RESIDENTIAL SPREAD FOOTING & PIER REQUIREMENTS

City of
SANTA ROSA
Planning & Economic
Development - Building Division

LAST UPDATED: 13 SEPTEMBER 2023

THIS DRAWING DEPICTS MINIMUM CODE REQUIREMENTS PER THE 2022 CALIFORNIA CODE CYCLE - INFORMATION IS FOR REFERENCE ONLY AND IS NOT A SUBSTITUTE FOR ACCURATE DRAWINGS PREPARED FOR EACH PROPOSED CONSTRUCTION PROJECT

WALL CONSTRUCTION: 2x STUDS @ 16"O.C. WITH $\frac{3}{8}$" MIN PLYWOOD NAILED WITH 8d OR 10d @ 6"O.C. MAX AT ALL EDGES, & 12"O.C. MAX FIELD - BLOCK ALL EDGES

THE MINIMUM ***NET** AREA OF VENTILATION OPENINGS SHALL BE NOT LESS THAN 1ft^2 FOR EACH 150ft^2 OF UNDER-FLOOR SPACE AREA - EXCEPTION: IF THE GROUND SURFACE IS COVERED BY A CLASS 1 VAPOR RETARDER MATERIAL, **NET** AREA OF VENTILATION SHALL BE NOT LESS THAN 1ft^2 FOR EACH 1,500ft^2 OF UNDER-FLOOR SPACE AREA - ONE SUCH OPENING SHALL BE WITHIN 3ft OF EACH CORNER OF THE BUILDING - OPENINGS SHALL BE COVERED WITH WIRE MESH (OR EQUIVALENT) WITH $\frac{1}{4}$" MAXIMUM OPENINGS (CRC R408.2)

SILL PLATE, ANCHOR BOLT, & WASHER - SEE NOTES 6 THROUGH 12 FOR MORE INFORMATION

#4 HORIZONTAL REBAR, CENTERED IN STEM, AT TOP OF STEM AND BOTTOM OF FOOTING - WHERE STEM EXCEEDS 24" FROM TOP OF FOOTING, PROVIDE VERTICAL & HORIZONTAL REINFORCING AT 18" O.C. (CRC R403.1.3.1)

FINISHED GRADE

UNDISTURBED GRADE

WHERE THERE IS EVIDENCE THAT THE GROUND WATER TABLE RISES TO WITHIN 6" OF THE GROUND LEVEL AT THE OUTSIDE BUILDING PERIMETER, OR THAT THE SURFACE WATER DOES NOT READILY DRAIN FROM THE BUILDING SITE, THE GROUND LEVEL OF THE UNDERFLOOR SPACE SHALL BE AS HIGH AS THE OUTSIDE FINISHED GROUND LEVEL, UNLESS AN APPROVED DRAINAGE SYSTEM IS PROVIDED (CRC R408.6)

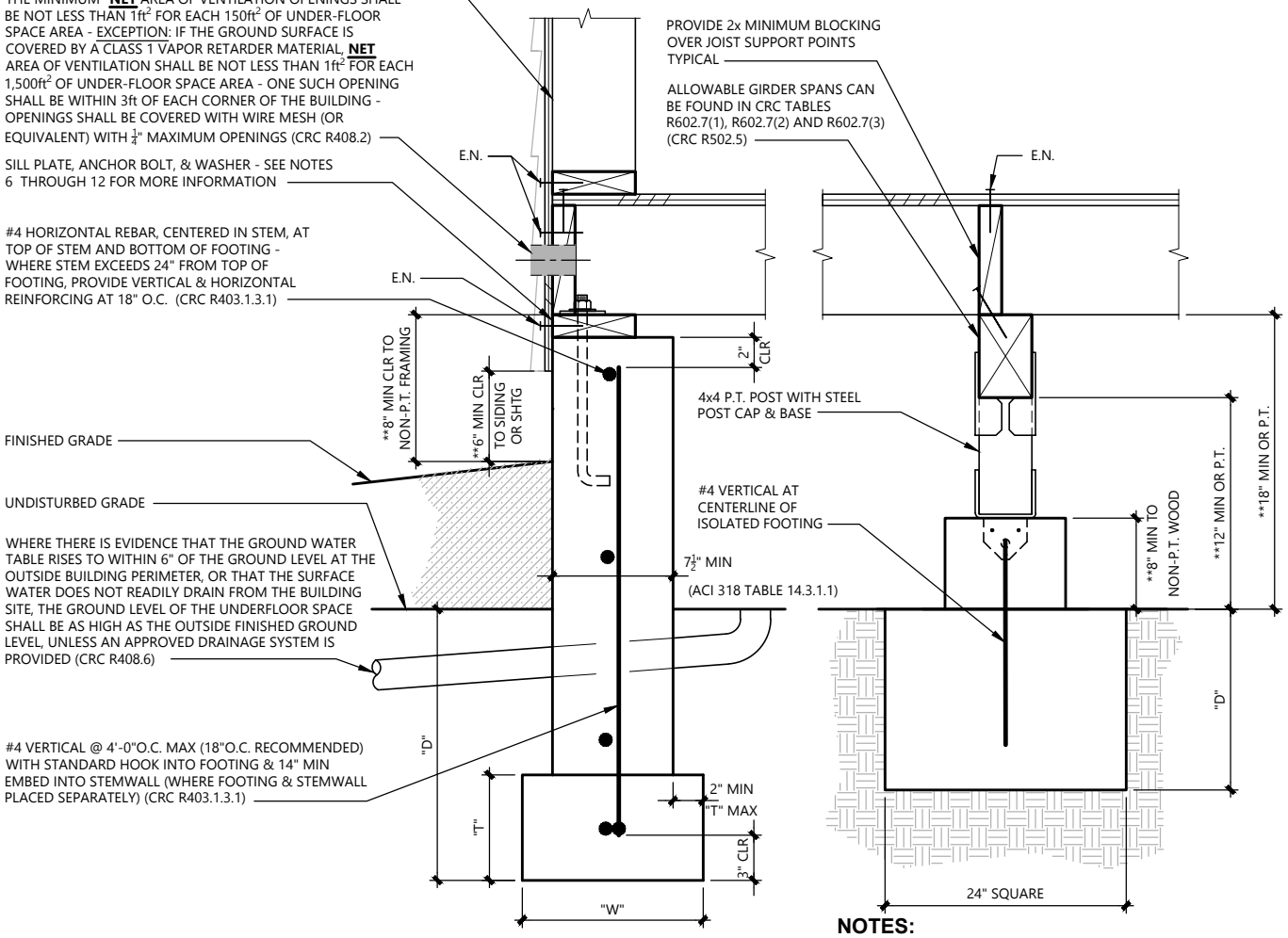
#4 VERTICAL @ 4'-0"O.C. MAX (18"O.C. RECOMMENDED) WITH STANDARD HOOK INTO FOOTING & 14" MIN EMBED INTO STEMWALL (WHERE FOOTING & STEMWALL PLACED SEPARATELY) (CRC R403.1.3.1)

*__NET AREA__ IS THE FREE AREA REMAINING BETWEEN WIRE MESH OR METAL PLATES OF VENTS - EXAMPLE: IF A 4"x16" NOMINAL VENT IS PROVIDED, THE NET AREA IS __LESS THAN__ 4" MULTIPLIED BY 16", AND IS OFTEN SPECIFIED BY THE VENT COVER MANUFACTURER

**REQUIREMENTS FOR PROTECTION OF WOOD AND WOOD-BASED PRODUCTS AGAINST DECAY CAN BE FOUND IN CRC SECTION R317

PROVIDE 2x MINIMUM BLOCKING OVER JOIST SUPPORT POINTS TYPICAL

ALLOWABLE GIRDER SPANS CAN BE FOUND IN CRC TABLES R602.7(1), R602.7(2) AND R602.7(3) (CRC R502.5)



MODIFIED CRC TABLE R403.1(1) CONCRETE FOOTINGS SUPPORTING WALLS OF LIGHT-FRAME CONSTRUCTION

NUMBER OF STORIES SUPPORTED BY FOUNDATION	WIDTH OF FOOTING "W" (CRC TABLE R403.1(1))	THICKNESS OF FOOTING "T" (CRC R404.1.3 & ACI 318 14.3.2.1)	DEPTH BELOW UNDISTURBED GROUND SURFACE "D" (CRC R403.1.4)
1	12"	8"	12" OR PER GEOTECHNICAL ENGINEER
2	15"	8"	12" OR PER GEOTECHNICAL ENGINEER
3	18"	8"	12" OR PER GEOTECHNICAL ENGINEER

MODIFIED CRC TABLE R403.1(2) CONCRETE FOOTINGS SUPPORTING WALLS OF LIGHT-FRAME CONSTRUCTION WITH BRICK VENEER

NUMBER OF STORIES SUPPORTED BY FOUNDATION	WIDTH OF FOOTING "W" (CRC TABLE R403.1(2))	THICKNESS OF FOOTING "T" (CRC R404.1.3 & ACI 318 14.3.2.1)	DEPTH BELOW UNDISTURBED GROUND SURFACE "D" (CRC R403.1.4)
1	15"	8"	12" OR PER GEOTECHNICAL ENGINEER
2	20"	8"	12" OR PER GEOTECHNICAL ENGINEER
3	25"	8"	12" OR PER GEOTECHNICAL ENGINEER

NOTES:

1. CONCRETE SHALL BE AIR ENTRAINED WITH A TOTAL AIR CONTENT (PERCENT BY VOLUME OF CONCRETE) NOT LESS THAN 5% & NOT MORE THAN 7% (CRC TABLE R402.2, FOOTNOTE d)
2. CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f'_c) OF 3,000psi (CRC TABLE R402.2)
3. REBAR SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000psi (CRC R404.1.3.3.7.1)
4. THE TOP SURFACE OF FOOTINGS SHALL BE LEVEL (CRC R403.1.5)
5. THE BOTTOM SURFACE OF FOOTINGS SHALL NOT HAVE A SLOPE EXCEEDING ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10% SLOPE) (CRC R403.1.5)
6. FOUNDATION SILL PLATES ARE TO BE 2x PRESSURE TREATED OR NATURALLY RESISTANT WOOD AND SHALL BE THE SAME WIDTH AS WALLS ABOVE, MINIMUM (CRC R403.1.6, R602.3.4)
8. FOUNDATION SILL PLATES ARE TO HAVE A MINIMUM OF (2) ANCHOR BOLTS WITH ONE BOLT LOCATED NEITHER MORE THAN 12" , NOR LESS THAN (7) BOLT DIAMETERS FROM EACH END OF THE PLATE (CRC R403.1.6)
9. ANCHOR BOLTS SHALL BE $\frac{1}{2}$"ϕ MINIMUM WITH 7" MINIMUM EMBEDMENT INTO CONCRETE & SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE (CRC R403.1.6)
10. ANCHOR BOLTS SHALL BE SPACED 6'-0"O.C. MAXIMUM FOR (1) & (2) STORY STRUCTURES, AND 4'-0"O.C. FOR STRUCTURES OVER (2) STORIES (CRC R403.1.6.1)
11. ANCHOR BOLTS SHALL HAVE STANDARD STEEL NUTS & 3"x3"x0.229"MIN STEEL WASHERS, TYPICAL (CRC R403.1.6.1(1) & CRC R602.11.1)
12. ANCHOR BOLT PLATES SHALL BE $\frac{1}{2}$" MAXIMUM FROM FACE OF SHEATHING TO FACE OF PLATE

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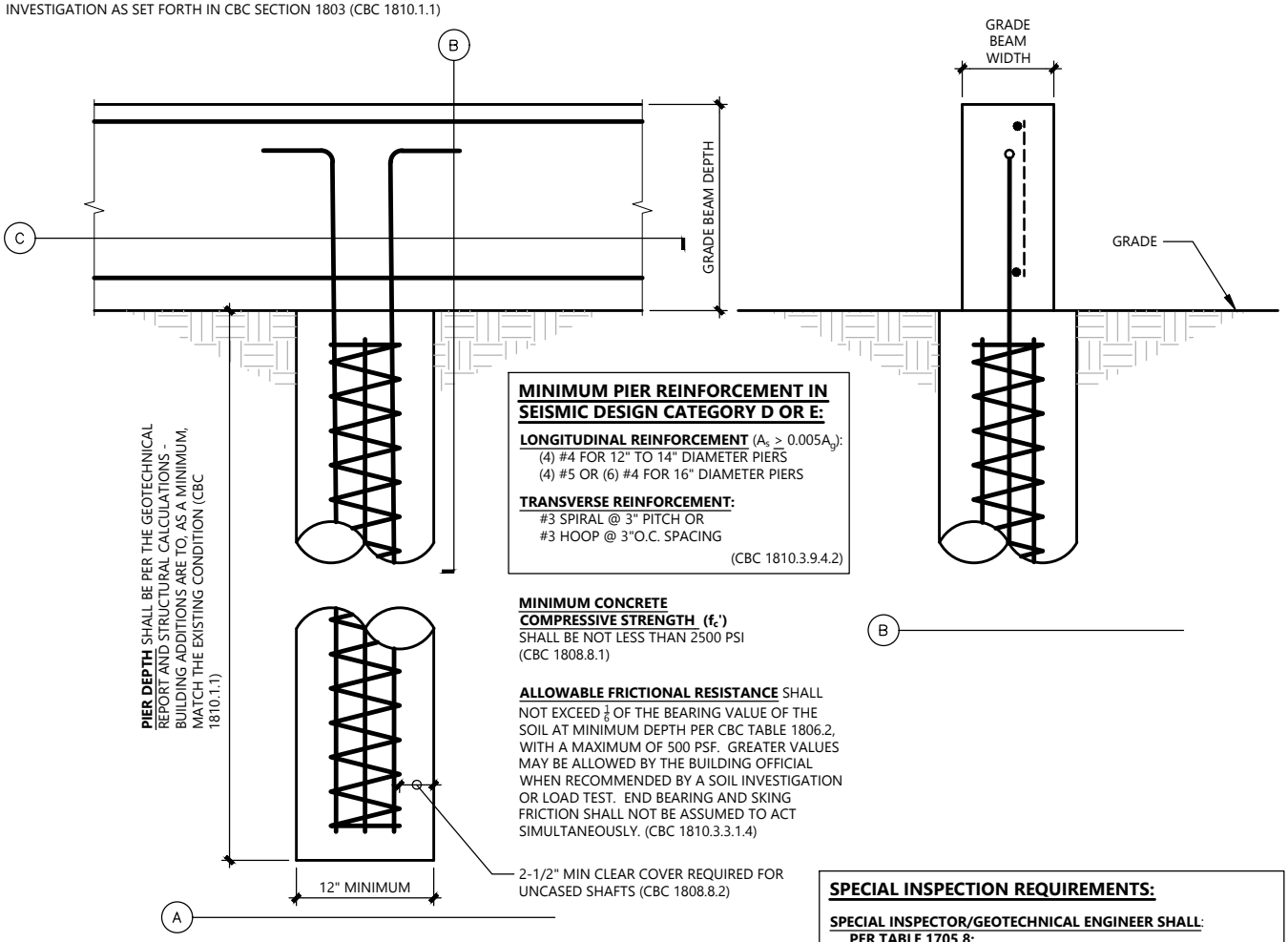
ENGINEERING REQUIRED:

DEEP FOUNDATIONS MUST BE DESIGNED BY A LICENSED DESIGN PROFESSIONAL & INSTALLED ON THE BASIS OF A GEOTECHNICAL INVESTIGATION AS SET FORTH IN CBC SECTION 1803 (CBC 1810.1.1)



MINIMUM PIER REINFORCEMENT IN SEISMIC DESIGN CATEGORY D OR E:

LONGITUDINAL REINFORCEMENT ($A_s \geq 0.005A_g$):
(4) #4 FOR 12" TO 14" DIAMETER PIERS
(4) #5 OR (6) #4 FOR 16" DIAMETER PIERS

TRANSVERSE REINFORCEMENT:
#3 SPIRAL @ 3" PITCH OR
#3 HOOP @ 3"O.C. SPACING

(CBC 1810.3.9.4.2)

MINIMUM CONCRETE COMPRESSIVE STRENGTH (f_c')
SHALL BE NOT LESS THAN 2500 PSI
(CBC 1808.8.1)

ALLOWABLE FRICTIONAL RESISTANCE SHALL NOT EXCEED $\frac{1}{6}$ OF THE BEARING VALUE OF THE SOIL AT MINIMUM DEPTH PER CBC TABLE 1806.2, WITH A MAXIMUM OF 500 PSF. GREATER VALUES MAY BE ALLOWED BY THE BUILDING OFFICIAL WHEN RECOMMENDED BY A SOIL INVESTIGATION OR LOAD TEST. END BEARING AND SKING FRICTION SHALL NOT BE ASSUMED TO ACT SIMULTANEOUSLY. (CBC 1810.3.3.1.4)

2-1/2" MIN CLEAR COVER REQUIRED FOR UNCASED SHAFTS (CBC 1808.8.2)

SPECIAL INSPECTION REQUIREMENTS:

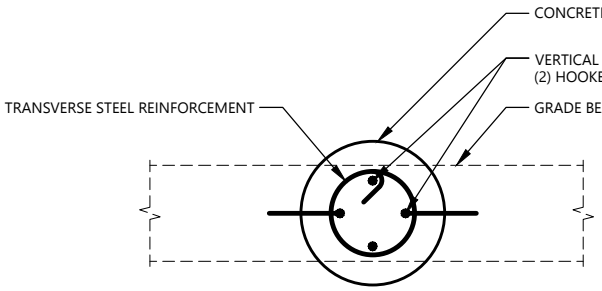
SPECIAL INSPECTOR/GEOTECHNICAL ENGINEER SHALL:

PER TABLE 1705.8:
- INSPECT PIER DRILLING OPERATIONS & MAINTAIN COMPLETE & ACCURATE RECORDS FOR EACH ELEMENT
- VERIFY PIER LOCATIONS, DIAMETER, DEPTH, PLUMBNESS, EMBEDMENT INTO BEDROCK (IF APPLICABLE), & ADEQUATE END-BEARING STRATA CAPACITY - RECORD CONCRETE OR GROUT VOLUMES

PER TABLE 1705.3:
- INSPECT REINFORCING STEEL
- INSPECT FORMWORK
- INSPECT REINFORCING BAR WELDING
- INSPECT ANCHORS CAST IN CONCRETE
- INSPECT ANCHORS POST-INSTALLED IN CONCRETE
- TAKE SAMPLES AND PERFORM TESTS ON CONCRETE (SLUMP, AIR CONTENT, TEMPERATURE, STRENGTH, CURING TEMPERATURE/TECHNIQUES, ETC.)
- INSPECT PLACEMENT BY TREMIE OR FUNNEL HOPPER

PROVIDE A REPORT INDICATING WORK IS IN CONFORMANCE WITH APPROVED PLANS

(CBC 1705.8)



C **PLAN VIEW**

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