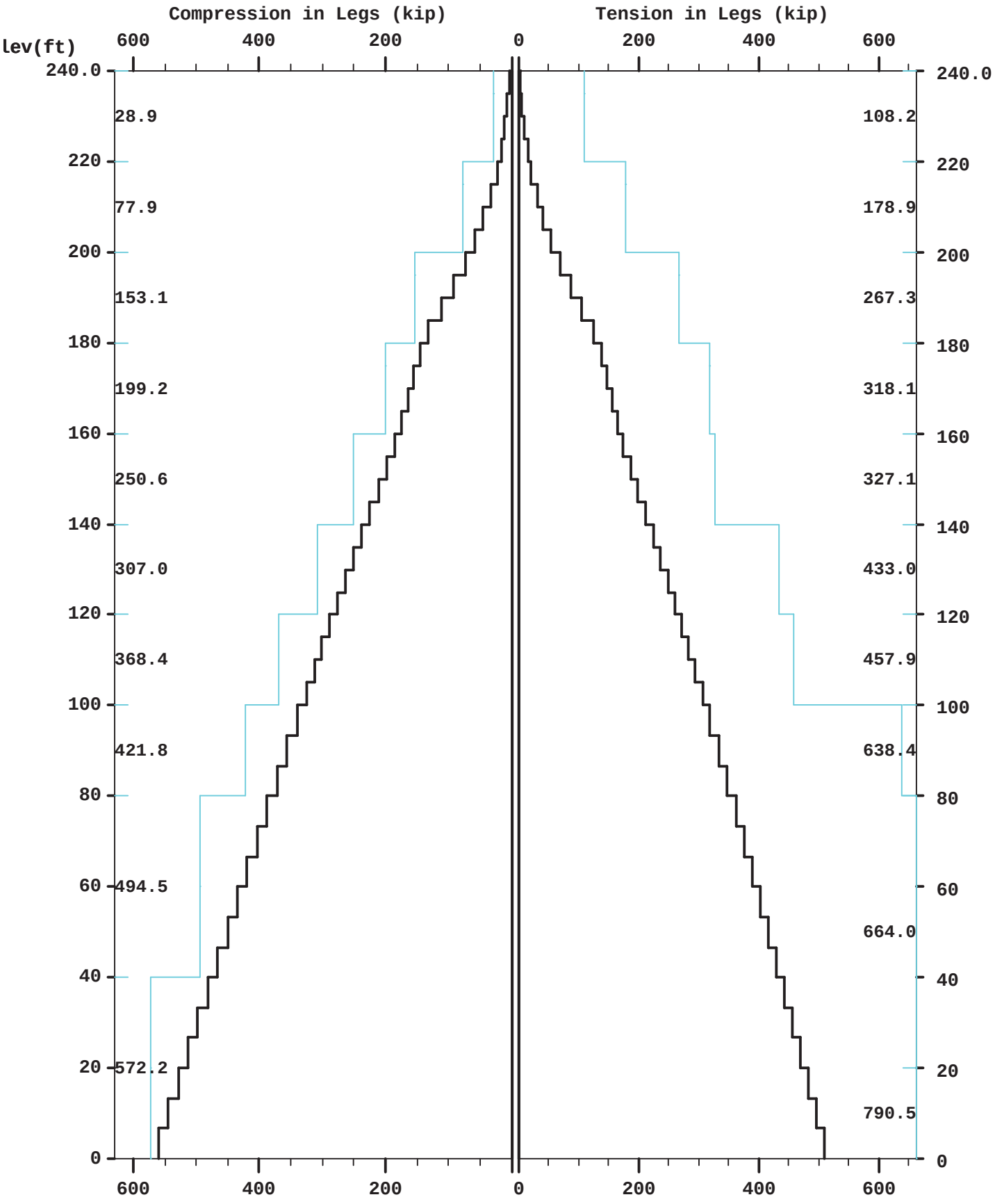
6). See the geotechnical report for compaction requirements, if specified.

7). The foundation is based on the following factored loads:
Factored download (kips) = 63.17
Factored overturn (kip-ft) = 10167.75
Factored shear (kips) = 85.36

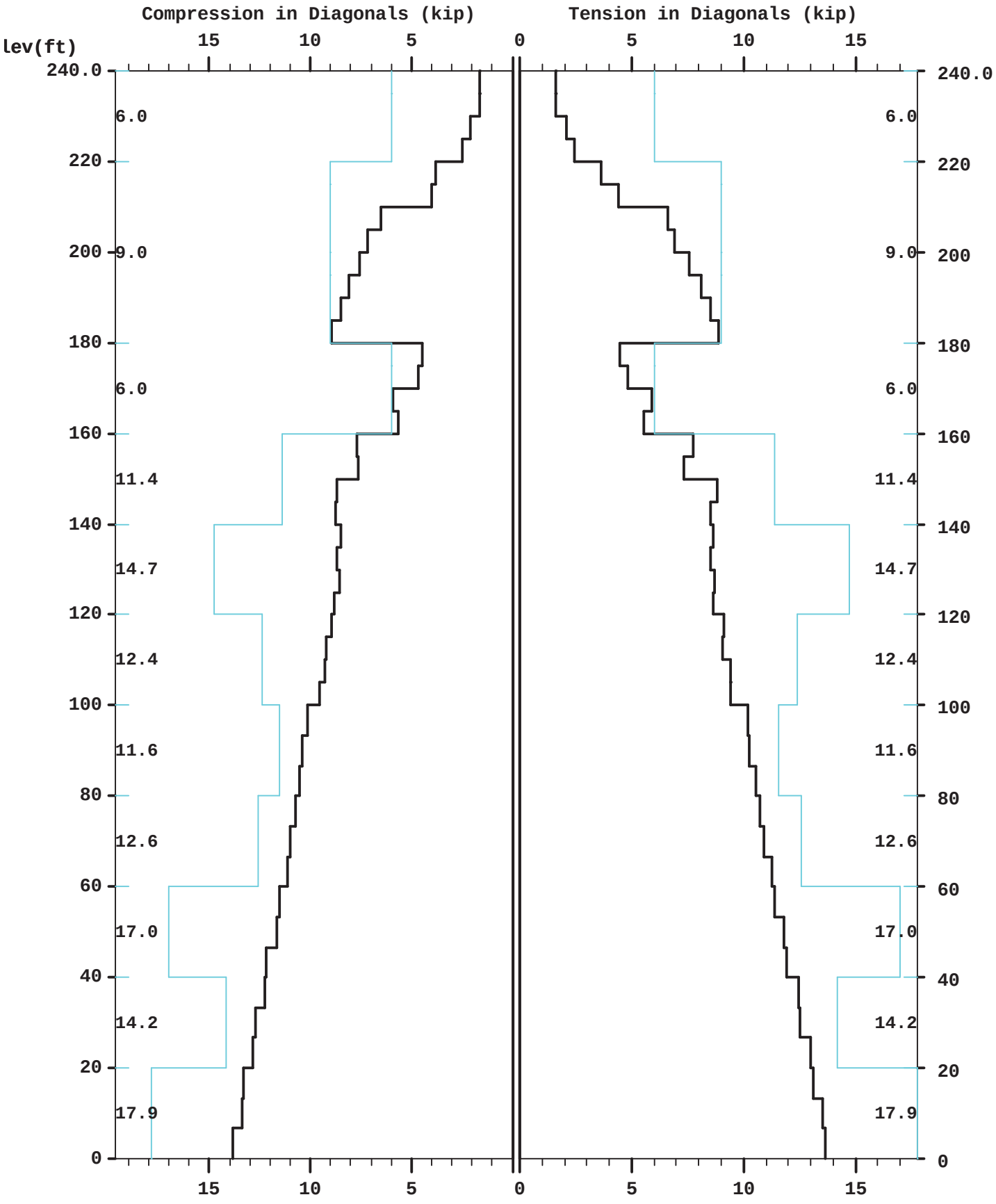
8). This is a design drawing only. Please see final construction drawings for all installation details.

Rebar Schedule per Mat and per Pier	
Pier	(18) #8 vertical rebar w/ hooks at bottom w/ #4 Rebar ties, two (2) within top 5" of pier then 9" C/C
Mat	(68) #10 horizontal rebar evenly spaced each way top and bottom. (272 total)

Maximum

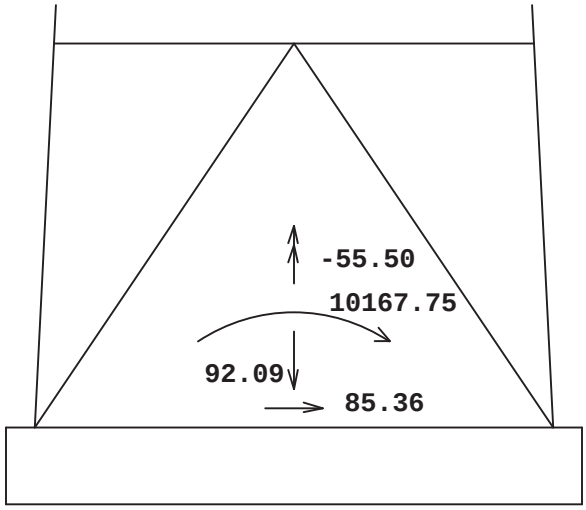

Compression in Legs (kip)
Tension in Legs (kip)
lev(ft)
600
400
200
0
200
400
600
240.0
220
200
180
160
140
120
100
80
60
40
20
0
28.9
77.9
153.1
199.2
250.6
307.0
368.4
421.8
494.5
572.2
108.2
178.9
267.3
318.1
327.1
433.0
457.9
638.4
664.0
790.5

Maximum

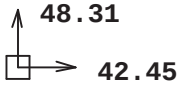

Compression in Diagonals (kip)
Tension in Diagonals (kip)
lev(ft)
15
10
5
0
240.0
220
200
180
160
140
120
100
80
60
40
20
0
6.0
9.0
6.0
11.4
14.7
12.4
11.6
12.6
17.0
14.2
17.9

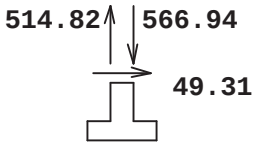
Maximum

TOTAL FOUNDATION LOADS (kip, ft-kip)



INDIVIDUAL FOOTING LOADS (kip)





Latticed Tower Analysis (Unguyed) (c)2013 Guymast Inc. 416-736-7453
Processed under license at:

Sabre Towers and Poles on: 10 mar 2015 at: 16:25:55

MAST GEOMETRY (ft)

PANEL TYPE	NO.OF LEGS	ELEV.AT BOTTOM	ELEV.AT TOP	F.W..AT BOTTOM	F.W..AT TOP	TYPICAL PANEL HEIGHT
X	3	235.00	240.00	5.00	5.00	5.00
X	3	220.00	235.00	5.00	5.00	5.00
X	3	215.00	220.00	5.00	5.00	5.00
X	3	200.00	215.00	5.00	5.00	5.00
X	3	195.00	200.00	5.00	5.00	5.00
X	3	180.00	195.00	5.00	5.00	5.00
X	3	175.00	180.00	5.44	5.00	5.00
X	3	160.00	175.00	6.75	5.44	5.00
X	3	140.00	160.00	8.50	6.75	5.00
X	3	120.00	140.00	10.25	8.50	5.00
X	3	100.00	120.00	12.00	10.25	5.00
X	3	80.00	100.00	13.75	12.00	6.67
X	3	60.00	80.00	15.50	13.75	6.67
X	3	40.00	60.00	17.25	15.50	6.67
X	3	20.00	40.00	19.00	17.25	6.67
X	3	0.00	20.00	20.75	19.00	6.67

MEMBER PROPERTIES

MEMBER TYPE	BOTTOM ELEV ft	TOP ELEV ft	X-SECTN AREA in.sq	RADIUS OF GYRAT in	ELASTIC MODULUS ksi	THERMAL EXPANSN /deg
LE	220.00	240.00	2.405	0.438	29000.	0.0000116
LE	200.00	220.00	3.976	0.438	29000.	0.0000116
LE	180.00	200.00	5.940	0.438	29000.	0.0000116
LE	160.00	180.00	7.069	0.438	29000.	0.0000116
LE	140.00	160.00	8.296	0.438	29000.	0.0000116
LE	120.00	140.00	9.621	0.438	29000.	0.0000116
LE	100.00	120.00	11.045	0.438	29000.	0.0000116
LE	80.00	100.00	14.186	0.438	29000.	0.0000116
LE	40.00	80.00	15.904	0.438	29000.	0.0000116
LE	0.00	40.00	17.721	0.438	29000.	0.0000116
DI	220.00	240.00	0.484	0.626	29000.	0.0000116
DI	180.00	220.00	0.715	0.626	29000.	0.0000116
DI	160.00	180.00	0.484	0.626	29000.	0.0000116
DI	140.00	160.00	0.938	0.626	29000.	0.0000116
DI	100.00	140.00	1.188	0.626	29000.	0.0000116
DI	80.00	100.00	1.090	0.626	29000.	0.0000116
DI	60.00	80.00	1.438	0.626	29000.	0.0000116
DI	20.00	60.00	1.688	0.626	29000.	0.0000116
DI	0.00	20.00	1.938	0.626	29000.	0.0000116
HO	235.00	240.00	0.484	0.626	29000.	0.0000116
HO	215.00	220.00	0.715	0.626	29000.	0.0000116
HO	195.00	200.00	0.715	0.626	29000.	0.0000116
HO	175.00	180.00	0.484	0.626	29000.	0.0000116

FACTORED MEMBER RESISTANCES

BOTTOM ELEV ft	TOP ELEV ft	LEGS COMP kip	LEGS TENS kip	DIAGONALS COMP kip	DIAGONALS TENS kip	HORIZONTALS COMP kip	HORIZONTALS TENS kip	INT BRACING COMP kip	INT BRACING TENS kip
235.0	240.0	28.89	108.24	6.01	6.01	5.82	5.82	0.00	0.00
220.0	235.0	28.89	108.24	6.01	6.01	0.00	0.00	0.00	0.00
215.0	220.0	77.87	178.92	9.01	9.01	8.46	8.46	0.00	0.00
200.0	215.0	77.87	178.92	9.01	9.01	0.00	0.00	0.00	0.00
195.0	200.0	153.15	267.28	9.01	9.01	8.46	8.46	0.00	0.00
180.0	195.0	153.15	267.28	9.01	9.01	0.00	0.00	0.00	0.00
175.0	180.0	199.21	318.09	6.01	6.01	5.82	5.82	0.00	0.00
160.0	175.0	199.21	318.09	6.01	6.01	0.00	0.00	0.00	0.00
140.0	160.0	250.56	327.10	11.40	11.40	0.00	0.00	0.00	0.00
120.0	140.0	306.99	432.95	14.74	14.74	0.00	0.00	0.00	0.00
100.0	120.0	368.38	457.90	12.37	12.37	0.00	0.00	0.00	0.00
80.0	100.0	421.75	638.38	11.56	11.56	0.00	0.00	0.00	0.00

60.0	80.0	494.48	663.98	12.58	12.58	0.00	0.00	0.00	0.00
40.0	60.0	494.48	663.98	17.01	17.01	0.00	0.00	0.00	0.00
20.0	40.0	572.23	663.98	14.17	14.17	0.00	0.00	0.00	0.00
0.0	20.0	572.23	790.45	17.87	17.87	0.00	0.00	0.00	0.00

==========

* Only 3 condition(s) shown in full
* Some wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A ==========

112 mph wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
============

LOAD TYPE	ELEV	APPLY..LOAD..AT RADIUS	AZI	LOAD AZI	.....FORCES..... HORIZ	DOWN	.....MOMENTS..... VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	251.0	0.00	0.0	0.0	0.32	0.04	0.00	0.00
C	242.5	0.00	0.0	0.0	0.07	0.01	0.00	0.00
C	242.0	0.00	0.0	0.0	0.05	0.01	0.00	0.00
C	240.0	0.00	0.0	0.0	0.72	0.36	0.00	0.00
C	240.0	0.00	0.0	0.0	0.37	0.18	0.00	0.00
C	240.0	0.00	0.0	0.0	0.65	0.36	0.00	0.00
C	230.0	0.00	0.0	0.0	0.31	0.04	0.00	0.00
C	220.0	0.00	0.0	0.0	0.57	0.09	0.00	0.00
C	220.0	0.00	0.0	0.0	0.57	0.09	0.00	0.00
C	215.0	0.00	0.0	0.0	0.31	0.04	0.00	0.00
C	207.0	0.00	0.0	0.0	0.31	0.02	0.00	0.00
C	204.0	0.00	0.0	0.0	0.35	0.18	0.00	0.00
C	200.0	0.00	0.0	0.0	0.25	0.16	0.00	0.00
C	197.0	0.00	0.0	0.0	0.35	0.18	0.00	0.00
C	160.0	0.00	0.0	0.0	3.38	1.82	0.00	0.00
C	150.0	0.00	0.0	0.0	3.34	1.82	0.00	0.00
C	122.0	0.00	0.0	0.0	0.15	0.11	0.00	0.00
C	108.0	0.00	0.0	0.0	0.15	0.11	0.00	0.00
D	240.0	0.00	42.0	0.0	0.15	0.06	0.02	0.07
D	235.0	0.00	42.0	0.0	0.15	0.06	0.02	0.07
D	235.0	0.00	42.0	0.0	0.13	0.06	0.02	0.07
D	220.0	0.00	42.0	0.0	0.13	0.06	0.02	0.07
D	220.0	0.00	42.0	0.0	0.16	0.09	0.02	0.08
D	215.0	0.00	42.0	0.0	0.16	0.09	0.02	0.08
D	215.0	0.00	42.0	0.0	0.15	0.09	0.02	0.08
D	200.0	0.00	42.0	0.0	0.14	0.09	0.02	0.08
D	200.0	0.00	42.0	0.0	0.17	0.12	0.03	0.09
D	195.0	0.00	42.0	0.0	0.17	0.12	0.03	0.09
D	195.0	0.00	42.0	0.0	0.15	0.11	0.03	0.09
D	180.0	0.00	42.0	0.0	0.15	0.11	0.03	0.09
D	180.0	0.00	43.1	0.0	0.17	0.13	0.03	0.09
D	175.0	0.00	43.1	0.0	0.17	0.13	0.03	0.09
D	175.0	0.00	42.8	0.0	0.16	0.12	0.03	0.09
D	160.0	0.00	38.8	0.0	0.17	0.12	0.03	0.09
D	160.0	0.00	72.5	0.0	0.22	0.17	0.03	0.13
D	150.0	0.00	74.8	0.0	0.23	0.17	0.03	0.13
D	150.0	0.00	125.7	0.0	0.25	0.19	0.06	0.16
D	140.0	0.00	127.9	0.0	0.25	0.19	0.05	0.15
D	140.0	0.00	121.3	0.0	0.27	0.22	0.06	0.17
D	125.0	0.00	125.1	0.0	0.28	0.23	0.05	0.15
D	125.0	0.00	121.9	0.0	0.28	0.23	0.06	0.16
D	120.0	0.00	121.9	0.0	0.28	0.23	0.06	0.16
D	120.0	0.00	116.6	0.0	0.28	0.25	0.07	0.18
D	100.0	0.00	115.7	0.0	0.28	0.26	0.07	0.19
D	100.0	0.00	112.6	0.0	0.28	0.28	0.08	0.20
D	80.0	0.00	115.6	0.0	0.29	0.28	0.07	0.19
D	80.0	0.00	108.1	0.0	0.28	0.32	0.09	0.22
D	60.0	0.00	110.5	0.0	0.29	0.33	0.08	0.21
D	60.0	0.00	104.5	0.0	0.29	0.35	0.10	0.22
D	40.0	0.00	106.5	0.0	0.30	0.36	0.09	0.22
D	40.0	0.00	101.6	0.0	0.29	0.38	0.11	0.23
D	20.0	0.00	103.2	0.0	0.29	0.39	0.10	0.23
D	20.0	0.00	99.2	0.0	0.27	0.41	0.12	0.21
D	0.0	0.00	100.6	0.0	0.28	0.42	0.11	0.21

ANTENNA LOADING
===============

.....ANTENNA..... TYPE	ELEV	AZI	ATTACHMENT RAD	AZI	.....ANTENNA FORCES..... AXIAL	SHEAR	GRAVITY	TORSION

	ft	ft		kip	kip	kip	ft-kip
STD+R	210.0	8.0	4.4	0.0	2.38	-0.33	0.40	1.41
HP	200.0	225.0	4.4	240.0	-0.34	0.10	0.12	0.10
HP	200.0	163.0	4.4	120.0	-0.38	-0.05	0.12	-0.04
HP	200.0	354.0	4.4	0.0	0.49	0.02	0.12	-0.02
STD+R	171.0	8.0	4.8	0.0	2.27	-0.31	0.40	1.35
STD+R	161.0	312.0	5.3	0.0	0.84	0.77	0.24	-0.46
HP	122.0	0.0	7.3	0.0	0.44	0.00	0.12	0.00
STD	108.0	0.0	8.0	0.0	0.23	0.00	0.03	0.00

SUPPRESS PRINTING
==========

...FOR THIS LOADING..				.....MAXIMUMS.....			
LOADS INPUT	DISPL	MEMBER FORCES	FOUNDN LOADS	ALL	DISPL	MEMBER FORCES	FOUNDN LOADS
no	yes	yes	yes	no	no	no	no

==========

LOADING CONDITION k ==========

112 mph wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
==========

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	......FORCES...... HORIZ kip	DOWN kip	......MOMENTS...... VERTICAL ft-kip	TORSNAL ft-kip
C	251.0	0.00	0.0	0.0	0.32	0.03	0.00	0.00
C	242.5	0.00	0.0	0.0	0.07	0.00	0.00	0.00
C	242.0	0.00	0.0	0.0	0.05	0.01	0.00	0.00
C	240.0	0.00	0.0	0.0	0.72	0.27	0.00	0.00
C	240.0	0.00	0.0	0.0	0.37	0.14	0.00	0.00
C	240.0	0.00	0.0	0.0	0.65	0.27	0.00	0.00
C	230.0	0.00	0.0	0.0	0.31	0.03	0.00	0.00
C	220.0	0.00	0.0	0.0	0.57	0.07	0.00	0.00
C	220.0	0.00	0.0	0.0	0.57	0.07	0.00	0.00
C	215.0	0.00	0.0	0.0	0.31	0.03	0.00	0.00
C	207.0	0.00	0.0	0.0	0.31	0.02	0.00	0.00
C	204.0	0.00	0.0	0.0	0.35	0.14	0.00	0.00
C	200.0	0.00	0.0	0.0	0.25	0.12	0.00	0.00
C	197.0	0.00	0.0	0.0	0.35	0.14	0.00	0.00
C	160.0	0.00	0.0	0.0	3.38	1.36	0.00	0.00
C	150.0	0.00	0.0	0.0	3.34	1.36	0.00	0.00
C	122.0	0.00	0.0	0.0	0.15	0.08	0.00	0.00
C	108.0	0.00	0.0	0.0	0.15	0.08	0.00	0.00
D	240.0	0.00	42.0	0.0	0.15	0.05	0.01	0.07
D	235.0	0.00	42.0	0.0	0.15	0.05	0.01	0.07
D	235.0	0.00	42.0	0.0	0.13	0.04	0.01	0.07
D	220.0	0.00	42.0	0.0	0.13	0.04	0.01	0.07
D	220.0	0.00	42.0	0.0	0.16	0.07	0.01	0.08
D	215.0	0.00	42.0	0.0	0.16	0.07	0.01	0.08
D	215.0	0.00	42.0	0.0	0.15	0.06	0.01	0.08
D	200.0	0.00	42.0	0.0	0.14	0.06	0.02	0.08
D	200.0	0.00	42.0	0.0	0.17	0.09	0.02	0.09
D	195.0	0.00	42.0	0.0	0.17	0.09	0.02	0.09
D	195.0	0.00	42.0	0.0	0.15	0.08	0.02	0.09
D	180.0	0.00	42.0	0.0	0.15	0.08	0.02	0.09
D	180.0	0.00	43.1	0.0	0.17	0.09	0.02	0.09
D	175.0	0.00	43.1	0.0	0.17	0.09	0.02	0.09
D	175.0	0.00	42.8	0.0	0.16	0.09	0.02	0.09
D	160.0	0.00	38.8	0.0	0.17	0.09	0.02	0.09
D	160.0	0.00	72.5	0.0	0.22	0.13	0.02	0.13
D	150.0	0.00	74.8	0.0	0.23	0.13	0.02	0.13
D	150.0	0.00	125.7	0.0	0.25	0.14	0.04	0.16
D	140.0	0.00	127.9	0.0	0.25	0.14	0.04	0.15
D	140.0	0.00	121.3	0.0	0.27	0.17	0.04	0.17
D	125.0	0.00	125.1	0.0	0.28	0.17	0.04	0.15
D	125.0	0.00	121.9	0.0	0.28	0.17	0.04	0.16
D	120.0	0.00	121.9	0.0	0.28	0.17	0.04	0.16
D	120.0	0.00	116.6	0.0	0.28	0.19	0.05	0.18
D	100.0	0.00	115.7	0.0	0.28	0.19	0.06	0.19
D	100.0	0.00	112.6	0.0	0.28	0.21	0.06	0.20
D	80.0	0.00	115.6	0.0	0.29	0.21	0.06	0.19
D	80.0	0.00	108.1	0.0	0.28	0.24	0.07	0.22

D	60.0	0.00	110.5	0.0	0.29	0.25	0.06	0.21
D	60.0	0.00	104.5	0.0	0.29	0.26	0.08	0.22
D	40.0	0.00	106.5	0.0	0.30	0.27	0.07	0.22
D	40.0	0.00	101.6	0.0	0.29	0.29	0.08	0.23
D	20.0	0.00	103.2	0.0	0.29	0.29	0.08	0.23
D	20.0	0.00	99.2	0.0	0.27	0.31	0.09	0.21
D	0.0	0.00	100.6	0.0	0.28	0.31	0.09	0.21

ANTENNA LOADING
==========

.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	210.0	8.0	4.4	0.0	2.38	-0.33	0.30	1.41
HP	200.0	225.0	4.4	240.0	-0.34	0.10	0.09	0.10
HP	200.0	163.0	4.4	120.0	-0.38	-0.05	0.09	-0.04
HP	200.0	354.0	4.4	0.0	0.49	0.02	0.09	-0.02
STD+R	171.0	8.0	4.8	0.0	2.27	-0.31	0.30	1.35
STD+R	161.0	312.0	5.3	0.0	0.84	0.77	0.18	-0.46
HP	122.0	0.0	7.3	0.0	0.44	0.00	0.09	0.00
STD	108.0	0.0	8.0	0.0	0.23	0.00	0.03	0.00

SUPPRESS PRINTING
==========

	...FOR THIS LOADING..			.....MAXIMUMS.....			
LOADS INPUT	DISPL	MEMBER FORCES	FOUNDN LOADS	ALL	DISPL	MEMBER FORCES	FOUNDN LOADS
no	yes	yes	yes	no	no	no	no

==========

LOADING CONDITION AU ==========

30 mph wind with 0.25 ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
==========

LOAD	ELEV	APPLY..LOAD..AT		LOAD	......FORCES......		......MOMENTS......	
TYPE		RADIUS	AZI	AZI	HORIZ	DOWN	VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	251.0	0.00	0.0	0.0	0.03	0.11	0.00	0.00
C	242.5	0.00	0.0	0.0	0.01	0.01	0.00	0.00
C	242.0	0.00	0.0	0.0	0.00	0.01	0.00	0.00
C	240.0	0.00	0.0	0.0	0.04	0.48	0.00	0.00
C	240.0	0.00	0.0	0.0	0.02	0.24	0.00	0.00
C	240.0	0.00	0.0	0.0	0.04	0.48	0.00	0.00
C	230.0	0.00	0.0	0.0	0.02	0.05	0.00	0.00
C	220.0	0.00	0.0	0.0	0.03	0.12	0.00	0.00
C	220.0	0.00	0.0	0.0	0.03	0.12	0.00	0.00
C	215.0	0.00	0.0	0.0	0.03	0.10	0.00	0.00
C	207.0	0.00	0.0	0.0	0.02	0.04	0.00	0.00
C	204.0	0.00	0.0	0.0	0.02	0.24	0.00	0.00
C	200.0	0.00	0.0	0.0	0.01	0.20	0.00	0.00
C	197.0	0.00	0.0	0.0	0.02	0.24	0.00	0.00
C	160.0	0.00	0.0	0.0	0.19	2.69	0.00	0.00
C	150.0	0.00	0.0	0.0	0.19	2.69	0.00	0.00
C	122.0	0.00	0.0	0.0	0.01	0.13	0.00	0.00
C	108.0	0.00	0.0	0.0	0.01	0.13	0.00	0.00
D	240.0	0.00	42.0	0.0	0.01	0.11	0.04	0.00
D	235.0	0.00	42.0	0.0	0.01	0.11	0.04	0.00
D	235.0	0.00	42.0	0.0	0.01	0.09	0.04	0.00
D	220.0	0.00	42.0	0.0	0.01	0.09	0.04	0.00
D	220.0	0.00	42.0	0.0	0.01	0.14	0.05	0.01
D	215.0	0.00	42.0	0.0	0.01	0.14	0.05	0.01
D	215.0	0.00	42.0	0.0	0.01	0.13	0.05	0.01
D	200.0	0.00	42.0	0.0	0.01	0.13	0.06	0.01
D	200.0	0.00	42.0	0.0	0.01	0.18	0.08	0.01
D	195.0	0.00	42.0	0.0	0.01	0.18	0.08	0.01
D	195.0	0.00	42.0	0.0	0.01	0.17	0.08	0.01
D	180.0	0.00	42.0	0.0	0.01	0.17	0.08	0.01
D	180.0	0.00	43.1	0.0	0.01	0.19	0.08	0.01
D	175.0	0.00	43.1	0.0	0.01	0.19	0.08	0.01
D	175.0	0.00	43.4	0.0	0.01	0.18	0.08	0.01
D	170.0	0.00	43.4	0.0	0.01	0.18	0.08	0.01

D	170.0	0.00	39.3	0.0	0.01	0.18	0.09	0.01
D	160.0	0.00	39.5	0.0	0.01	0.18	0.09	0.01
D	160.0	0.00	63.7	0.0	0.01	0.26	0.11	0.01
D	150.0	0.00	65.7	0.0	0.01	0.26	0.11	0.01
D	150.0	0.00	108.7	0.0	0.02	0.30	0.14	0.01
D	140.0	0.00	111.0	0.0	0.02	0.30	0.13	0.01
D	140.0	0.00	104.3	0.0	0.02	0.34	0.15	0.01
D	125.0	0.00	108.1	0.0	0.02	0.35	0.14	0.01
D	125.0	0.00	105.5	0.0	0.02	0.35	0.15	0.01
D	120.0	0.00	105.5	0.0	0.02	0.35	0.15	0.01
D	120.0	0.00	100.6	0.0	0.02	0.37	0.18	0.01
D	110.0	0.00	102.0	0.0	0.02	0.38	0.17	0.01
D	110.0	0.00	101.1	0.0	0.02	0.38	0.18	0.01
D	100.0	0.00	101.0	0.0	0.02	0.39	0.19	0.01
D	100.0	0.00	98.5	0.0	0.02	0.40	0.20	0.01
D	80.0	0.00	101.3	0.0	0.02	0.41	0.19	0.01
D	80.0	0.00	94.4	0.0	0.02	0.45	0.23	0.01
D	60.0	0.00	96.5	0.0	0.02	0.46	0.21	0.01
D	60.0	0.00	91.3	0.0	0.02	0.48	0.25	0.01
D	40.0	0.00	92.8	0.0	0.02	0.50	0.24	0.01
D	40.0	0.00	89.0	0.0	0.02	0.52	0.27	0.01
D	20.0	0.00	90.0	0.0	0.02	0.53	0.26	0.01
D	20.0	0.00	87.1	0.0	0.02	0.56	0.31	0.01
D	13.3	0.00	87.1	0.0	0.02	0.56	0.31	0.01
D	13.3	0.00	86.7	0.0	0.02	0.58	0.36	0.01
D	6.7	0.00	86.7	0.0	0.02	0.58	0.36	0.01
D	6.7	0.00	86.5	0.0	0.02	0.60	0.40	0.01
D	0.0	0.00	86.5	0.0	0.02	0.60	0.40	0.01

ANTENNA LOADING
===============

.....ANTENNA.....			ATTACHMENT		...........ANTENNA FORCES..........			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	210.0	8.0	4.4	0.0	0.11	-0.01	0.78	0.07
HP	200.0	225.0	4.4	240.0	-0.02	0.00	0.22	0.00
HP	200.0	163.0	4.4	120.0	-0.02	0.00	0.22	0.00
HP	200.0	354.0	4.4	0.0	0.02	0.00	0.22	0.00
STD+R	171.0	8.0	4.8	0.0	0.10	-0.01	0.78	0.06
STD+R	161.0	312.0	5.3	0.0	0.04	0.04	0.43	-0.02
HP	122.0	0.0	7.3	0.0	0.02	0.00	0.22	0.00
STD	108.0	0.0	8.0	0.0	0.01	0.00	0.05	0.00

SUPPRESS PRINTING
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	...FOR THIS LOADING..			.........MAXIMUMS..........			
LOADS	DISPL	MEMBER	FOUNDN	ALL	DISPL	MEMBER	FOUNDN
INPUT		FORCES	LOADS			FORCES	LOADS
no	yes	yes	yes	no	no	no	no

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MAXIMUM MAST DISPLACEMENTS:
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ELEV	------DEFLECTIONS (ft)-----			--TILTS (DEG)---		TWIST
ft	NORTH	EAST	DOWN	NORTH	EAST	DEG
240.0	3.532 S	-2.943 J	0.040 S	1.751 S	-1.451 J	-0.605 d
235.0	3.379 S	-2.815 J	0.038 S	1.748 S	-1.448 J	-0.605 d
230.0	3.226 S	-2.689 J	0.035 S	1.740 S	-1.440 J	-0.605 d
225.0	3.073 S	-2.562 J	0.033 S	1.725 S	-1.427 J	-0.607 d
220.0	2.922 S	-2.437 J	0.031 S	1.703 S	-1.407 J	-0.608 d
215.0	2.772 S	-2.313 J	0.028 S	1.683 S	-1.389 J	-0.610 d
210.0	2.625 S	-2.193 J	0.026 S	1.656 S	-1.366 J	-0.611 d
205.0	2.479 S	-2.072 J	0.024 S	1.618 S	-1.335 J	-0.588 d
200.0	2.338 S	-1.956 J	0.022 S	1.570 S	-1.293 J	-0.565 d
195.0	2.199 S	-1.841 J	0.021 S	1.528 S	-1.259 J	-0.539 d
190.0	2.066 S	-1.732 J	0.019 S	1.476 S	-1.216 J	-0.515 d
185.0	1.935 S	-1.624 J	0.017 S	1.414 S	-1.165 J	-0.491 d
180.0	1.812 S	-1.523 J	0.016 S	1.339 S	-1.104 J	-0.468 d
175.0	1.695 S	-1.426 J	0.015 S	1.274 S	-1.051 J	-0.439 d
170.0	1.585 S	1.336 b	0.013 h	1.212 S	-1.002 J	-0.409 AN
165.0	1.479 S	1.248 b	0.012 h	1.151 S	-0.951 J	-0.366 AN
160.0	1.379 S	1.167 b	0.011 h	1.091 S	-0.904 J	-0.326 AN
155.0	1.284 S	1.087 b	0.010 h	1.039 S	-0.862 J	-0.303 AN
150.0	1.195 S	1.014 b	0.010 h	0.987 S	-0.821 J	-0.282 AN
145.0	1.107 S	0.941 b	0.009 h	0.935 S	-0.779 J	-0.263 AN
140.0	1.026 S	0.874 b	0.008 h	0.883 S	-0.737 J	-0.245 AN

135.0	0.949	S	0.808	b	0.008	h	0.837	S	-0.700	J	-0.231 AN
130.0	0.876	S	0.748	b	0.007	h	0.792	S	-0.663	J	-0.218 AN
125.0	0.806	S	0.689	b	0.006	h	0.745	S	0.625	b	-0.205 AN
120.0	0.742	S	0.635	b	0.006	h	0.700	S	0.588	b	-0.192 AN
115.0	0.679	S	0.582	b	0.005	h	0.659	S	0.555	b	-0.179 AN
110.0	0.621	S	0.533	b	0.005	h	0.620	S	0.522	b	-0.167 AN
105.0	0.566	S	0.486	b	0.005	BM	0.580	S	0.489	b	-0.154 AN
100.0	0.515	S	0.443	b	0.005	CB	0.540	S	0.457	b	-0.142 AN
93.3	0.450	S	0.387	b	0.004	BM	0.499	S	0.422	b	-0.127 AN
86.7	0.390	S	0.336	b	0.004	CB	0.458	S	0.388	b	-0.112 AN
80.0	0.334	S	0.289	b	0.004	BM	0.416	S	0.354	b	-0.098 AN
73.3	0.284	S	0.246	b	0.004	CB	0.380	S	0.323	b	-0.087 AN
66.7	0.238	S	0.207	b	0.003	BM	0.343	S	0.292	b	-0.077 AN
60.0	0.197	S	0.171	b	0.003	CB	0.306	S	0.261	b	-0.067 AN
53.3	0.159	S	0.139	b	0.003	BM	0.269	S	0.230	b	-0.059 AN
46.7	0.127	S	0.111	b	0.002	AU	0.233	S	0.199	b	-0.051 AN
40.0	0.097	S	0.085	b	0.002	BM	0.196	S	0.168	b	-0.043 AN
33.3	0.072	S	0.064	b	0.002	AU	0.163	S	0.140	b	-0.035 AN
26.7	0.050	S	0.044	b	0.001	BM	0.131	S	0.112	b	-0.027 AN
20.0	0.032	S	0.029	b	0.001	AW	0.098	S	0.084	b	-0.019 AN
13.3	0.018	S	0.016	b	0.001	BO	0.065	S	0.056	b	-0.013 AN
6.7	0.007	S	0.006	b	0.000	AW	0.033	S	0.028	b	-0.006 AN
0.0	0.000	A	0.000	A	0.000	A	0.000	A	0.000	A	0.000 A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS:
==========

ELEV ft	AZI deg	TYPE *	.....BEAM DEFLECTIONS (deg)..... PITCH	YAW	ROLL	TOTAL
210.0	8.0	STD+R	1.426 G	0.614 AN	-1.640 S	1.485 G
200.0	225.0	HP	1.462 V	0.571 b	1.467 P	1.504 V
200.0	163.0	HP	1.421 e	0.562 AN	1.501 S	1.441 e
200.0	354.0	HP	-1.323 e	0.564 AN	-1.561 S	1.401 b
171.0	8.0	STD+R	1.057 G	0.417 AN	-1.213 S	1.092 G
161.0	312.0	STD+R	-1.062 h	0.331 AN	1.022 G	1.064 h
122.0	0.0	HP	-0.603 b	0.197 AN	-0.718 S	0.634 b
108.0	0.0	STD	-0.509 b	0.162 AN	-0.604 S	0.534 b

MAXIMUM TENSION IN MAST MEMBERS (kip)
==========

ELEV ft	LEGS	DIAG	HORIZ	BRACE
240.0	----------		0.62 T	0.00 A
	1.63 k	1.59 AF		
235.0	----------		0.06 A	0.00 A
	5.39 k	1.61 V		
230.0	----------		0.03 AC	0.00 A
	9.53 k	2.09 V		
225.0	----------		0.07 A	0.00 A
	14.85 k	2.44 V		
220.0	----------		0.29 V	0.00 A
	20.72 k	3.61 k		
215.0	----------		0.17 J	0.00 A
	30.40 k	4.41 V		
210.0	----------		0.09 AI	0.00 A
	41.04 k	6.64 AF		
205.0	----------		0.16 M	0.00 A
	52.95 k	6.90 D		
200.0	----------		0.44 k	0.00 A
	68.57 k	7.59 AF		
195.0	----------		0.24 A	0.00 A
	86.76 k	8.12 V		
190.0	----------		0.06 AC	0.00 A
	104.78 k	8.51 AF		
185.0	----------		0.25 A	0.00 A
	124.32 k	8.91 V		
180.0	----------		1.25 AC	0.00 A
	137.74 k	4.46 k		
175.0	----------		0.25 A	0.00 A
	147.29 k	4.82 AH		
170.0	----------		0.08 V	0.00 A
	155.24 k	5.88 X		
165.0	----------		0.21 M	0.00 A
	164.34 k	5.56 p		
160.0	----------		0.08 d	0.00 A
	174.29 k	7.78 X		
155.0	----------		0.21 Y	0.00 A
	186.22 k	7.35 p		
150.0	----------		0.07 d	0.00 A
	197.90 k	8.81 AH		

145.0	----------	0.17 Y	0.00 A	
	211.81 k 8.50 F			
140.0	----------	0.03 d	0.00 A	
	223.96 k 8.66 AH			
135.0	----------	0.12 Y	0.00 A	
	236.72 k 8.49 F			
130.0	----------	0.02 O	0.00 A	
	248.28 k 8.71 AH			
125.0	----------	0.10 A	0.00 A	
	260.37 k 8.64 F			
120.0	----------	0.02 S	0.00 A	
	271.64 k 9.11 X			
115.0	----------	0.08 A	0.00 A	
	283.39 k 9.05 p			
110.0	----------	0.03 A	0.00 A	
	294.55 k 9.40 X			
105.0	----------	0.08 A	0.00 A	
	305.97 k 9.42 F			
100.0	----------	0.03 A	0.00 A	
	318.72 k 10.20 X			
93.3	----------	0.08 A	0.00 A	
	333.48 k 10.28 j			
86.7	----------	0.04 A	0.00 A	
	347.69 k 10.53 X			
80.0	----------	0.06 A	0.00 A	
	361.96 k 10.75 j			
73.3	----------	0.03 A	0.00 A	
	375.77 k 10.92 X			
66.7	----------	0.06 A	0.00 A	
	389.66 k 11.25 j			
60.0	----------	0.03 A	0.00 A	
	403.21 k 11.38 X			
53.3	----------	0.05 A	0.00 A	
	416.83 k 11.83 j			
46.7	----------	0.03 A	0.00 A	
	430.22 k 11.94 R			
40.0	----------	0.04 A	0.00 A	
	443.67 k 12.43 j			
33.3	----------	0.03 A	0.00 A	
	456.87 k 12.53 j			
26.7	----------	0.04 A	0.00 A	
	470.12 k 12.99 j			
20.0	----------	0.03 A	0.00 A	
	483.15 k 13.11 j			
13.3	----------	0.01 M	0.00 A	
	496.18 k 13.52 j			
6.7	----------	0.03 A	0.00 A	
	508.98 k 13.64 j			
0.0	----------	0.00 A	0.00 A	

MAXIMUM COMPRESSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE
240.0	----------		-0.60 l	0.00 A
	-2.26 S	-1.61 V		
235.0	----------		-0.05 AC	0.00 A
	-6.35 S	-1.60 V		
230.0	----------		-0.03 A	0.00 A
	-10.82 S	-2.10 V		
225.0	----------		-0.06 AC	0.00 A
	-16.57 S	-2.45 V		
220.0	----------		-0.34 s	0.00 A
	-23.15 S	-3.78 V		
215.0	----------		-0.14 q	0.00 A
	-33.41 S	-4.03 D		
210.0	----------		-0.14 G	0.00 A
	-44.94 S	-6.52 G		
205.0	----------		-0.14 q	0.00 A
	-57.65 S	-7.17 AF		
200.0	----------		-0.63 A	0.00 A
	-73.61 S	-7.58 V		
195.0	----------		-0.22 AC	0.00 A
	-92.65 S	-8.10 AF		
190.0	----------		-0.07 A	0.00 A
	-111.10 S	-8.52 V		
185.0	----------		-0.24 AC	0.00 A
	-131.50 S	-8.93 AF		

180.0	----------		-1.32	A	0.00	A
	-145.36	S -4.47	X			
175.0	----------		-0.24	q	0.00	A
	-155.64	S -4.68	F			
170.0	----------		-0.08	s	0.00	A
	-164.35	S -5.91	G			
165.0	----------		-0.22	q	0.00	A
	-173.69	S -5.68	X			
160.0	----------		-0.08	AN	0.00	A
	-185.04	S -7.70	s			
155.0	----------		-0.21	AO	0.00	A
	-197.31	S -7.64	X			
150.0	----------		-0.07	AN	0.00	A
	-210.14	S -8.70	I			
145.0	----------		-0.17	AO	0.00	A
	-224.63	S -8.72	X			
140.0	----------		-0.03	AN	0.00	A
	-237.13	S -8.49	F			
135.0	----------		-0.12	AO	0.00	A
	-250.67	S -8.69	X			
130.0	----------		-0.02	AT	0.00	A
	-262.82	S -8.56	F			
125.0	----------		-0.10	AO	0.00	A
	-275.86	S -8.82	X			
120.0	----------		-0.02	AT	0.00	A
	-288.07	S -8.97	F			
115.0	----------		-0.08	AO	0.00	A
	-300.77	S -9.21	X			
110.0	----------		-0.03	AC	0.00	A
	-312.92	S -9.30	F			
105.0	----------		-0.07	AO	0.00	A
	-325.43	S -9.55	X			
100.0	----------		-0.03	AC	0.00	A
	-339.38	S -10.11	F			
93.3	----------		-0.07	AO	0.00	A
	-355.73	S -10.37	X			
86.7	----------		-0.03	AC	0.00	A
	-371.51	S -10.53	j			
80.0	----------		-0.06	AO	0.00	A
	-387.57	S -10.75	X			
73.3	----------		-0.03	AC	0.00	A
	-403.26	S -11.02	j			
66.7	----------		-0.05	AO	0.00	A
	-419.12	S -11.16	X			
60.0	----------		-0.03	AC	0.00	A
	-434.70	S -11.56	j			
53.3	----------		-0.04	AO	0.00	A
	-450.49	S -11.66	X			
46.7	----------		-0.03	AC	0.00	A
	-466.06	S -12.16	j			
40.0	----------		-0.04	AO	0.00	A
	-481.83	S -12.27	R			
33.3	----------		-0.02	AC	0.00	A
	-497.43	S -12.73	j			
26.7	----------		-0.04	AO	0.00	A
	-513.13	S -12.86	j			
20.0	----------		-0.02	AC	0.00	A
	-528.68	S -13.29	j			
13.3	----------		-0.01	e	0.00	A
	-544.34	S -13.40	j			
6.7	----------		-0.03	AC	0.00	A
	-559.80	S -13.81	j			
0.0	----------		0.00	A	0.00	A

MAXIMUM INDIVIDUAL FOUNDATION LOADS: (kip)

LOAD---COMPONENTS				TOTAL
NORTH	EAST	DOWN	UPLIFT	SHEAR
48.31 S	42.45 e	566.94 S	-514.82 k	49.31 e

MAXIMUM TOTAL LOADS ON FOUNDATION : (kip & kip-ft)

HORIZONTAL			DOWN	OVERTURNING			TORSION
NORTH	EAST	TOTAL		NORTH	EAST	TOTAL	
		@ 150.5				@ 150.7	

80.4	71.4	85.4	92.1	9809.6	8464.7	10167.7	-55.5
S	b	h	BP	S	b	h	AN

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MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES

Tower Description	240' S3R Series SD
Customer	VERIZON WIRELESS
Project Number	101214
Date	3/13/2015
Engineer	TTW

Overall Loads:			
Factored Moment (ft-kips)	10167.75	Anchor Bolt Count (per leg)	6
Factored Axial (kips)	63.17		
Factored Shear (kips)	85.36		
Individual Leg Loads:		Tower eccentric from mat (ft)=	1.75
Factored Uplift (kips)	515.00		
Factored Download (kips)	567.00		
Factored Shear (kips)	49.00		
Width of Tower (ft)	20.75	Allowable Bearing Pressure (ksf)	**4.50**
Ultimate Bearing Pressure	9.00	Safety Factor	**2.00**
Bearing Φs	0.75		
Bearing Design Strength (ksf)	6.75	Max. Factored Net Bearing Pressure (ksf)	5.69
Water Table Below Grade (ft)	**5**		
Width of Mat (ft)	34	Minimum Mat Width (ft)	27.42
Thickness of Mat (ft)	1.5		
Depth to Bottom of Slab (ft)	6		
Bolt Circle Diameter (in)	10.25		
Top of Concrete to Top of Bottom Threads (in)	58		
Diameter of Pier (ft)	4	Minimum Pier Diameter (ft)	2.35
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	3.54
Ht. of Pier Below Ground (ft)	4.5		
Quantity of Bars in Mat	68		
Bar Diameter in Mat (in)	1.27		
Area of Bars in Mat (in^2)	86.14		
Spacing of Bars in Mat (in)	5.98	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	18		
Bar Diameter in Pier (in)	1		
Tie Bar Diameter in Pier (in)	0.5		
Spacing of Ties (in)	9		
Area of Bars in Pier (in^2)	14.14	Minimum Pier A_s (in^2)	9.05
Spacing of Bars in Pier (in)	6.95	Recommended Spacing (in)	5 to 12
f'c (ksi)	4.5		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.105		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	71.20		

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES (CONTINUED)

Two-Way Shear:

Average d (in)	13.73		
ϕV_c (kips)	607.3	V_u (kips)	558.1
$\phi V_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}b_o d$	910.9		
$\phi V_c = \phi(\alpha_s d/b_o+2)f'_c{}^{1/2}b_o d$	733.6		
$\phi V_c = \phi 4f'_c{}^{1/2}b_o d$	607.3		
Shear perimeter, b_o (in)	193.93		
β_c	1		

Stability:

Overturning Design Strength (ft-k)	11955.3	Factored Overturning Moment (ft-k)	10722.6

One-Way Shear:

ϕV_c (kips)	638.8	V_u (kips)	563.1

Pier Design:

Design Tensile Strength (kips)	763.4	Tu (kips)	515.0
ϕV_n (kips)	176.0	V_u (kips)	49.0
$\phi V_c = \phi 2(1+N_u/(500A_g))f'_c{}^{1/2}b_w d$	90.6		
V_s (kips)	100.5	*** V_s max = 4 $f'_c{}^{1/2}b_w d$ (kips)	494.6
Maximum Spacing (in)	9.76	(Only if Shear Ties are Required)	
Actual Hook Development (in)	12.46	Req'd Hook Development l_{dh} (in)	11.13
		*** Ref. ACI 11.5.5 & 11.5.6.3	

Anchor Bolt Pull-Out:

$\phi P_c = \phi\lambda(2/3)f'_c{}^{1/2}(2.8A_{SLOPE} + 4A_{FLAT})$	272.5	P_u (kips)	515.0
Pier Rebar Development Length (in)	40.13	Required Length of Development (in)	30.17

Flexure in Slab:

ϕM_n (ft-kips)	4680.3	M_u (ft-kips)	4644.7
a (in)	3.31		
Steel Ratio	0.01538		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	129.39	Required Development in Pad (in)	25.02

Condition	1 is OK, 0 Fails
Minimum Mat Width	1
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Two-Way Shear	1
Overturning	1
Anchor Bolt Pull-Out	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Interaction Diagram Visual Check	1
One-Way Shear	1
Hook Development	1
Minimum Mat Depth	1

EXHIBIT 7

HELLMAN YATES & TISDALE

ATTORNEYS AND COUNSELORS AT LAW

MEMORANDUM

To: Joel Evans, Charleston County Planning

From: Jonathan L. Yates and Brian A. Hellman

Date:

Re: Meeting with Johns Island Council

Dear Mr. Evans:

In accordance with Chairman Meyer's March 14, 2011, Memorandum regarding community outreach and Planned Development applications, Berkeley Electric Cooperative, Inc. had a meeting with the Johns Island Council on September 4, 2014.

The Johns Island Council voted in support of the PD, and generally looked forward to the benefits the Smart Grid improvements will bring to the island.

EXHIBIT 8

HELLMAN YATES & TISDALE

ATTORNEYS AND COUNSELORS AT LAW

MEMORANDUM

To: Joel Evans, Charleston County Planning

From: Jonathan L. Yates and Brian A. Hellman

Date: November 7, 2014

Re: Wetlands Determination

Dear Mr. Evans:

At the request of the applicant, Environmental Corporation of America ("ECA") prepared an assessment of the proposed PD site, 1509 Main Road. Based on National Wetlands Inventory date as well as an inspection of the site, ECA determined that the proposed undertaking would not impact jurisdictional waters or wetlands.

A copy of the ECA assessment is enclosed herewith as Exhibit 3 and incorporated herein by reference.

EXHIBIT 9

BERKELEY ELECTRIC COOPERATIVE, INC.

Your Touchstone Energy® Partner

23 April 23, 2014

Charleston Planning Commission

Berkeley Electric Cooperative is requesting a permit to replace the current communications tower location at 1509 Main Rd, Johns Island, SC. The current tower was constructed in 1986. It provides the only link between our office on Johns Island and corporate headquarters in Moncks Corner, SC. The tower has our primary microwave system which provides computer and telephone service to the office. It provides coverage of the JI service area for our two-way radio trunking system and is the main point of connection for the communication system carrying the telemetry data plus control of all the substations for the JI service district. The tower is one of the main sites for Verizon cellular service to Johns Island.

The increasing demand for more efficient and faster communications has created a loading issue for BEC and Verizon on this tower. BEC is looking at adding a high speed microwave loop between all the substations in Johns Island service area to provide support for installation of our Smart Grid system. The Smart Grid system is the installation of an intelligent meter that provides two communications over the power lines. This will increase more efficiency to power outages and more accurate billing for our customers.Verizon was also wanting to add more load to the tower for better call and data handling for its customers. The new tower will provide the necessary load requirements for BEC and Verizon plus if a second carrier did request space on the tower.

We are going to replace the guyed tower with a self-support, at the same height, because the location being close to the coast does receive higher winds during storms. A self-supporter does have a smaller chance of collapsing versus a guyed tower because of the wires used to support the tower which if even just one wire breaks loose, it could bring the whole tower down in a storm.

Thank You,

Dennis Grant
Telecommunications Engineer, P.E.
Berkeley Electric Cooperative, Inc.

BERKELEY ELECTRIC COOPERATIVE, INC.

Your Touchstone Energy® Partner

April 23, 2014

Joel Evans
Charleston Planning Commission
4045 Bridgeview Drive
North Charleston, SC 29405

Re: Traffic Patterns PUD

Dear Mr. Evans:

I hope this letter finds you well. Please accept this letter regarding any additional traffic patters for the proposed PUD zoning change proposal. This proposed tower replacement, in addition to the zoning, will not change the current traffic patterns of the site. General construction of the site will be approximately 45 to 75 days. General construction traffic will be entering and existing the site during the hours of 7 AM to 7 PM.

After the general construction period concludes, traffic entering and exiting the site will generally be limited to small twin axle pickups and like vehicles. In most standard cases, vehicular traffic will be approximately 1 to 2 trips per month for carrier-tenant maintenance. Other traffic use for emergency and office use will generally be limited to emergency-type situations such as after hurricanes and major storms.

If you should have any questions, please do not hesitate to contact me directly.

Thank You,

Dennis Grant
Telecommunications Engineer, P.E.
Berkeley Electric Cooperative, Inc.

EXHIBIT 10

ModSpace

12'X56' OFFICE TRAILER

12'x56' Office Trailer Exterior View

Our three-office trailer has plenty of elbow room your entire team.

Perfect for when you need a little more elbow room for you and your team, our 12'x56' Three Office Trailer has two private and one central office across 672 square feet of floor space.

Request a Quote

or Click to Call

We will contact you within 60 minutes*!

PRODUCT DETAILS

- Specs & Features
- 360° View
- Additional Services

Run projects, review building plans and meet with your team. Our huge inventory of site trailers ensures you get the right size and floor plan to fit your demands. And our On-time Guarantee gets it there when you need it, or your first month is free.

We can also help you increase job-site efficiency with pre-wiring for voice and data communications, add code-compliant steps, decks and ramps for easy access to your trailer, supply furniture, provide insurance to protect you from risk and much more.

Specifications

- 12'x56' building size
- 12'x60' overall size with towing hitch
- (2) 12'x12' private offices
- (1) 12'x32' main office
- 672 square feet of interior floor space
- Electric, plumbing, heat and air conditioning
- 50 lbs. per square foot allowable floor load

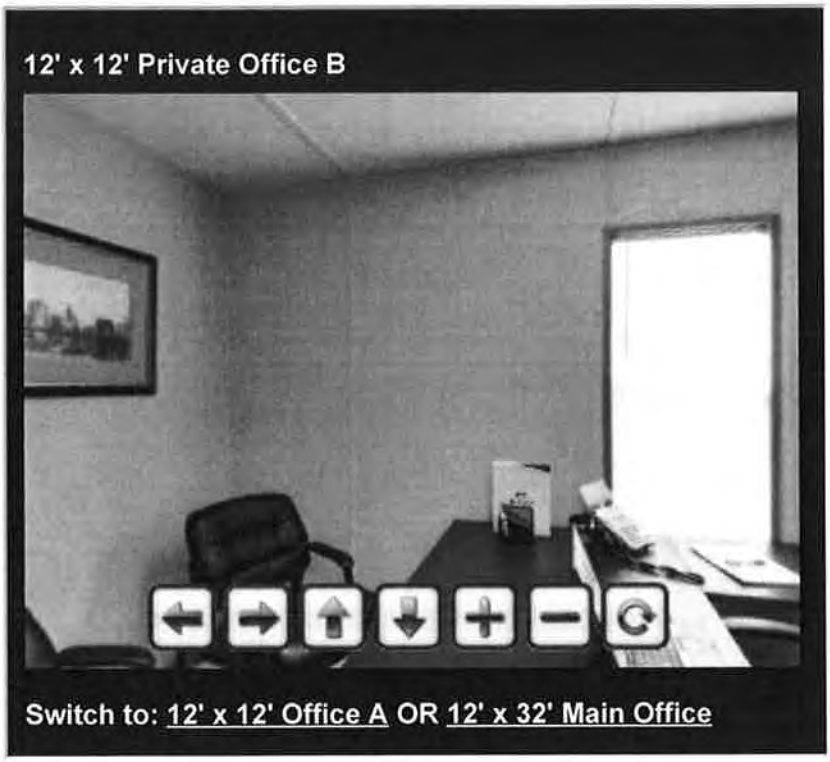
Features

- Insulated walls, ceilings and floors
- 1/8" vinyl floor tile
- .019 deluxe aluminum siding or decorative siding
- Paneled walls
- Sliding windows
- 120V electrical outlets

- (2) 36"x80" lockable exterior doors
- (2) 36"x80" interior doors (3 with half bath)
- Fluorescent lighting
- 8' ceiling height
- Central heating & air conditioning
- Restroom optional

All features noted are ModSpace standards. Specifications and floor plans may vary. Wood, vinyl and metal exteriors, skirting and other custom features, options and finishes are available upon request.

Contact your local ModSpace representative for details on units available in your area.



Step Inside Our 12' x 56' Mobile Office!
Click for a full screen 360° Panoramic View

Additional Services

We can take care of everything you need to have a fully-functional office at your job or office site, so you can be up and running day one with your new space.

- **Steps, Decks and Ramps** - OSHA, CAL OSHA and general code options
- **Furniture** - From just the basics to professional office
- **Insurance** - Optional Commercial General Liability and Damage Waiver options
- **Communications Services** - Pre-wiring for voice and data
- **Plug and Play Utilities** - Utility hookups, HVAC, bottled water delivery and more
- **Turnkey Services** - Project management, design/build services, financing options

**Monday - Friday, 8:00 am - 6:00 pm ET*
If you prefer to speak with a ModSpace representative, please call us at 866.322.0120

RECOMMENDED JUST FOR YOU