

GENERAL NOTES

DESIGN CRITERIA

1. GOVERNING BUILDING CODE
2020 FLORIDA BUILDING CODE (IBC 2018), ACI, AISC, AND ICC-ES AC308.

2. DESIGN INFORMATION

FOUNDATION REACTIONS WERE PROVIDED PER SABRE INDUSTRIES, STRUCTURAL DESIGN REPORT, JOB NO. 512004, REVISION B, DATED 02/03/2023. PILE DESIGN LOADS WERE DETERMINED FROM ENSOFT GROUP ANALYSIS. GROUP CONSIDERS (4) PILES IN A 4'-9" SQUARE PATTERN.

3. GENERAL

- 3.1. THESE PLANS ARE SUBMITTED FOR REVIEW BY THE PROJECT STRUCTURAL ENGINEER OF RECORD.
- 3.2. ALL FORCES AND LOADS SHOWN ARE ASD FACTORED UNLESS NOTED OTHERWISE.
- 3.3. ITEMS SHOWN ON THESE PLANS ARE NEW UNLESS NOTED (E), EXIST. OR EXISTING.

4. SUBSURFACE CONDITIONS

- 4.1. GEOTECHNICAL INFORMATION WAS PROVIDED ON THIS PROJECT PER GEOTECHNICAL REPORT BY S&ME, PROJECT NO. 22690231, DATED 01/06/2023.
- 4.2. FOUNDATION CONSTRUCTION AND SITE PREPARATION METHODS SHALL FOLLOW RECOMMENDATIONS OUTLINED IN GEOTECHNICAL REPORT REFERENCED ABOVE.

5. GROUT

- 5.1. HELICAL PILE ANNULUS GROUT, IF NEEDED, SHALL BE NEAT CEMENT GROUT (PORTLAND TYPE II & WATER) WITH MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
- 5.2. IN FREEZING TEMPERATURES, FOLLOW ACI STANDARD 306.1 FOR COLD WEATHER CONCRETING WITH RESPECT TO MIXING, HANDLING AND PLACEMENT.

6. HELICAL PILES/ANCHORS

- 6.1. ALL HELICAL PILES AND END CAPS SHALL BE MANUFACTURED AND SUPPLIED BY MAGNUM PIERING INC.
- 6.2. TOLERANCE
 - 6.2.1. HELICAL PILES SHALL BE FURNISHED AND INSTALLED AT THE LOCATIONS SHOWN ON THE STRUCTURAL PLANS AND IN ACCORD WITH THIS PROCEDURE. STANDARD TOLERANCE FOR POSITIONING IS ± 3", ELEVATION IS ± 1/4", AND ANGLE IS ± 2°.
- 6.3. INSTALLATION
 - 6.3.1. CONNECT THE LEAD SECTION TO THE TORQUE MOTOR USING THE DRIVE TOOL AND DRIVE PINS. POSITION AND ALIGN THE LEAD SECTION AT THE LOCATION AND TO THE INCLINATION SHOWN ON THE DRAWINGS AND CROWD THE PILOT POINT INTO THE SOIL. ROTATE TO ADVANCE THE LEAD SECTION AND CONTINUE TO ADD EXTENSION SECTIONS TO ACHIEVE THE TERMINATION CRITERIA.
 - 6.3.2. CONNECT EXTENSIONS USING BOLTS SHOWN ON DRAWINGS. BOLTS SHALL BE "SNUG-TIGHT" PER THE AISC. "THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT". BOLTS DO NOT REQUIRE A SPECIFIC TORQUE, DO NOT OVER TORQUE BOLTS.
 - 6.3.3. ALL SECTIONS SHALL BE ADVANCED INTO THE SOIL IN A SMOOTH, CONTINUOUS MANNER AT A RATE OF ROTATION BETWEEN 5 AND 20 REVOLUTIONS PER MINUTE. CONSTANT AXIAL FORCE (CROWD) SHALL BE APPLIED WHILE ROTATING THE HELICAL PILES/ANCHORS INTO THE GROUND. THE CROWD APPLIED SHALL BE SUFFICIENT TO ENSURE THAT THE HELICAL PILE/ANCHOR ADVANCES INTO THE GROUND A DISTANCE EQUAL TO AT LEAST 80% OF THE HELIX PITCH PER REVOLUTION DURING NORMAL ADVANCEMENT. THE MAXIMUM TORQUE RATING OF THE HELICAL PILE/ANCHOR SHALL NOT BE EXCEEDED DURING INSTALLATION.
 - 6.3.4. LOG INSTALLATION DEPTH AND TORQUE AT INTERVALS SHOWN IN SPECIAL INSPECTION TABLE DURING INSTALLATION AND RECORD FINAL DEPTH AND TORQUE. SUBMIT INSTALLATION LOGS TO MAGNUM FOR REVIEW PRIOR TO COMPLETION OF THE PROJECT.
- 6.4. TERMINATION CRITERIA
 - 6.4.1. HELICAL PILES/ANCHORS SHALL BE ADVANCED UNTIL ALL OF THE FOLLOWING CRITERIA ARE SATISFIED:
 - 6.4.1.1. MINIMUM INSTALLATION TORQUE IS ACHIEVED. MINIMUM INSTALLATION TORQUE IS SHOWN ON THE SUMMARY TABLE OR PILE SCHEDULE.
 - 6.4.1.2. MINIMUM DEPTH/LENGTH IS OBTAINED. THE MINIMUM DEPTH/LENGTH SHALL BE AS SHOWN ON THE DRAWINGS, THAT WHICH CORRESPONDS TO THE PLANNED BEARING STRATUM, OR THE DEPTH/LENGTH AT WHICH THE MINIMUM INSTALLATION TORQUE IS MEASURED, WHICHEVER IS GREATER.
 - 6.4.2. IF MAXIMUM TORQUE RATING IS REACHED OR REFUSAL OCCURS PRIOR TO ACHIEVING THE MINIMUM DEPTH/LENGTH, CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS:
 - 6.4.2.1. REVERSE THE DIRECTION OF TORQUE, BACK-OUT THE HELICAL PILE/ANCHOR A DISTANCE OF 1 TO 2 FEET AND ATTEMPT TO REINSTALL BY DECREASING CROWD AND AUGERING THROUGH THE OBSTRUCTION.
 - 6.4.2.2. TERMINATE THE INSTALLATION AT THE DEPTH OBTAINED SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER.
 - 6.4.2.3. REMOVE THE HELICAL PILE/ANCHOR AND INSTALL A NEW ONE WITH FEWER AND/OR SMALLER DIAMETER HELICAL BEARING PLATES. THE NEW HELICAL CONFIGURATION SHALL BE SUBJECT TO REVIEW AND ACCEPTANCE OF THE ENGINEER.
 - 6.4.2.4. REMOVE THE HELICAL PILE/ANCHOR AND PRE-DRILL A PILOT HOLE SIMILAR IN DIAMETER TO THE PILE SHAFT IN THE SAME LOCATION AND REINSTALL THE ANCHOR/PILE.
 - 6.4.2.5. IF THE OBSTRUCTION IS SHALLOW, REMOVE THE HELICAL PILE/ANCHOR AND REMOVE THE OBSTRUCTION BY SURFACE EXCAVATION. BACKFILL AND COMPACT THE RESULTING EXCAVATION AND REINSTALL THE PILE/ANCHOR.
 - 6.4.2.6. REMOVE THE HELICAL PILE/ANCHOR AND SEVER THE UPPERMOST HELICAL BEARING PLATE FROM THE LEAD SECTION IF MORE THAN ONE HELICAL BEARING PLATE IS IN USE, OR RESHAPE THE HELICAL BEARING PLATES TO CREATE THE PATENTED MAGNUM DUAL CUTTING EDGE SHAPE BY CUTTING WITH A BAND SAW. REINSTALL THE PILE/ANCHOR.
 - 6.4.3. IF THE MINIMUM INSTALLATION TORQUE IS NOT ACHIEVED AT THE CONTRACT LENGTH, THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS:
 - 6.4.3.1. UNTIL THE MAXIMUM DEPTH/LENGTH IS ACHIEVED, IF ANY, INSTALL THE HELICAL PILE/ANCHOR DEEPER USING ADDITIONAL EXTENSION SECTIONS.
 - 6.4.3.2. REMOVE THE HELICAL PILE/ANCHOR AND INSTALL A NEW ONE WITH ADDITIONAL AND/OR LARGER DIAMETER HELICAL BEARING PLATES.

- 6.4.3.3. DECREASE THE RATED LOAD CAPACITY OF THE HELICAL PILE/ANCHOR AND INSTALL ADDITIONAL HELICAL PILES/ANCHORS. THE RATED CAPACITY AND ADDITIONAL UNIT LOCATION SHALL BE SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER.
- 6.4.3.4. FOR LARGE DIAMETER PILES (5.5" DIAMETER SHAFT OR GREATER) INSTALLED IN SOFT, PLASTIC, OR SENSITIVE SOILS THE PILE MAY BE ALLOWED TIME TO SET-UP AND MAY BE RE-TORQUED AT A LATER TIME IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:
 - 6.4.3.4.1. AFTER SUFFICIENT SET-UP TIME, RE-ATTACH THE DRIVE TOOL TO THE PILE USING THE SAME TORQUE MOTOR AND TORQUE MEASURING DEVICES AS USED DURING THE INITIAL INSTALLATION.
 - 6.4.3.4.2. APPLY CROWD AND SLOWLY ROTATE PILE UNTIL ONE FULL REVOLUTION HAS BEEN ACHIEVED. RECORD THE PEAK TORQUE READING DURING ONE REVOLUTION AND TERMINATE INSTALLATION.
 - 6.4.3.4.3. IF THE MINIMUM REQUIRED INSTALLATION TORQUE IS ACHIEVED, ALONG WITH ALL OTHER TERMINATION CRITERIA, RECORD FINAL PILE INSTALLATION DATA.
 - 6.4.3.4.4. IF MINIMUM REQUIRED INSTALLATION TORQUE IS NOT ACHIEVED, FURTHER SET-UP TIME MAY BE NECESSARY. REFER TO OTHER OPTIONS WITHIN THESE NOTES AS REQUIRED.
 - 6.4.3.4.4.1. A CORRELATION BETWEEN SET UP TIME AND INCREASE IN TORQUE MAY BE ESTABLISHED BY RE-TORQUING MULTIPLE PILES AT THE RECOMMENDED TIME INTERVALS OF 1 DAY, 3 DAYS, 1 WEEK AND 2 WEEKS.
- 6.4.4. IF THE MINIMUM DEPTH HAS BEEN OBTAINED BUT THE FINAL INSTALLATION TORQUE IS NOT ACHIEVED DUE TO AUGERING ON AN OBSTRUCTION UNDER MAXIMUM CROWD (REFUSAL):
 - 6.4.4.1. RECORD "REFUSAL" ON INSTALLATION LOGS IN PLACE OF FINAL TORQUE.
 - 6.4.4.2. SUBMIT INSTALLATION LOGS TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL. THE PILE/ANCHOR MAY BE DEEMED ACCEPTABLE IF ONE OF THE FOLLOWING CONDITIONS ARE MET:
 - 6.4.4.2.1. THE BORING LOGS INDICATE SUITABLE BEARING STRATUM AT THE APPROXIMATE DEPTH OF REFUSAL.
 - 6.4.4.2.2. THE PILES, ON EITHER SIDE OF THE PILE(S) IN QUESTION, ACHIEVED TORQUE AT SIMILAR DEPTHS.
 - 6.4.4.2.3. PILE CAPACITY IS VERIFIED BY DYNAMIC OR STATIC LOAD TEST.
 - 6.4.4.2.4. OTHERWISE, THE PILE SHALL BE DOWNGRADED BASED ON LAST CREDIBLE TORQUE READING OBTAINED PRIOR TO REFUSAL AND ADDITIONAL PILES/ANCHORS SHALL BE INSTALLED. THE RATED CAPACITY AND ADDITIONAL PILE/ANCHOR LOCATION SHALL BE SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER.
- 6.5. LATERAL CAPACITY
 - 6.5.1. IF THE PILE HAS A REQUIRED LATERAL CAPACITY AND AN ANNULUS FORMS AROUND THE UPPER PILE SHAFT SUCH THAT THE SHAFT IS NOT TIGHT AGAINST THE GROUND, SPECIAL PROVISIONS SHOULD BE TAKEN TO GROUT THE TOP PORTION OF SHAFTS FOR PROPER LATERAL PERFORMANCE
 - 6.5.2. SMALL QUANTITIES OF GROUT CAN BE MIXED BY HAND AND POURED INTO THE ANNULUS FROM THE SURFACE USING A BUCKET.
 - 6.5.3. LARGER QUANTITIES SHALL BE BATCHED USING COLLOIDAL MIXER AND GRAVITY FED INTO ANNULUS FROM GROUND SURFACE.

7. INSTALLATION EQUIPMENT

- 7.1. HYDRAULIC HOST MACHINE
 - 7.1.1. HYDRAULIC HOST MACHINE SHALL BE CAPABLE OF APPLYING ADEQUATE CROWD AND TORQUE SIMULTANEOUSLY TO ENSURE NORMAL ADVANCEMENT OF THE HELICAL PILES. EQUIPMENT SHALL BE CAPABLE OF MAINTAINING PROPER ALIGNMENT AND POSITION. HYDRAULIC FLOW AND PRESSURE SHOULD MATCH TORQUE AND MOTOR REQUIREMENTS.
- 7.2. TORQUE MOTOR
 - 7.2.1. HELICAL PILES SHALL BE INSTALLED WITH HIGH TORQUE, LOW RPM MOTORS, WHICH ALLOW ADVANCEMENT WITH MINIMAL SOIL DISTURBANCE. IDEAL ROTATION RATE IS 5 TO 20 RPM.
 - 7.2.2. TORQUE MOTOR SHALL BE HYDRAULIC POWER DRIVEN WITH CLOCKWISE AND COUNTER-CLOCKWISE ROTATION CAPACITY.
 - 7.2.3. TORQUE MOTOR SHALL BE ADJUSTABLE WITH RESPECT TO REVOLUTIONS PER MINUTE DURING INSTALLATION. PERCUSSION DRILLING EQUIPMENT SHALL NOT BE PERMITTED.
 - 7.2.4. TORQUE MOTOR SHALL HAVE TORQUE CAPACITY EQUAL TO OR GREATER THAN HELICAL PILE RATING AS SHOWN ON THE HELICAL PILE SCHEDULE. IF MOTOR TORQUE EXCEEDS PILE RATING, ADJUST FLOW BYPASS SWITCH TO RATING TO PROTECT PILE FROM DAMAGE.
 - 7.2.5. CONNECTION BETWEEN THE TORQUE MOTOR AND THE INSTALLATION RIG SHALL HAVE NO MORE THAN TWO PIVOT HINGES ORIENTED 90 DEGREES FROM EACH OTHER. ADDITIONAL HINGES PROMOTE WOBBLING AND AFFECT LATERAL CAPACITY.
- 7.3. DRIVE TOOL
 - 7.3.1. CONNECTION BETWEEN THE TORQUE MOTOR AND HELICAL PILE SHALL BE IN-LINE, STRAIGHT, AND RIGID, AND SHALL CONSIST OF A HEXAGONAL, SQUARE, OR ROUND KELLY BAR ADAPTER AND HELICAL SHAFT SOCKET.
 - 7.3.2. TO ENSURE PROPER FIT, THE DRIVE TOOL SHALL BE MANUFACTURED BY MAGNUM PIERING, INC. AND USED IN ACCORDANCE WITH MAGNUM'S INSTALLATION INSTRUCTIONS.
- 7.4. DRIVE PINS
 - 7.4.1. CENTER SHAFT OF THE HELICAL PILE SHALL BE ATTACHED TO THE DRIVE TOOL BY ASME SAE GR. 8 SMOOTH TAPERED PINS MATCHING THE NUMBER AND DIAMETER OF THE SPECIFIED SHAFT CONNECTION BOLTS.
- 7.5. TORQUE INDICATOR
 - 7.5.1. A TORQUE INDICATOR SHALL BE USED TO MEASURE TORQUE DURING INSTALLATION. TORQUE INDICATOR MAY BE AN INTEGRAL PART OF THE INSTALLATION EQUIPMENT OR EXTERNALLY MOUNTED IN-LINE WITH THE INSTALLATION TOOLING.
 - 7.5.2. TORQUE INDICATOR SHALL BE CAPABLE OF TORQUE MEASUREMENTS WITH A SENSITIVITY OF 500 FT-LBS OR LESS.
 - 7.5.3. TORQUE INDICATOR SHALL HAVE BEEN CALIBRATED WITHIN 1-YEAR PRIOR TO START OF WORK.
 - 7.5.4. INDICATORS THAT MEASURE TORQUE AS A FUNCTION OF HYDRAULIC PRESSURE SHALL BE RE-CALIBRATED FOLLOWING MAINTENANCE PERFORMED ON THE TORQUE MOTOR. TORQUE INDICATORS SHALL BE RE-CALIBRATED IF REASONABLE DOUBT EXISTS AS TO THE ACCURACY OF THE TORQUE MEASUREMENTS.
 - 7.5.5. REDUNDANT TORQUE INDICATORS, SUCH AS ELECTRONIC CELL AND HYDRAULIC GAUGES, IS HIGHLY RECOMMENDED.

8. SPECIAL INSPECTIONS

- 8.1. SUBMIT INSPECTION REPORTS DIRECTLY TO MAGNUM FOR REVIEW. SUBMIT STRUCTURAL RELATED SPECIAL INSPECTION REPORTS TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW.
- 8.2. THE FOLLOWING SPECIAL INSPECTIONS IN TABLE FORM ARE REQUIRED. FOLLOW ALL REQUIREMENTS OUTLINED IN IBC SPECIAL INSPECTIONS CHAPTER.
 - X - DENOTES THAT THE INSPECTION IS REQUIRED, ONE TIME OCCURRENCE.
 - C - DENOTES THAT THE INSPECTION IS REQUIRED AND SHALL BE CONTINUOUS.
 - P - DENOTES THAT THE INSPECTION IS REQUIRED AND SHALL BE PERIODIC, REFER TO 'REMARKS' FOR FREQUENCY.

REQUIRED MINIMUM SPECIAL INSPECTIONS PER IBC		
MARK	DESCRIPTION	REMARKS
C	HELICAL PILE INSTALLATION	RECORD DEPTH AND TORQUE @ 1-FT INTERVALS AND @ TERMINATION. ADDITIONAL REQUIREMENTS PER IBC SPECIAL INSPECTIONS

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05/01/2023

PLAN NOT VALID WITHOUT ORIGINAL
WET STAMP

HELICAL PILE FOUNDATION
GENERAL NOTES

NO.	DATE	REVISION	ISSUED FOR CONSTRUCTION			
1	5/1/2023					

ENGINEER: VAV PROJECT NO: 23-1511-9000
PROJECT MGR: KTB ORIGIN DATE: 2023/04/13
REVIEWER: HAP SCALE: AS SHOWN
SHEET: HP1

GENERAL NOTES (CONTINUED)

9. BACKFILL & DRAINAGE

- 9.1. BACKFILL MATERIALS SHALL BE FREE OF COBBLES, BOULDERS, AND DEBRIS GREATER THAN 3" DIAMETER. BACKFILL MATERIALS SHALL NOT CONTAIN ORGANICS, FROZEN SOIL, OR ANY DELETERIOUS MATERIALS. BACKFILL SHALL BE PLACED AND COMPACTED IN THIN (8" MAX) LIFTS. BACKFILL BOTH SIDES OF GRADE BEAM SIMULTANEOUSLY.
- 9.2. PERFORMANCE OF FOUNDATIONS IS HIGHLY DEPENDANT ON PROPER DRAINAGE. ADEQUATE DRAINAGE SHALL BE PROVIDED AROUND ALL STRUCTURES. THIS DRAINAGE SHOULD BE MONITORED AND MAINTAINED THROUGHOUT THE LIFE OF THE STRUCTURE. THE GROUND SURFACE AROUND THE STRUCTURE, IN THE AREA OF THE PILES, SHALL BE SLOPED AS MUCH AS PRACTICAL TO CONDUCT RUNOFF WATER AWAY FROM FOUNDATIONS AND RETAINING WALLS.FOR NEW CONSTRUCTION, MAGNUM TYPICALLY RECOMMENDS A MINIMUM SLOPE OF 10% IN LANDSCAPED AREAS AND 2% FOR PAVEMENTS AND SLAB-ON-GRADE.

10. LOAD TESTS

- 10.1. LOAD TESTS, IF REQUIRED, SHALL BE PERFORMED IN GENERAL ACCORDANCE WITH PROJECT SPECIFICATIONS AND THESE GENERAL NOTES, AND DRAWINGS BY MAGNUM GEO-SOLUTIONS, LLC. TITLED "FORT WHITE TELECOM TOWER - LOAD TEST PLAN", SHEET S1 AND S2, OF PROJECT NO. 23-1511-9000, DATED 05/01/2023.
- 10.2. LOAD TESTING AGENCY SHALL SUBMIT SEALED LOAD FRAME DRAWINGS AND STRUCTURAL CALCULATIONS PRIOR TO START OF TESTING. HYDRAULIC JACK AND LOAD CELL SHALL BE CALIBRATED PER ISO STANDARDS WITHIN 1-YEAR OF START OF TESTING. SUBMIT CALIBRATION CERTIFICATES PRIOR TO START OF TESTING.
- 10.3. TESTS SHALL BE PERFORMED IN GENERAL ACCORDANCE WITH ASTM D1143 OR ASTM 3689.
- 10.4. ACCEPTANCE CRITERIA SHALL BE PER ICC-ES AC358. USE THE MODIFIED DAVISSON METHOD PROVIDED. NET DEFLECTION LIMIT AT MAXIMUM TEST LOAD EQUAL TO 10% AVERAGE HELIX DIAMETER.
- 10.5. PDA TESTING SHALL BE PERFORMED IN GENERAL ACCORDANCE WITH ASTM 4945.
- 10.6. LATERAL TESTING SHALL BE PERFORMED IN GENERAL ACCORDANCE WITH ASTM 3966.

11. LIMITATIONS

- 11.1. THIS DRAWING IS BASED ON LOADS AND SOIL INFORMATION BY OTHERS. IN ADDITION, THIS DRAWING RELIED UPON CERTAIN INFORMATION, DIMENSIONS, STRUCTURAL DETAILS, AND CONDITIONS WHICH MAY BE SHOWN HERE AS EXISTING (E) OR FIELD VERIFY (FV). CONTRACTOR SHALL VERIFY AND COORDINATE CONDITIONS, MATERIALS, AND ALL DIMENSIONS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES OR CHANGES SHOULD BE BROUGHT TO THE ATTENTION OF MAGNUM.
- 11.2. UNKNOWNNS COULD EXIST REGARDING THE CONSTRUCTION OF THE STRUCTURE AND SUBSURFACE PROPERTIES THAT COULD AFFECT PILE/ANCHOR PERFORMANCE.
- 11.3. THIS PLAN WAS PREPARED TO THE LEVEL OF SKILL AND CARE ORDINARILY PRACTICED BY OTHER ENGINEERS IN THIS AREA AT THIS TIME. NO WARRANTY IS MADE BY MAGNUM GEO-SOLUTIONS, LLC. AND PROFESSIONAL ENGINEERS EMPLOYED HEREIN, EXPRESS OR IMPLIED.
- 11.4. A LIMITED MANUFACTURING DEFECT WARRANTY IS PROVIDED BY MAGNUM PIERING, INC.
- 11.5. THIS PLAN IS BASED ON PRODUCTS MANUFACTURED BY MAGNUM PIERING, INC. AND METHODS OF INSTALLATION PRACTICED BY MAGNUM AUTHORIZED INSTALLERS. THIS PLAN IS INVALID FOR PRODUCTS MANUFACTURED BY OTHERS AND ANY OTHER INSTALLATION CONTRACTORS.



ABBREVIATIONS	
ABBREVIATION	DESCRIPTION
B	BOLTED
BO	BY OTHERS
BR	BOLTED REINFORCED
CLR	CLEAR
D	DUAL CUTTING EDGE HELIX ¹
S	SINGLE CUTTING EDGE HELIX ¹
EA	EACH
FV	FIELD VERIFY
G	GALVANIZED
GN	GENERAL NOTES
GB	GRADE BEAM
HP	HELICAL PILE
NG	NON-GALVANIZED
NR	NOT REQUIRED
NS	NOT SPECIFIED
NTS	NOT TO SCALE
P	PAINTED
REQ'D	REQUIRED
SCHED	SCHEDULE
SG	SPRAY GALVANIZED
TOB	TOP OF BORING
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
w/	WITH

¹THE NUMBER PRECEDING "S" OR "D" IS THE HELIX DIAMETER IN INCHES.

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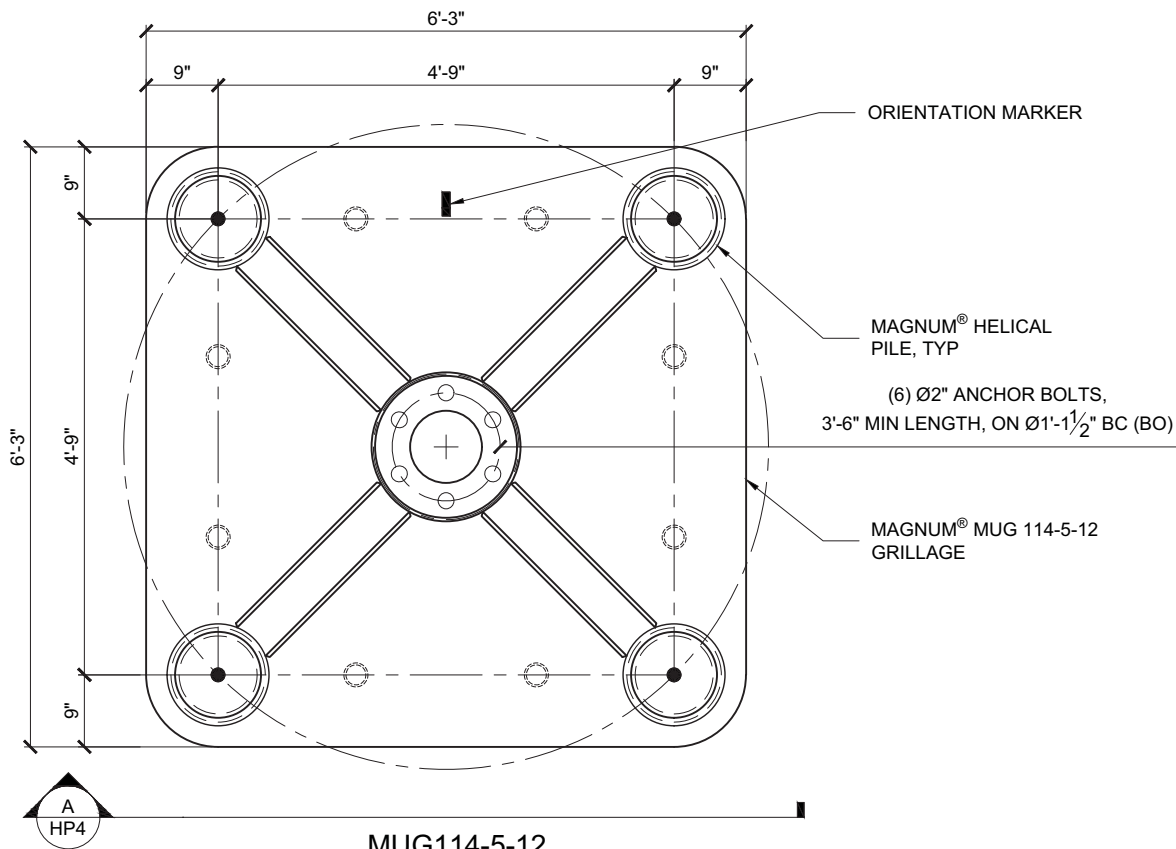
05/01/2023
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HELICAL PILE FOUNDATION
GENERAL NOTES (CONTINUED)

NO.	DATE	REVISION
1	5/1/2023	ISSUED FOR CONSTRUCTION

ENGINEER: VAV PROJECT NO: 23-1511-9000
PROJECT MGR: KTB ORIGIN DATE: 2023/04/13
REVIEWER: HAP SCALE: AS SHOWN
SHEET: HP2

LOCATE AND CLEAR ALL UTILITIES
PRIOR TO INSTALLATION OF HELICAL
PILES OR EXCAVATION.



MUG114-5-12
FOUNDATION LAYOUT
1/2" = 1'-0"

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HELICAL PILE FOUNDATION
LAYOUT AND SCHEDULE

REVISION		ISSUED FOR CONSTRUCTION			
DATE	NO.	DATE	NO.	DATE	NO.
5/1/2023	1				

MUG114-5-12: HELICAL PILE SCHEDULE											
PILE PROPERTIES		REQUIRED CAPACITY PER PILE		PILE CONNECTION (COUPLING)		MAGNUM END CAP/ BRACKET		END CAP/ BRACKET HARDWARE		INSTALLATION CRITERIA	
NUMBER OF PILES	4 EA (12 TOTAL)	COMPRESSION (kips)	285	BOLT SIZE (in)	1-1/2	DESIGNATION	MHC1304-12X16B3	BOLT SIZE (in)	1-1/2	MINIMUM TORQUE (ft-lbs)	178,100
MAGNUM PILE DESIGNATION	MH1247Q-6 G	TENSION (kips)	238	NUMBER OF BOLTS	3	DIMENSIONS	16"Ø PL X 2"	NUMBER OF BOLTS	3	MAX TORQUE RATING (ft-lbs)	229,200
SHAFT DIMENSIONS	12.75" X 0.47"	LATERAL (kips)	25.7	BOLT GRADE	ASTM A193 B7	FINISH	G	BOLT GRADE	ASTM A193 B7	ANTICIPATED LENGTH (ft)	80 TO 112+*
HELICES	24D30S36S									MINIMUM LENGTH (ft)	28

*BEARING STRATUM WAS NOT ENCOUNTERED WITHIN THE DEPTH OF THE BORING FOR BORING B-1. THEREFORE, ANTICIPATED LENGTH IS UNKNOWN.

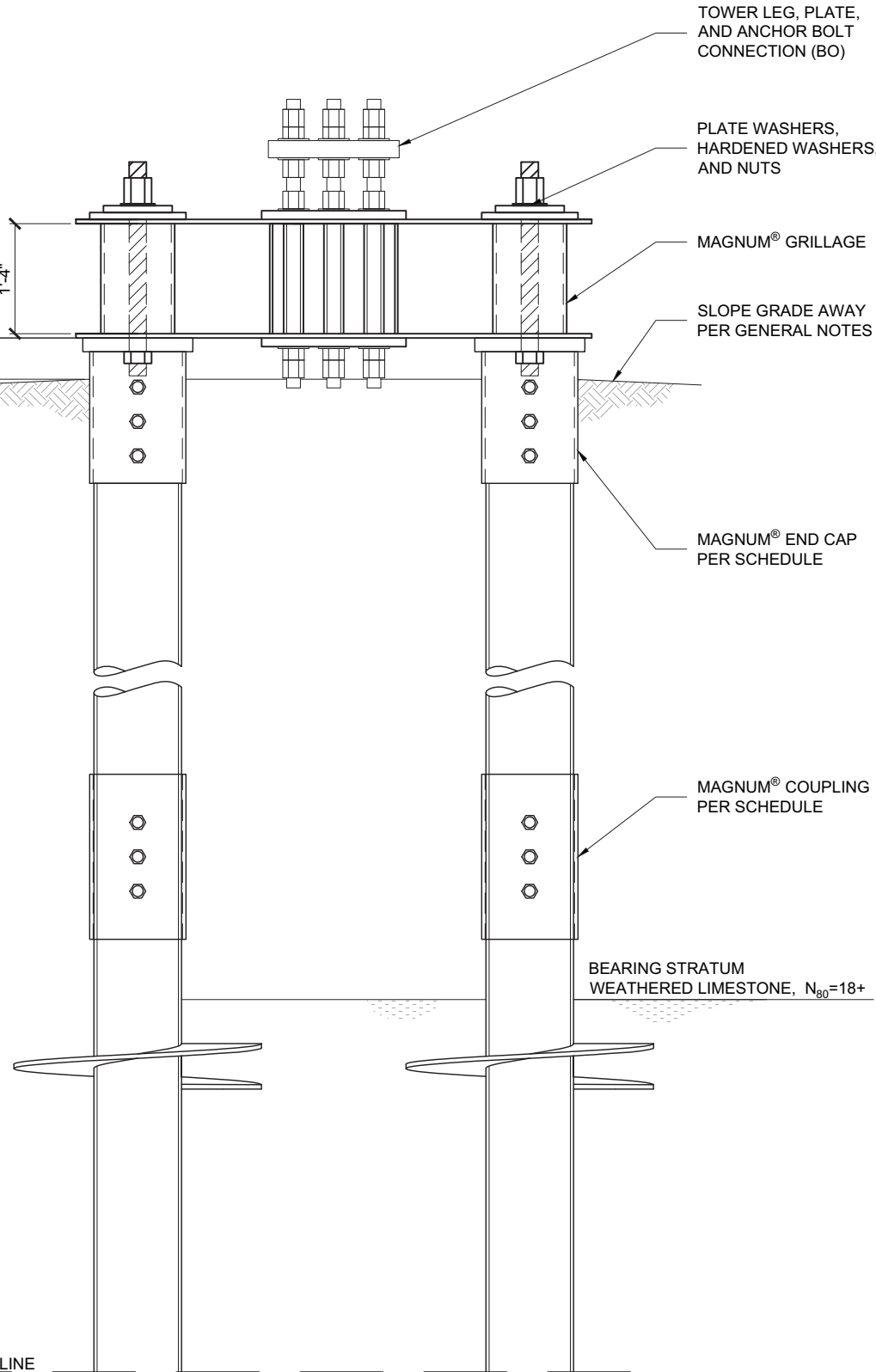
EXISTING GRADE / ASSUMED TOB
ELEV. VARIES (BO)

LENGTH = AS REQUIRED TO ACHIEVE
MINIMUM TORQUE AND MINIMUM LENGTH PER SCHEDULE

MATCHLINE

6" MAX

1'-4"

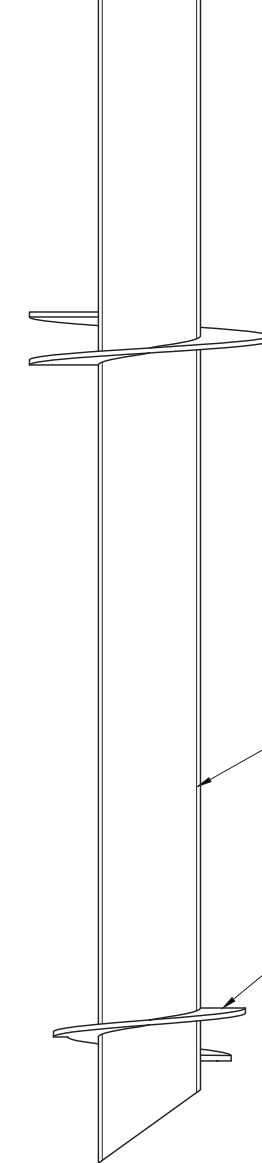
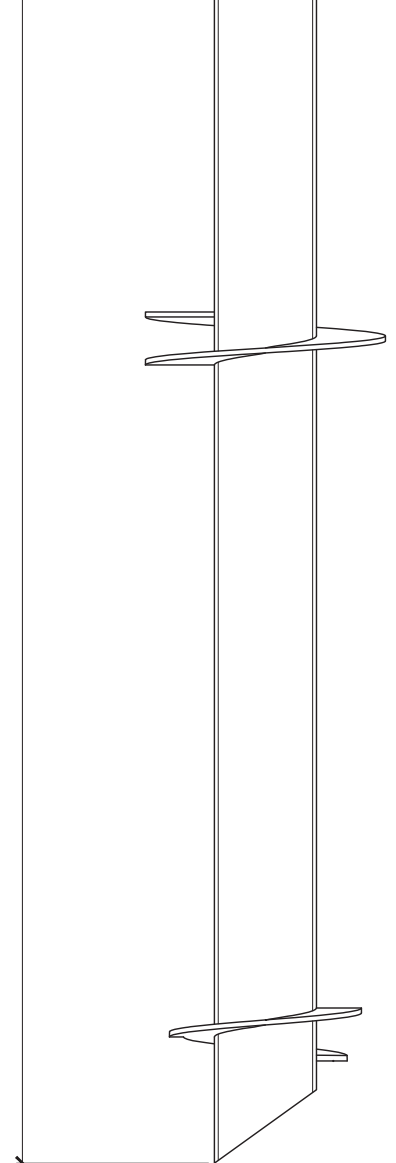


A
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MUG114-5-12
FOUNDATION SECTION
 $\frac{1}{2}" = 1'-0"$

LOCATE AND CLEAR ALL UTILITIES
PRIOR TO INSTALLATION OF HELICAL
PILES OR EXCAVATION.

MATCHLINE



MAGNUM® HELICAL
PILE PER SCHEDULE

HELICES PER
SCHEDULE (TYP)

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HELICAL PILE FOUNDATION SECTION DETAIL

NO.	DATE	REVISION
1	5/1/2023	ISSUED FOR CONSTRUCTION

ENGINEER: VAV PROJECT NO: 23-1511-9000
PROJECT MGR: KTB ORIGIN DATE: 2023/04/13
REVIEWER: HAP SCALE: AS SHOWN
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