



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

February 14, 2014

Memo To: Mr. Mickey Biedell, P.E.
Contractor Qualifications

From: David S. Chang, Ph.D., P.E.
State Hydraulics Engineer

A handwritten signature in black ink that reads "David S. Chang".

Subject: Revised Hydraulic Design and Stormwater Prequalification Approvals

I have revised and consolidated the existing Hydraulics and Stormwater Prequalification approval process from two Tiers and 11 Disciplines to four Tiers and 6 Disciplines, respectively.

The purpose of these changes is to recruit more qualified Private Engineering Firms (PEFs) that fit into one or more of the Tiers of experience required to complete the Department's current and future programs and projects that are managed by the Hydraulics Unit. The qualifications of these new four Tiers are as follows:

Tier I - Basic Hydrologic and Hydraulic Design

- a) Roadway drainage design, including ditches, small pipe culverts, storm sewer systems, outfall analysis, drainage investigations, etc.
- b) Bridge and/or culvert design over streams using the Federal Highway Administration (FHWA) design guidelines, such as Hydraulic Design Series 5, 7, etc.
- c) Drainage design using the North Carolina Department of Transportation "Stormwater Best Management Practices Toolbox".
- d) Samples of the approved design reports and/or hydraulic calculations/models for items a, b and c above.
- e) Proof of work experience may be waived by the State Hydraulics Engineer for Engineers who have worked at NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer with a minimum of 5 years in review and/or design of hydrologic and hydraulic projects in the Unit.

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- f) PEF must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina.

Tier II - Complete Hydrologic and Hydraulic Design

- a) All the requirements listed in Items a, b, c and d of Tier I .
- b) Design of bridges and culverts over FEMA regulated streams that require coordination and approvals from FEMA or their designees.
- c) Firm is required to prepare drainage plans using the Microstation CADD and Geopak Drainage Software.
- d) Samples of the approved design reports and hydraulic models that were used for the review and approval by FEMA or their designees.
- e) Proof of work experience may be waived by the State Hydraulics Engineer for engineers who have worked in the NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer with a minimum of 15 years in review and/or design of hydrologic and hydraulic projects in the Unit.
- f) PEF must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina, and one engineer or engineering technician with experience using Microstation CADD and Geopak Drainage software.

Tier III - Complex Hydraulic Design

- a) All the requirements listed in Items a, b, c and d of Tier II.
- b) Two-dimensional (2-D) hydraulic modeling design experience for bridges over streams that are under the influence of turbulent, unsteady flow, etc.
- c) Samples of the approved design reports and design models using 2-D hydraulic modeling.
- d) PEF must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina, and one engineer or engineering technician with experience using Microstation CADD and Geopak Drainage software.

Tier IV - Unique Hydraulic Engineering (UHE)

- 1. UHE - NFIP (National Flood Insurance Program)
 - a) Extensive knowledge of the NFIP and experience in hydraulic model design, FEMA flood map revision, and review of hydraulic modeling for bridges and/or culverts over FEMA regulated streams under contract with FEMA or their designees.

- b) PEF is required to have and use Microstation CADD Software.
 - c) Sample of the approved review/design reports and hydraulic models under the contracts with FEMA and/or their designees.
 - d) PEF must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina.
2. UHE – NPDES (National Pollutant Discharge Elimination System)
- a) Extensive knowledge of the U.S. Environmental Protection Agency’s NPDES program and experience in watershed pollutant load modeling (Total Maximum Daily Load, or TMDL).
 - b) Samples of the NPDES compliance reports and TMDL models that were approved by the State and/or Federal agencies.
 - c) Proof of work experience may be waived by the State Hydraulics Engineer for engineers who have worked in the NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer-Advanced with a minimum of 10 years in managing and reviewing NPDES compliance tasks in the Unit.
 - d) Firm must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina.
3. UHE – Coastal Hydraulic Modeling
- a) Extensive knowledge and experience of coastal hydrodynamics and simulation models using RMA2 (Resource Management Associates), ADCIRC (Advanced Circulation Model for Coastal Ocean Hydrodynamics) and SWAN (Simulation Waves Near Shore) software.
 - b) Samples of the approved design reports and hydraulic models in the coastal areas.
 - c) Firm must have a minimum of one hydraulic design engineer who is a Professional Engineer currently registered in North Carolina.

Please update the Department’s Prequalification database and replace the Unit’s 11 Qualification Disciplines (Code No’s 55, 129, 161, 172, 184, 221, 239, 277, 279, 433 and 434) with six (6). I suggest that we begin this new Tiers process on March 1, 2014 for all new applications. The members of Hydraulics Unit will follow the revised process in reviewing and approving PEF requests for Hydraulics work prequalification. By copy of this letter, I ask that Mr. Scott Blevins of Professional Services Management Unit help share this with the PEF community, after you complete the database update.

If you have any questions, please feel free to call me at (919) 707-6700.

DSC

Cc: Mr. Mike Holder, P.E.
Mr. Rodger Rochelle, P.E.
Mr. Jon Nance, P.E.
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