

I am writing to seek the Board's support in adding a "Plumbing" option to the National Council of Examiners for Engineers and Surveyors' (NCEES) Principals & Practices (PP) "Mechanical Engineering" discipline exam. Based on discussions with NCEES' Tim Miller, a minimum of ten Boards must concur to the need for such an option. As a Registered Professional Engineer, I will be seeking this support from multiple Boards.

The practice of engineering encompasses many disciplines which contain many specific sub-disciplines within their general discipline. One such sub-discipline, not currently represented within the subset of Mechanical Engineering, is Plumbing.

At one time, plumbing was felt to be simplistic enough that any ABET-accredited engineer could adequately meet the demands of the discipline; providing fixtures, drains and vents. However, plumbing engineering has been and continues to become more complex than it was in the past. Plumbing has a greater impact on public health, safety and welfare than environmental heating/air conditioning. Some of the systems with which the plumbing engineer must design and manage are: domestic/potable water (specialized systems such as distilled, softened, deionized, reverse osmosis, grey water and black water, among others), sanitary waste and vent (specialized clinical, medical, laboratory and kitchen waste systems along with removal of Fats, Oils and Greases (FOG) from the kitchen waste), storm water removal and reuse (both conventionally and siphonically), fuel systems (natural gas, liquidified petroleum (LP or propane) fuel oils, gasoline and others), industrial gases (oxygen, nitrogen, acetylene, argon, carbon dioxide and others), medical gas systems (oxygen, breathing air, instrument air, vacuum, waste anesthesia gas removal and others), laboratory gas systems (which can feature medical gases, industrial gases, fuels, etc.) and with the growth of "Green" systems rain and waste reclamation systems are being brought into the market. And when one considers the design and regulatory requirements, Plumbing Engineering has achieved a complexity all of its own.

Engineers, specializing in plumbing, must routinely concern themselves with these various and complex Plumbing Systems. Today's practice of engineering has become more difficult, if not impossible, for the typical Registered Engineer specializing in the Heating, Ventilating and Air Conditioning (HVAC) discipline. It is not practical or possible to maintain the necessary level of competency in the two distinct disciplines of plumbing and HVAC. The reality is that the vast majority of these Registered Engineers routinely affix their seal and signatures to plumbing documents, prepared by designers and drafters, who lack the necessary engineering background. Clearly, this should be considered a violation of the rules established by the Board and not in the best interest of the welfare and safety of the public-at-large.

Yes, there are many similarities between engineers who practice within the HVAC and plumbing disciplines; heat transfer, thermal dynamics, fluid flow, gases such as air, etc. However, there are many differences as well. HVAC engineers deal with full pipe flow, psychometrics, relatively low pressure air movement, building automation systems, etc. Plumbing engineers, on the other hand, deal with partially filled pipe flow, open channel flow, bio-films and pathogenic growths within potable water systems, higher pressures within gas systems that involve considerations for compressibility, etc. For these and the reasons above, a plumbing option should be placed within the framework of the mechanical PP examination process. It has become a necessity for the engineering community and the regulatory boards that oversee that community to assure that the public's health, safety and welfare is

protected. This will ensure that the Registered Engineers sealing and signing plumbing documents have a level of verifiable knowledge and competency within the discipline.

In closing, I urge the Board to support the inclusion of a plumbing option within the Mechanical Engineering examination and to advise NCEES of this support.

Thank you for your time, consideration and support.

Sincerely,