



Throughout the U.S. Army Corps of Engineers, the Kansas City District is known for expertise in tainter gate evaluations and retrofit designs. With extensive knowledge and experience to evaluate and analyze various components, engineers identify structural deficiencies and provide repair recommendations. Additional strengths include designing trunnion pins and hubs as well as evaluating the load capacity of trunnion anchor blocks using finite element analysis. A trunnion is a cylindrical protrusion used as a mounting or pivoting point.



The district's structural engineers have extensive knowledge of tainter gate design requirements and have performed nine evaluations and retrofit designs in accordance with Engineering Manual 1110-2-2702 (Engineering and Design - Design of Spillway Tainter Gates) in the last 10 years. The district staffs four engineers with over 30 years of combined tainter gate design experience and can provide unique solutions to address complex challenges of repairing gates on a spillway without stoplogs or stoplog slots.



In 2009, engineers from the Kansas City District designed and developed construction documents for retrofitting 18 tainter gates as part of the Tuttle Creek Dam Safety Assurance Project in Manhattan, Kansas. The trunnion pin friction was considered in the retrofit design for strengthening the structural members. The repair was a complete tainter gate retrofit including strengthening of existing structural members and the replacement of trunnion pins and hubs. This \$175 million project was accomplished two years ahead of schedule and \$75 million under budget

PROJECT RECOGNITION AWARDS RECEIVED:

- Headquarters Project Delivery Team of the Year
- Excellence Award 2009
- NWD USACE Dam Safety Award 2009
- Public Employees Recognition Award- Excellence in Public Service
- Distinguished Team Award 2010

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Key Messages	Facts & Figures
<ul style="list-style-type: none"> ● Focused on quality (ISO 9001 Certified) and customer satisfaction ● Staff of 4 engineers with over 30 years of combined tainter gate design experience ● Highly trained structural engineers with experience in multiple facets of structural design ● Repeated business nationwide, not only because of our technical expertise, but also because of our responsiveness, dependability and attention to detail 	<ul style="list-style-type: none"> ● Structural evaluation of tainter gates for: <ul style="list-style-type: none"> - Alum Creek Dam in 2005 - Fishtrap and Paint Creek Dams in 2007 - for JW Flannagan Dam in 2009 - Delaware and Senecaville Dams in 2010 ● Structural retrofit design of 18 tainter gates for Tuttle Creek Dam in 2009 ● Structural evaluation for retrofit design of 18 tainter gates for Harlan County Dam, including new stoplog slot and stoplog designs, in 2012