*FOUNDATION DEPTH BASED ON SOIL CONDITIONS PROVIDED ARE SUBJECT TO REVIEW AND MODIFICATION OF DEPTH ON SITE OR IF ADDITIONAL SOIL INFORMATION IS PROVIDED

NOTES:
1. TURBINES SHALL NOT BE CONSTRUCTED IN DEPRESSIONS OR NATURAL STORM RUNOFF CHANNELS.
2. OFF TURBINE PAD STORM RUNOFF WATERS SHALL BE DIRECTED AWAY FROM THE TURBINE PAD.
3. ELECTRICAL TRENCHES SHALL NOT CHANNEL OR PIPE STORM RUNOFF WATERS TO TRANSFORMER OR TURBINE FOUNDATIONS.
4. SEAL TOP OF PVC TUBES AROUND ANCHOR BOLTS WITH SILICON CAULKING OR SILICON TAPE TO PREVENT WATER FROM ENTERING PVC TUBES AFTER TEMPLATE IS REMOVED FROM ATOP FOUNDATION.
5. THE QA/QC SPECIAL INSPECTOR SHALL VERIFY IN WRITING ON THE FOUNDATION CHECKLIST SOILS ENCOUNTERED IN THE FOUNDATION EXCAVATION AND PHOTOGRAPH. CHANGED SOIL CONDITIONS SHALL BE IMMEDIATELY BE BROUGHT TO THE ENGINEERS ATTENTION FOR RE-ANALYSIS.
6. GEOTECHNICAL INFORMATION FOR FOUNDATION DESIGN PRESENTED IN:

GEOTECHNICAL ENGINEERING SERVICE
PROPOSED STETSON MOUNTAIN WIND PROJECT
DANFORTH, MAINE
DATED: SEPT. 7, 2007
BY: SW COLE ENGINEERING, INC.
PROJECT NO.: 07-0215

5' DEEP x 24' DIA. CAP FOUNDATION W/ 14 - 40' ROCK ANCHORS			
B-T1	B-T11	B-T21	B-T31
B-T2	B-T12	B-T22	B-T32
B-T3	B-T13	B-T23	B-T33
B-T4	B-T14	B-T24	B-T34
B-T5	B-T15	B-T25	B-T35
B-T6	B-T16	B-T26	B-T36
B-T7	B-T17	B-T27	B-T37
B-T8	B-T18	B-T28	B-T38
B-T9	B-T19	B-T29	
B-T10	B-T20	B-T30	
PRELIMINARY TOTAL OF 38			

NOTE:
BORING AND TURBINE NUMBERING

NOMINAL DIMENSIONS			
"MARK"	VALUE (M)	VALUE (FT)	DESCRIPTION
Hh	80.0	262.5	HUB HEIGHT
Dr	77.0	252.6	DIAMETER OF ROTOR
Oth	118.5	388.8	OVERALL TURBINE HEIGHT
Th	78.0	255.9	TOWER HEIGHT

NOTE:
FLANGE DIMENSIONS PROVIDED IN GE WIND ENERGY DOCUMENT "FOUNDATION DATA FOR THE GE WIND ENERGY 1.5SLE MODULAR TOWER SYSTEM IEC II WITH REDUCED GUST (IEC S) 80M HH "T" FLANGE TOWER OPTION" DATED: 03/10/05.

DESIGN CRITERIA
WIND
EXTREME WIND LOADING PROVIDED BY TOWER AND TURBINE MANUFACTURER:
Fx (HORIZONTAL LOAD) = 117,665 LBS
Fz (VERTICAL LOAD) = 439,636 LBS
M (MAXIMUM MOMENT) = 25,746,597 FT-LBS
SEISMIC (DOES NOT GOVERN)
2003 INTERNATIONAL BUILDING CODE

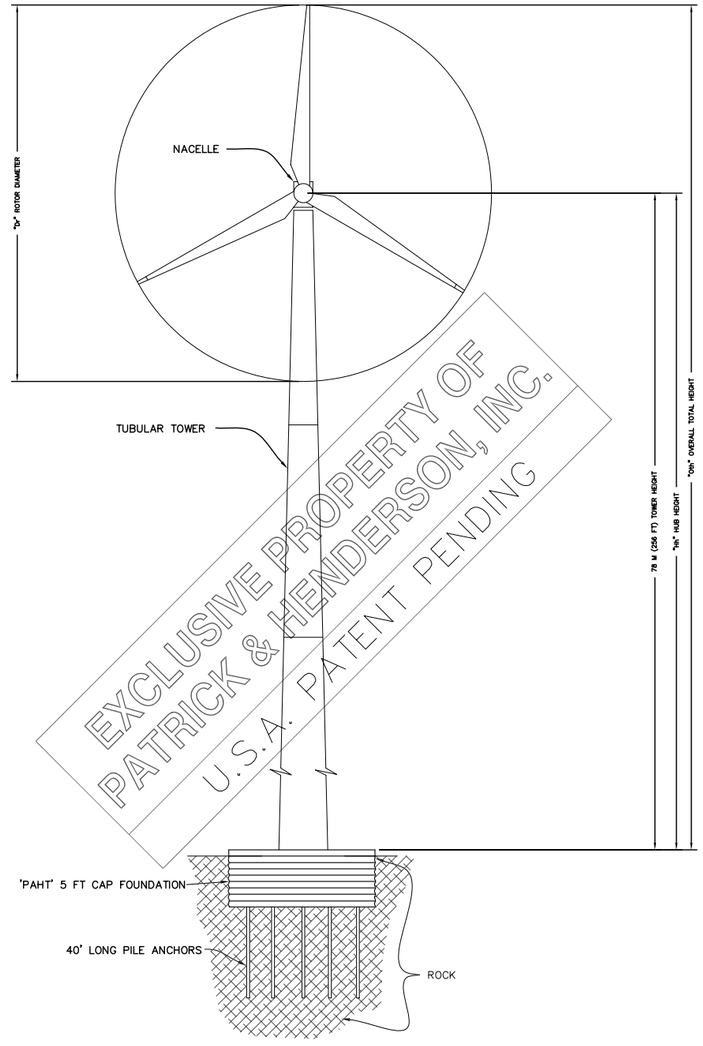
NOTE:
LOADING PROVIDED IN GE WIND ENERGY DOCUMENT "FOUNDATION DATA FOR THE GE WIND ENERGY 1.5sle MODULAR TOWER SYSTEM IEC II WITH REDUCED GUST (IEC S) 80M HH "T" FLANGE TOWER OPTION" DATED: 03/10/05.

NOTE:
SEISMIC CRITERIA PRESENTED IN GEOTECHNICAL INVESTIGATION.

NOTE:
WIND LOADS ARE GREATER THAN SEISMIC LOAD AS DETERMINED BY THE 2003 INTERNATIONAL BUILDING CODE.

THIS FOUNDATION WAS DESIGNED FROM EXTREME AND MAXIMUM OPERATION WIND LOADS AND FREQUENCIES AT THE BOTTOM OF THE TOWER PROVIDED BY THE TURBINE AND TOWER MANUFACTURER.
ROTATIONAL STIFFNESS = 40 GN-M/RAD MINIMUM

NOTE:
FINAL FOUNDATION SIZE SUBJECT TO VERIFICATION OF SOIL / ROCK CONDITIONS EXPOSED BY FOUNDATION EXCAVATION



'PAHT' FOUNDATION FOR WIND TURBINE
SCALE: NONE

GE WIND 1.5sle W/ 77M ROTOR
WIND TURBINE GENERATOR
AT A
80 METER HUB HEIGHT TOWER

RESPONSIBLITY STATEMENT

Contractors shall verify and be responsible for all dimensions and conditions on the job and this office must be notified of any variations from the dimensions and conditions shown by these drawings. Shop details must be submitted to this office for approval before proceeding with fabrication.
Construction contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged, in connection with the performance of work on this project, excepting liability arising from the sole negligence of design professional.

DRAWING INDEX		
FOUNDATION SIZE-SHEET NUMBER	DRAWING TITLE	REVISION #
40-S-1	TITLE SHEET & DRAWING INDEX	0
40-S-2	ASSEMBLY VIEW	0
40-S-3	FOUNDATION PLAN & SECTION	0
40-S-4	EMBEDMENT RING, TEMPLATE RING, & FABRICATION DETAILS	0

FOUNDATION SIZE = PILE ANCHOR LENGTH

APPROVED FOR CONSTRUCTION
PATRICK AND HENDERSON, INC.
Oct 10, 2007
ALLAN P. HENDERSON DATE
MAINE #11218
EXP. 12/31/07

STATE OF MAINE
ALLAN HENDERSON
No. 11218
REGISTERED PROFESSIONAL ENGINEER

Oct 10, 2007
ALLAN P. HENDERSON DATE
MAINE #11218
EXP. 12/31/07

ISSUED FOR CONSTRUCTION 09/14/07
5' DEEP x 24' DIA. CAP FOUNDATION W/ 14 - 40' ROCK ANCHORS
USA PATENT PENDING

STETSON WIND

APPROVED FOR CONSTRUCTION

TITLE SHEET & DRAWING INDEX

REV: 0

PATRICK AND HENDERSON INC. PLOT INFORMATION: STAMPED AND SIGNED ELECTRONICALLY 10/10/07

PATRICK & HENDERSON INC. CIVIL & GEOTECHNICAL ENGINEERING
1965 AIRPORT DRIVE
BAKERSFIELD, CALIFORNIA 93308
(661) 391-9854
FAX: (661) 391-9926

Consulting Engineers
Foundation & Structural Engineering
Land Planning
Land Surveying
Soils Testing

DATE: 09/14/07
SCALE: AS SHOWN
DRAWN BY: JK
APPROVED: AH

DATE	REV #	REVISION DESCRIPTION	BY

PREPARED FOR:
REED & RED, INC.
PO BOX 370
RTE 128
WOOLWICH, MAINE 04579
TELEPHONE: 207-443-9747

DESCRIPTION:
P&H 5' DEEP x 24' DIA CAP FOUNDATION W/ 14 ROCK ANCHORS
GE WIND 1.5 ON A 80 M HH TOWER FOUNDATION PLAN
FOR
STETSON MOUNTAIN WIND PROJECT
DANFORTH, MAINE

USA PATENT PENDING

P&H JOB NO.: 07-036
P&H SHEET NO.: 40-S-1
4 SHEETS
ISSUED FOR CONSTRUCTION: 09/14/07
REVISION DATE:
MAINE LICENSE NO.: 11218

CONFIDENTIAL

GENERAL FOUNDATION NOTES:

1. **CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK.** DISCREPANCIES IN THE DIMENSIONS OR SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER BEFORE PROCEEDING WITH THE WORK.
2. ALL CONSTRUCTION SHALL CONFORM TO THE FOLLOWING:
   CONCRETE: ACI 318–2002 (EXCEPT TREMMIE REQUIREMENTS SEE #26)
   AGGREGATE: C–33
   STRUCTURAL STEEL: AISC 9th EDITION
   CEMENT: ASTM C–150
   REINFORCING STEEL: ASTM A–615 (WITH MODIFICATIONS AS NOTED)
3. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 6,000 psi (41.3 MPa) AT 28 DAYS. USE A MINIMUM SEVEN (7.0) SACK MIX WITH A WATER CEMENT RATIO OF 0.45 (APPROXIMATELY) PER CUBIC YARD. (9.0 SACKS/M3, 387 Kg/M3). WATER REDUCERS AND PLASTICIZERS ARE ACCEPTABLE; FLY ASH IS NOT ACCEPTABLE. SELF CONSOLIDATING CONCRETE IS ACCEPTABLE IF APPROVED BY THE ENGINEER.
4. CEMENT SHALL BE TYPE I OR II PORTLAND CEMENT IN ACCORDANCE WITH ASTM C–150. THE SOILS REPORT SHALL RECOMMEND CEMENT TYPE OTHER THAN TYPE I OR II IF HIGH CONCENTRATION OF SOIL BORNE SALTS ARE PRESENT IN ON SITE SOILS.
5. ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 318–2002 CHAPTER 5. ALL CONCRETE SHALL BE VIBRATED, EXCEPT FOR SELF CONSOLIDATING CONCRETE, WITH MINIMUM 2.5" (64 MM) VIBRATORS IN GOOD WORKING ORDER.
6. ALL CONCRETE SHALL BE PROTECTED FROM FREEZING FOR A MINIMUM OF 7 DAYS AFTER PLACEMENT.
7. THE CONCRETE MIX DESIGN SHALL BE APPROVED BY THE ENGINEER.
8. NO CONCRETE SHALL BE PLACED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OR HIS REPRESENTATIVE. THE APPROVAL SHALL CONSIST OF A WRITTEN FORM INDICATING THAT ALL DIMENSIONS AND REINFORCING STEEL ARE IN SUBSTANTIAL CONFORMANCE WITH THE PLANS. THE ENGINEER'S REPRESENTATIVE SHALL BE PRESENT DURING PLACEMENT OF THE CONCRETE.
9. REINFORCEMENT SHALL BE SUPPORTED TO OBTAIN BAR PLACEMENT AND SPACING AS INDICATED ON THE PLANS. SEE ACI MANUAL OF CONCRETE PRACTICE PART 3. SPLICE REBAR ONLY AS SHOWN ON THE PLANS OR IN ACCORDANCE WITH A SHOP DRAWING BY CONTRACTOR APPROVED BY ENGINEER.
10. THE LOCATION OF ANY CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.
11. MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE 3" (75 MM) FOR CONCRETE PLACED IN DIRECT CONTACT WITH EARTH, AND 2" (50 MM) FOR CONCRETE EXPOSED TO THE ELEMENTS.
12. FOR CONDUIT AND GROUNDING SYSTEM LOCATION AND ORIENTATION SEE CONDUIT SCHEDULE SHEET 5 OF THESE PLANS IF AVAILABLE PLANS.
13. TRENCHES FOR GROUNDING AND CONDUIT SHOWN ON PLANS BY THE ELECTRICAL ENGINEER OR TURBINE MANUFACTURE. CONDUIT SHALL BE BACKFILLED WITH CLEAN FINE, FINE GRAINED SOIL COMPACTED TO 95% OF ASTM A–698 OR BACKFILLED WITH ONE SACK SAND CEMENT SLURRY.
14. ALL MISCELLANEOUS METAL WORK SHALL BE A–36 UNLESS OTHERWISE SPECIFIED. FLAME CUT IS O.K. IF APPROVED BY THE ENGINEER.
15. THIS PLAN NOT VALID WITHOUT AN ACCOMPANYING SOILS REPORT APPROVED BY THE ENGINEER.
16. ALL EXTERIOR BACKFILL (TURBINE BUILDING PAD BACKFILL) TO BE COMPACTED TO 90% RELATIVE COMPACTION OF ASTM D–698 OUTSIDE OF SLURRY AND SHALL CONSIST OF CLEAN GRANULAR MATERIAL. COMPACTION TESTING AS APPROVED BY THE ENGINEER, SHALL BE PERFORMED BY AN ACCEPTABLE GEOTECHNICAL FIRM. THE COST OF COMPACTION TESTING SHALL BE PAID FOR BY THE CONTRACTOR/OWNER.
17. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM FOUNDATIONS AT A MIN. 5% SLOPE IN ALL DIRECTIONS FOR AT LEAST 10 FEET. NO PONDING OF WATER ALLOWED ON TURBINE BUILDING PAD.
18. NO WELDING OF REINFORCEMENT STEEL OR ANCHOR BOLTS, UNLESS APPROVED BY THE ENGINEER.
19. EXCAVATION SHALL BE CLEAN AND FREE FROM LOOSE MATERIAL PRIOR TO PLACEMENT OF STEEL.
20. ROCK CAVITIES UNDETECTED BY ON SITE GEOTECHNICAL / GEOPHYSICAL INVESTIGATION ARE NOT CONSIDERED BY THIS FOUNDATION DESIGN. A SOCK MAY BE PLACED AROUND ANCHOR WITHIN VOID (CAVITY) TO CONTAIN GROUT.
21. ONLY APPROVED PLANS WET STAMPED BY THE ENGINEER AND APPLICABLE AGENCIES SHALL BE USED FOR CONSTRUCTION. THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF THE MOST RECENT APPROVED PLANS, ADDENDA AND REVISIONS ON SITE FOR CONSTRUCTION.
22. GROUT SHALL BE DAYTON SUPERIOR SURE–GRIP HIGH PERFORMANCE GROUT NON–SHRINK CEMENTIOUS OR EQUAL. GROUT SHALL BE UTILIZED TO FILL AIR VOIDS IN CONCRETE AS MAY OCCUR IMMEDIATELY UNDER TEMPLATE: (GROUTING BY TOWER INSTALLER)

COMPRESSIVE STRENGTH psi:	FLOWABLE
1 DAY	4,000 (27.6 MPa)
3 DAY	4,500 (31.0 MPa)
14 DAY	6,500 (44.8 MPa)
28 DAY	8,500 (58.6 MPa)

23. TOWER ANCHOR BOLTS SHALL BE WILLIAMS FORM ENGINEERING CORP. GRADE 75 #10 (1.375 O.D.) ANCHOR BOLTS (ASTM A–722) OR APPROVED EQUAL. REBAR SHALL BE GRADE 60 DEFORMED BARS OR APPROVED EQUAL.
24. CONCRETE SHALL BE PLACED PER ENGINEER'S DIRECTION OR HIS REPRESENTATIVE.
25. TOWER ANCHOR BOLTS SHALL BE TENSIONED IN ACCORDANCE WITH THE BOLT TENSIONING SEQUENCE SHEET S–3 OR AS DIRECTED BY THE ENGINEER.
26. CONCRETE CURING COMPOUND SHALL CONFORM TO SECTION 3.2.1 ACI 308.1–98. THE CONCRETE CURING COMPOUND SHALL BE APPLIED IN TWO COATS. CONTRACTOR SHALL PROVIDE THE ENGINEER A COPY OF THE MANUFACTURER'S INSTRUCTIONS.
27. MATERIAL QUANTITIES ARE FOR BID PURPOSES ONLY THE CONTRACTOR SHALL DETERMINE CONSTRUCTION QUANTITIES.
28. ROCK ANCHOR BOLTS SHALL BE WILLIAMS FORM ENGINEERING CORP. GRADE 150 KSI, CON–TECT SYSTEMS, OR APPROVED EQUAL. ROCK ANCHOR BOLT SHALL BE TENSIONED TO 60% OF THE ULTIMATE STRENGTH OF THE BOLT UNLESS OTHERWISE STATED IN THESE PLANS OF DIRECTED BY THE ENGINEER OR HIS REPRESENTATIVE.
29. SHIMS (4 SHIMS PACK 4" WIDE BY 6" LONG) SHALL BE UTILIZED TO SUPPORT AND POSITION THE TOWER BASE SECTION DURING TOWER ERECTION.
30. PRIOR TO GROUTING FULL THE ROCK ANCHOR HOLE, THE HOLE SHALL BE MOISTURIZED.

SPECIAL INSPECTION NOTES:

1. THE ENGINEER OR HIS REPRESENTATIVE SHALL VERIFY THAT THE SOIL CONDITIONS MEET THE MINIMUM REQUIREMENT. ADJUSTMENTS FOR ROCK OR ROCK CAVITIES, IF ENCOUNTERED, MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
2. CONCRETE SHALL BE BROUGHT UP UNIFORMLY AND VIBRATED IN ACCORDANCE WITH NOTE 5 OF GENERAL FOUNDATION NOTES. CONCRETE SLUMP TESTS AND CONCRETE COMPRESSION TEST SAMPLES SHALL BE OCCASIONALLY TAKEN BY THE FOUNDATION QA/QC INSPECTOR FROM CONCRETE POURS AT THE INSPECTORS OPTION FOR STRENGTH. COMPLIANCE SLUMPS GREATER THAN SPECIFIED SHALL BE CAUSE FOR CONCRETE REJECTION. MAXIMUM TIME IN TRUCK IS 90 MINUTES OR 300 REVOLUTION. DRUM SHALL BE TURNED A MINIMUM OF 30 REVOLUTIONS AFTER ADDING WATER.
3. A MINIMUM OF FOUR CONCRETE TEST CYLINDERS SHALL BE TAKEN FOR EACH COMPLETE FOUNDATION BY OTHERS UNLESS OTHERWISE AGREED UPON.
4. CERTIFICATION OF BOLT STRENGTHS AND REINFORCEMENT GRADE ALONG WITH MILL CERTIFICATIONS AND HEAT NUMBERS SHALL BE PROVIDED BY THE CONTRACTOR FOR THE ENGINEER FOR ALL STEEL.
5. SAMPLES FOR MATERIAL TESTS SHALL BE PROVIDED TO THE ENGINEER UPON REQUEST AT NO ADDITIONAL COST TO THE OWNER.
6. ALL FRAMEWORK AND BOLT TEMPLATES SHALL BE DESIGNED TO HOLD THE FOUNDATION COMPONENTS RIGIDLY IN PLACE DURING PLACEMENT OF CONCRETE OR DURING TRANSPORTATION OF THE BOLT ASSEMBLY FROM FABRICATION YARD TO THE EXCAVATION.
7. DEVIATIONS FROM THE PLAN REQUIRE WRITTEN APPROVAL BY THE ENGINEER. PROPOSED CHANGES SHALL BE SHOWN ON SHOP DRAWINGS PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
8. A FINAL REPORT SHALL BE SUBMITTED BY THE ENGINEER PRESENTING ALL TEST RESULTS, FOUNDATION CHECKLISTS, FIELD REPORTS, AND ANY SUBSTANTIAL DEVIATIONS FROM THE PLAN. THE FOUNDATION CHECKLIST SHALL BE KEPT FOR EACH FOUNDATION BY THE ENGINEER'S REPRESENTATIVE.
9. BOLTS SHALL HAVE SHAFT LIMITS (CLASS LCI) OF 0.004 INCH (0.10 MM) AND HOLES SHALL HAVE LIMITS (CLASS LCI) OF 0.005 INCH (0.125 MM) IN ACCORDANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
10. THE CONTRACTOR, OWNER, AND ENGINEER OR HIS REPRESENTATIVE MAY MEET PRIOR TO CONSTRUCTION FOR A PRE CONSTRUCTION CONFERENCE.
    (a) THE PLANS SHALL BE REVIEWED AND AN ITEMIZED CHECK LIST KEPT ALONG WITH COMMENTS NOTED.
    (b) THE SPECIFICATIONS SHALL BE REVIEWED IN DETAIL.
    (c) THE CONTRACTOR SHALL PRESENT HIS CONSTRUCTION METHODS AND PROCEDURES ALONG WITH A CRITICAL PATH CONSTRUCTION SCHEDULE.
11. SLURRY AND/OR GROUT TESTS RESULTS SHALL BE TAKEN FOR EACH FOUNDATION.
12. TURBINE PAD GRADING SHALL COMPLY WITH THE APPROVED GRADING PLAN AND PERFORMED BY THE GRADING CONTRACTOR. THE FOUNDATION INSPECTOR SHALL VERIFY CONFORMANCE WITH FOUNDATION DRAINAGE REQUIREMENTS.

MATERIALS BY SUPPLIERS:

1. TOWER ANCHOR BOLTS TO BE PACKAGED INTO GROUPS OF 20 BOLTS OR AT CONTRACTOR'S OPTION.
2. TOWER ANCHOR BOLTS TO BE FITTED WITH A SCHEDULE 200 PVC SLEEVES 20" SHORTER THAN THE BOLT LENGTH.
3. EMBEDMENT RINGS (MAY BE) SPLICED TO FACILITATE SHIPPING IN SEGMENTS AND RAPID FIELD ASSEMBLE INTO CONTINUOUS RING. A SHOP DRAWING OF SPLICE PLATE SHALL BE PROVIDED TO THE ENGINEER BY SUPPLIER FOR APPROVAL IF THE SPLICE PLATE PROPOSED DOES NOT CONFORM TO DETAIL 6 SHEET S–4 OF THESE PLANS.
4. BOLT HOLE TOLERANCES FOR THE TEMPLATE AND RINGS FROM SPECIFIED DIMENSIONS SHOWN ON THESE PLANS.
   (a) BOLT CIRCLE DIAMETERS WITHIN 1/16 INCH (1.6 MM) MORE OR LESS. BOLT LENGTH WITHIN 1 INCH
   (b) SPACING BETWEEN BOLT HOLES 1/32 INCH (0.8 MM) – MORE OR LESS – 1/16 INCH MORE OR LESS ACCUMULATIVE.
   (c) RINGS SHALL NOT VARY MORE THAN 1/4 INCH (6 MM) OUT OF LEVEL.
5. RING THICKNESS SHALL NOT VARY MORE THAN 1/32 INCH (0.8 MM).
6. EXPOSED BOLT THREADS SHALL BE COVERED WITH A CAP OR EQUAL AS APPROVED BY THE ENGINEER. PLASTIC CAPS MAY BE PACKED WITH GREASE. (BY TOWER INSTALLER). TOOMAN ABS PLASTIC CAPS ARE APPROVED BOLT COVERS.
7. ONE NUT SHALL BE THREADED TO THE TOP OF THE BOTTOM THREADS OF THE TOWER ANCHOR BOLT 7.5 INCHES ABOVE THE BOTTOM OF THE BOLT. THE NUT FOR THE TOP OF THE BOLT SHALL BE THREADED TO EXPOSE APPROXIMATELY 1 INCH OF THREADS EXTENDING ABOVE NUT. THE REMAINING NUT FOR EACH ANCHOR BOLT SHALL BE PACKAGED IN SEPARATE CONTAINER (KEGS) LABELED "HEAVY HEX NUTS" AND THE NUMBER OF NUTS CONTAINED.
8. WASHERS SHALL BE HARDENED STEEL WASHERS. BEVELED WASHERS SHALL BE PLACED BETWEEN BOTTOM OF NUT AND THE PILE ANCHOR BASE PLATE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING IN PLACE THE EMBEDMENT RING TO PREVENT MOVEMENT DURING CONCRETE POUR TO THE SATISFACTION OF THE QA/QC INSPECTOR.

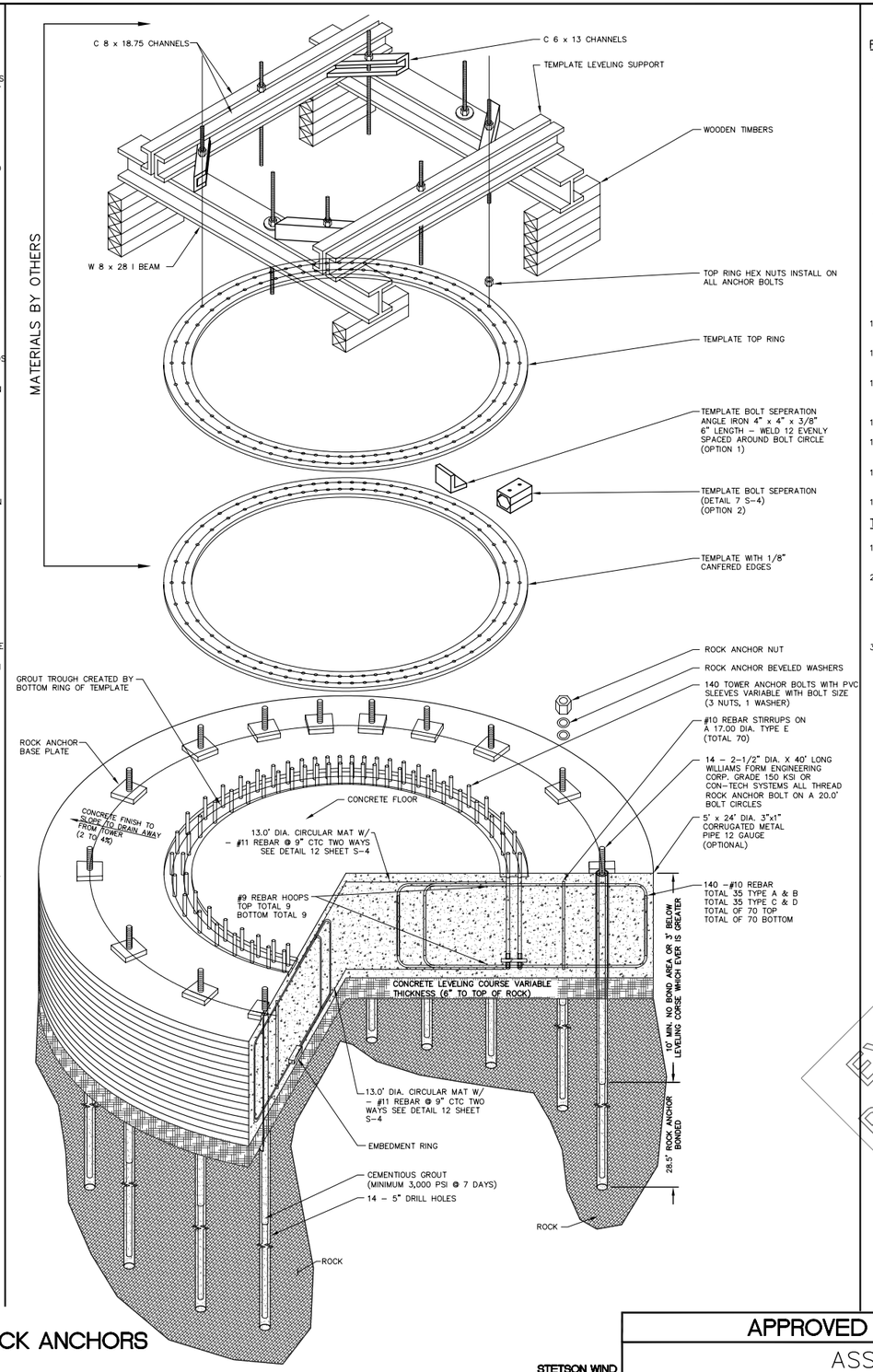
NOTES FOR CORRUGATED METAL PIPE
CORRUGATED METAL PIPE (CMP) USED FOR CANS SHALL MEET ASTM A929 (YS=33 KSI) OR ASTM A444 (YS= 50 KSI) SPECIFICATION. CMP TO BE GALVANIZED FOR CORROSION PROTECTION.

CMP OUTER CAN TO BE 24.0' DIAMETER AND 12 GAUGE MATERIAL WITH CORRUGATION AT 3 X 1.

CORRUGATED METAL PIPE SHALL BE HELICAL INTERLOCKING SEAM (AASHTO DESIGNATION: T 249–90).

* OUTER CMP IS OPTIONAL

CONVERSIONS ENGLISH TO METRIC		
1000 PSI	=	6.9 MPa
1" (INCH)	=	25.4 MM
1' (FOOT)	=	0.305 M



RECOMMENDED CONSTRUCTION SEQUENCE:

1. EXCAVATE TO OR INTO STABLE BEDDING FOR FOUNDATION CAP AND ELECTRICAL.
2. CLEAN SURFACE AT BOTTOM OF EXCAVATION.
3. SET 6 INCH PVC ROCK ANCHOR PIPES VERTICALLY ALONG ROCK ANCHOR CIRCLE FROM ROCK AT BOTTOM TO TOP OR ABOVE TOP OF FOUNDATION CAP. SECURE ROCK ANCHOR PIPES IN PLACE WITH TWO REBAR HOOPS ONE 4 INCHES FROM TOP OF FOUNDATION CAP AND THE OTHER AT OR ABOVE THE TOP OF THE EMBEDMENT RING.
4. PLACE ELECTRICAL COMMUNICATION AND GROUNDING CONDUITS SPACED ON BOTTOM OF EXCAVATION AND SECURED IN PLACE. ELECTRICAL CONDUIT MAY BE PLACED IN THE FOUNDATION CAP THROUGH THE STEEL IN ACCORDANCE WITH THE ELECTRICAL ENGINEER PLAN.
5. POUR CONCRETE LEVELING COURSE COVERING CONDUIT AND ENCASING TO SECURE IN PLACE PVC ROCK ANCHOR PIPES.
6. SET OUTER CMP ATOP LEVELING COURSE.
7. SET LEVEL TEMPLATE ASSEMBLY ATOP BUILDING PAD (CENTERED AROUND TURBINE LOCATION) WITH BOTTOM OF BOTTOM RING 2 INCHES BELOW TOP OF OUTER CMP (TOP OF FOUNDATION CAP).
8. INSERT TOWER ANCHOR BOLTS THROUGH TEMPLATE RINGS WITH BOTTOM OF UPPER NUT 9 INCHES BELOW TOP OF BOLT.
9. LIFT TEMPLATE WITH BOLTS OUT OF FORM RING AND PLACE SEGMENTS OF EMBEDMENT RING WITH LAP PLATES BELOW HALF NUTS AND SECURE TIGHT IN POSITION WITH BOTTOM NUTS.
10. REPLACE TEMPLATE CONCENTRIC WITH AND INSIDE OUTER CMP. LEVEL TEMPLATE RINGS WITH BOTTOM OF BOTTOM TEMPLATE RING 2 INCHES BELOW TOP OF OUTER CMP.
11. PLACE AND TIE REINFORCING STEEL USING HOOP SUPPORTS, CHAIRS, OR STANDEES AS REQUIRED TO POSITION AND STABILIZE FOR CONCRETE POUR.
12. POUR AND VIBRATE CONCRETE FOR FOUNDATION CAP BOTH INSIDE AND OUTSIDE OUTER CMP. CONCRETE SLUMP SHALL BE 4 TO 6 INCHES. SLUMPS GRATER THAN 6 INCHES REQUIRE ADDITION OF SUPER PLASTICIZERS.
13. REMOVE TEMPLATE NEXT DAY TO NEXT FOUNDATION TO BE CONSTRUCTED.
14. DRILL, WET HOLES, AND GROUT ROCK ANCHORS TO DEPTH WITH TOP 12 INCHES MIN. OF ROCK ANCHOR BOLTS ABOVE FOUNDATION.
15. AFTER A MINIMUM OF SEVEN (7) DAYS OF CURE TIME FOR THE ROCK ANCHOR GROUT, PLACE ROCK ANCHOR PLATES ATOP THIN GROUT LEVELING COURSE.
16. POST–TENSION ROCK ANCHORS IN ACCORDANCE WITH ROCK ANCHOR TENSIONING SEQUENCE.

TOWER INSTALLATION NOTES:

1. CONCRETE SHALL ATTAIN STRENGTH OF 4,000 PSI PRIOR TO SETTING OF TOWER, AND 5,000 PSI MINIMUM PRIOR TO OPERATION OF THE WIND TURBINE.
2. SET THE TOWER ON THE BOLT ASSEMBLY. FIRST TIGHTEN THE TWO NUTS ADJACENT TO THE LEVELING NUTS TO APPROXIMATELY 50 FT–LBS, TIGHTEN THE REMAINING BOLTS TO 50 FT–LBS EACH IN THE ORDER SHOWN IN THE TORQUE TABLE. TIGHTEN IN ACCORDANCE WITH THE TORQUE TABLE TO THE FINAL TORQUE AFTER THE TURBINE INSTALLATION HAS BEEN COMPLETED AND PRIOR TO OPERATION. THE CONCRETE SHALL CURE FOR A MINIMUM OF SEVEN (7) DAYS AND THE GROUT THREE (3) DAYS OR 5,000 PSI BEFORE FINAL TORQUE.
3. THE NUTS ABOVE THE TOWER BASE SHALL BE TENSIONED AS FOLLOWS:
   A) TORQUE TO 50 FT–LBS FOLLOWING POURING THE GROUT AND SETTING THE BASE SECTION OF THE TOWER. THE NUTS ABOVE THE LEVELING MUST BE TORQUED FIRST.
   B) FOLLOWING A MINIMUM OF THREE (3) OR 5,000 PSI FOR THE GROUT CURE, THE REMAINDER OF THE TOWER, THE NACELLE, AND THE BLADES CAN BE SET.
   C) ANCHOR BOLTS MAY BE FULLY TENSIONED AFTER GROUT HAS OBTAINED 5,000 PSI.

STATE OF MAINE
ALLAN HENDERSON
No. 11218
REGISTERED
PROFESSIONAL ENGINEER

Oct 10, 2007

ALLAN P. HENDERSON
MAINE #11218
EXP. 12/31/07
DATE

ISSUED FOR CONSTRUCTION 09/14/07
5' DEEP x 24' DIA. CAP FOUNDATION W/ 14 – 40' ROCK ANCHORS
USA PATENT PENDING

PATRICK AND HENDERSON INC. PLOT INFORMATION: **STAMPED AND SIGNED ELECTRONICALLY 10/10/07**

STETSON WIND

APPROVED FOR CONSTRUCTION

ASSEMBLY VIEW

REV: 0

PATRICK & HENDERSON INC. CIVIL & GEOTECHNICAL ENGINEERING
1965 AIRPORT DRIVE
BAKERSFIELD, CALIFORNIA 93308
(661) 391–9854
FAX: (661) 391–9926

Consulting Engineers
Foundation & Structural Engineering
Land Planning
Land Surveying
Soils Testing

DATE: 09/14/07
SCALE: AS SHOWN
DRAWN BY: JK
APPROVED: AH

DATE	REV #	REVISION DESCRIPTION	BY

PREPARED FOR:
REED & RED, INC.
PO BOX 370
RTE 128
WOOLWICH, MAINE 04579
TELEPHONE: 207–443–9747

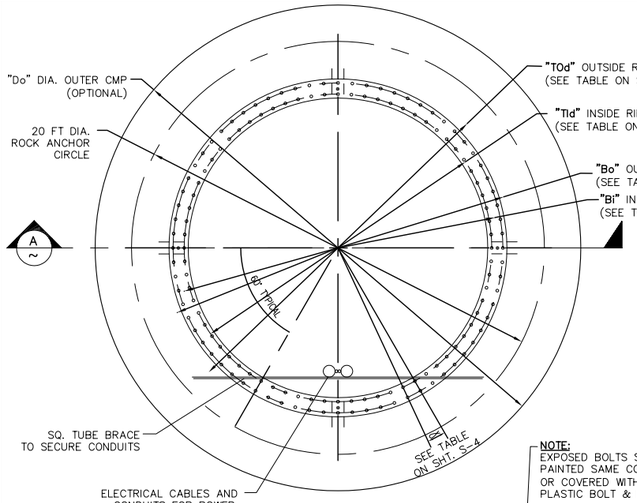
DESCRIPTION:
P&H 5' DEEP x 24' DIA CAP FOUNDATION W/ 14 ROCK ANCHORS
GE WIND 1.5 ON A 80 M HH TOWER FOUNDATION PLAN
FOR
STETSON MOUNTAIN WIND PROJECT
DANFORTH, MAINE

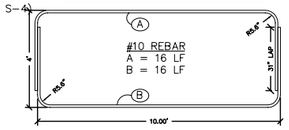
USA PATENT PENDING

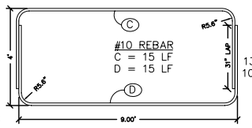
P&H JOB NO.: 07–036
P&H SHEET NO.: 40–S–2
4 SHEETS
ISSUED FOR CONSTRUCTION: 09/14/07
REVISION DATE:
MAINE LICENSE NO.: 11218

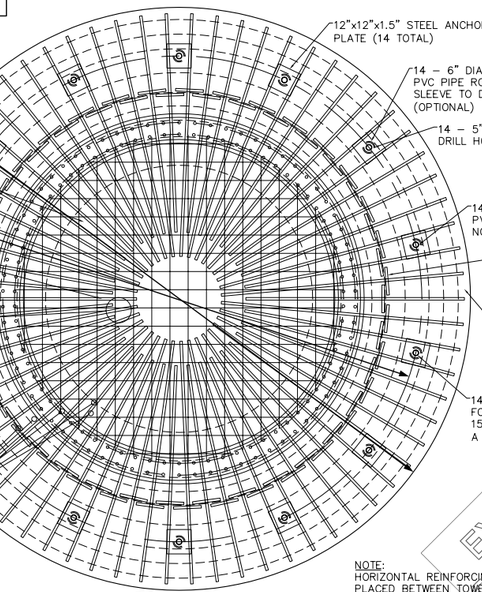
CONFIDENTIAL

5 FT CAP FOUNDATION DIMENSIONS			
"MARK"	VALUE	UNITS	DESCRIPTION
Dab	1.375	IN.	OUTSIDE DIAMETER OF TOWER ANCHOR BOLTS #10
Lab	60	IN.	LENGTH OF TOWER ANCHOR BOLTS
Nab	140	EA.	NUMBER OF TOWER ANCHOR BOLTS
Le	48	IN.	TOWER ANCHOR BOLT EMBEDMENT LENGTH
Dpvc	1.5	IN.	DIAMETER OF PVC PIPE SLEEVE
Do	24.0	FT	DIAMETER OF OUTER CMP (OPTIONAL)
Hout	5.0	FT	OVERALL HEIGHT OF OUTER CMP 12 GAUGE (OPTIONAL)



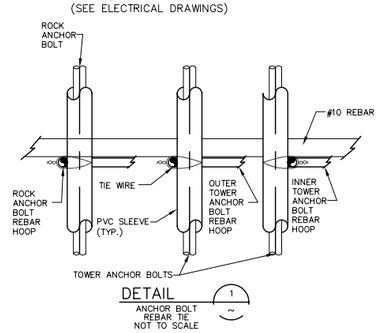




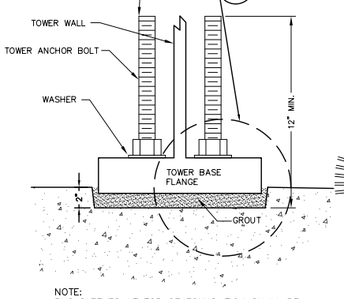


TOP VIEW

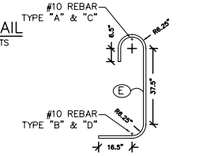
NOTE:
HORIZONTAL REINFORCING SHALL BE PLACED BETWEEN TOWER BOLT PAIRS.

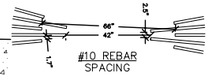


DETAIL 1
ANCHOR BOLT REBAR TIE
NOT TO SCALE



DETAIL 11
MEASUREMENTS

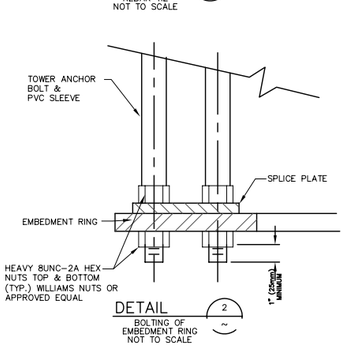




NOTE:
EXPOSED BOLTS SHALL BE PAINTED SAME COLOR AS TOWER OR COVERED WITH TOOMAN'S ABS PLASTIC BOLT & NUT COVER.

NOTE:
PVC SLEEVES AT TOP OF FOUNDATION SHALL BE TAPPED OR SEALED, UNLESS CONTRACTOR COVERS FOUNDATION TO PREVENT MOISTURE OR CONCRETE FROM ENTERING PVC SLEEVES.

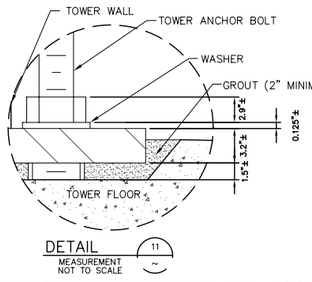
DETAIL 9
GROUT TROUGH & SLAB
NOT TO SCALE



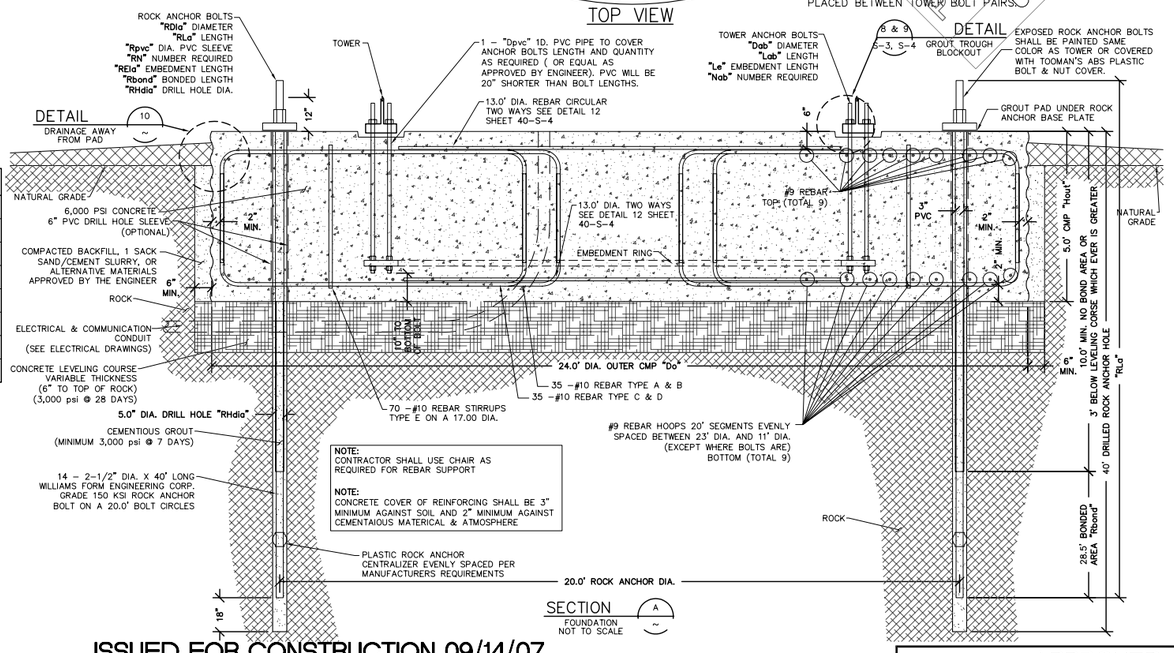
DETAIL 2
BOLTING OF EMBEDMENT RING
NOT TO SCALE

ROCK ANCHOR BOLT DIMENSIONS			
"MARK"	VALUE	UNITS	DESCRIPTION
RDia	2–1/2	IN	DIAMETER OF ROCK ANCHOR BOLT
RLa	40	FT	LENGTH OF ROCK ANCHOR BOLTS
RN	14	EA	NUMBER OF ROCK ANCHOR BOLTS
REla	38.5	FT	ROCK ANCHOR EMBEDMENT LENGTH
Rbond	29	FT	ROCK ANCHOR BONDED LENGTH
Rpvc	3.0	IN	DIAMETER OF PVC ROCK ANCHOR SLEEVE
RHdia	5.0	IN	DIAMETER OF ROCK ANCHOR DRILL HOLE

NOTES:
1. WILLIAMS FORM ENGINEERING CORP. 2–1/2" (14 TOTAL) GRADE 150 KSI ROCK ANCHOR BOLTS SPECIFIED.
2. CAP FOUNDATION SHALL BE CONSTRUCTED ATOP ROCK.

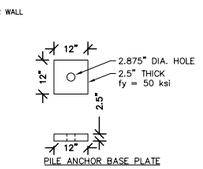


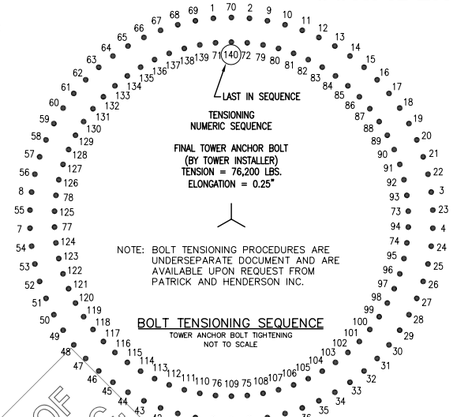
DETAIL 11
MEASUREMENT
NOT TO SCALE



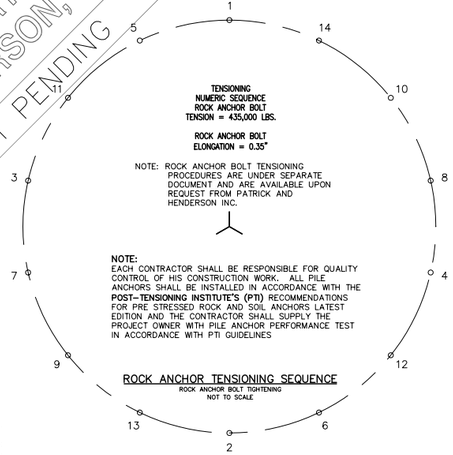
SECTION A
FOUNDATION
NOT TO SCALE

DETAIL 10
DRAINAGE AWAY FROM PAD
NOT TO SCALE





BOLT TENSIONING SEQUENCE
TOWER ANCHOR BOLT TIGHTENING
NOT TO SCALE



NOTE:
EACH CONTRACTOR SHALL BE RESPONSIBLE FOR QUALITY CONTROL OF HIS CONSTRUCTION WORK. ALL PILE ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE **POST–TENSIONING INSTITUTE'S (PTI)** RECOMMENDATIONS FOR PRE STRESSED ROCK AND SOIL ANCHORS LATEST EDITION AND THE CONTRACTOR SHALL SUPPLY THE PROJECT OWNER WITH PILE ANCHOR PERFORMANCE TEST IN ACCORDANCE WITH PTI GUIDELINES

ROCK ANCHOR TENSIONING SEQUENCE
ROCK ANCHOR BOLT TIGHTENING
NOT TO SCALE

STATE OF MAINE
ALLAN HENDERSON
No. 11218
REGISTERED
PROFESSIONAL ENGINEER

Oct 10, 2007

ALLAN P. HENDERSON
MAINE #11218
EXP. 12/31/07
DATE

ISSUED FOR CONSTRUCTION 09/14/07
5' DEEP x 24' DIA. CAP FOUNDATION W/ 14 – 40' ROCK ANCHORS
USA PATENT PENDING

STETSON WIND

APPROVED FOR CONSTRUCTION

FOUNDATION PLAN & SECTION

REV: 0

PATRICK AND HENDERSON INC. PLOT INFORMATION: **STAMPED AND SIGNED ELECTRONICALLY 10/10/07**

PATRICK & HENDERSON INC.
CIVIL & GEOTECHNICAL ENGINEERING
1965 AIRPORT DRIVE
BAKERSFIELD, CALIFORNIA 93308
(661) 391–9854
FAX: (661) 391–9926

Consulting Engineers
Foundation & Structural Engineering
Land Planning
Land Surveying
Soils Testing

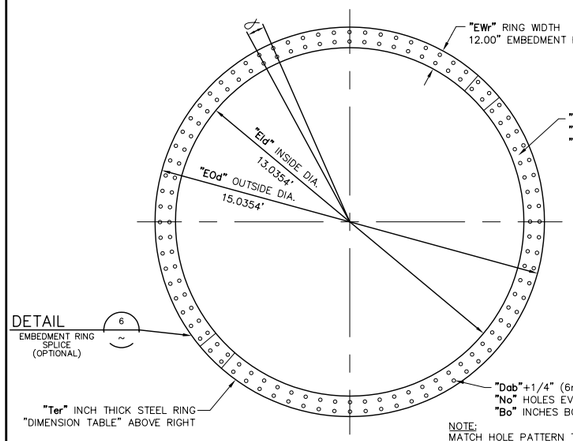
DATE: 09/14/07
SCALE: AS SHOWN
DRAWN BY: JK
APPROVED: AH

REVISION DESCRIPTION			
DATE	REV #		BY

PREPARED FOR:
REED & RED, INC.
PO BOX 370
RTE 128
WOOLWICH, MAINE 04579
TELEPHONE: 207–443–9747

DESCRIPTION:
P&H 5' DEEP x 24' DIA CAP FOUNDATION W/ 14 ROCK ANCHORS
GE WIND 1.5 ON A 80 M HH TOWER FOUNDATION PLAN
FOR
STETSON MOUNTAIN WIND PROJECT
DANFORTH, MAINE
USA PATENT PENDING

P&H JOB NO.: 07–036
P&H SHEET NO.: 40-S-3
4 SHEETS
ISSUED FOR CONSTRUCTION 09/14/07
REVISION DATE:
MAINE LICENSE NO.: 11218

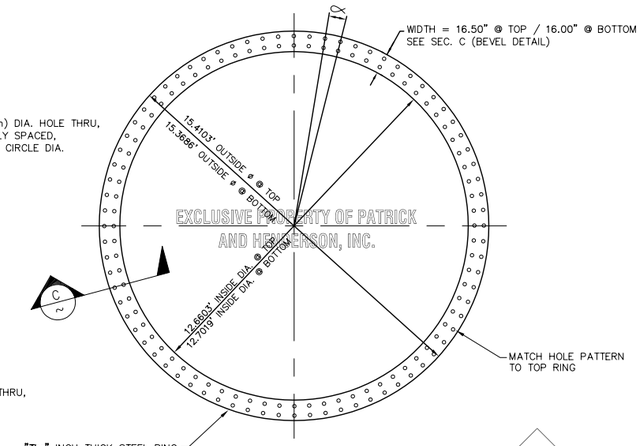


DETAIL 6 — EMBEDMENT RING SPLICE (OPTIONAL)

NOTE:
MATCH HOLE PATTERN TO TEMPLATE TOP RING.

NOTE:
FLAME CUT BOLT HOLES OK EMBEDMENT RING
ONLY EMBEDMENT RING MAY BE MADE IN 4 EQUAL SEGMENTS AND SPLICED AT CONTRACTOR'S OPTION

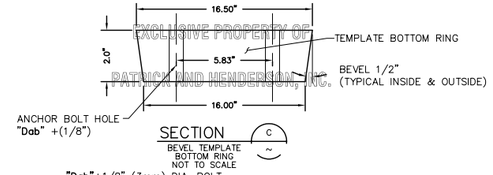
DETAIL 3 — EMBEDMENT RING S-2, S-3 (1 REQUIRED) NOT TO SCALE



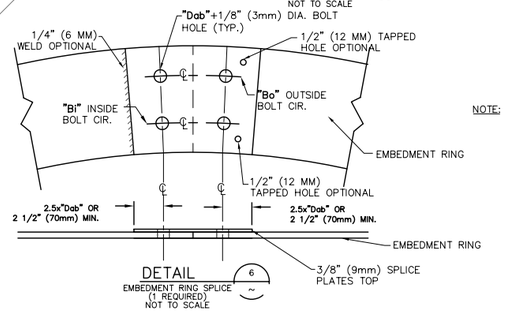
DETAIL 4 — TEMPLATE BOTTOM RINGS S-2, S-3 (1 REQUIRED) NOT TO SCALE

DIMENSION TABLE FOR TEMPLATE TOP RING, TEMPLATE BOTTOM RING, & EMBEDMENT RING			
"MARK"	VALUE	UNITS	DESCRIPTION
Dab	1.375	IN.	ANCHOR BOLT OUTSIDE DIAMETER ASTM A-722, GR. 75, #10
Ni	70	EA.	NUMBER OF ANCHOR BOLT HOLES INSIDE BOLT CIRCLE
No	70	EA.	NUMBER OF ANCHOR BOLT HOLES OUTSIDE BOLT CIRCLE
Bi	13.5499	FT	INSIDE DIAMETER OF ANCHOR BOLT CIRCLE
Bo	14.5210	FT	OUTSIDE DIAMETER OF ANCHOR BOLT CIRCLE
Tld	13.1234	FT	INSIDE DIAMETER OF TOP RING
TOd	14.9471	FT	OUTSIDE DIAMETER OF TOP RING
Eld	13.0354	FT	INSIDE DIAMETER OF EMBEDMENT RING
EOd	15.0354	FT	OUTSIDE DIAMETER OF EMBEDMENT RING
TWr	10.9422	IN	WIDTH OF TOP RING
EWr	12.00	IN	WIDTH OF EMBEDMENT RING
Ttr	1.0	IN	THICKNESS OF TOP RING
Tbr	2.0	IN	THICKNESS OF BOTTOM RING
Ter	1.5	IN	THICKNESS OF EMBEDMENT RING (fy = 50K)
∝	5.143	°	ANGLE BETWEEN BOLT HOLES

NOTES:
1. BASE FLANGE DIMENSIONS IN GE WIND ENERGY DOCUMENT "FOUNDATION DATA FOR THE GE WIND ENERGY 1.5SLE MODULAR TOWER SYSTEM IEC II WITH REDUCED GUST (IEC S) 80M HH "T" FLANGE TOWER OPTION" DATED: 03/10/05.
2. THE TURBINE PURVEYOR (B.O.P. CONTRACTOR OR PROJECT OWNER) SHALL VERIFY THAT TURBINE MANUFACTURE CONCURS WITH TOWER BASE FLANGE TABLED VALUES ABOVE AND NOTIFY THE ENGINEER.

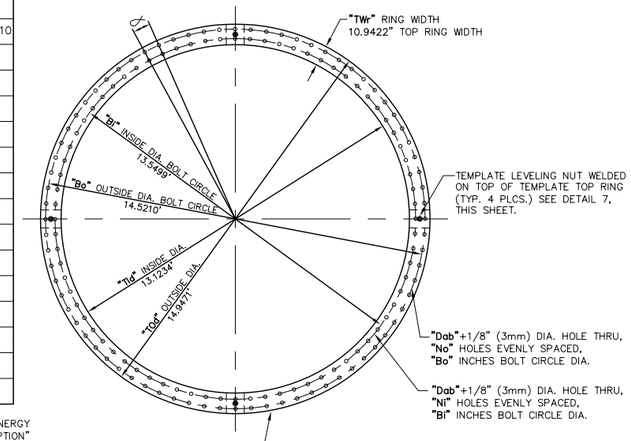


SECTION C — BEVEL TEMPLATE BOTTOM RING NOT TO SCALE



DETAIL 6 — EMBEDMENT RING SPLICE (1 REQUIRED) NOT TO SCALE

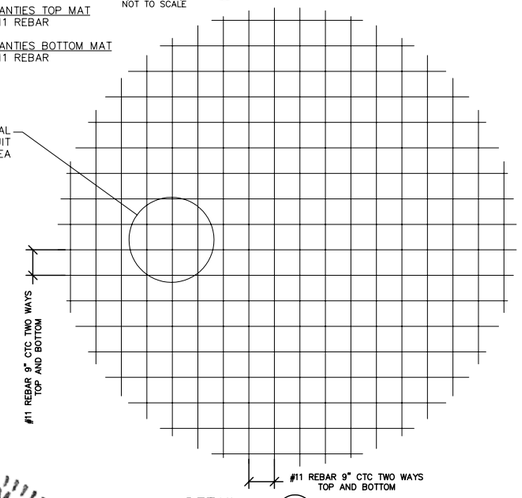
NOTE: MARK WITH LINE TOP AND SIDES OF SPLICE PLATE INDICATING FLUSH FIT OF RING SEGMENTS.



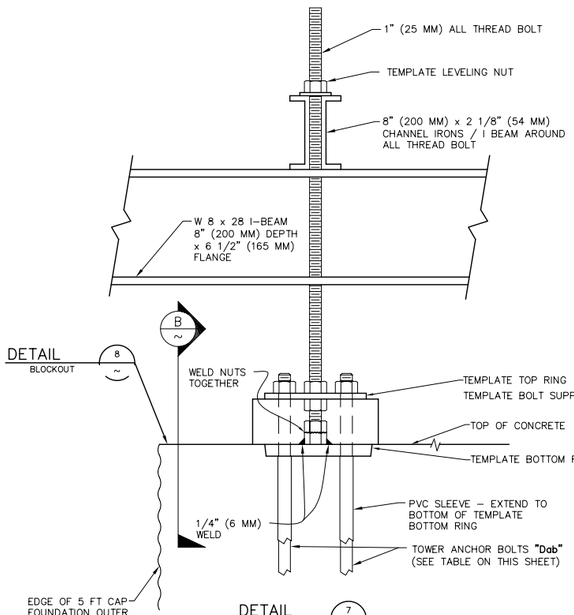
DETAIL 5 — TEMPLATE TOP RING S-2, S-3 (1 REQUIRED) NOT TO SCALE

BAR QUANTIES TOP MAT
36 - #11 REBAR

BAR QUANTIES BOTTOM MAT
36 - #11 REBAR

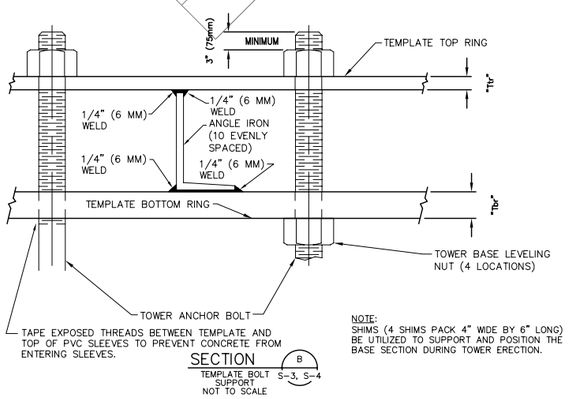


DETAIL 12 — REBAR MATS TOP & BOTTOM NOT TO SCALE



DETAIL 8 — BLOCKOUT

DETAIL 7 — FORM PLATE NOT TO SCALE

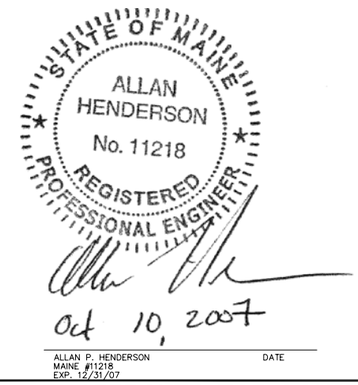


SECTION B — TEMPLATE BOLT SUPPORT S-3, S-4 NOT TO SCALE

NOTE:
SHIMS (4 SHIMS PACK 4" WIDE BY 6" LONG) SHALL BE UTILIZED TO SUPPORT AND POSITION THE TOWER BASE SECTION DURING TOWER ERECTION.

MATERIALS BY SUPPLIER

1. EMBEDMENT RINGS MAY BE IN ONE PIECE AND/OR PLATE SPLICED TO FACILITATE SHIPPING IN SEGMENTS AND RAPID FIELD ASSEMBLY INTO CONTINUOUS RINGS FOR PLACEMENT INSIDE OF OUTER CMP. A SHOP DRAWING, IF DIFFERENT THAN DETAIL 6 OF THESE PLANS, OF SPLICE PLATE SHALL BE PROVIDED THE ENGINEER FOR APPROVAL BY SUPPLIER.
2. BOLT HOLE TOLERANCES FOR THE TEMPLATE AND EMBEDMENT RINGS FROM SPECIFIED DIMENSIONS SHOWN ON THESE PLANS:
   (a) BOLT CIRCLE DIAMETERS WITHIN 1/16 INCH (1.6 MM) MORE OR LESS BOLT LENGTH TO BE WITHIN 1" (25 MM).
   (b) SPACING BETWEEN BOLT HOLES 1/32 INCH (0.8 MM) - MORE OR LESS 1/16 INCH (1.6 MM) MORE OR LESS ACCUMULATIVE.
   (c) RINGS SHALL NOT VARY MORE THAN 1/4 INCH (6 MM) OUT OF LEVEL.
3. RING THICKNESS SHALL NOT VARY MORE THAN 1/32 INCH (0.8 MM).



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MAINE #11218
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USA PATENT PENDING

STETSON WIND

APPROVED FOR CONSTRUCTION

EMBEDMENT RING, TEMPLATE RING, & FABRICATION DETAILS

REV: 0

PATRICK AND HENDERSON INC. PLOT INFORMATION: STAMPED AND SIGNED ELECTRONICALLY 10/10/07

PATRICK & HENDERSON INC.
CIVIL & GEOTECHNICAL ENGINEERING
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