

completion of the excavations. All footing excavations should be carefully inspected by qualified personnel to verify footings will be placed to bear on firm undisturbed soil or compacted structural fill at the recommended depth, and the excavation is in a dry condition prior to pouring concrete. Eustis should be retained to observe the condition within footing excavations prior to concrete placement.

36. Allowable Soil Bearing Values. Analyses have been made to estimate the net allowable soil bearing values for continuous grade beam footing foundations and isolated square footing foundations. A shallow continuous footing foundation, placed to bear at least 2 feet below finished grade on firm undisturbed soil or compacted structural fill, and having a width of 1 to 3 feet, may be designed for a net allowable soil bearing value of 1,200 psf. A shallow isolated square footing foundation, placed to bear at the same depth and having a maximum width of 5 feet, may be designed for a net allowable soil bearing value of 1,400 psf. This value should be reduced to 1,200 psf for square footings between 6 and 15 feet in width. Larger footings should be evaluated further. These allowable soil bearing values contain an estimated factor of safety of 3 against a soil shear failure. A factor of safety of 2 may be used to evaluate transient loads such as wind.

37. Estimated Settlement of Footings. Assuming a long term dead load pressure intensity equal to 80% of the allowable soil bearing values, estimates of settlement were made for continuous grade beam footing foundations and isolated square footing foundations. The estimated settlement for continuous grade beam footings having widths of 1 to 3 feet, and for isolated square footings with widths of 3 to 5 feet, may range from ¼ to ½ inch. Estimated settlement for larger footings with widths of 15 feet or less may range from ½ to 1 inch. ***These settlement estimates should be considered additive to the settlement estimated for fill.***

38. Our estimates of settlement assume the center to center spacing between continuous strip footings is not less than three times the footing width, and the

center to center spacing between adjacent square footings is not less than twice the largest footing side dimension. We have also assumed the site has been prepared as recommended in this report, the foundation soils are not degraded or exposed to excess moisture prior to placing concrete for the footings, and no more than 12 inches of fill above the existing ground surface will be required to reach finished grade at the site. To decrease the potential of differential movements, concrete for footings should be placed integrally with grade beams and piers. If any of our assumptions are not met, Eustis should be notified to reevaluate potential settlement.

### Deep Foundations

39. Estimated Pile Load Capacities. Based on the soil borings, laboratory tests, and CPT data, engineering analyses have been made to determine estimates of the allowable compressive load capacities for treated ASTM D 25 quality timber piles for support of the proposed structures. Our estimated capacities neglect the skin friction along the top 2 feet of the pile for embedment within the pile cap and assume the piles are driven vertically. The results of these analyses are shown on Figure 2. If the tapered timber piles extend above grade to raise the structures, Eustis should evaluate our estimated capacities for the reduced pile dimensions for the embedded pile.
  
40. Factors of Safety. The allowable pile load capacities provided on Figure 2 contain an estimated factor of safety of 2 against failure of a single pile through the soil. To utilize the estimated capacities based on a factor of safety of 2, a pile load test should be performed.