PROJECT PROFILE

GEOTECHNICAL ENGINEERING FOR FLOATING CASINOS

D'Appolonia was retained to provide geotechnical engineering services related to the construction of two floating entertainment complexes located on the Mississippi River.

The floating Ameristar Casino located in Vicksburg, Mississippi, is confined within a system of sheetpile cofferdams that protects it from Mississippi River currents and the effects of river level fluctuations. Prior to construction, D'Appolonia was contracted by a geotechnical constructor involved in the project to design a two-tiered anchored soldier pile and lagging retaining wall system to allow for construction of an access roadway down steep bluffs adjacent to the casino.

Anchored soldier pile and lagging retaining wall system.

Ameristar Casino during construction of the enclosing cofferdam. The two-tiered retaining wall system can be seen in the background.

The retaining wall system supported excavated cuts in loess soil deposits – an unstable material – in excess of 30 feet. Subsequent to construction the D'Appolonia-designed retaining wall system has performed well in contrast to the downslope cofferdams and river bank retaining walls that have experienced distress resulting from localized slope movements.

D'Appolonia's scope of work for the Lady Luck Casino project included design of retaining wall systems to provide an enclosure for protecting the floating casino from the forces of the Mississippi River and to stabilize the riverbank at the site.

The enclosure wall system design for the Lady Luck Casino consisted of tangent caissons for resisting differential forces resulting from the difference between the river level and the water level within the floating casino enclosure. The river bank wall system design consisted of rows of large tangent caissons with prestressed rock anchors oriented upslope to the loess bluff above in order to provide additional stability and to resist lateral loads in excess of 100,000 pounds per lineal foot.

Construction was conducted from both land- and barge-mounted equipment.