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Nota di contenuto	Frontmatter -- Contents -- Author Information -- Preface -- Acknowledgement -- 1. Introduction / Takahashi, Yoshifumi / Shi, Zihai -- 2. The Composite Pipe Construction Method / Takahashi, Yoshifumi -- 3. Fracture Tests of Full-Scale Pipe Specimens and Various Structural Element and Material Property Tests / Nakamura, Yukari -- 4. Nonlinear Fracture Mechanics of Concrete / Shi, Zihai -- 5. Structural Analysis Theories of Composite Pipes as Semi-Composite Structure in Sewer Renovation / Shi, Zihai / Wang, Jianhong -- 6. Renovation Design of Ageing Sewers as Composite Pipes by the Limit State Design Method / Nakano, Masaaki -- 7. Development of the Composite Pipe Design Support System / Nakamura, Yukari -- 8. Design Examples of Sewers Renovated by the SPR Method / Kouchi, Toru -- List of Figures -- List of Photos -- List of Tables -- Index
Sommario/riassunto	In Japan, as a large number of sewer lines approach and exceed their design service life, rehabilitation of these ageing sewers to ensure their safe operation and upgrade their functions gains urgency. In this pioneering work, Z. Shi, M. Nakano and Y. Takahashi present a systematic treatment of structural analysis and renovation design of ageing sewers as semi-composite pipes, including testing and construction guidelines. The concept of a semi-composite pipe and the application of fracture mechanics of concrete in numerical modelling

are the two distinctive features of the established design theories, which have been employed for sewer renovation in Japan for more than 20 years, with the total length of renovation construction now exceeding 700 km. The leading authors have engaged in designing the renovation of ageing sewers since the mid 1990s, and the book will become a valuable reference work for sewer engineers worldwide, and academics and students in civil, urban and architectural engineering departments.

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