

Henderson County

Code Enforcement Services

240 2nd Avenue East Hendersonville, North Carolina 28792
Phone (828) 697-4857 Fax (828) 697-4535

MEMORANDUM

DATE: July 23, 2009
TO: Technical Review Committee
TRC MEETING DATE: August 4, 2009
REGARDING: Minor Site Plan Review
NAME OF APPLICANT: David Vanvoorhis/Robert White
DEPARTMENT: Code Enforcement Services
STAFF CONTACT: Toby Linville
ATTACHMENTS: Site Plan / Technical Specifications

Please find attached plans for the following development proposal to be reviewed by the Henderson County Technical Review Committee on August 4, 2009.

Minor Site Plan Review

Robert White, on behalf of the owner, David Vanvoorhis, submitted the minor site plan for this project. They wish to utilize the property for a wind turbine as an accessory to a single family dwelling.

SR 3.16. Wind Mill/Turbine, Accessory < 40 ft height

- (1) Principal Structure/Use Requirement. Accessory wind mills/turbines shall only be permitted in conjunction with a principal residential dwelling unit or business.
- (2) Height. Wind turbine height shall be no more than 40 feet.
- (3) Rotor Blades. Rotor blades shall not exceed eight (8) feet in radius measured from the center of the support structure and shall maintain a minimum ground clearance of ten (10) feet. Wind turbines proposing a rotor blade exceeding eight (8) feet in radius shall require a special use permit and shall also meet the requirements for SR 3.17.
- (4) Setback. The base of the wind turbine shall be at least ten (10) feet from surrounding property lines and setback a distance equivalent to 110 percent of the height of the wind turbine at its highest point from the property line.
- (5) Color. Wind turbines must be a color that is consistent with *existing development* or natural conditions.
- (6) Compliance with FAA Regulations. Wind turbines must comply with applicable FAA regulations, including any necessary approvals for installation close to *airports*. Evidence of compliance or non-applicability shall be submitted to the *Zoning Administrator*.
- (7) Compliance with FCC Regulations. Wind turbines must comply with applicable FCC regulations. Evidence of compliance or non-applicability shall be submitted to the *Zoning Administrator*.
- (8) Structure Requirements. Wind turbines shall require a building permit to insure that the foundation is designed and constructed with a concrete foundation per the manufacturing requirements. Sealed engineering drawings shall be required prior to the issuance of a building permit. These standards shall not preempt the State Building Code standards or requirements to insure structural stability.
- (9) Survival Wind Speed. Wind turbines shall be designed to withstand wind speeds as required by the State Building Code.

The project site is located on 1.0 acre of land (PIN 9597374444) located at 81 Denise Dr. in the Eagle's Rest subdivision off Jackson Loop Rd. The project is located in a Residential Two-Rural (R2-R) zoning district. The project meets the requirements of the Land Development Code and all the applicable major site plan requirements are met.

If you would like to submit your changes early please use the comment sheet provided and sending it back via email to tlinville@hendersoncountync.org.

Date: July 23, 2009
Owner Name:
Mailing Address:
Situs Address:

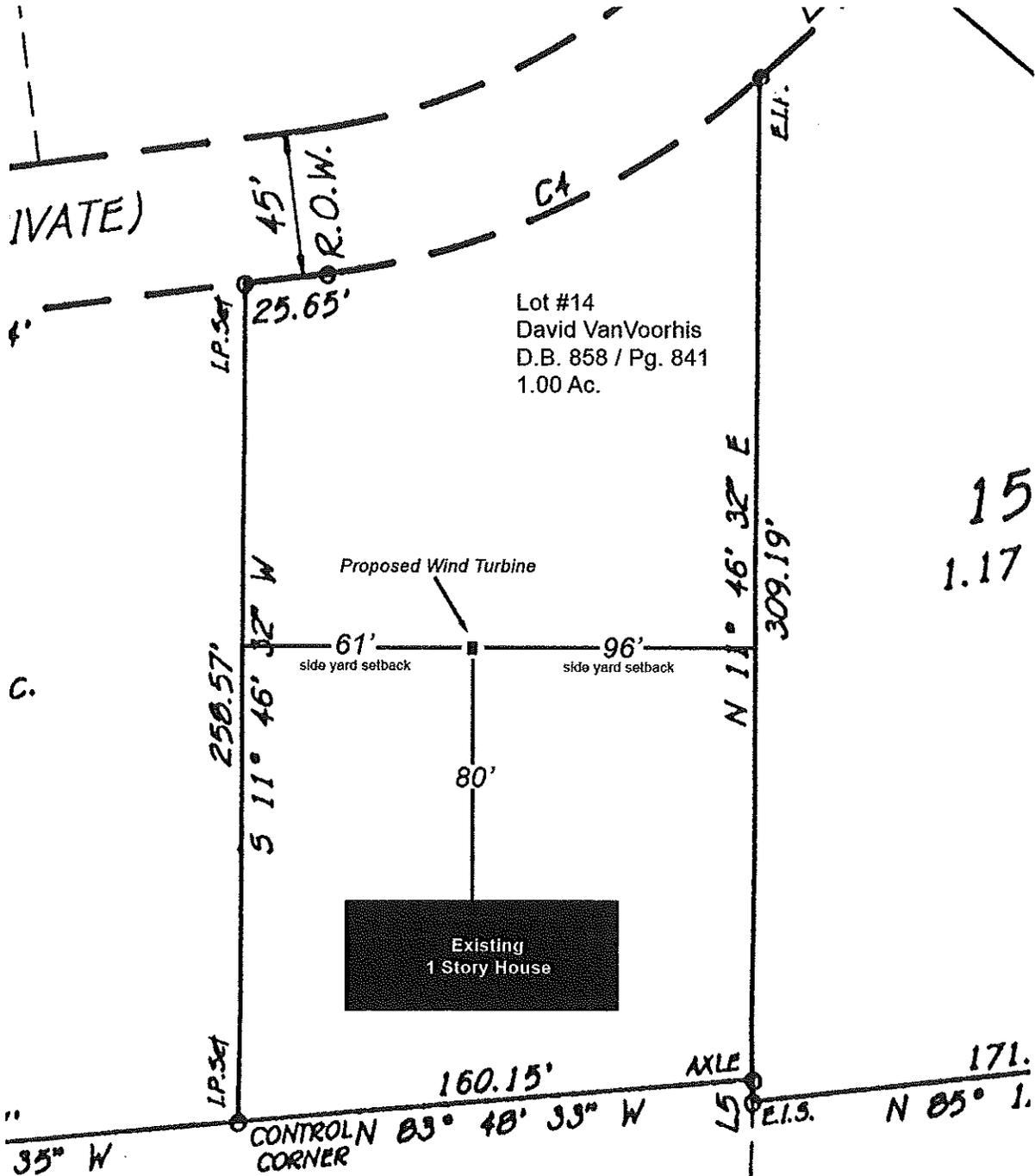
PIN: 9597374444
VANVOORHIS, DAVID
81 DENISE DR
81 DENISE DR

Parcel Number: 9951030



History:	No History Found
Permit:	No Permit Found
Date:	No Date Found
NEW Zoning Districts:	Residential 2 - Rural
Acreage:	1.0000
Municipality Boundaries:	No City Found
	No Ordinance Found
Water Supply Watersheds:	No Watershed Found
	No Watershed Found
	No Watershed Found
OLD 1982 Flood Zones 03-01-1982:	No Flood Zone Found
	No Flood Zone Found
NEW 2008 Flood Zones 10-02-2008:	No Flood Hazard
NEW 2008 Floodway 10-02-2008:	No Floodway
NEW 2008 Flood Panel 10-02-2008:	9597
Protected Ridges:	No
City of Hendersonville Annexation Resolution:	No
Fire Tax Districts:	01 Blue Ridge Fire

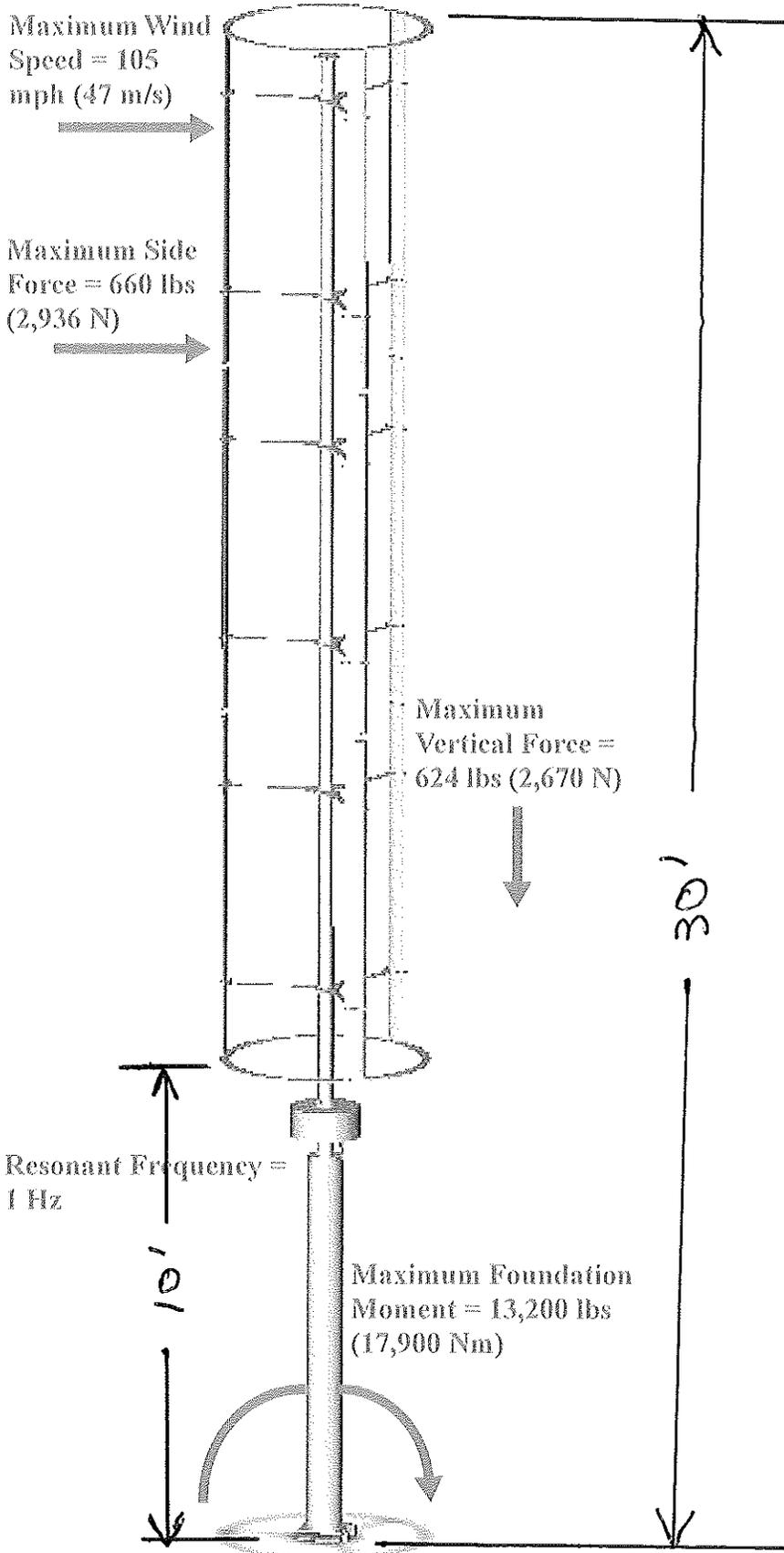
Wind spine Wind Turbine



This survey taken from survey by:
Laughter Austin and Associates, PA
131 Fourth Avenue East
Hendersonville, NC 28792
Date: 08/09/95
Henderson Co. RofD Slide #2011

2.5 Load Diagram

Windspire Wind Turbine



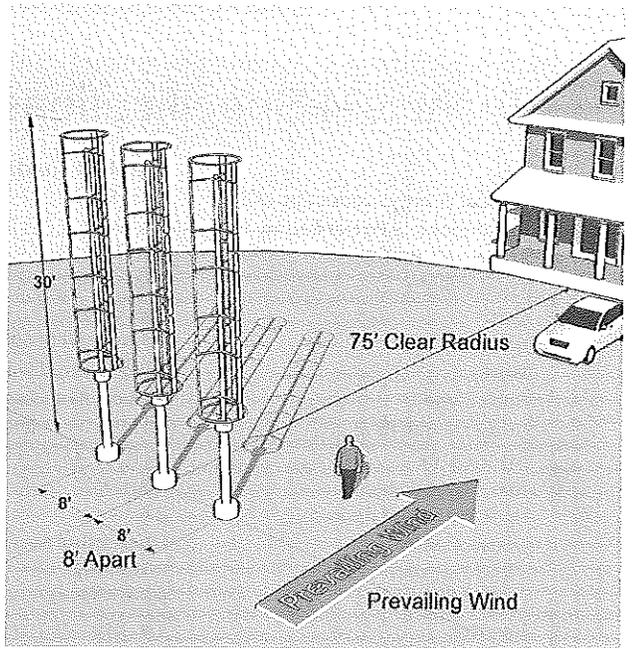
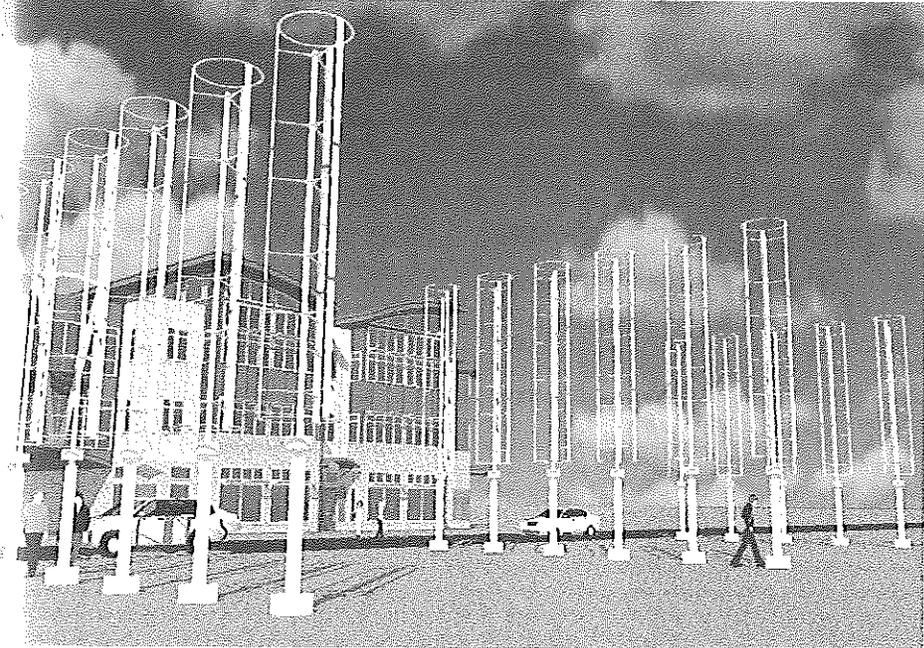
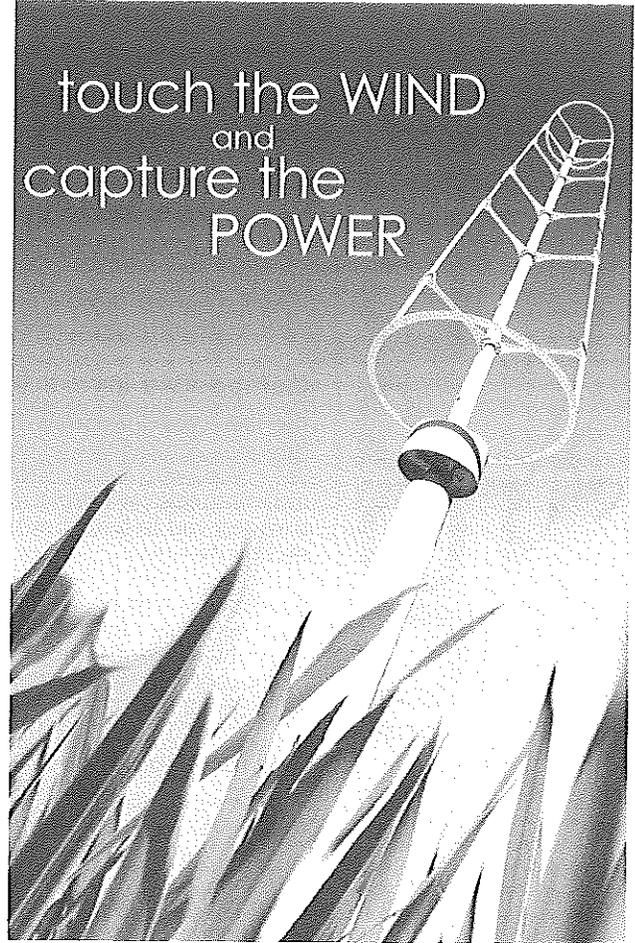
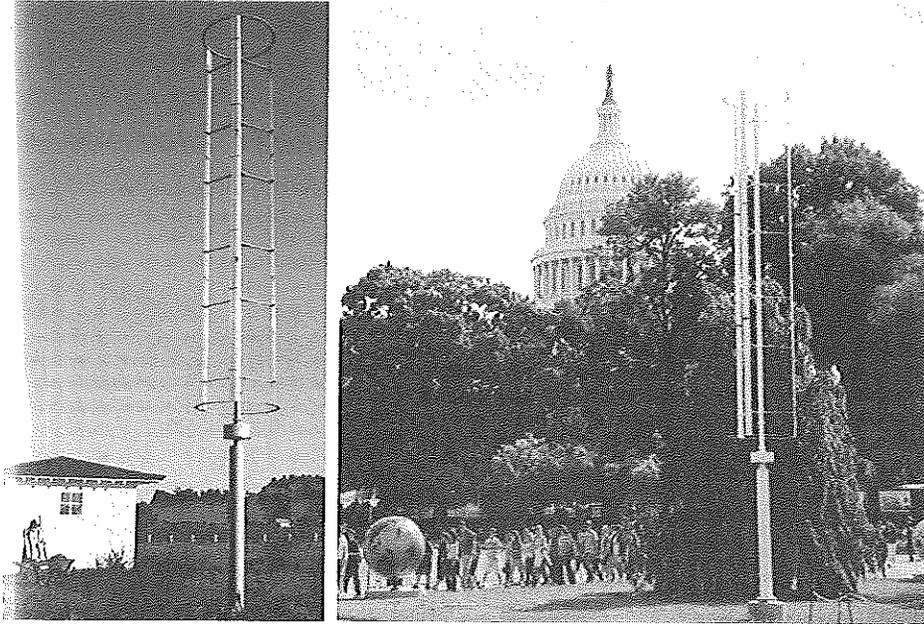
Dave Van Voorish - Windspire Wind Turbines

DATE RECEIVED 6/19/09
 DATE REVIEWED 6/19/09
 TYPE CONST. IF B
 GROUP (OCCUPANCY) ULTIMATE 329
 APPROVED DISAPPROVED
**REVIEW OF PLANS DOES NOT RELIEVE DESIGNER
 OR CONTRACTOR OF RESPONSIBILITY
 FOR COMPLIANCE WITH ALL LOCAL AND
 STATE CODES**

MAR

Windspire

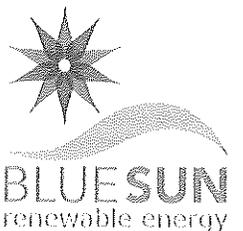
touch the WIND
and
capture the
POWER



Virtually silent and bird friendly
Low profile at only 30' tall
Easy tilt-up installation
Easy to take down or relocate
All electronics integrated
Grid ready
Clean renewable energy

Starts spinning in 3-5 mph
Power production at 9 mph
Exceptionally Competitive

Affordable pricing:
30% Federal tax credit
35% NC tax credit
1% NC loan available



www.bluesunrenew.com
Asheville: 828-230-3580



Mariah Power's Testing Program

Vertical Innovation, Technology Integration™

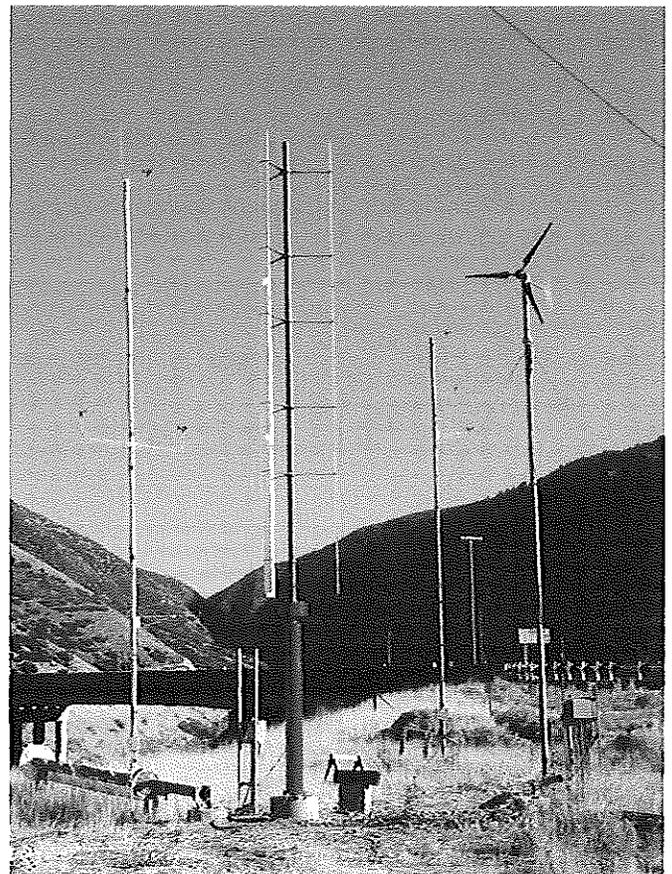
Windspire® Performance Testing

In an industry that is still developing standards for testing small wind turbines, each small wind manufacturer is responsible for determining how to test and rate their wind turbines. At Mariah Power, we are committed to testing our products in real-world settings and through independent facilities to further our innovation and deliver quality products to our customers.

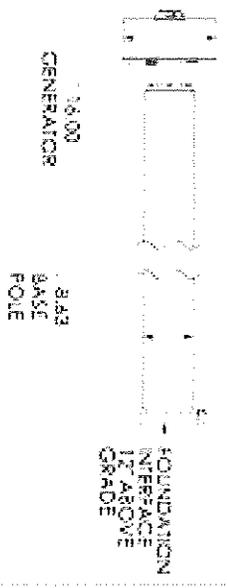
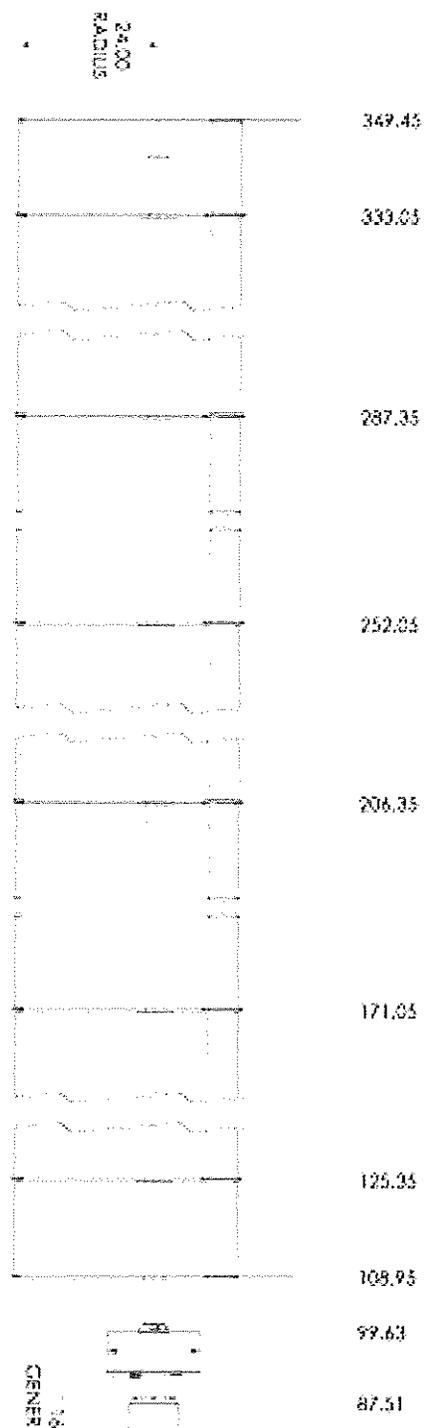
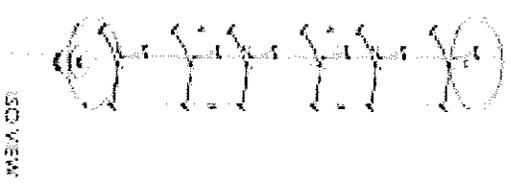
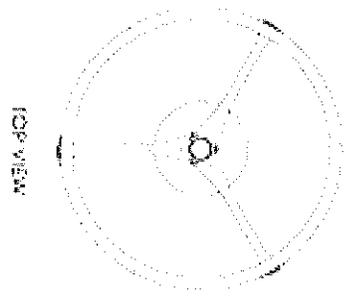
Testing enables us to know how well our unit performs in real world wind conditions, while also generating data that we can use to calculate and develop our power and energy curves. This allows us to give customers a realistic idea of how much energy to expect for their wind conditions prior to installing a Windspire. Testing also identifies potential issues and helps us continually improve our product.

The foundation of our program has been to engage one of the best third-party test sites in the industry, run by Windward Engineering in Spanish Fork, Utah. This test site offers a class 6 wind zone, and full testing and monitoring equipment. In addition, Mariah Power has done testing at a federal test facility in Colorado, and is expanding its current independent testing program with an installation at the North Carolina Small Wind Energy Research and Demonstration Site at Appalachian State University. Future plans also include an installation at the Texas Department of Agriculture's test facility in West Texas. The Windspire is also taking part in a Wind Lab at the Museum of Science in Boston that will provide data on urban rooftop installations. Finally, Mariah Power will use the data from its many field installations, which will be collected in a variety of wind conditions, to customize the product for various wind regimes.

We take pride in setting high performance standards for our technology, and in putting our unit through stringent in-ground testing. By setting realistic expectations for our customers based on real-world performance results, and by incorporating testing into our product development process, we are building a reputation as a reliable and innovative technology company.

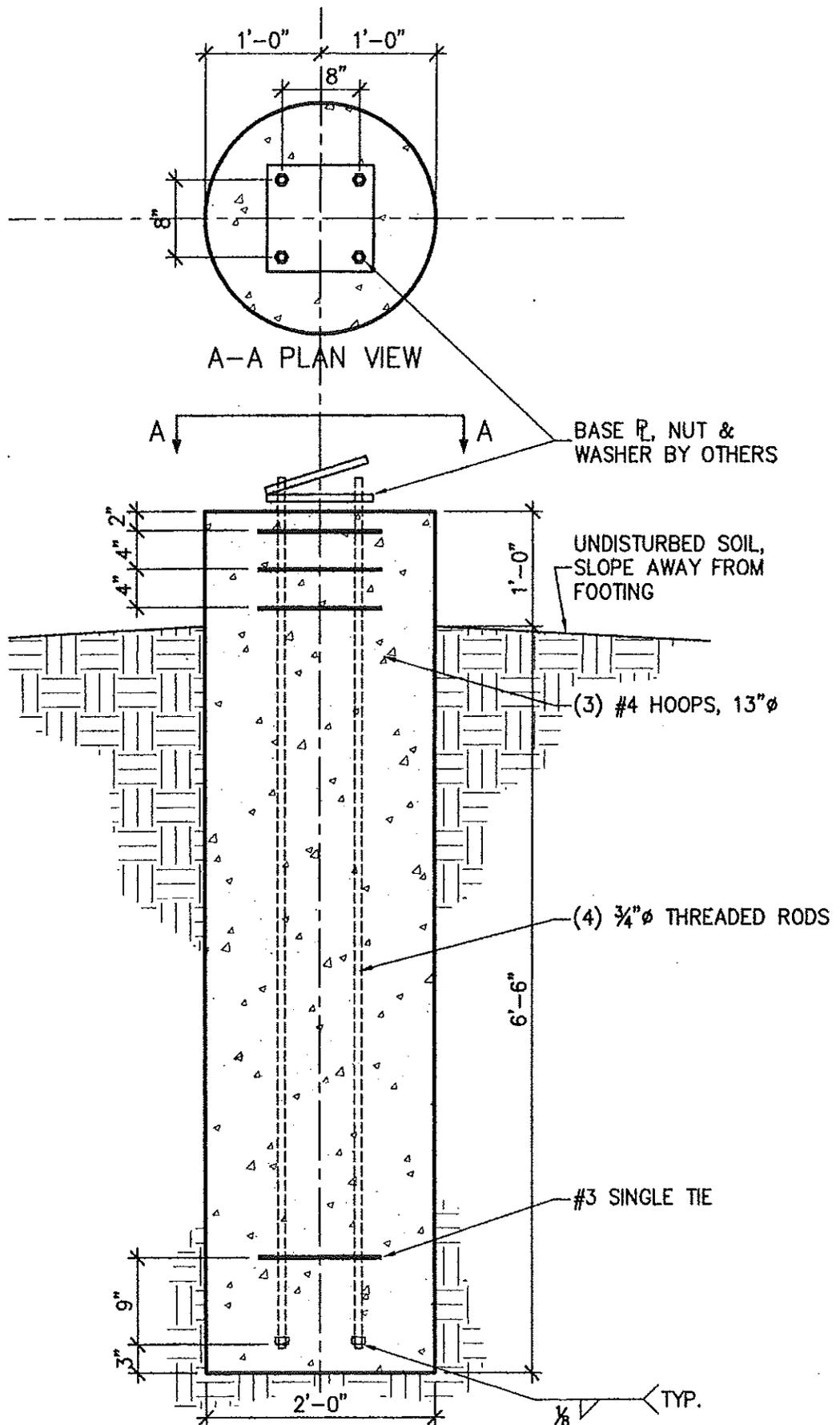


Windspire Wind Turbine



Project Name	Windspire
Client	ABC Energy
Design Date	10/20/2023
Scale	1/4" = 1'-0"
Sheet No.	WT-01
Revision	01
Author	J. Smith
Checker	M. Jones
Approver	D. Brown
Project Path	C:\Projects\Windspire
File Name	WT-01.dwg
Plot Date	10/20/2023
Plot Time	10:30 AM
Plot Scale	1/4" = 1'-0"
Plot Size	11x17

Windspine Wind Turbine



Windspine Wind Turbine

GENERAL STRUCTURAL NOTES:

1. GENERAL NOTES

- 1.1. METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
- 1.2. THIS FOOTING IS DESIGNED FOR 100 MPH WIND PER THE MANUFACTURERS SPECIFICATIONS. IN THE EVENT OF HURRICANE WINDS, THE OWNER SHALL LOWER THE WINDSPIRE TO PROTECT THE STRUCTURE FROM HURRICANE WIND.
- 1.3. REFER TO SHEET 1 OF 3 BY SUMMIT ENGINEERING CORPORATION FOR ADDITIONAL NOTES.

2. FOUNDATION

- 2.1. ALL FOOTINGS SHALL BE ON UNDISTURBED SOIL OR 98% COMPACTED FILL PER ASTM D698.
- 2.2. NO FOOTINGS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE OR LOOSE MATERIAL.
- 2.3. EXCAVATIONS FOR FOOTINGS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 6 MIL. POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HRS OF THE EXCAVATION OF THE FOOTING.
- 2.4. ADVERSE FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION SUCH AS SOFT SOILS, ORGANIC MATTER, ETC., SHALL BE REPORTED TO THE ENGINEER BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.

3. CONCRETE

- 3.1. ALL CONCRETE PLACED, SHALL HAVE NORMAL WEIGHT COARSE AGGREGATES, AND SHALL HAVE THE MINIMUM COMPRESSIVE STRENGTHS (f'c) OF 3000 PSI AT 28 DAYS.
- 3.2. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
- 3.3. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH $\frac{3}{4}$ " x 45 DEGREE CHAMFER, UNLESS OTHERWISE NOTED.
- 3.4. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.
- 3.5. DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE ACI DETAILING MANUAL.
- 3.6. IN-PLACE REINFORCING STEEL, SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

RPA ENGINEERING, P.A.

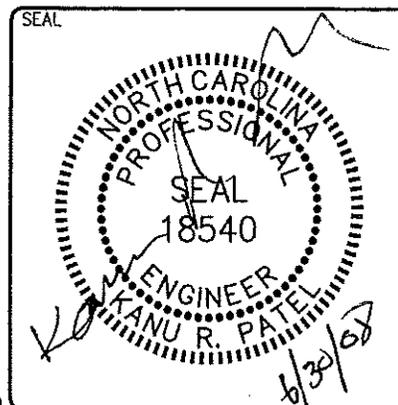
Structural Engineering Solutions

102 Regency Blvd.
Suite A1
Greenville, NC 27831
Phone: 252-321-6027
Fax: 252-355-2179

135 Parkway Office Court
Suite 201
Cary, NC 27514
Phone: 919-859-5611
Fax: 919-859-5610

**30' WINDSPIRE TURBINE FOUNDATION
BLUE SUN DEVELOPMENT GROUP**

WASHINGTON COUNTY
NORTH CAROLINA



DRAWING TITLE
**FOUNDATION
PLAN
AND NOTES**

PROJ. NO.
2008222

DATE
6-30-2008

DRWN. MKE	CHKD.	APP. KRP
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SHEET NO.

S1.1

Windspire

Wind Turbine Electrical

Figure 2-15: Circuit Design 1

