

borings B4 – B-7 yielding LL's of 48 and 49.

The following soil types were identified as fill soil:

(A-2-4): very loose, brown wet silty clayey sand.

(A-5), very soft, brown, moist to saturated clayey silt

(A-6), soft, brown wet, sandy clay

(A-7), soft to very soft, moist to wet tan brown silty clay

**Residual Soil**

The residual soil on the project is micaceous, with a well-developed soil stratigraphy grading from sand, near weathered rock, to highly plastic clay at the surface. The residual soil in the subsurface near I-40 and the Hanes Mall Bridge are medium dense to dense sand or very stiff silt. The residual clay soil at the presumed original land surface, just below the fill, often has PI values = 30 or above. Soil from 5' to 10' below original land surface but still classified as A-7 clay, exhibit values around PI =12. The following soil types were identified as residual soil:

(A-2-4): loose to very loose gray to tan micaceous silty sand

(A-2-6): medium dense tan, moist silty clayey sand

(A-2-7): medium dense to loose moist silty clayey sand

(A-4): tan soft to medium stiff wet clayey sandy silt

(A-5): tan, medium stiff to stiff moist clayey fine sandy silt

(A-6): tan to white medium stiff to soft sandy clay

(A-7): tan to white very stiff to very soft silty sandy clay

**Alluvial Soil**

Alluvial soil was found in the Little Creek floodplain in the original B-3, and EB-2 borings. In the current phase, borings -L- 25+20, 175' rt, -L-27+50, 100' rt. and -L-28+50,150' rt all found alluvium in the floodplain in or near the footprint of the proposed widening. Though up to 5' of alluvial A-7 was found, it overlies A-2-4 alluvial sand and is doubly drained. The alluvial section was less than 15' thick. Vane Shear Tests of the clay yielded values of 1500psf or better.

**Rock Properties**

Rock outcrop was encountered only in the subsurface of the Little Creek floodplain.

**Groundwater Properties**

The field investigation for this project occurred during the winter of 2002, 2003 between snow and rain precipitation events. Water was found within 5' of ground surface in the Little Creek Floodplain. Along the residual ridge between the Hanes Mall Blvd Bridge and the retaining wall area, the borings were dry. In the area of the retaining wall, groundwater levels were variable, but often at or above pavement elevation.

**Geotechnical Descriptive Analysis of the Project**

The project was divided into 3 segments, for discussion. **Segment 1** is the -L- line from the beginning of the project to -L-35+00, and covers the Hanes Mall Blvd. Bridge and the approaches. **Segment 2** is the section of L- between the bridge and the retaining wall area. **Segment 3** runs from -L- 48+00 to the end of the project.

**Segment 1. Station -L-10+00 to -L-35+00**

The segment begins on residual soil at -L- 10+00, elevation of 830 feet and drops at a constant grade to the bridge approach apron at -L-19 +94, elevation 811'. The centerline of the Kester Mill Road intersection is at -L- 13+55. There is commercial development on both sides of the road. The improvements up to and just beyond Kester Mill Road will consist of adding a lane on the right side, and widening Kester Mill road at the intersection. This work will be on fill. From about -L-15+00 to the approach apron, the topography to the right drops, requiring an eastward thickening wedge of fill to support the new lane. At the bridge approach apron, the fill will be

about 32' thick, and keyed into the existing 2:1 approach embankment sideslope. The design of the new bridge is unknown, but it will be about 300 feet long with the bridge deck about 25' above I-40. At this location, I-40 is built on 32 to 35 feet of fill. Beyond the bridge, (-L- 23+00, elevation 806'), the existing embankment is about 60 feet high over the floodplain. The embankment thins to the east, as the road drops, and the road reaches residual soil at -L- 35+00 elevation 775.

This preliminary bridge investigation found that the sediments of the Little Creek floodplain are less than 15' thick primarily sandy with a 5' thick doubly drained A-7 clay near the surface.

**2.-L- 35+00 to -L-48+00**

This segment of the Hanes Mall Boulevard Project is almost completely on residual soil and consists of installation of curb and gutter and conversion of the 2-lane road to a four-lane road. Very little soil will be moved within this segment.

**3. -L- 48+00 to 56+45**

This segment of the Project does not require a grade change. Fill soil sufficient for the purposes of curb and gutter construction will be added to the right. To improve traffic flow into strip mall parking on the left, a planned retaining wall will allow construction of a tapered lane on the left, and is the major structure of this segment that was investigated. The parking area is about 10 feet above the street level, and the retaining wall would fall about halfway up a grassed slope that currently exists. The wall would be about 5 feet high. Our investigation found that the parking lot is on fill and the wall would be holding back wet clayey soil with blow counts of N=0 to N=4. In some sections, the fill extends to below present road elevation. In some sections, the residual soil at 10 feet below road elevation is weak with blow counts of N=0.

**CLOSING STATEMENT**

If any significant changes are made in the design or location of the proposed roadway, the subsurface information and interpretations will have to be reviewed and modified as necessary.

Respectfully Submitted,



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