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Pervious Concrete

Reported by ACI Committee 522

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^{*}The members of ACI Committee 522 dedicate this document to the memory of Don Brown.
[†]Chair of the editorial subcommittee.

This report provides technical information on pervious concrete's application, design methods, materials, properties, mixture proportioning, construction methods, testing, and inspection.

The term "pervious concrete" typically describes a semi-slump, open-graded material consisting of portland cement, coarse aggregate, little or no fine aggregate, admixtures, and water. The combination of these ingredients will produce a hardened material with connected pores, ranging in size from 0.08 to 0.82 in. (2 to 8 mm), that allow water to pass through easily. The void content can range from 18 to 35%, with typical compressive strengths of 400 to 4000 psi (2.8 to 28 MPa). The drainage rate of pervious concrete pavements will vary with aggregate size and density of the mixture, but will generally fall into the range of 2 to 18 gal./min/ft² (81 to 730 L/min/m²).

Keywords: construction; design; drainage; permeability; pervious concrete; pavement; stormwater; testing.

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ACI 522. 1-13 Specification for Pervious Concrete Pavement American Concrete Institute, 2013 **ACI Manual of Concrete Practice**, 2007 *Concrete Pavement Design, Construction, and Performance* Norbert J. Delatte, 2014-05-22 This second edition of Concrete Pavement Design Construction and Performance provides a solid foundation for pavement engineers seeking relevant and applicable design and construction instruction It relies on general principles instead of specific ones and incorporates illustrative case studies and prime design examples to highlight the material It presents a thorough understanding of materials selection mixture proportioning design and detailing drainage construction techniques and pavement performance It also offers insight into the theoretical framework underlying commonly used design procedures as well as the limits of the applicability of the procedures All chapters have been updated to reflect recent developments including some alternative and emerging design technologies that improve sustainability What's New in the Second Edition The second edition of this book contains a new chapter on sustainability and coverage of mechanistic empirical design and pervious concrete pavements RCC pavements are now given a new chapter The text also expands the industrial pavement design chapter Outlines alternatives for concrete pavement solutions Identifies desired performance and behavior parameters Establishes appropriate materials and desired concrete proportions Presents steps for translating the design into a durable facility The book highlights significant innovations such as one is two lift concrete pavements precast concrete pavement systems RCC pavement interlocking concrete pavers thin concrete pavement design and pervious concrete This text also addresses pavement management maintenance rehabilitation and overlays **Proceedings of the International Conference on Emerging Smart Cities (ICESC2022)** Bashar S. Mohammed, Teh Hee Min, Muslich Hartadi Sutanto, Tri Basuki Joewono, Sholihin As'ad, 2024-01-17 This book contains papers presented at the International Conference on Emerging Smart Cities ICESC2022 previously known as the International Conference on Civil Offshore and Environmental Engineering ICCOEE ICESC is held under the banner of World Engineering Science and Technology Congress ESTCON2022 from 1 to 2 December 2022 at Borneo Convention Centre Kuching Sarawak Malaysia This proceeding contains papers presented by academics and industrial practitioners showcasing the latest advancements and findings in civil engineering areas with an emphasis on emerging smart cities for the ultimate shape of urban living in the near future The papers are categorized under the following tracks 1 Climate Adaptive materials 2 Environmental sustainability 3 Infrastructure efficiency **ACI 522. 1m-13** American Concrete Institute, 2013 **Sustainable Buildings and Structures: Building a Sustainable Tomorrow** Konstantinos Papadakis, Chee Chin, Isaac Galobardes, Guobin Gong, Fangyu Guo, 2019-09-26 Sustainable Buildings and Structures Building a Sustainable Tomorrow collects the contributions presented at the 2nd International Conference on Sustainable Buildings and Structures Suzhou China 25-27 October 2019 The papers aim at sharing the state of the art on sustainable approaches to engineering design and construction and cover a wide range of topics Sustainable Construction

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slides and videos updated to include the latest advances in concrete technology **Concrete International** ,2008 **ACI 522.1-20 Specification for Construction of Pervious Concrete Pavement** ACI Committee 522,2020-11 **Proceedings of the First International Conference on Recent Advances in Concrete Technology** Amde M. Amde,Gajanan M. Sabnis,John S. Y. Tan,2007 Proceedings of the ... Annual Conference Canadian Transportation Research Forum. Conference,2009 **Performance of Pervious Portland Cement Concrete by Field and Laboratory Testing, Including Void Structure, Unit Weight, Compressive and Flexural Strength** William B. Denison,2012 Titan Virginia Ready Mix TVRM sponsored a study involving field and laboratory testing on numerous placement segments of the 4700 yd³ 8 acres of pervious pavement supplied to the Prime Outlet Mall project in Williamsburg Virginia 2008 The intent of the study was to gather a statistically sufficient quantity of test data of plastic and hardened properties using ASTM test standards from a project large in square footage to provide such data The TVRM approach involved representative sampling plastic and hardened density testing void % determination thickness measurements and compressive and flexural strength testing The hardened test specimens were obtained by coring and sawing from precast panels cast onsite during pavement production The test panels measuring 3 ft x 3 ft x 6 in in depth had supporting bottoms and was cast from composite samples obtained at the project site The test panels were cast and cured in the same manner as the pervious pavement one test panel for every 150 to 200 yd³ The test panels were cured a minimum of 7 days to promote the necessary aggregate cement paste bond development as is referenced in ACI 522 1 08 ACI 522 1 Specification for Pervious Concrete Pavement American Concrete Institute Farmington Hills MI 2008 Once the curing was complete the pervious test panels were cushioned and transported to the TVRM laboratory for further curing and hardened strength and density testing The TVRM objective was to compile enough raw data with consistent test results to help designers and specifiers in designing for future pervious projects

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