8.0 GEOTECHNICAL OVERVIEW

A geotechnical overview was prepared by the Geotechnical Branch of the Kentucky Transportation Cabinet, Division of Materials. Information was also provided by the University of Kentucky, Kentucky Geological Survey (KGS). According to the KYTC Geotechnical Branch "There are no major geotechnical concerns anticipated within the study area."

There are seven geologic map units present at the surface in the study area as shown in Figure 20 (Appendix B). However, the majority of the study area is underlain by Loess, Alluvium, and Continental deposits. These deposits are mainly made up of silt, sand, and gravel. The first two deposits are the most common and are unconsolidated Quaternary deposits; Loess sediment on upland surfaces and Alluvium along stream drainages, particularly Truman Creek. Neither of these presents severe limitations for road construction.

Cut and fill slopes will mainly encounter Loess silt throughout the study area. Cut slopes in this material are usually erosive and may require some type of slope protection to eliminate erosion. Cuts with high water tables may require 3:1 slopes and extra right-ofway may be needed. Ditchlines will require channel lining to prevent erosion. According to the KGS documentation, Loess sediment is susceptible to mass movement and landslides on slopes that are exposed to moisture and vertical cuts are more stable.

Areas underlain by Alluvium require more extensive geotechnical evaluation because they are often sources of groundwater, sites for archeological settings, and may be susceptible to liquefaction during regional earthquakes. Alluvial valleys along major streams in the study area are 2,000 to 3,000 ft wide, a considerable span where special attention to structures is needed. Embankments in Alluvium should be stable on 2:1 fill slopes. Rock and fabric may be needed in soft and wet areas to provide a working platform for construction.

Continental Deposits composed of gravel occur at the headwaters of small tributaries. These gravels may be a local source for road metal, subgrade, and base materials. They may, however, be locally cemented with iron oxide and difficult to excavate.

Occurring in isolated pockets within the study area are deposits of Artificial Fill and deposits from the Tertiary geologic age which includes formations of the Jackson and Claiborne. The Jackson and Claiborne Formations contain sand, silt and clay, with the Claiborne formation containing a few lignite seams.