Hasune Footway Bridge, Tokyo (Japan)

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Objekttyp: **Article**

Zeitschrift: **IABSE structures = Constructions AIPC = IVBH Bauwerke**

Band (Jahr): **3 (1979)**

Heft C-9: **Recent structures**

PDF erstellt am: **09.07.2024**

Persistenter Link: https://doi.org/10.5169/seals-15814

10. Hasune Footway Bridge, Tokyo (Japan)

Owner: Tokyo Metropolitan Government
Designer, Engineer: Tokyo Metropolitan Expressway Public Corporation
Contractor: Sakai Iron Work Co., Ltd.

General

The Hasune Footway Bridge crosses over a multiple intersection located in a residential quarter in the northern part of Tokyo. The proposed intersection of 3 major roads would cut the quarter into 3 blocks. Therefore provision was made in the planning to construct a new overhead footway there.
In accordance with the shape of the crossing, the plan of the footway bridge was decided on as shown in Fig. 1 consisting of a triangular central part with the accesses from each of the three blocks so designed as to overpass freely with the least additional distance. Each access provides both ramp and stairway thus enabling passage not only on foot but also by bicycle, wheelchair and so forth.
The bridge has two distinctive features. The first is an outstanding aesthetic appearance harmonizing with the quarter, and the second is ease of use.
The construction of the Hasune Footway Bridge was planned by the Tokyo Metropolitan Government and the design and supervision of the construction were entrusted to the Tokyo Metropolitan Expressway Public Corporation. The construction work on site began in August 1975 and the bridge was put into service in May 1977. The total construction cost was about 350 million yen.

Main Structures

The main structures consist of steel deck plates and steel box girders as the superstructures, with box section steel bents and cast-in-place concrete piles as the substructures.
The structure of the central triangular flat part is a three dimensional rigid frame having three curved box girders connected to each other at apeces of the triangle, where steel bents are embedded. The analysis of this structure was made for a continuous three dimensional skeleton including steel bents and concrete piles. The structures of the ramp accesses and stairways are box section rigid frames and suspended girders.
On both sides of the steel deck plate, the vertical ornamental side plates of 60 cm in depth are installed as shown in Fig. 2 so as to hide the uneven plane caused by attachment of ribs. Light-blue color was painted on these side plates, against the dark-blue of box girder's web. The existence of the side plates and the two-tone color painting are very effective in setting off the girders' slenderness and uniform continuity.
The field joints of side plate, steel deck plate and steel bent were executed by field welding. It also played a role in achieving the outstanding appearance of the bridge.

Railings, Pavements and Accessories

Balusters made of cast iron were installed to form a smooth vertical arch with side plates as shown in Fig. 2. The height decided on for the baluster was 120 cm, and another hand rail was installed at a height of 85 cm for the convenience of aged persons and children. There are also attached braille block tapes on this rail for blind users.
Colored resin mortar was laid as the surface of the pavement on two layers of asphalt pavement. The bridge surface with its colored pattern made the bridge light and pleasant to the user. Separate colors were adopted for each of the three accesses so as to distinguish the direction of ramp. And the guide board at the entrance of each access displays the direction by colors.
The 6 cm thick pavement was increased diagonally to a 10 cm width at both ends beside the curbs, for drainage of water. Thus the bridge does not need any drainage pipe.
There is a large circular open space of 5 m diameter in the center of the triangular part, and there is a pole 18 m high for illumination. Around the circular space, benches are being set in order that users can take a rest at the top of the bridge.
At part of one access, a sight-barrier board had to be installed in accordance with the request of residents near the bridge. Aesthetic considerations also played a part in this board design as shown in photo 4. Arched pipe was used with plastic plate and an open space with slats to accent the appearance and to anticipate wind pressure.
The Hasune Footway Bridge can be said to be a good example of the direction in which overhead footway construction should be heading. In the design of structural details and accessories consideration was paid to many aspects such as aesthetic appearance, and ease and pleasure of use. As a result the bridge provides the user not only with a means of passage but also friendly human space on it.
The bridge was awarded the Tanaka Prize of the Japan Society of Civil Engineers for 1977.

(N. Yamadera)

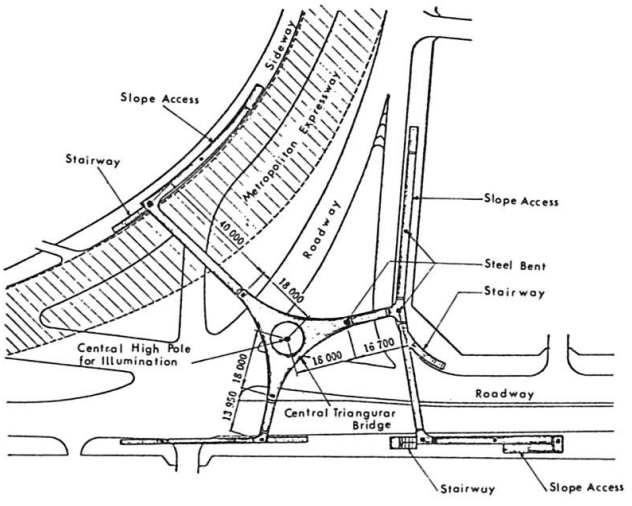

Fig. 1 Plan

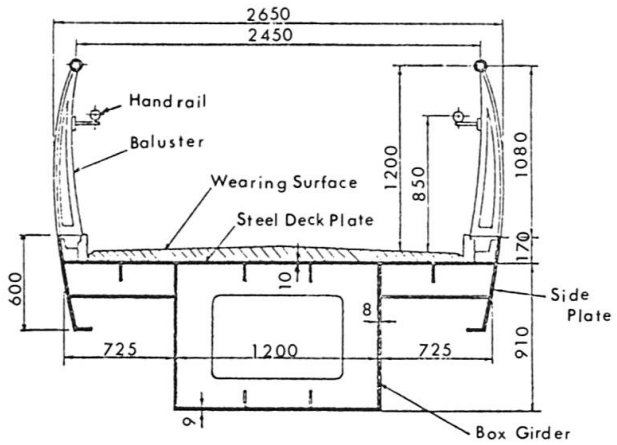

Fig. 2 Standard Cross Section of Superstructure