

# Advice on using Master's and Peace Corps Service in Application for PE

James R. Mihelcic, PhD, BCEEM

Master's International Program in Civil & Environmental Engineering

University of South Florida

<http://cee.eng.usf.edu/peacecorps/>

November 7, 2011

**Acknowledgements.** Much of the writing and professional experiences shared below was provided by the following three Master's International graduates and returned Peace Corps Volunteers (RPCVs): John Simpson (Honduras), Ryu Suzuki (Panama), and Brandon Braithwaite (Panama).

## Requirements

Requirements will depend by the state you sit for the PE. You will have to pass the FE examination first, meet engineering education requirements, and then you will have to submit a record of your experience to a State Licensing Board with a brief write-up of your engineering experiences.

**Fundamentals of Engineering (FE) Examination.** This exam is generally taken during the applicant's final year of school or immediately after graduation. No engineering experience is required; however, evidence of education described below is required (*note for those taking this examination while in graduate school, you usually have to sign up for this exam at least one semester prior to taking it*).

**Professional Engineering (PE) Examination.** The requirements for exam typically include successful completion of the FE exam (described above) and four (4) years of verifiable engineering experience. Note that in our Wisconsin example below, you can sit for the PE examination without taking/passing the FE examination, but you require more experience. Again, this will vary by state. You can learn more about the PE requirements in your engineering area of specialization at this web site: [http://www.ncees.org/Exams/PE\\_exam.php](http://www.ncees.org/Exams/PE_exam.php)

**Board Certified Environmental Engineer.** Environmental engineers can become board certified environmental engineers (BCEE) with the American Academy of Environmental Engineers after working several more years and taking a specialty examination. There are different categories, depending on whether you have passed the PE Examination: Board Certified Environmental Engineer (BCEE) for those with PE and Board Certified Environmental Engineering Member (BCEEM) for those without the PE.

<http://www.aee.net/Website/BCEE.htm>

**Requirements in Florida.** The PE applicant must demonstrate four years of verified engineering experience and a passing grade on the FE to be eligible to apply for the PE exam. Full time work while in school can be counted at a discounted rate of 25% or 50%, depending on the year of studies the applicant worked during. The applicant can earn up to a maximum 12

months of experience prior to graduation. Advanced degrees obtained as a full time student can count for 12 months equivalent experience. This is further explained in Rule 61G15-20.002(1)(b)2, F.A.C. Foreign experience can be counted and verified in the same manner as provided in the application for experience. <http://www.fbpe.org/licensure/application-process>

**Requirements in Wisconsin.** Wisconsin provides up to 1 year of work eligibility equivalence to a graduate school program. This will be different for different states. In Wisconsin, the fast-track to getting a PE is first passing the FE and then you can apply to take the PE after 4 years of "engineering" experience. The long track is 8 years experience with no FE. The engineering experience is a little tricky, you must submit a write-up saying how you did engineering. For example, if one works in the construction industry, very common among Civil graduates, it's harder to say you were doing engineering – i.e. "designing." In my case in the Peace Corps, I designed a number of infrastructure and wrote up how I was "an engineer for the Peace Corps." So I sold that and was eligible to sit for the exam. Other engineering grads that join the Peace Corps and don't do much engineering may have a harder sell, in Wisconsin at least. But at least in Wisconsin, it's all about how you write up a paragraph about your employment during those 4 years. I think the key is how you articulate your PC service in the PE application form. Attached is my professional qualification form. <http://drl.wisconsin.gov/profession.asp>

### **Three Examples of how past Master's International PCVs have written up their professional qualifications for time serving as an engineer**

(many times these descriptions are signed by the supervisor,  
this could be your APCD, some other boss, even graduate advisor)

**Definition of Engineering Design.** You will have to do a short write up of your engineering experience. ABET defines **engineering design** as "the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic science and mathematics and engineering sciences are applied to convert resources optimally to meet a stated objective. Among the fundamental elements of the design process are the establishment of objectives and criteria, synthesis, analysis, construction, testing and evaluation. The engineering design component of a curriculum must include most of the following features: development of student creativity, use of open-ended problems, development and use of modern design theory and methodology, formulation of design problem statements and specification, consideration of alternative solutions, feasibility considerations, production processes, concurrent engineering design, and detailed system description. Further it is essential to include a variety of realistic constraints, such as economic factors, safety, reliability, aesthetics, ethics and social impact."

definition obtained from: <http://www.me.unlv.edu/Undergraduate/coursenotes/meg497/ABETdefinition.htm>

#### **Example 1 – Professional Qualifications.**

8/00 - 5/01 – Graduate Student – University X .

Worked toward completion of 30-credit Master's Degree in Civil (or Environmental)

Engineering. Taught senior level soils mechanics laboratory. Performed research in areas of nitrogen removal during wastewater treatment.

7/01 - 10/03 – Water and Sanitation Engineer – U.S. Peace Corps

My responsibilities included all aspects of the development of gravity-fed and pumped rural potable water systems in Honduras. Specifically, I worked in the planning, design, construction, and maintenance of potable water systems. I analyzed water sources to determine if project was feasible. I selected the most cost-efficient tubing that was locally available to supply a sufficient quantity of water and selected appropriate pumps. I supervised construction of tanks, intake structures, and installation of tubing. I created status reports when requested by the sponsoring agency. I reviewed designs for projects completed by others. I trained locals on the management of a water system.

**Example 2 – Professional Qualifications.**

*Graduate school.* I enrolled at UNIVERSITY in the Masters International Program with the U.S. Peace Corps and began my graduate studies in 9/05. I completed the on-campus portion of the program in 4/06. While on campus, I took 20+ credits in field engineering, wastewater treatment, construction management, soil engineering, and hydraulic structures. I was also a full-time Teaching Assistant and taught a lab section on soil mechanics.

*PC Service.* (supervisor was listed as Health Program Director at PC Headquarters) I volunteered in indigenous areas of Panama coordinating rural water and sanitation projects between the Ministry of Health and local communities. As a regional engineer, I designed and built several rural aqueducts which provided potable water to hundreds of Panamanians. Design steps included finding a water source, surveying possible aqueduct routes, designing a system, budgeting a list of materials, grant writing and solicitation, construction management, and operation and maintenance training. I also built over ten composting latrines, trained two incoming classes of new volunteers in hydraulic design calculations, and researched for my graduate thesis, all under supervision from Dr. X and Dr. Y, P.E. at University Z. My thesis, titled "Training Water Committees in Bocas del Toro, Panama: A Case Study," was successfully defended in June, 2009.

**Example 3 – Professional Qualifications** (example of how professional qualifications are verified by signature of the applicant’s supervisor, could be APCD, another individual, engineering graduate advisor)

**Section C** (to be completed by applicant)

Job Description – Provide a description (using concise statements) of the scope and nature of work or projects performed. Indicate whether you had full or partial responsibility for the work and the complexity of the work. If additional space is needed for this employer, please copy this form.

Title	From MM/YY	To MM/YY	Part-time? Less than 35 hrs/week	NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>
Water and Sanitation Engineer	Aug-06	Mar-10	Average part-time hours per week		
Total <i>Sub-professional</i> (non-qualifying) Experience	Number of Years		Number of Months		
Total <i>Professional</i> Experience	Number of Years		3	Number of Months 7	
<p>As a Water and Sanitation Engineer with the US Peace Corps, I implemented water supply projects for various indigenous rural communities in Panama. I designed and constructed a water supply system for a school of 150 students, designed another system for a rural community of 250 residents, and trained 60 water service providers from 15 different communities. Specific tasks included water source identification, topographical surveys, hydraulic grid line calculations, storage tank sizing, budgeting a list of materials, grant solicitation, construction management, watershed reforestation, and operation and maintenance training. I had a full responsibility for the work completed.</p> <p>Based on literature review and three years of field I experience, I developed a method to monitor and evaluate the physical infrastructure of rural water supply systems as well as the managerial, technical, and financial capabilities of community based water service providers. I used a benchmark scoring system to assess 28 water supply systems completed by Peace Corps Panama and found that many systems in this region would benefit from structural improvement, maintenance, and additional training. This study helped Peace Corps Panama provide follow-up support to at-risk communities. I had a full responsibility for the work completed.</p> <p>I also assisted in designing a micro hydroelectric system capable of producing 2.1 kW of power for a rural community in Panama. Design steps included a topographical survey, flow rate and energy calculation, and turbine and electronic equipment selection. I had a partial responsibility for the work completed.</p>					
Applicant's Signature			Date		

**Section D** (to be completed by supervisor)

Have you supervised the applicant for the entire period listed under Section C?

Yes

No  If no, how long have you supervised the applicant? 07/07 To 03/10  
DD/YY DD/YY

To the best of your knowledge, did the applicant correctly describe his/her experience in **Section C**?

Yes

No  If no, provide a description of the type of work or projects performed by the applicant and the complexity of his/her work.

Supervisor's Signature  Date 10/22/10

] Refer to 18 VAC 10-20-240 Experience in the Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects Regulations for additional information on sub-professional and professional experience.