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### Structural Design of Bridges and Associated Highway Structures

Occasionally, a bridge or associated highway structure is required to be constructed in connection with a private development, say, under the terms of the lease conditions. The bridge or associated highway structure may be located within the private lot, outside the lot boundary or partly outside the lot boundary.

2. The design and construction of such structures should be carried out in accordance with the Structures Design Manual for Highways and Railways, issued by the Highways Department. The plans should always be examined by the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS). As part of the centralized plans processing system, the Building Authority will arrange for the relevant plans to be examined by ACABAS: see PNAP 107.

#### Wholly or Partly within a Private Lot

3. When a bridge or associated highway structure is built wholly or partly within a private lot or gains support from or is connected to a building resting on a private lot, the plans should be processed under the Buildings Ordinance. This includes :

- (a) any bridge erected between two private buildings, if the bridge gains support from either or both of the buildings; or
- (b) a bridge which gains support from a private building at one end and rests on government land at the other, whether or not separate access is available from the public street.

4. Notwithstanding the standards of the Structures Design Manual for Highways and Railways, structural design and construction of this type of building works should also satisfy the requirements of the Building (Construction) Regulations with due observation of the recommendations of the relevant Codes of Practice and Practice Notes for Authorized Persons and Registered Structural Engineers, issued by the Building Authority.

#### Wholly Outside a Private Lot

5. A bridge or associated highway structure of the free-standing type, built entirely on government land or over public highways, may have to be constructed outside a private lot. These are exempted from the Buildings Ordinance.

6. The **Director of Highways** is the competent authority for the control of such structures. The Highways Department will be responsible for vetting plans, permitting works to be carried out, imposing requirements for the testing of foundations, examining material quality control data and liaising and corresponding with the appointed Authorized Person or Registered Structural Engineer.

7. In addition to the requirements of the Structures Design Manual for Highways and Railways, the Highways Department will also require the following design standards to be satisfied :

(a) **Geometric Design and Layout**

The geometric layout and dimensions of the structures should comply with the Transport Planning & Design Manual Volume 2, issued by the Transport Department;

(b) **Materials and Workmanship**

All materials for the works and workmanship should also comply with the General Specification for Civil Engineering Works, 1992 Edition (Hong Kong Government);

(c) **Retaining Walls**

Retaining walls should be designed and constructed in accordance with GEOGUIDE 1 (Guide to Retaining Wall Design, Second Edition), issued by the Geotechnical Engineering Office of the Civil Engineering Department;

(d) **Lighting**

The lighting of the structures should comply with the requirements of the Lighting Division of the Highways Department and the Electrical and Mechanical Services Department;

(e) **Geotechnical Requirements**

The geotechnical aspects should comply with the requirements of the Geotechnical Manual for Slopes, issued by the Geotechnical Engineering Office; and

(f) **Landscape Improvement**

The adverse impact of the structures on their surroundings or landscape should be minimized by introducing appropriate treatment and/or landscape planting. Such proposals should form part of the design.

Consultation with the Landscape Unit of the Highways Department prior to submission is welcomed.

8. Structural details of bridges and highway structures to be built wholly outside a private lot, including resubmissions, should initially be submitted to the Buildings Department. They should comprise 3 sets of plans, 2 sets of calculations and 2 sets of site investigation documents, for transmission to the Highways Department. When the works are completed to satisfaction, the Highways Department will so certify in writing, thus concluding its technical and administrative involvement in the works.

### **Concluding Observation**

9. The manuals and guides mentioned above are available from the Government Publications Sales Centre.

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