8.0 GEOTECHNICAL OVERVIEW

A geotechnical overview was prepared by the Geotechnical Branch of the Kentucky Transporation 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 significant geotechnical concerns within the study area or any proposed corridor."

There are seven geologic map units present at the surface in the study area as shown in Figure 19 (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 along the tributaries to Cane Creek and the Bayou de Chien. Neither of these presents severe limitations for road construction.

The majority of the material in the project area that would be encountered in any cuts or fills is silt of the Peoria Loess and Roxana Silt. These silts are very susceptible to erosion in cut sections. Slope protection may be needed to prevent erosion of the cut slope face in cut sections. Cuts with high water tables may require 3:1 slopes and additional right-of-way. 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 over Alluvium deposits may require fabric and rock to be placed as a working platform. Embankments constructed from rock and geotextile fabric may be required up to the high water elevation and should be stable on 2:1 slopes. Embankments over known wetlands may require waiting periods for foundation consolidation. It is preferred to avoid wetlands if possible.

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.