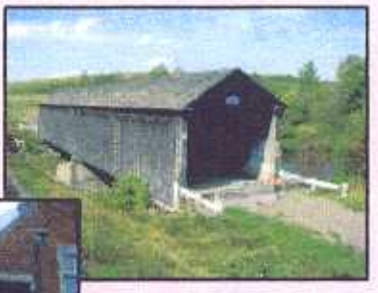
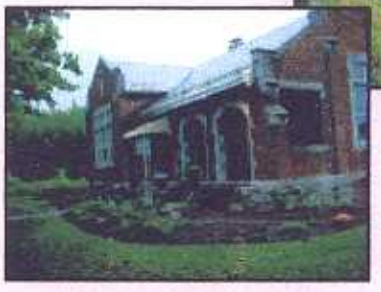
QUANTUM CONSTRUCTION CONSULTANTS, LLC

DESIGN SERVICES





- ✓ BRIDGES
- ✓ BUILDINGS
- ✓ RESTORATION
- ✓ REPLACEMENT

Quantum Construction Consultants, LLC (QCC) is a small, Women Business Enterprise specializing in Structural and Civil Engineering Services.

QCC is located in Concord, New Hampshire and provides consulting engineering services to state, municipal, and private clients in the New England area.

Lisa M. Martin, P.E., President and CEO of the firm, has more than 20 years of experience in civil and structural engineering and project management. Her experience includes rehabilitation and replacement of municipal and state bridges, civil support services including hydraulic analyses and drainage design, building design, design of retaining walls, dams and hydroelectric power facilities, and the restoration of historic structures including stone arch bridges.

Joining Ms. Martin, are **Susan S. Partch** and **Heidi J. Nadeau**. Ms. Partch has over 40 years of marketing and administrative management. As Vice President, she assists the firm in marketing and administrative responsibilities. Ms. Nadeau has over 14 years of experience in finance and accounting and is the firm's chief financial advisor.

QCC is committed to providing quality engineering services including bridge and roadway design, hydraulic analyses & drainage design, civil support services, construction support services, permitting and full building design services.

CONSTRUCTION SUPPORT SERVICES

- ✓ IBC SPECIAL INSPECTIONS

- ✓ CONSTRUCTION MONITORING
- ✓ STORM WATER POLLUTION PREVENTION PLANS
- ✓ COFFERDAM & SHORING DESIGN
- ✓ TEMPORARY BRIDGE DESIGN

27 LOCKE ROAD, CONCORD, NH 03301
PHONE: (603) 224-0859 FAX: (603) 224-3625
lmartin@quantum-cc.com

EXPERIENCE AND QUALIFICATIONS

Ms. Martin has over twenty years of in-depth and diverse civil and structural engineering experience. As a manager, she interacts effectively with clients, management, professional, and construction personnel. Her experience includes both office and field experience in design and construction. In addition, Ms. Martin is experienced in the preparation of technical reports, specifications, contracts, and construction documents, and has experience in the design, analysis, and construction of numerous types of structures.

Ms. Martin has performed inspections and evaluations of damaged and deteriorated bridges and buildings for the purposes of rehabilitation and replacement. She is experienced in the structural design and construction administration of various types of bridges and structures utilizing reinforced concrete, structural steel, masonry, precast concrete, light gauge metal framing, and timber. Her diverse variety of projects include commercial and industrial buildings, offices, schools, a correctional facility, municipal and state bridges, and restoration of several historic stone arch bridges. Ms. Martin is also a FERC Approved Dam Safety Inspector, and has designed many types of dams and outlet works.

DAM SAFETY AND HYDROELECTRIC PROJECTS

- **Great Brook Cutler Shop Dam, Antrim, NH** – Inspection and design of repairs to the stone masonry dam to address leakage, seepage, sinkholes, erosion of concrete piers and training wall, gate replacement and improvements to address overtopping of dam. Project includes coordination with adjacent bridge replacement project, water diversion plan and preparation of a dam operations and maintenance plan.

- **Transcript Dam, Peterborough, NH** – Study of dam safety improvements, including stability and seepage analyses, dam repairs, and alternatives to increase the hydraulic capacity of the spillway. Recommended repairs included capping and adding a concrete gravity structure to improve stability, installation of riprap and seepage filter stone at the base of the spillway, and repairs to the concrete training walls.

- **NHDOT Nashua 11057, Nashua, NH** – Evaluation of the dam site and building ruins located at the Salmon brook Dam, NHDES Dam No. 165.07. Provided technical expertise in the evaluation of the stone masonry dam and appurtenances, evaluation of the building foundation walls with respect to the stability of the dam and future use as a public park.

- **Pennichuck Water Works Inc., Nashua, NH** – Stability analyses, dam break analyses, inundation mapping, and emergency action plan for three water supply dams in series. Rehabilitation of 35-foot high stone masonry arch dam at Harris Pond Dam. Design and construction administration of replacement spillway structure and earth dam rehabilitation at Bowers Pond Dam. Conducted engineering study for upgrades to Supply Pond Dam.

- **NHDOT Swanzey 13745, Swanzey, NH** – Study of the effects of removing the Homestead Woolen Mills Dam on the Thompson Covered Bridge to determine scour susceptibility of the stone masonry piers and abutments of the bridge if the dam is removed. Study included HEC RAS hydraulic analyses to determine the effects of changes in water surface levels and velocities. Conceptual design of alternatives to mitigate scour were presented.

- **Sawmill Dam, Sanborn Farm Mills, Loudon, NH** – Restoration of a historic stone-faced earthen dam used for sawmill operations in the 1800's. The purpose of the project is to restore the dam and sawmill to its original working condition. Project includes construction of a new hidden concrete core wall, new intake structure, and turbine penstock. The original sawmill building will be restored and then lifted back onto the new intake and restored foundations.

- **Harris Pond Dam, Nashua, NH** – Restoration of the 35-foot high mortared stone masonry arch dam. Work included repointing of masonry arch, stabilization of stone wingwalls, construction of new downstream training walls, removal of deteriorated penstock through dam, and other dam repairs.

- **Boott Hydropower Project, Lowell, MA** – Design and construction administration of the surge suppression gate system installed to relieve surge wave pressures related to turbine shutdown on the historic "Great Wall" on the Lowell canal system. Also, designed emergency reconstruction in response to the failure of the historic stone masonry spillway structure.

- **Proctor Hydroelectric Facility, Proctor, VT** – Headloss evaluation and design of replacement intake gates, access walkways, concrete restoration of intake structure, and replacement of trashrack steel support structure.

- **Huntington Falls Hydroelectric Facility, Proctor, VT** – Design and construction administration for the installation of a rubber dam crest gate and construction of a wood framed control building.

- **Sugar River II Hydroelectric Project, Newport, NH** – Design of a new concrete gravity, open gated dam structure and intake structure founded on soil. Work included dam break analyses and inundation mapping for purposes of hazard classification and Emergency Action Plan in accordance with FERC guidelines.

- **Highgate Falls Hydroelectric Project, Swanton Village, VT** – Design of concrete gravity dam and spillway rehabilitation including multi-strand post-tensioned anchorage system, new intake structure, penstock, powerhouse for environmental flow turbine at dam, penstock relining, and installation of 15 foot diameter by 214 foot long rubber dam.

- **Winooski One Hydroelectric Project, Burlington, VT** – Design of a new 7.5 MW facility including new post-tensioned dam and spillway, two 8-foot diameter rubber dams, powerhouse, fish elevator, and recreational park.

- **Barton Hydroelectric Project, West Charleston, VT** – Hydraulic design and replacement of 350 feet of wood stave pipe with steel penstock with ring girders on piers, restoration of 400 feet of steel penstock, replacement of concrete saddles and intake works restoration.

RECENT HYDROLOGIC AND HYDRAULIC STUDIES

- **Sudbury-Brandon, VT, Route 73** – Hydraulic study of the flooding of VT Route 73 along Otter Creek as part of the VTrans scoping process to seek solutions to frequent road closure due to periodic flooding. The study included gage installation and data gathering to correlate seasonal flooding and HEC-RAS computer modeling. Several public meetings were performed to seek input from the communities and to present the findings of the study.

- **Pittsford-Brandon, VT, US Route 7** – Evaluation of culvert replacement alternatives along the roadway improvement project. Project included the study of replacement alternatives for culverts or bridges that would allow for fish passage. An in-depth study, including conceptual sketches of alternatives, comparison of hydraulic capacities, and structure life cycle cost analyses, was performed at one location due to environmental sensitivity and fish passage issues.

- **MDOT Donnell's Bridge, Route 1 over the Ogunquit River, Ogunquit, ME** – Hydrologic and hydraulic analyses for the MDOT bridge widening project. Hydraulic analyses include utilizing the HEC-RAS computer program to model the existing and proposed conditions.

- **NHDOT Swanzey 13745, Swanzey, NH** – Study of the effects of removing the Homestead Woolen Mills Dam on the Thompson Covered Bridge to determine scour susceptibility of the stone masonry piers and abutments of the bridge if the dam is removed. Study included HEC-RAS hydraulic analyses to determine the effects of changes in water surface levels and velocities. Conceptual design of alternatives to mitigate scour were presented.

Current Dam Engineering Project

PROJECT: **Great Brook Cutler Shop Dam**
Antrim, NH

CONTACT: William A. Prokop, Town Administrator
Town of Antrim, NH
66 Main Street
Antrim, NH 03440
(603) 588-6785

This project entails the rehabilitation of the Great Brook Cutler Shop Dam (NHDES Dam No. 009.12). The Great Brook Cutler Shop Dam, constructed in 1925, consists of stone masonry with concrete training walls and earth embankments at each abutment. The dam had deteriorated over time, had significant leakage, and was in need of repair.

QCC's design of repairs consists of an upstream concrete facing, apron and short cutoff wall to seal the existing stone dam from leakage, and reduce seepage potential under the structure. The design also includes filter stone and riprap, installed at the toe of the dam, to control seepage and prevent erosion. Other repairs entail concrete training wall repair, spillway cap and pier replacement, gate and outlet pipe replacement, sinkhole repair and overtopping protection. This project required a unique water diversion plan. QCC provided environmental and dam permitting services, and will prepare a Dam Operations & Maintenance Plan. This project requires close coordination with the bridge replacement project located immediately downstream of the dam.

Current Dam Engineering Project

PROJECT: **Knowles Pond Dam**
Northfield, NH

CONTACT: Joyce M. Fulweiler, Town Administrator
Town of Northfield
21 Summer Street
Northfield, NH 03276
(603) 286-7039

This project entails design improvements to the Knowles Pond Dam (NHDES Dam #180.02) for the Knowles Pond Conservation Area. This project involved the removal and replacement of an existing, badly deteriorated, corrugated metal outlet pipe with polyethylene pipe, and reconstruction of incidental stone headwalls. Additionally, QCC prepared a Dam Operations Plan for the Town of Northfield. QCC provided design and NHDES wetland permitting services as a donation to the conservation area. Future dam improvements will include reconstruction of slopes and the installation of a toe drain to address dam stability and seepage concerns. Other tasks include construction cost estimates and assistance in fund raising and grant applications. Lisa M. Martin, PE is a volunteer member of the Knowles Pond Conservation Stewardship/Management Committee.

Current Dam Engineering Project

PROJECT: **Salmon Brook Dam**
Nashua, NH

CONTACT: Joseph F. Kieronski, P.E.
Consultant Design Chief
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302-0483
(603) 271-2731

The Salmon Brook Dam Engineering Study was performed jointly by CLD Consulting Engineers, Inc. and Quantum Construction Consultants, LLC. The NHDOT engaged the CLD/QCC Team to evaluate the stability of the dam and appurtenant foundations. This site was formerly occupied by the International Paper Box Machine Company and is located on Main Street in the City of Nashua, NH. The property is currently owned by the NHDOT but will be transferred to the City of Nashua for the purposes of constructing a public park.

The study entailed the evaluation of whether remedial measures were necessary to stabilize the existing foundations walls and dam, or if the walls could be removed safely. The CLD/QCC Team conducted a visual assessment, performed stability analyses, and provided recommendations as guidelines for the future development so as not to jeopardize the stability of the dam.

The City of Nashua recently selected the CSS/CLD/QCC Team for the final design of dam repairs and park sitework related to the dam and appurtenances.

QUANTUM CONSTRUCTION CONSULTANTS, LLC
27 LOCKE ROAD, CONCORD, NH 03301-5417 TEL: 603-224-0859 FAX: 603-224-3625

LISA M. MARTIN, PE
President/CEO

EDUCATION AND TRAINING

BS, Civil Engineering	University of Massachusetts – Amherst January 1982
Mathematics	Worcester State College, 1976-1978

CONTINUING EDUCATION

- MDOT Local Project Administration Certification - 2004
- MDOT Load And Resistance Factor Design – 2003
- SENH/AIA: IBC Ch 17 Special Inspections - 2003
- SENH/NECMA: Masonry Design – 2002
- SENH/NHDOT: Bridge Ratings – 2001
- Risk and Practice Management for Design Professionals – 2000
- Fred Pryor Seminar: How to Manage Multiple Projects and Meet Deadlines – 2000
  UNHTTC: Bridge Maintenance Workshop – 1999
- CENH: Becoming a More Powerful Project Manager – 1998
- UNH: Organization and Project Management – 1997
- BSCES: Forensic Structural Engineering – 1997
- AF&PA: Wood Design and Construction Seminar – 1997
- SENH/SSFNE: Weld Inspection Seminar – 1997
- SENH/BOCA: Code Use Group Review Seminar – 1997
- IMI: Masonry Seminar: Design and Constructing Masonry for Seismic Considerations and the (MSJC) 1995 Masonry 530 Code – 1997
- BOCA: Special Inspections Seminar – 1995

LICENSURE

NH #6889 (Civil & Structural); VT #7852 (Structural I); MA #40574 (Structural); ME #9685

PREVIOUS EMPLOYMENT

12/1997–03/2003	Director of Structural Services, CLD Consulting Engineers, Inc.
01/1991–11/1997	Chief Structural Engineer, The H.L. Turner Group Inc.
07/1986–12/1990	Structural Engineer, Anderson-Nichols & Company, Inc.
06/1985–12/1985	Structural Engineer, United Engineers & Constructors, Inc.
01/1982–05/1985	Structural Designer, Stone & Webster Engineering Co.

Municipal Clients

Joyce M. Fulweiler, Town Administrator
Town of Northfield
21 Summer Street
Northfield, NH 03276
(603) 286-7039

William A. Prokop, Town Administrator
Town of Antrim
66 Main Street, PO Box 517
Antrim, NH 03440
(603) 588-6785

Kevin C. Kelley, Code Enforcement Officer
Town of Epping
157 Main Street,
Epping, NH 03042
603-679-1224, Ext. 113

Edward L. Chase, P.E.
Merrimack Director of Public Works
12 Bishop Street, PO Box 940
Merrimack, NH 03054
603-424-5137

Margaret I. Warren, Administrator
Town of Salisbury
9 Old Coach Road, PO Box 214
Salisbury, NH 03268
603-648-2473

Vicki Varick
Aaron Cutler Memorial Library
269 Charles Bancroft Highway
Litchfield, NH 03052
603-424-4044

Private Clients

Tim Sheldon
Brady Sullivan Properties
670 N. Commercial Street, Suite 303
Manchester, NH 03101
603-231-2600

JoAnn F. Fryer, P.E.
CLD Consulting Engineers, Inc.
316 US Route One, Suite D
York, ME 03909
207-363-0669

State References

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Consultant Design Chief
NHDOT Bureau of Bridge Design
PO Box 483
Concord, NH 03302-0483
603-271-2731

Michelle Juliano, P.E.
Assistant Administrator
NHDOT Bureau of Public Works
PO Box 483
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603-271-1645