2008 OCEA Award
(Outstanding Civil Engineering Achievement Award)

◆Group I

This award is presented in recognition of an achievement relating to innovative planning or design, or individual technologies such as constructing technologies that made an outstanding contribution to the further advancement of civil engineering technology in relation to a specific project.

Realization of ultra short term construction of an underground structure and development of a bicycle parking system using IC tags
-Kasai Station Underground Bicycle Parking Lot -

Public Works Department, Edogawa City Office

Summary

In this project, an underground bicycle parking lot with a capacity of 9,400 bicycles was completed in an ultra short construction period of 1 year and 11 months by using the precast method for about 80% of the underground structure in order to eliminate the problem of bicycles illegally parked or abandoned around the Tokyo Metro Kasai Station and promote a modal shift to environmentally-friendly bicycles.

Moreover, a storage system has been developed where a bicycle is recognized by the sensor based on the IC tag directly attached to it and stored when the user simply places it at the entrance of the parking lot.

Design and construction technologies for the first nationwide large twin tunnels far close to existing structures passing right underneath buildings
- New Tomei Expressway Imasato daiichi tunnel -

Central Nippon Expressway Co., Ltd., Tokyo Branch, Numazu construction office
Shimizu Corp., Aisawa Construction Co., Ltd., P.S.Mitsubishi Construction Co., Ltd. Joint Venture

Summary
The Imasato-daiichi tunnel is twin parallel tunnels extremely close to existing structures with a large cross section under small overburden. A lot of technical difficulties were expected due to buildings on the ground surface right above the tunnels. Thus, design of high-strength support system and improvement of pillar between the tunnels with preceding grouting were introduced to assure mechanical stability. These methods enabled successful construction of large twin tunnels far close to existing structures, which led to establishment of design and construction methods for such kind of tunnels.

Construction of Large Double Adjoined Binocular Tunnels in a Shallow Ground in Densely Residential Area -Daini Keihan Expressway Shoji Tunnel Project-

West Nippon Expressway Company, Ltd. Hirakata Construction Office
Joint Venture of Taisei Corp.,Hazama Corp.and Fukuda Corp.

Summary

Shoji Tunnel of Daini Keihan Expressway locates in a hilly terrain where residential houses densely exist. It is 265m in length and comprises four-linked tunnels in 58m width, two for 3-lane expressway and the other two for 2-lane national highway. It is constructed under a severe condition of only 10.5m maximum overburden in unconsolidated sandy grounds. Contemporary technologies were applied in environmental issues including noise and vibration control, ground subsidence control and groundwater flow preservation, in designs based on three-dimensional numerical analysis and dynamic aseismic analysis, and in construction methods such as cement mixing soil improvement, chemical grouting, and semi-selfcompacting concrete.

Development of tunneling methods in anomalous grounds with heavy squeezing or high groundwater pressure.

Hokuriku Shinkansen Construction Bureau, Railway Construction Headquarters, Japan Railway Construction, Transport and Technology Agency/ Tekken・Nissan rinkai・Moriya JV/ Kumagai・JDC・Ohmoto JV/ Hazama・Konoike・Kagata・Maruyama JV/ Nishimatsu・Toa・Ueki・Nakamoto JV/ Taisei・Zenitaka・Daiichi・Matsumoto-Doken JV/ Obayashi・Daiho・Matsumura・Tanaka-Sangyou JV

Summary

Iiyama tunnel locates in the prefecture boundary in Nagano Prefecture and Niigata Prefecture with the length of 22.225km which is the longest in Hokuriku Shinkansen and the third longest inland tunnel in Japan. For reducing the settlement in excavation in heavily squeezing rock, “multiple-layer supporting method” has been developed. For steady excavation in unconsolidated grounds with high groundwater pressure, the advance management method with three types of probe drilling and the face ground assessment has been established. For safe excavation in rocks containing flammable gas, appropriate management of the gas detection and dilution was conducted in the execution cycle. Thus, the safe and steady advance of the tunnel was attained.