

# Pervious in Practice

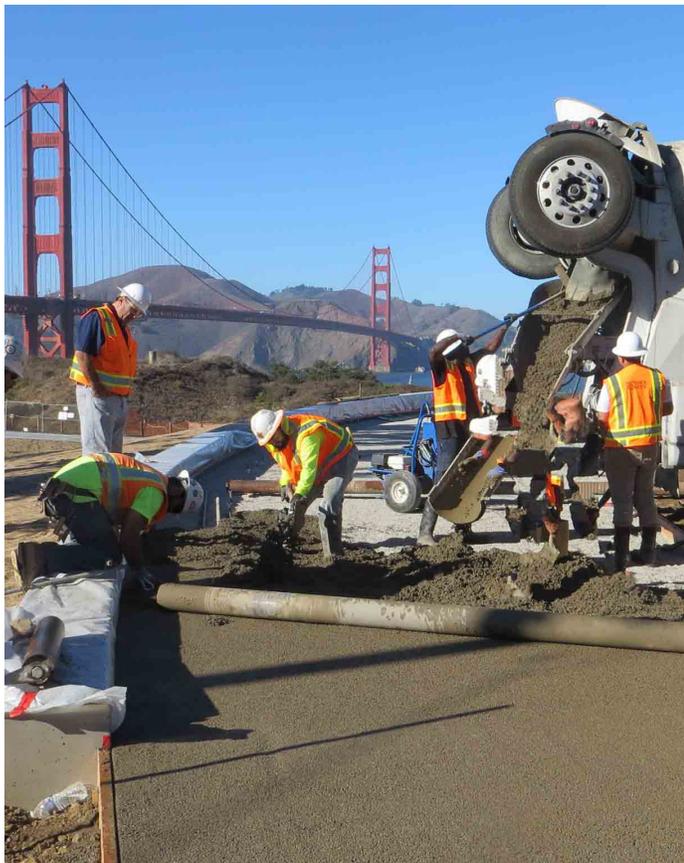
## Methods, materials, mixtures



### PIP 2— Importance of Using Certified Pervious Concrete Contractors

Proper design and installation of pervious concrete systems is essential to ensure that the material meets the permeability requirements for the project while achieving optimum structural capacity and durability for pavement performance. It is critical that the designer of the pervious concrete pavement system understands the hydrologic and structural requirements and develops appropriate specifications to achieve them. The designer is referred to the consensus reference specification *ACI 522.1 Specification for Pervious Concrete Pavement*, developed by Committee 522 of the American Concrete Institute.

Just as importantly, the pervious concrete contractor must clearly understand that installation procedures for pervious concrete pavements are unique and that procedures used to construct conventional concrete pavement will not work with this material and can detract from its intended function. Additionally, he/she should understand the basic hydrologic function of a pervious concrete pavement system and be able to recognize errors in the design, specification and construction of the system, and potential problems with the pervious concrete mixture as proposed and when delivered.



Failure to recognize and follow established rules for successful pervious installations leads to poor results and expensive repairs. The costs associated with removing and replacing a failed pervious concrete pavement go far beyond the materials and labor. Construction delays can have a considerable effect on the overall cost of a project. And it is difficult to put a dollar amount on the shaken confidence of the design community when a material fails to perform as intended. For this reason, ACI 522.1 lists certain minimum qualifications for pervious concrete contractors.

To ensure that a cadre of knowledgeable contractors is available to meet these needs, the National Ready Mixed Concrete Association (NRMCA) has developed the Pervious Concrete Contractor Certification program. The certification program is designed to be administered locally by sponsoring groups in conjunction with planned training sessions and/or demonstrations of pervious concrete placement. NRMCA provides certification exams and performance evaluations to approved local sponsoring groups for administering the certification. By requiring that certification be renewed every five years, the program ensures that individuals remain current with changing technology and practices.

In developing the certification program, NRMCA recognized that there is no substitution for experience. With that in mind, the program identifies three levels of certification:

- Pervious Concrete Technician
- Pervious Concrete Installer
- Pervious Concrete Craftsman

**A Pervious Concrete Technician** is a person who has demonstrated knowledge by successful completion of a written exam about pervious concrete. There is no field experience evaluated for this certification level. The Technician level is intended for contractor and non-contractor personnel to understand the proper techniques of installing pervious concrete, but does not purport to represent any level of hands-on experience.

**A Pervious Concrete Installer** is a person who has demonstrated the ability to place, compact, finish, edge, joint, cure and protect pervious concrete pavements and has documented a limited project-based field experience in placing pervious concrete. To qualify as an Installer, the individual must not only pass the written exam, and also complete a Performance Evaluation administered by the Local Sponsoring Group. He/she must also provide project experience documentation of successful construction of a minimum of three projects with a total area exceeding 10,000 square feet. It is anticipated that contractor personnel that have achieved the Installer level of certification will upgrade to Craftsman level when they achieve the work experience criteria for that level.

**A Pervious Concrete Craftsman** is a person who has demonstrated an advanced level of field experience with placing pervious concrete. The experience level for Craftsman is based on time. The Craftsman level is intended for contractor personnel who have achieved this highest level of certification by completing the work experience as indicated by the certification criteria. A candidate for Craftsman must pass the written exam and possess a current ACI Flatwork Finisher Technician or Craftsman certification at the time of application. Additionally, he/she must complete the Performance Evaluation as well as document pervious concrete work experience exceeding 1500 hours. In lieu of the Performance Evaluation, the candidate can submit documentation of pervious concrete work experience of 3,000 hours.

Certification is one means of ensuring, but not assuring, that the selected contractor has personnel qualified to install pervious concrete pavements. Other aspects that should be evaluated by the owner or specifier include availability of required equipment, portfolio of successful projects with owner review, and due diligence in performing good work. ACI 522.1 specifies that the concrete contractor shall provide evidence of employment of *one NRMCA certified Pervious Concrete Craftsman* who must be on site, overseeing each placement crew, or *three NRMCA certified Pervious Concrete Installers* who have documented experience relevant to this level of certification and who must be on site, working as members of each placement crew, during all pervious concrete placements. Contractors who do not meet these requirements should be required to enlist contract consultants that meet the specifications.

Besides having the experience to successfully place and finish pervious concrete, a certified pervious concrete contractor should understand the nuances of a pervious concrete mix design. The pervious concrete contractor is required to recognize the physical properties and characteristics of pervious concrete that are required to properly install the pavement and to make necessary adjustments at the jobsite. Uniformity of concrete batches from one load to the next is important to the installation of pervious concrete and there is little margin for error on targeting the correct quantity of mixing water with pervious concrete mixtures. The certification criteria have been developed so that a Pervious Concrete Installer or Craftsman can be presumed to have the knowledge and experience to make these decisions and is expected to assume a leadership role when installing pervious concrete and make decisions on placement conditions and procedures. The contractor must be willing to stop a placement and correct deficiencies as soon as they are recognized.

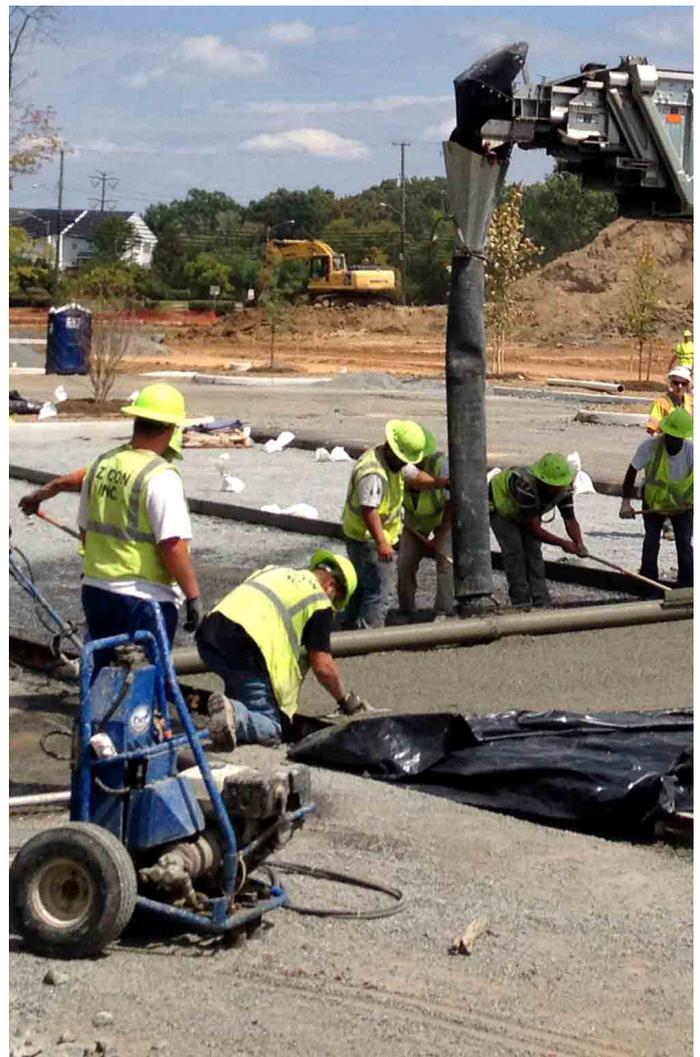
To ensure that only qualified contractors are used, owners/project managers should require the following:

1. Contractor must list qualifications on Bid Envelope: Requiring the pervious concrete contractor to list his/her qualifications, including certification number, on the bid envelope will eliminate unqualified contractors from bidding the project. Bid envelopes without the appropriate qualifications listed should not be accepted. Certification can be verified on the applicable section of the NRMCA website: [www.nrmca.org](http://www.nrmca.org)
2. A mandatory pre-bid conference: This meeting should address the differences in site preparation, mix designs, and contractor

personnel qualifications. General contractors must be carefully reminded that, per specification, non-qualified pervious concrete installers will not be allowed and that they should require a copy of the current certification from all bidders. The general contractor should be held financially responsible when project expectations are not achieved with the selected pervious concrete contractor and to ensure that a qualified pervious contractor is selected to construct this portion of a project.

Insisting that your concrete contractor is an NRMCA Certified Pervious Concrete Contractor should be your first—and could be your biggest—step in ensuring a quality pervious concrete placement that will meet or exceed all expectations. If alternative certifications are proposed, the owner or his/her representative should ensure that their equivalence is stated and that there are no conflicts of interest with the certifying body.

For more information on NRMCA's Pervious Concrete Contractor Certification program, including a list of approved Local Sponsoring Groups and a database of certified Technicians, Installers and Craftsmen, go to: [www.nrmca.org/Education/Certifications/Pervious\\_Contractor.htm](http://www.nrmca.org/Education/Certifications/Pervious_Contractor.htm)



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