Cunningham Engineering & Design, LLC
Certificate of Authorization No, 24GA28204400
213 Newton Swartswood Road Newton, New Jersey 07860
973-219-7546 RMCNJPE@YAHOO.COM

FOUNDATION AND SOILS INVESTIGATION

FOR

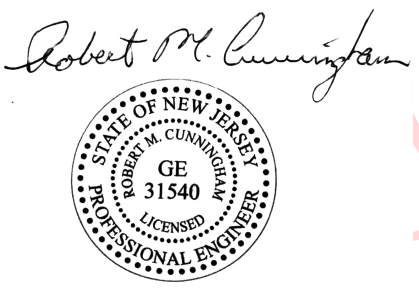
NAN, POP, & COMPALY LLC
16 STONEVIEW COURT
BASKING RIDGE, NEW JERSEY 07920

SITE LOCATION

106 CENTRAL AVENUE
BLOCK 75, LOT 1
BOROUGH OF BRADLEY BEACH
MONMOUTH COUNTY, NEW JERSEY

DECEMBER 31, 2025

PREPARED BY
ROBERT M. CUNNINGHAM, PE
NEW JERSEY LICENSE # GE31540



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NARRATIVE

The purpose of this report is to provide information collected from a subsurface investigation at the subject property, 106 Central Avenue, to be used by the designers of a single-family home to replace the existing home.

The scope of this investigation was two-fold. The first item in the scope was to provide information on groundwater elevations to determine the proposed basement floor elevation. The second item in the scope was to determine if the presumptive bearing capacities indicated in IRC Table R401.4.1 will be used for foundation design, or if higher bearing capacities can be proposed.

The field portion of the investigation was performed on December 26, 2025. Access to soils below the existing dwelling was obtained by core drilling a 6-inch diameter hole through the existing basement floor slab near the center of the basement. This hole is also approximately mid-way between the two existing sump pumps.

The elevation of the basement floor slab was measured to be 88 inches below the existing finished first floor. According to the Survey by Wm. DiMarzo & Son, Assoc., Inc., the first-floor elevation is 15.6 feet. Subtracting 88 inches (7.33 feet) from 15.6 feet = a basement floor elevation of 8.27 feet.

Observation was made of a stabilized water elevation in the two sump pump pits. The owner had raised the float switch elevations in both sump pumps approximately 10 days prior to an elevation which would call for the pumps to turn on when the water elevation in the pits would be approximately 4 inches below the basement floor slab. In both sump pump pits, the water level was measured to be 10 inches below the floor slab. After leaving the test hole open for approximately 4 hours, the water level in the test hole was observed to be 10 inches below the floor slab. Subtracting 10 inches (0.83 feet) from 8.27 feet = a water table elevation of 7.44 feet.

According to the requirements of the Borough of Bradley beach, the proposed basement floor elevation should be 7.44 feet + 2.0 feet = 9.44 feet.

Two samples of the soil below the existing basement floor were collected at depths of 10 inches and 18 inches. These samples were brought back to the office for textural analyses. The results of the textural analyses of both samples were quite similar with the soil being classified as Silty Sand with Some Gravel. The sand portion is further classified as having a percentage fine plus very fine sand of over 50 percent by weight.

In situ testing was done at approximate depths of 10 inches and 19 inches below the existing basement floor slab using a dynamic cone penetrometer. The dynamic cone penetrometer is a hand operated device that is used to drive a steel cone point and shaft into the soil in a similar manner to the larger standard penetration test apparatus which requires a boring rig. A 15 pound disc hammer is dropped 20 inches to advance the cone point into the soil. The number of hammer blows to advance the cone 1.75” is recorded for consecutive 1.75” increments at each test location. The average of the blow counts for the second through final increments is the “N” value for that particular test location. The lower of the blow counts (N) from the two depths will be used in determining the apparent bearing capacity for the soil.

DYNAMIC CONE PENETROMETER TEST 1-10

Test Hole 1 at 10”

Blow Counts for 3 test increments

7	7
8	
11	

Average of 2 lower increments = 9.5, converts to SPT “N” = 7 blows / foot
per ASTM STP #399 for coastal plain soils

Use AASHTO Bearing Equation: q ult. = density x (Dx1 + B x2)

Where x1 and x2 are factors from Fig iv

D= Depth of footing = 5.5’

B = width of footing = 2’

30th percentile dry density for silty sand = 95 pcf

From Fig. iv, x1 = 15 and x2 = 9

q ult. = 95 ((5.5 x 15) + (2 x 9)) = 9,547 PSF

q all = q ult. / Factor of Safety = 9,547 PSF / 3 = 3,182 PSF

To be conservative, this calculation is made for a strip footing, as the results of the calculations for spread footings often yield higher calculated bearing capacities.

DYNAMIC CONE PENETROMETER TEST 1-19

Test Hole 1 at 19”

Blow Counts for 3 test increments

9
11
12

Average of 2 lower increments = 11.5, converts to SPT “N” = 8 blows / foot
per ASTM STP #399 for coastal plain soils

Use AASHTO Bearing Equation: q ult. = density x (Dx1 + B x2)

Where x1 and x2 are factors from Fig iv

D= Depth of footing = 5.5’

B = width of footing = 2’

30th percentile dry density for sand = 95 pcf

From Fig. iv, x1 = 16 and x2 = 9.5

q ult. = 95 ((5.5 x 16) + (2 x 9.5)) = 10,165 PSF

q all = q ult. / Factor of Safety = 10,165 PSF / 3 = 3,388 PSF

To be conservative, this calculation is made for a strip footing, as the results of the calculations for spread footings often yield higher calculated bearing capacities.

RECOMMENDATIONS

The lowest calculated bearing capacity is 3,182 PSF from Test 1-10. This calculated bearing capacity is in agreement with the allowable assumed bearing capacity for silty sand of 3,000 PSF per IRC Table R401.4.1.

Since the percentage of fine plus very fine sand in relation to the total sand portion of the samples is greater than 50 percent, it is suggested that an addition reduction be taken to be conservative. The design bearing capacity of the soil at the intended bottom of footing elevation should not exceed 2,500 PSF.

According to the requirements of the Borough of Bradley beach, the proposed basement floor elevation should be the water table elevation + 2 feet, or 7.44 feet + 2.0 feet = 9.44 feet.

The proposed bottom of footing elevation within the existing basement footprint should be at the existing bottom of footing elevation of 7.44 feet

Typical strip footings for walls and typical spread footings for columns and piers can be utilized for the construction of this project. The minimum width of strip footings should be 24 inches.

Care shall be exercised to ensure that footings are placed on only virgin soil that is hand trimmed with flat shovels.

Care shall be taken to prevent the accumulation of stormwater runoff in the foundation excavation. After demolition of the existing foundation, the two sump pump pits and pumps should be re-installed to discharge through filtering devices. It is suggested that a temporary electric power pole be installed to eliminate the need to power the sump pumps by generators.