

GENERAL REQUIREMENTS

REFER TO SUBSEQUENT PLAN AND DETAIL NOTES FOR VARIATIONS AND REQUIREMENTS SPECIFIC TO REFERENCED PROJECT.

NOTES ON DRAWINGS TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES.

REMEDIAL FOUNDATION REPAIR ACKNOWLEDGEMENT:
IT IS OUR UNDERSTANDING THAT THE INTENT OF THIS REPAIR IS TO STABILIZE, AND POTENTIALLY LIFT THE WORST CASE PORTIONS OF THE STRUCTURE, BY SUPPORTING THE FOUNDATION WITH STEEL UNDERPINNING FOUNDED BELOW THE ACTIVE EXPANSION ZONE. IT SHOULD BE NOTED THAT THIS PROJECT IS VOLUNTARY AND RECOMMENDATIONS FOR REPAIRS ARE NOT MANDATORY. IF THE RECOMMENDATIONS ARE NOT ECONOMICALLY OR OTHERWISE FEASIBLE AT THIS TIME, THE HOMEOWNER MAY CHOOSE TO REDUCE THE SCOPE OF THE REPAIR TO ADDRESS THE WORSE CASE PORTIONS OF THE FOUNDATION. HOWEVER, THE HOMEOWNER SHOULD UNDERSTAND THAT THE NEW FOUNDATION SYSTEM WILL SUPPORT THE STRUCTURE ONLY IN THE AREAS ADDRESSED. STRUCTURAL CONCERNS AND ADDITIONAL SETTLEMENT MAY CONTINUE IN THE REMAINDER OF THE FOUNDATION. IN THIS SCENARIO, THE HOME SHOULD BE CLOSELY MONITORED FOR ADDITIONAL DAMAGE IN AREAS WHERE THE FOUNDATION IS NOT REPAIRED.

DESIGN CRITERIA

BUILDING CODE PERFORMANCE (MEETS OR EXCEEDS REQUIREMENTS):

- 2015 INTERNATIONAL BUILDING CODE (IBC)
- 2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
- 2018 NORTH CAROLINA BUILDING CODE (NCBC)
- 2018 NORTH CAROLINA RESIDENTIAL CODE (NCRC)

DEAD LOADS:	
ROOF DEAD LOAD	15 PSF
FLOOR DEAD LOAD	15 PSF
DECK DEAD LOAD	12 PSF
WOOD WALL DEAD LOAD	12 PSF
BRICK DEAD LOAD	39 PSF
CONCRETE	150 PCF
LIVE LOADS:	
ROOF LIVE LOAD	20 PSF
FLOOR LIVE LOAD	60 PSF
DECK LIVE LOAD	40 PSF
FLOOR LIVE LOAD (RESIDENTIAL)	40 PSF

HELICAL PIERS

MATERIALS:

- BRACKET PLATES – ASTM A36
(MIN YIELD STRESS, $f_y = 36$ KSI / MIN TENSILE STRESS, $F_u = 58$ KSI)
- PIER TUBES – ASTM A500 GRADE B OR C
(MIN YIELD STRESS, $f_y = 50$ KSI / MIN TENSILE STRESS, $F_u = 55$ KSI)
- EXTERNAL SLEEVE – ASTM A500 GRADE B OR C
(MIN YIELD STRESS, $f_y = 50$ KSI / MIN TENSILE STRESS, $F_u = 62$ KSI)
- PIER CAP – ASTM A529 GRADE 50
(MIN YIELD STRESS, $f_y = 50$ KSI / MIN TENSILE STRESS, $F_u = 65$ KSI)
- COIL ROD – ASTM A193 GRADE B7
(MIN YIELD STRESS, $f_y = 105$ KSI / MIN TENSILE STRESS, $F_u = 125$ KSI)
- STEEL ANGLE SHAPES – ASTM A36
(MIN YIELD STRESS, $f_y = 36$ KSI / MIN TENSILE STRESS, $F_u = 58$ KSI)
- SHAFT COUPLER – ASTM A513 TYPE 5
(MIN YIELD STRESS, $f_y = 70$ KSI / MIN TENSILE STRESS, $F_u = 87$ KSI)
- SHAFT COUPLING HARDWARE – GRADE 8 BOLTS WITH NUTS
HELIX PLATES (ROUND SHAFT) – ASTM A572 GRADE 50
(MIN YIELD STRESS, $f_y = 50$ KSI / MIN TENSILE STRESS, $F_u = 65$ KSI)

WELDING NOTES:

CONFORM TO AWS D1.1. WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH AWS REQUIREMENTS. USE E70 ELECTRODES OF TYPE REQUIRED FOR MATERIALS TO BE WELDED.

HELICAL PIERS (CONT.)

WELDING NOTES:
CONFORM TO AWS D1.1. WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH AWS REQUIREMENTS. USE E70 ELECTRODES OF TYPE REQUIRED FOR MATERIALS TO BE WELDED.

CORROSION PROTECTION:
SACRIFICIAL DESIGN THICKNESS – CAPACITIES INCLUDE A SCHEDULED LOSS IN STEEL THICKNESS DUE TO CORROSION FOR BLACK, UNCOATED STEEL. ANCHORS ARE DESIGNED FOR 50-YEAR SCHEDULED SACRIFICIAL THICKNESS LOSS IN ACCORDANCE WITH ICC-ES AC308.

INSTALLATION:
SYSTEM TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS. MINIMUM INSTALLATION PRESSURE IS TO BE DETERMINED BY THE FOLLOWING EQUATION:

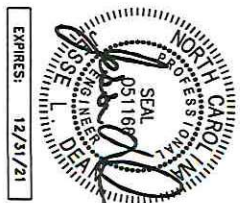
$$\text{HELICAL PIER INSTALLATION TORQUE (FT-LB)} = \left[\text{DESIGN WORKING LOAD} \right] \times \left[f_{ts} = 2 \right] / \left[\text{EMPIRICAL TORQUE CORRELATION FACTOR, } K_T = 9 \text{ FT}^{-1} \right]$$

MINIMUM INSTALLATION DEPTH IS 10'-0"± UNO.

NOTIFY ENGINEER IF MINIMUM INSTALLATION CONDITIONS CANNOT BE ACHIEVED.

EXISTING UTILITY LINES:
CONTRACTOR TO REPAIR UTILITY LINES THAT MAY BE DAMAGED DURING INSTALLATION.

HELICAL PIER SPICING:
HELICAL LEAD AND EXTENSIONS ARE TO BE MECHANICALLY SPLICED WITH GRADE 8 BOLTS WITH NUTS.



VICINITY MAP

SCALE: NTS



ROMANOSKI RESIDENCE
FOUNDATION UNDERPINNING
409 S 16TH ST
ERWIN, NC 28339



GENERAL NOTES
REVISIONS
PROJECT NO:
SHEET NO:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
JLD
DATE:
02.11.2021
SHEET NO:
S1.1

TESTING & INSPECTION

CONTINUOUS SPECIAL INSPECTION IS REQUIRED DURING INSTALLATION PER 2015 IBC SECTION 1810.4.12. THE SPECIAL INSPECTOR IS RESPONSIBLE FOR VERIFYING AND RECORDING THE FOLLOWING:

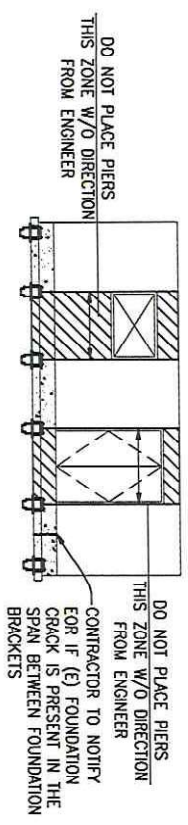
- PROJECT DESCRIPTION (ADDRESS, INSTALLATION DATE, PERMIT NUMBER)
- PILE AND BRACKET CONFIGURATION
- PART DESCRIPTION (PRODUCT MANUFACTURER, BRACKET TYPE, PIER TYPE, PIER OUTSIDE DIAMETER, PIER WALL THICKNESS)
- PIER INCINATION, LOCATION, DEPTH, AND INSTALLATION PRESSURE ACHIEVED

LOAD TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM METHOD D1143 (QUICK METHOD) ON 20 PERCENT OF PIERS AND WILL BE SELECTED BY THE SPECIAL INSPECTOR. AN ALIGNMENT LOAD (AL) SHALL BE APPLIED TO THE PILE PRIOR TO SETTING THE DEFLECTION MEASURING EQUIPMENT TO ZERO OR A REFERENCE POSITION. THE AL SHALL BE NO MORE THAN 10% OF THE DESIGN LOAD. INCREMENTAL LOADING SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TEST LOADING SCHEDULE	HOLD TIME	MAX DEFLECTION
AL (10 DL MAX)	0 MIN.	
0.25 DL	UNTIL STABLE	
0.50 DL	UNTIL STABLE	
0.75 DL	UNTIL STABLE	
1.00 DL	UNTIL STABLE	
1.25 DL	UNTIL STABLE	
1.50 DL	UNTIL STABLE	
1.25 DL	UNTIL STABLE	0.04 INCHES
1.00 DL	UNTIL STABLE	
0.75 DL	UNTIL STABLE	
0.50 DL	UNTIL STABLE	
0.25 DL	UNTIL STABLE	

LOAD TESTING CREEP ACCEPTANCE CRITERIA SHALL BE NO GREATER THAN 0.04 INCHES WITHIN A 10 MINUTE PERIOD. IF MOVEMENT IS OBSERVED GREATER THAN 0.04 INCHES WITHIN THE 10 MINUTE PERIOD THE LOAD TEST SHALL BE HELD FOR AN ADDITIONAL 50 MINUTES. THE PIER IS TO BE DEEPENED AND RE-TESTED, OR THE PIER IS TO BE ABANDONED AND REPLACED WITH A NEW PIER. IF THE LOAD TEST IS TO BE HELD THE PIER MOVEMENTS SHALL BE MEASURED AT 15, 20, 30, 40, 50, AND 60 MINUTES. THE CREEP VERSUS THE LOGARITHM OF TIME SHALL BE PLOTTED. IF THE CREEP RATE IS LESS THAN 0.080 INCHES BETWEEN 6 AND 60 MINUTES, THE LOAD TEST SHALL BE CONSIDERED SUCCESSFUL.

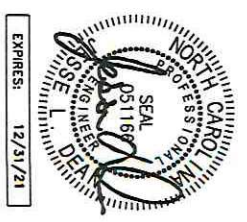
PUSH PIER TEST PRESSURE (PSI): [DESIGN LOAD] X 1.5 / [AREA OF HYDRAULIC RAM].
 HELICAL PIER TEST PRESSURE (PSI): [DESIGN LOAD] X 1.5 / [AREA OF HYDRAULIC RAM].



NO PIER PLACEMENT ZONE

SCALE: NTS

1



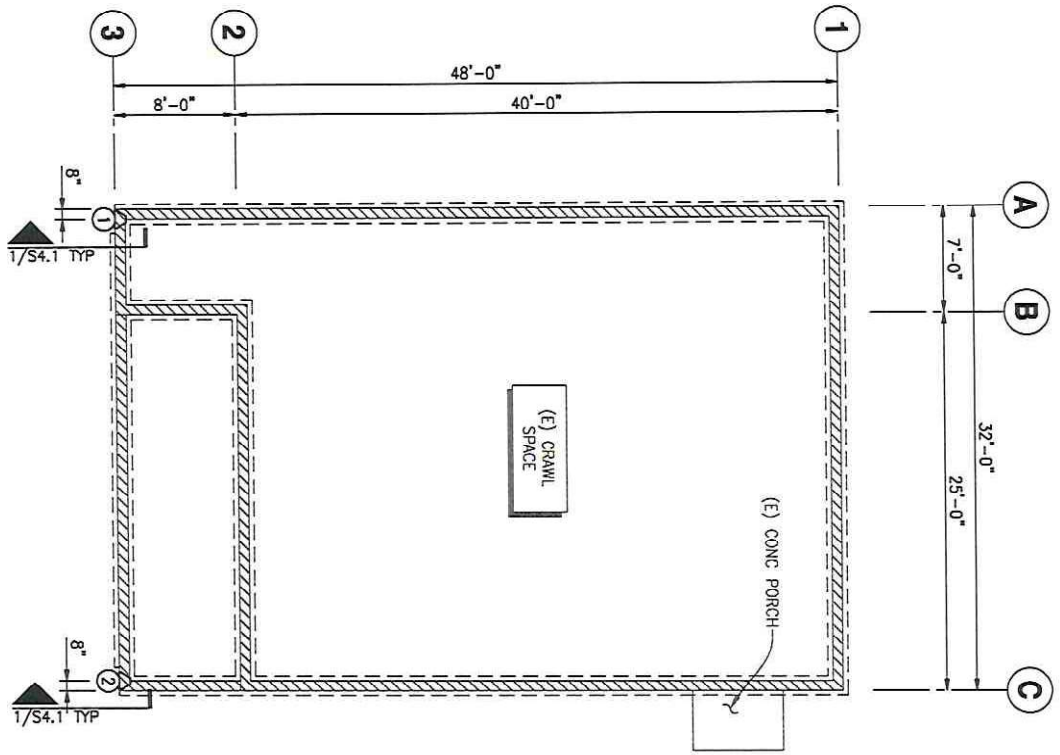
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GENERAL NOTES

REVISIONS

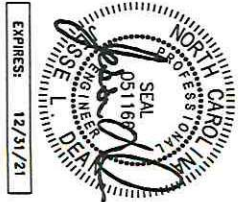
PROJECT NO.: SE21-028
 DESIGNED BY: DH
 DRAWN BY: DH
 CHECKED BY: []
 DATE: 02-11-2021

SHEET NO.: **S1.2**



(E) FOUNDATION/(N) PIER LAYOUT PLAN NOTES:

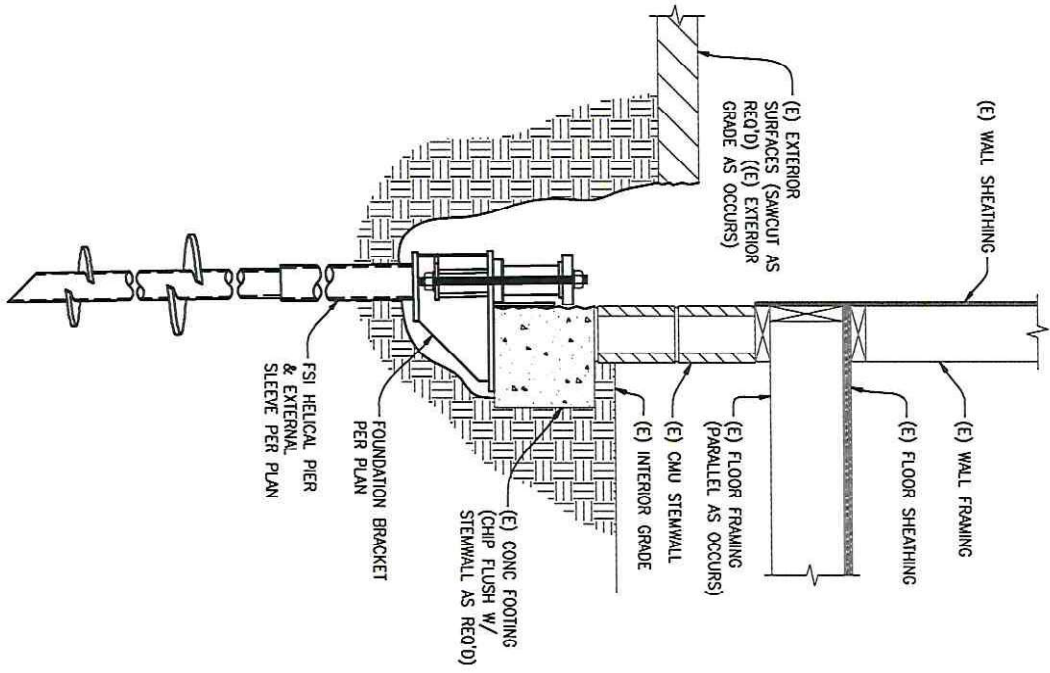
1. REFERENCE S1.1 FOR GENERAL REQUIREMENTS
 2. CONTRACTOR TO NOTIFY ENGINEER OF RECORD OF DISCREPANCIES BETWEEN FIELD CONDITIONS & THOSE SHOWN IN THESE DOCUMENTS PRIOR TO WORK TYP
 3. INDICATES (E) CMU STEINWALL ON (E) CONC FOOTING (CONTRACTOR TO VERIFY 8"Wx3'-0"H (E) CMU STEINWALL AND 2'-0"Wx12" DP (E) CONC FOOTING MIN TYP (NOTIFY ENGINEER OF RECORD IF FIELD CONDITIONS DIFFER IN THE AREA OF WORK))
 4. SECTION CUT - DETAIL NUMBER/SHEET NUMBER
X/SX.X
 5. INDICATES LOCATION OF FSI 288 HELICAL PIER W/ FSI FS288BL FOUNDATION BRACKET PER DETAILS ON S4.1 ((2) TOTAL)
- HELICAL PIER INSTALLATION NOTES:**
- MAX LOAD TO ANCHOR = 6,135 LBS
 - 2.875"Ø PIPE PILE W/ 0.276" THICK WALL
 - 3.5"Øx24" LONG PIPE SLEEVE W/ 0.216" WALL
 - 0.375" THICK 10/12" HELIX W/ 1/4" FILLET WELDS EACH SIDE OF HELIX TO PIER
 - MINIMUM 10'-0" INSTALLATION DEPTH & 1,500 FT-LB INSTALLATION TORQUE
6. PIER SPACING SHALL BE AS INDICATED ON PLAN
 7. CONTRACTOR TO NOTIFY ENGINEER OF RECORD IF (E) FOUNDATION CRACK IS PRESENT IN THE SPAN BETWEEN FOUNDATION BRACKETS
 8. ALL CONSTRUCTION MATERIALS ON PLANS, ELEVATIONS & DETAILS ARE (N) UNO



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PROJECT NO.: SE21-028	S2.1
DESIGNED BY: DH	
DRAWN BY: DH	
CHECKED BY: DATE: 02.11.2021	
REVISIONS	
(E) FOUNDATION/ (N) PER LAYOUT PLAN	
SHEET NO.: S2.1	

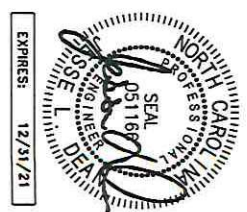


NOTE:
REF PLAN FOR LAYOUT & INSTALLATION REQ'S

(N) HELICAL PIER TO (E) FOUNDATION DETAIL

SCALE: 1"=1'-0"

1



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PIER DETAIL

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DATE:
02-11-2021

SHEET NO:
S4.1