

1. Record Nr.	UNINA9910961005403321
Titolo	Nonconventional concrete technologies : renewal of the highway infrastructure // Committee on Nonconventional Concrete Technologies for Renewal of the Highway Infrastructure, National Materials Advisory Board, Commission on Engineering and Technical Systems, National Research Council
Pubbl/distr/stampa	Washington, D.C., : National Academy Press, 1997
ISBN	9786610191758 9780309174886 0309174880 9781280191756 1280191759 9780309562317 0309562317
Edizione	[1st ed.]
Descrizione fisica	1 online resource (xiv, 110 pages) : illustrations
Collana	Compass series NMAB ; ; 484
Disciplina	625.8/4
Soggetti	Pavements, Concrete Concrete - Additives Reinforced concrete construction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	""Nonconventional Concrete Technologies""; ""Copyright""; ""Preface""; ""Acknowledgments""; ""Contents""; ""Executive Summary""; ""POTENTIAL MATRIX MATERIALS AND THEIR SYNTHESIS""; ""REINFORCEMENT AND LAYERED STRUCTURES""; ""PROCESSING""; ""SYSTEMS APPROACH""; ""1 Introduction and Background ""; ""STRUCTURE AND COMPOSITION OF CONVENTIONAL PORTLAND CONCRETE""; ""Cement Paste""; ""Macro- and Microstructure""; ""Chemical and Mineral Admixtures""; ""SYNTHESIS AND PROCESSING OF CONVENTIONAL CONCRETE""; ""PROPERTIES OF CONVENTIONAL CONCRETE""; ""PERFORMANCE OF CONVENTIONAL CONCRETE""

""ASSESSMENT OF CONVENTIONAL CONCRETE TECHNOLOGY""  
""Advantages""; ""Disadvantages""; ""CHARACTERISTICS OF AN IDEAL CONCRETE""; ""2 Controlled Synthesis of Potential Matrix Materials and Reactive Additives""; ""GELATION AND RHEOLOGY CONTROL""; ""AGENTS TO CONTROL WATER AND SHRINKAGE""; ""Synthetic Polymers and Cellulose Derivatives""; ""Wood and Paper Waste Materials""; ""Swelling Clays""; ""High-Range Water Reducers (Superplasticizers)""; ""THERMAL CONTROL AGENTS""; ""REACTIVE INORGANIC ADDITIVES""; ""REBAR CORROSION CONTROL AGENTS""; ""EVOLUTION OF STRUCTURE OF CONCRETE""  
""Biomimetic Synthesis""""3 Reinforcement ""; ""PERFORMANCE REQUIREMENTS""; ""CONTINUOUS REINFORCEMENT""; ""Coatings for Steel Rebar Reinforcement""; ""Alternative Continuous Reinforcement""; ""DISCONTINUOUS-FIBER REINFORCEMENT""; ""MULTIPLE REINFORCING PHASES WITHIN A CONCRETE SYSTEM""; ""4 Concrete Processing""; ""PROCESS CONTROL""; ""Control of Cement Feedstock Production""; ""Control of the Hydration Process""; ""Concrete Mixing Control""; ""Control of Fiber Mixing""; ""MATERIALS TESTING AND QUALITY ASSURANCE""; ""PLACEMENT METHODS""; ""5 Systems Approach to Concrete Technology ""  
""SYSTEMS APPROACH""""MODEL-BASED DESIGN""; ""KEY ENABLERS FOR THE APPLICATION OF A SYSTEMS APPROACH""; ""Fundamental Issues and Computational Models""; ""Smart Processing and Intelligent Systems""; ""LIFE-CYCLE COSTS""; ""SUMMARY""; ""References""; ""APPENDICES""; ""Appendix A Workshop Participants""; ""Appendix B Modern Sensor Technology""; ""REFERENCES""; ""Appendix C Conventional Concrete Test Procedures""; ""REFERENCE""; ""Appendix D Biographies of Committee Members and Technical Consultants""; ""Chemical Formulas of Cement Materials""; ""Glossary""

---

Sommario/riassunto

Nonconventional Concrete Technologies: Renewal of the Highway Infrastructure identifies research and development opportunities in innovative, nonconventional materials and processes that have the potential to accelerate the construction process, improve the durability of highway pavement and bridges, and enhance the serviceability and longevity of new construction under adverse conditions.

---