

# WILLIAM NEEDHAM, PE

## Civil Project Manager



**Education:** Bachelor of Science, Civil Engineering  
Northeastern University, Boston, MA  
ASAE, Franklin Institute of Boston

**Registrations:** Professional Engineer: North Carolina License 031746  
South Carolina License 38801  
Virginia License 62773  
Certified Stormwater SCM Inspector: 038  
Certified Level III-A Erosion Control

**Affiliations:** American Society of Civil Engineers

### Professional Summary

Bill joined A&O in January 2019 with more than 30 years' experience with civil-site design, stormwater drainage design; water, sewer, and underground utilities layout and design; earthwork quantity calculations; and hydrogeologic studies. He owned a stormwater maintenance company for 11 years, specializing in stormwater remediation, erosion control, stormwater systems inspections and maintenance, drainage infrastructure design and installation, landscape maintenance and installation. As a business owner, he gained experience in business development, client relations, marketing, employee relations, financial management, equipment procurement and management.

### Experience:

**Lake Orange Erosion Control Barrier Replacement, Orange County, NC 2020** Project engineer for upgrades to a 40-foot-high earthen dam, concrete control weir, and spillway structure. The structure controls the flow for a 150-acre surface water reservoir owned by Orange County. Developed a system to combat wave action and steep slope erosion along the 1,000-foot berm and near the concrete control weir using articulating concrete block revetment mats and cast-in-place concrete walls. Produced construction plans, technical specifications, and engineer's opinion of probable construction costs. Submitted design plans to NCDEQ Dam Safety and NCDEMR Land Quality for approval.

**Dixon Drive Townes Flood Study, Raleigh, NC 2020** Project manager for flood hazard study to delineate the 100-year floodplain and elevation relative to a proposed 20-unit townhome development. Developed a hydrologic watershed model using HEC-RAS computer software, historical rainstorm data, and on-the-ground survey information. Presented study to the City of Raleigh on behalf of the developer during the approval process.

### Hydrologic and Hydraulic Analysis – Neuse River Basin, NC 2019

Project engineer for H&H analysis of 25 dams located within the Neuse River Basin for the NC Department of Environmental Quality (DEQ) Division of Energy, Mineral and Land Resources (DEMLR). Performed hydraulic analysis using utilizing a simplified HEC-HMS rainfall-runoff hydrologic analysis and reservoir routing models for 6 frequency-based storms per dam; Stream Stats reports; calculation of watershed hydrologic and hydraulic parameters; reservoir stage and storage relationships and calculation of dam spillway stage-discharge relationships for all spillways.

### Robert Schultz Pond Design, Chatham County, NC 2019

Project manager for the design and permitting of a  $\frac{3}{4}$  acre residential pond. Project involved layout and design of the pond, wetland permitting, and the site plan for a seven-bedroom home on an 11-acre parcel. Project included plans for erosion control, grading, stormwater and associated details. U. S. Army Corps of Engineers, and County review and permitting was part of the work.

### St. Michael the Archangel Church ADA Access, Cary, NC 2019

Project manager for the design and permitting of an ADA accessible ramp addition providing connectivity between an existing sidewalk and the basement level entrance of an existing church building. Project included plans for grading, drainage, erosion control, demolition and landscaping as well as an engineer's cost estimate for the work. Municipal review and permitting was part of the work.

**Wake County Convenience Center Improvements, Wake County, 2019**

Project manager for improvements to nine convenience center sites, including concrete slabs with steel plate runners, timber stairs, speed humps and other measures to improve the safety and flow of traffic, timber bumpers to protect retaining walls, and parking wheel stops. Provided demolition and erosion control plans; grading, drainage, and staking plans; and other details. Provided project specifications and an engineer's opinion of probable construction cost.

**NC Division of Dam Safety, Wake County, NC**

Over-topping study / hydraulic analysis of several dams within Wake County NC. Compiled models using ArcGis and HEC-HMS software to model catastrophe level storms to determine water levels within the lake and along the containment dam.

**Zachary Michael Office, Raleigh NC, - Zachary Michael Constr. Corp, 2017**

Design-build project working as a sub-consultant to Zachary Michael Construction Company to develop a new company office building. Design & permitting through the City of Raleigh. Work consisted of planning and layout, grading, erosion and sediment control, stormwater management (subsurface detention and sand filter system), potable water service design, public water line extension, public sanitary sewer main extension, sanitary sewer service, NCDOT permitting for driveway installation and utility connections.

**Primrose School, Durham NC, Primrose Franchising Corp., 2018**

Provided design services for a childcare & early education facility. Design & permitting through the Town of Cary. Work consisted of planning and layout, grading, erosion and sediment control, stormwater hydraulic analysis (subsurface detention and sand filter system), potable water service design, public water line extension, public sanitary sewer main extension, sanitary sewer service, NCDOT permitting for driveway installation and utility connections.

**Piedmont Civil Consultants, PA, Morrisville, NC, 2008 – 2017** Owner of a small company that provided stormwater inspections, erosion control inspections, maintenance and remediation, drainage infrastructure design and installation.

**Baldwin Peak Subdivision, Chatham Co. NC. Client: Turnberry Development Group, LLC, 2008**

Working directly with the land owner to design a 28-lot (10 acres each) subdivision. Design work consisted of grading, erosion and sediment control, stormwater hydraulic analysis of overall watershed, potable water service design, public water line extension, NCDOT permitting for driveway and utility connections.

**Village at the Park, Cary NC. Client: Woodfield Investments, 2008**

Sub-consultant to local architect to provide services for a 276-unit apartment complex. Design & permitting through the Town of Cary. Work consisted of planning and layout, grading, erosion and sediment control, stormwater hydraulic model for three phase treatment system (constructed wetlands, bioretention areas, level spreaders), potable water service design, public water line extension, public sanitary sewer main extension, reclaimed water main extension, sanitary sewer service, NCDOT permitting and design roadway widening and utility connection permits.

**WakeMed Women's Pavilion, Cary NC. Client WakeMed, 2008**

Sub-consultant to local architect to provide civil engineering and permitting services for the addition of a 425,000 ft. Women's Pavilion Wing to the existing WakeMed hospital. Design work for this contract included grading, erosion and sediment control, stormwater management (ties to existing system), potable water service design, public sanitary sewer extension, sanitary sewer service. Layout design of ADA accessible parking facilities and drop-off area.

**Walgreens Durant, Raleigh NC. Client: LRC Falls Durant Investors, 2008**

Worked with a team of consultants to obtain a special use permit for a 15,000 square-foot pharmacy from the City of Raleigh. Compiled an initial design plan. Presented details of the proposed drainage system to the City of Raleigh Board of Adjustments at a televised hearing. Prepared grading and soil erosion control plans, staking plan, on-site utility design, retaining wall design and off-site roadway improvements, hydrologic and hydraulic analysis for on-site retention pond and develop technical specifications.

**The Manor at Green Level Crossing, Cary NC. Client: Toll Brothers, 2007**

Sub-consultant to local architect to provide services for a high-end 27 lot residential subdivision. Design work consisted of grading, erosion and sediment control, hydrologic and hydraulic analysis (retention ponds), potable water service design, public water line extension, public sanitary sewer extension, sanitary sewer service, NCDOT permitting and design roadway widening and utility connection permits.

**Old Town, Raleigh NC. Greystone Development, 2007**

Hydraulic watershed analysis for 16 on-site stormwater retention ponds for a mixed-use development that included 2,400 townhomes, 360,000 square feet of retail space, and a golf course. All ponds were incorporated into the overall golf course design and integrated into vertical and horizontal layout of the proposed roadways and building lots while providing the required stormwater attenuation and nutrient removal.

**Walgreens Kildaire, Cary NC. Client: Levey and Company, 2007**

Prepared the site layout and design of parking facilities and site access drives for 15,000 square-foot retail building. Designed grading and soil erosion control plans, staking plan, on-site utility design, retaining wall design and off-site roadway improvements, stormwater hydraulic analysis for on-site retention pond design and technical specifications for Walgreens Pharmacy. Employed stormwater management necessary to accommodate the most impervious surface on the site. Provided on-call construction management services. Prepared, coordinated field survey, drafted and submitted to the city as-built certification drawings.

**Bethany Village, Morrisville NC. Client: Tribek Properties**

Provided design and permitting services. Prepared the site layout and design of parking facilities and site access drives. Designed grading and soil erosion control plans, staking plan, on-site utility design, retaining wall design and off-site roadway improvements (added a full length right turn lane to Davis Drive), hydrologic and hydraulic analysis for on-site retention pond design and technical specifications. Employed stormwater management necessary to accommodate the most impervious surface on the site. Worked with sub-consultants to design and permit a 40,000 gallon subsurface rain water harvesting tank to capture and reuse water. Provided on-call construction management services. Coordinated field survey, then drafted and permitted as-built certification drawings.

**Piedmont Civil Consultants, PA, Morrisville, NC, 2008-2017**

Established, owned, and managed a small company providing stormwater inspections, erosion control inspections, maintenance, and remediation, drainage design and installation. Wrote and certified reports with PE stamp, filed reports with state and local agencies.