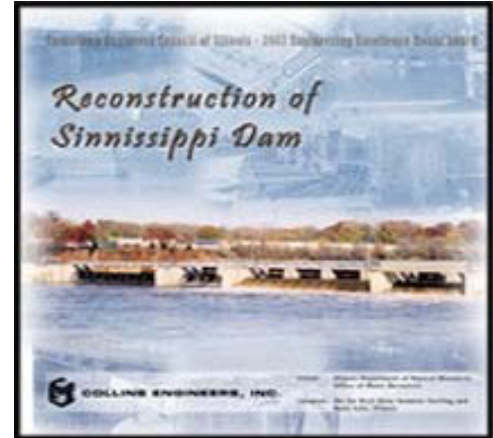


Reconstruction of Sinnissippi Dam
Sterling/Rock Falls, Illinois, U.S.
Illinois Department of Natural Resources
Consulting Engineers Council of Illinois—2003 Engineering Excellence Honor Award

Collins was retained by the Illinois Department of Natural Resources (IDNR) as their prime design consultant to perform hydrographic surveys, alternative studies, constructability analyses, life cycle cost analyses, ice/flow regime impact analyses, gate failure response scenario analyses, optimum design selection, and preparation of detailed design drawings, specifications, and construction cost estimates for a new structure. Ultimately, the replacement dam consisted of more than 500 feet of pneumatically operated hinged-leaf gates with an additional 500 feet of concrete ogee spillway.



Due to the age and extent of deterioration of the original Sinnissippi Dam, as determined by Collins during an extensive feasibility study, complete replacement of the steel tainter gate and rubble fill crib dam facility was recommended.

Innovative aspects of the design included heated, stainless steel pier face plate embedments to assist in gate de-icing and promote wintertime gate operation; a system of galvanized steel stoplogs and stainless steel embedded slots to create bulkheads for gate dewatering; a galvanized steel access bridge for crane movements and gate maintenance operations; and a fully automated gate operating system for 24-hour monitoring and proper discharge capacity at the Sinnissippi Dam for all headwater conditions.

In arriving at the ultimate design for the reconstruction of the Sinnissippi Dam, utmost importance was placed on providing a highly reliable, yet economic, structure that would extend the service life of the dam by at least 60 years. It was also imperative that the reconstruction design be able to stand up to the harsh winter conditions of the locale, while being able to reliably handle and pass the ice conditions that typically develop on the river. It was also deemed very important that the design for the new dam structure eliminate the need for spillway flashboards and their inherent maintenance and safety considerations. Finally, the new dam design and its operational characteristics needed to have little, if any, effect on the upstream water profile, the sediment transport regime, the wildlife habitat of the site, and the local environment. Collins provided a design that met all of these needs to the complete satisfaction of the IDNR. In addition, the highly detailed analyses and up-front research performed by Collins for this project proved their worth in the end with a project that was completed with very little need for field modifications and with minimal scope changes during construction. As a result of the lack of problems and need for change orders during construction, cost extras had very little impact on the final project cost. This was of great satisfaction to the IDNR with their tight budget and funding constraints. After nearly a year of service to date, the IDNR reports continued complete satisfaction with a rehabilitated Sinnissippi Dam that has met all their needs and exceeded their expectations.