FRESE NICHOLS

Dams and Hydraulic Structures

FRESE NICHOLS, INC. (FNI) HAS BEEN ONE OF THE NATION’S LEADING water resources firms since 1894. Our nationally recognized firm is the region’s most experienced engineering consultant for water supply projects, designing more than 150 major dams and reservoirs during our history.

Our experience with dams and reservoirs includes both new and rehabilitation projects. We are familiar with all aspects of dam maintenance and operations, as well as inspection, monitoring, evaluation and rehabilitation of dams.

In addition, our professionals provide full-service capabilities for your water resources projects. We provide solutions from beginning to end for all dam and hydraulic structure needs, including permitting and planning, hydrologic and hydraulic analysis, geotechnical and structural design, construction document preparation, and construction management.

Lake Brazos Labyrinth Weir Dam Rehabilitation
CITY OF WACO
FNI provided innovative solutions for this award-winning dam rehabilitation project. The team combined reuse of the existing dam site with an unconventional spillway configuration, yielding construction time and cost savings.

Lake Houston Dam Evaluation
COASTAL WATER AUTHORITY
FNI performed a comprehensive evaluation of Lake Houston Dam, including a Probable Maximum Flood update, breach analysis and Emergency Action Plan (EAP).

Richland Chambers Reservoir and Dam Design
TARRANT REGIONAL WATER DISTRICT
FNI provided all planning, permitting, design and construction phase services for this 45,000-acre reservoir with a six-mile long dam.

Toledo Bend Dam Gate Inspection and Analysis
TOLEDO BEND PROJECT JOINT OPERATION
FNI performed inspections of 11 tainter gates, hoists, and associated mechanical and electrical systems. Following the inspection, FNI developed a structural model reflecting field conditions to evaluate structural capacity of the gates.
More than 100 Emergency implementation at both local and state levels for successful construction required close coordination with the community at dams, including 21 high-hazard dams. This project FNI completed evaluation and modernization of 23 IMPROVEMENT DISTRICT (WCID)

UPPER BRUSHY CREEK WATER CONTROL Dam Modernization Program

2009 Engineering Achievement Award, Texas Council of Engineering Companies

2002 Engineering Excellence Award, Texas Council of Engineering Companies

Wesley Seale Dam

2001 National Rehabilitation Project of the Year, Association of State Dam Safety Officials

Best of 2001 Award of Excellence, Texas Construction

2002 National Finalist, American Council of Engineering Companies

Upper Brushy Creek Dam

Modernization Program

2007 Award of Merit, Association of State Dam Safety Officials

2008 Environmental Project of the Year, Texas Public Works Association

2008 Excellence in Constructed Project Award, United States Society of Dams

2008 Engineering Excellence Honor Award, American Council of Engineering Companies

Lake Brazos Dam

2007 Gold Medal for Engineering Excellence, Texas Council of Engineering Companies

2008 Environmental Project of the Year, Texas Public Works Association

2008 Excellence in Constructed Project Award, United States Society of Dams

2008 Engineering Excellence Honor Award, American Council of Engineering Companies

Hydrologic and Hydraulic Guidelines for Dams in Texas

2009 Eminent Conceptor Top Engineering Project, Texas Council of Engineering Companies

Lake Delton Dam Repair

2009 Engineering Achievement Award, American Society of Civil Engineers (Wisconsin Section)

2010 Engineering Excellence Honor Award, American Council of Engineering Companies

Award-Winning Projects

FNI’s recent history of award-winning dam projects includes:

Wesley Seale Dam

2001 National Rehabilitation Project of the Year, Association of State Dam Safety Officials

Best of 2001 Award of Excellence, Texas Construction

2002 National Finalist, American Council of Engineering Companies

2002 Engineering Excellence Award, Texas Council of Engineering Companies

Lake Brazos Dam

2007 Award of Merit, Association of State Dam Safety Officials

2008 Environmental Project of the Year, Texas Public Works Association

2008 Excellence in Constructed Project Award, United States Society of Dams

2008 Engineering Excellence Honor Award, American Council of Engineering Companies

Upper Brushy Creek Dam

Modernization Program

2007 Award of Merit, Association of State Dam Safety Officials

2008 Environmental Project of the Year, Texas Public Works Association

2008 Excellence in Constructed Project Award, United States Society of Dams

2008 Engineering Excellence Honor Award, American Council of Engineering Companies

Hydrologic and Hydraulic Guidelines for Dams in Texas

2009 Eminent Conceptor Top Engineering Project, Texas Council of Engineering Companies

Lake Delton Dam Repair

2009 Engineering Achievement Award, American Society of Civil Engineers (Wisconsin Section)

2010 Engineering Excellence Honor Award, American Council of Engineering Companies

FNI’s Dam and Hydraulic Structure Experience Includes:

- More than 600 dam evaluations in the past 10 years
- 12 Federal Energy Regulatory Commission Part 12 inspections
- More than 150 major dam and reservoir designs
- More than 110 Probable Maximum Flood studies
- More than 200 Breach Analyses
- More than 100 Emergency Action Plans

SERVICES

FNI has a rich history of planning, designing, rehabilitating, inspecting, monitoring and evaluating dams, spillways and hydraulic structures. We offer comprehensive engineering and consulting services for dams and reservoirs in the following areas:

PLANNING AND PERMITTING

- Water Supply Planning and Feasibility Assessment
- Federal and State Environmental Permitting
- State Dam Safety Coordination
- Funding

STUDIES AND ANALYSES

- Hydrologic and Hydraulic Modeling
- Geological and Geotechnical Investigations
- Seepage Modeling
- Settlement and Bearing Capacity Modeling
- Embankment and Foundation Stability Analysis
- Gravity Dam Stability Analysis
- Advanced Structural Numerical Modeling
- Physical Model Studies
- Hydropower Feasibility Studies
- Risk Management and Risk-Based Prioritization
- Emergency Action Plans and Security Assessments
- Potential Failure Mode Analysis

DESIGN AND REHABILITATION

- Embankment Dams
- Gravity Dams
- Slab and Buttress Dams
- Spillways
- Foundation Improvements
- Cut-off Walls
- Dam Rehabilitation and Dam Raises
- Dewatering Systems
- Post-Tensioned Anchors
- Gates and Hoists

INSTRUMENTATION AND MONITORING

- Dam Safety Instrumentation Design
- Instrumentation Monitoring Programs
- SCADA and Other Control Hardware and Software

CONSTRUCTION MANAGEMENT AND SUPPORT

- Constructability Review
- Engineering Support
- Contract Administration and Document Control
- On-site Inspection and Quality Assurance

FACILITY REVIEWS AND EVALUATION

- Dam Safety Inspections and Training
- Operation and Maintenance Plans
- Gate Inspections
- Gate Operating Plans
- Part 12D Safety Inspections
- Comprehensive Facility Review
- Security Plans

Freese and Nichols is a full service professional consulting firm and the first engineering/architecture firm to receive the Malcolm Baldrige National Quality Award. With offices in Texas and North Carolina, Freese and Nichols provides services in engineering, architecture, environmental science, planning, construction services, energy and program management.