

SUBSURFACE CONDITIONSGeneral

The types of foundation materials encountered have been visually classified and are described in detail on the boring logs. The results of the field penetration tests, strength tests, water level observations and other laboratory tests are presented on the boring logs. Representative samples of the soils were placed in sample jars and are now stored in the laboratory for further analysis if desired. Unless notified to the contrary, all samples will be disposed of after one (1) month.

The stratification of the soils, as shown on the boring logs, represents the estimated soil conditions only in the actual boring locations, and other variations may occur between and beyond the borings. Lines of demarcation represent the approximate boundary between the soil types, but the transition may be gradual.

It is to be noted that, whereas the test borings are drilled and sampled by experienced drillers, it is usually difficult to record changes in stratification within narrow limits. In the absence of foreign substances, it is also difficult to distinguish between discolored soils and clean soil fill.

Description of Foundation Materials

The subsurface data at the test boring locations indicates an upper stratum of fill extending to depths of about five (5) to seven (7) ± feet. The fill consists predominately of intermixed clay and gravel, with varying amounts of sand, wood, asphalt, rubber, and topsoil lenses.

The results of the field and laboratory tests indicate the fill to be variable in strength and support characteristics. Standard Penetration Resistances ranged from six (6) to thirteen (13) blows per foot and moisture contents from fifteen (15) to forty-two (42) percent.

The fill is underlain by strata of highly organic black clayey silt and gray to blueish-gray clayey silt to silty clay to depths of eleven (11) to fourteen (14) ± feet. The material is slightly fibrous with traces of shell fragments.

The field and laboratory tests indicate these soils to be very loose/very soft with Standard Penetration Resistances typically ranging from one (1) blow for eighteen (18) inches to two (2) blows per foot. Moisture contents within the stratum were very high, ranging from about eighty-eight (88) to three hundred thirty-three (330) percent. This stratum is considered to be highly compressible and not suitable for direct support of foundations or for foundation supporting fill.

The underlying soils generally consist of silty sand and gray silty clay to at least the terminal depths of the borings. However, at the locations of B-1 and B-2, there is a thin stratum of gray organic silt between the sand and clay strata.

The clay soils are stiff to hard in consistency with Standard Penetration Resistances of eleven (11) to fourteen (14) and penetrometer values of 1.75 to 4.25 TSF. Moisture contents within this stratum were typically seventeen (17) to nineteen (19) percent.

Groundwater Observations

Static water tables were measured after completion of the drill hole and the removal of the auger. In most locations, the limited time available to occupy the site did not permit water level readings to be obtained at later intervals.

The groundwater level measured at borings No. 1 and 2 was eleven (11) feet and fourteen and one half (14.5) feet respectively, below the ground surface at the time of drilling. Groundwater was not present at B-3 and B-4 after removal of the augers.

It should be noted that groundwater levels on this site may vary due to seasonal conditions, recent rainfall, drought or temperature effects.

FOUNDATION DISCUSSION AND RECOMMENDATIONS

Project Description

Based upon the information provided, it is understood that the site will be developed with a one (1) to two (2) story residential-type structure which is likely to have a basement.

This information was provided by Mr. Baker.

RECOMMENDED FOUNDATION TYPECaissons/Drilled Piers

The existing fill and underlying organic soils, which extend to depths ranging from about twelve and one half (12.5) to seventeen (17) ± feet based upon the test borings, are considered to be highly compressible, and are not suitable nor recommended for direct support of foundations or foundation supporting fill.

Considering the depth of the existing fills and the proposed construction, it appears that caissons or drilled piers are likely to be the most feasible foundation system for support of the proposed residence. Caissons should be designed as end bearing and shaft or bell diameters can be dimensioned to exert net allowable soil pressures of up to 6,000 P.S.F. where they are extended into the stratum of gray silty clay, which is anticipated to be present at depths ranging from twelve and one half (12.5) to seventeen (17) feet below the existing ground surface, based upon the test borings.

Precautions should be taken to permit the caissons to be drilled, reamed and concreted under relatively dry conditions. It may be necessary to utilize bentonite and/or temporary steel casing to support the walls of the shaft. This will also help prevent the inflow of water during the belling and cleaning operations.