**Technical Award**

**Sophisticated Technology for Viaduct Slab Replacement**

**Hanshin Expressway Company Limited, Business and Maintenance Management Headquarters**
**Tobishima Corporation, Osaka Branch**
**Kajima Corporation, Kansai Branch**

The Hanshin Expressway Renewal Project is being implemented to carry out the needed renewal of aging viaduct slabs. The Hanshin Expressway passes through areas with dense concentrations of roads, buildings, and residences, so in carrying out the work it is necessary to minimize the social impact of construction-related road closures, control noise and vibration, and take the roadside environment into account. Further, construction work is restricted to a confined space with no possibility of securing a construction yard outside the expressway boundary. For these reasons, a rational and efficient slab renewal technology was required for this mass slab renewal program under very severe constraints.

The Hydro-Jet RD method was developed to solve the issue of reducing the social impact of the work. Water jets rapidly remove the existing slabs and the concrete at the joints with the steel girders first while the structure is in service, thereby reduced the road closure period and noise and vibration associated with the removal of the existing slabs.

The replacement slabs are of ultra-high-strength fiber-reinforced concrete (UFC). This results in thin, light, and highly durable flat-plate UFC slabs that avoid the need to alter the road surface level and reinforce the main steel girders. This realizes a rational and efficient slab renewal procedure. In addition, to cope with the limited space available when working on this urban expressway, a special lightweight, low-overhead erection machine was developed for removal of the old slabs and placement of the new ones. Through use of these methods, it can minimize the social impact of the work and provide the viaduct with highly durable new slabs under the severe restrictions of an urban expressway. This technology is highly evaluated as a contribution to the coming era of mass slab renewal and is deserving of the Technology Award.