CONTENTS & SUMMARY

Seamless Location Based Service in the Railway Sector using GPS and IMES
Asoo SHIKIMURA, Satoshi KOGURE, Natsumi TAKAGI, Naohiko KOHTAKE

As train stations have become increasingly convenient as they grow bigger and more multifunctional, both in urban and rural areas in recent years, there are also challenges to provide users with easy-to-understand guidance and information in increasingly complex indoor spaces. This paper presents the results of a demonstration experiment using the Global Positioning System (GPS) and the Indoor Messaging System (IMES) that is compatible with GPS, and which can obtain positional information accurately indoors, offering a future outlook for the system in the railway sector.

Development of Concrete Peel-off Detection Device using Laser
Norikazu MISAKI, Masahiro SHINODA, Yoshinori SHIMADA

The impact acoustics method is a commonly used inspection method for tunnel linings. This method is simple but has issues such as variations in the inspection results of different technicians and the considerable amount of inspection time. In this study, we developed an inspection method using a remote sensing system that detects defects in concrete elements, as an alternative to the impact acoustics method. This newly developed system is used for inspecting the lining of tunnels on the Shinkansen Line; as a result, it is determined that the vibrations generated by maintenance vehicles and power generators adversely impact the accuracy of measurements. In order to reduce the vibrations generated by maintenance vehicles and electric power generators, a new vibration canceling platform is developed and installed on the proposed system; this platform is confirmed to be capable of removing the abovementioned vibrations.

Development of Automated High-Water Measuring System at the Tokaido Shinkansen Fuji River Bridge
Shigeharu MATSUMOTO, Kenichi IMAI, Hidemaro FUNABASHI, Tomohiro SHOJI

Recent years have seen frequent cases where stable transport has been hindered by severe typhoons, torrential rains and other sorts of abnormal weather never experienced previously. JR Central has worked to develop new technologies to address natural disasters, which even counter these sorts of weather changes. This paper describes the development of one such effort, an automated high-water measuring system at the Tokaido Shinkansen Fuji River Bridge.

Development of Railway Embankment Structures Resistant to severe Earthquakes and Prolonged Overflows caused by Tsunami
Kenji WATANABE, Kosuke MATSUURA, Kimihito FUJI, Atsuhiro KUDO

Railway embankments sustained extensive damages from the tsunami triggered by the Great East Japan earthquake in 2011. Numerous studies have been conducted on enhancing the earthquake resistance of railway embankments; however, studies on their tsunami resistance have been insufficient. The Railway Technical Research Institute developed a new geotextile reinforced soil structure based on model experiments for enhancing the earthquake and tsunami resistance of railway embankments. The experiments were conducted by developing a device capable of simultaneously reproducing both a large-scale earthquake and prolonged tsunami overflow.

TOPICS
Development of superconducting feeder cable and train running test
Masaru TOMITA

The development of a superconducting cable aimed at railways applications has commenced by assuming a DC transmission cable used for electric trains. A cable has been fabricated based upon the results of current testing of a superconducting wire, along with a variety of evaluation tests undertaken to determine cable characteristics. A superconducting transmission cable having zero electrical resistance characteristics and applicable for railway use, is anticipated to bring about enhanced regeneration efficiencies, reduced power losses, load leveling and integration of sub-stations, and the suppression of rail potential.

NEWS

To the Readers
Nobuyuki WATANABE