# Design for 4 km long elevated highway over rail tracks in London

Autor(en): **Wood, D.J.D.**

Objekttyp: **Article**

Zeitschrift: **IABSE congress report = Rapport du congrès AIPC = IVBH Kongressbericht**

Band (Jahr): **9 (1972)**

PDF erstellt am: **21.07.2024**

Persistenter Link: https://doi.org/10.5169/seals-9672

IV

# Design for 4 km Long Elevated Highway over Rail Tracks in London

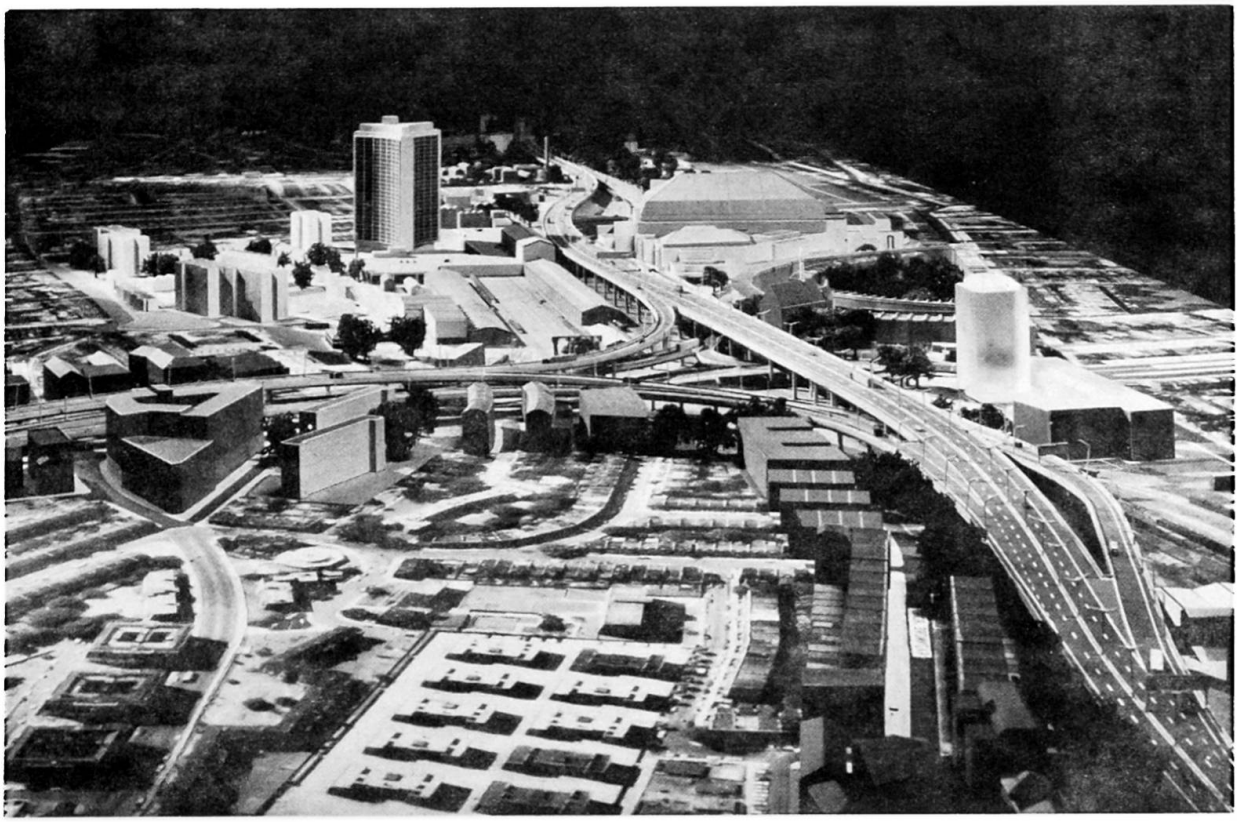
Projet pour une route surélevée de 4 km au dessus du chemin de fer à Londres

Entwurf einer 4 km langen Hochstrasse über Eisenbahnlinien in London

D.J.D. WOOD
Husband & Co.
England

## 1. Introduction

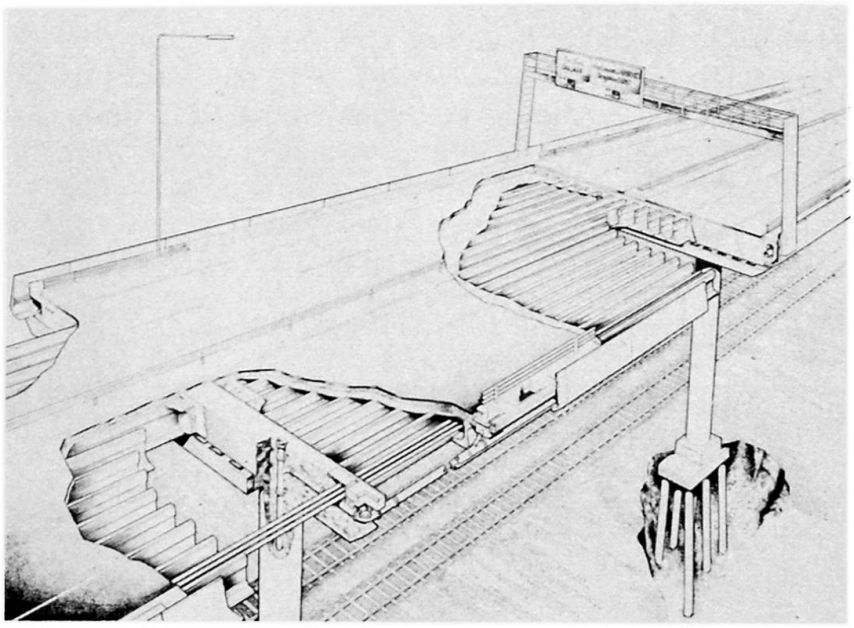
The influence referred to in Messrs. Lee and Chaplin's paper, "The Influence of the Method of Construction on the Design of Urban Viaducts", has been particularly strong in the case of the West Cross Route in London. Husband & Co. are currently engaged on the design of this scheme which is a southern extension of Westway, one of the structures referred to in Messrs. Lee and Chaplin's paper. The special interest of the structure is that it is to be built for a distance of 4 km over a live railway line. A section of the route is illustrated in a photograph of a model in Figure 1.



There are often good planning reasons for locating new urban roads along existing lines of severance such as railways, and it is probable that pressures from environmental interests will lead to the adoption of this type of scheme more often in the future.

## 2. Structural Arrangement

The standard spans of the elevated highway are formed from simply supported precast prestressed beams approximately 30 m long, as illustrated in Figure 2.



The position of the crosshead columns is variable over a wide range in order to maintain the required clearances from the rail tracks which are not exactly parallel to the road structure.

Figure 2: Structural Arrangement

It is proposed that the foundations will be formed using large mobile augur rigs to construct in-situ reinforced concrete piles but, in a few special cases where there are clearance problems, groups of small diameter in-situ piles formed by less bulky items of plant will be used.

The phases of construction of a typical section of the elevated highway are shown in the following figures:-

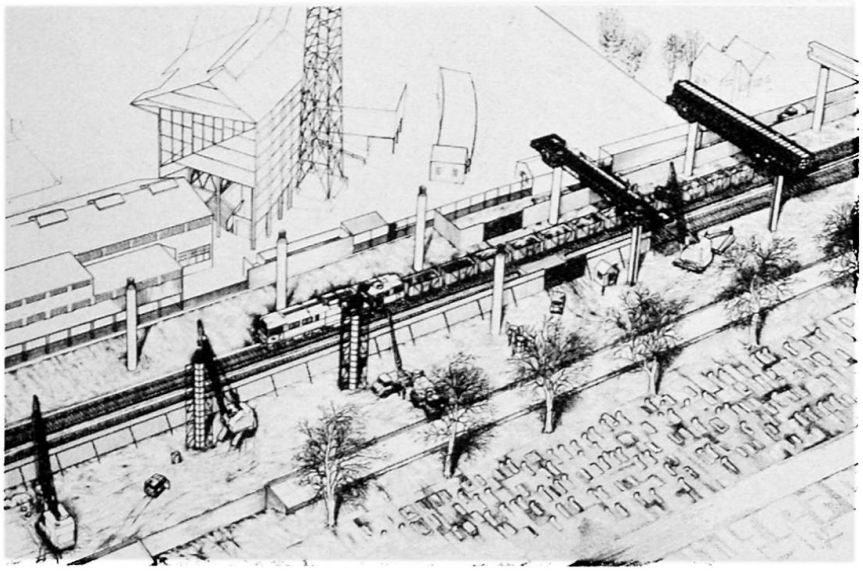


Figure 3: Stage I

In the first stage, on completion of piling, the columns are concreted using cylindrical steel formwork. The forms will be anchored to the pile caps so that they become self-supporting. The soffit of the cross-head shutters has been designed to act as a combined working platform and debris shield. This would be erected across the rail tracks during a short possession. The fixing of the remainder of the shuttering, the reinforcement and concreting would be carried out without interfering with train movements.

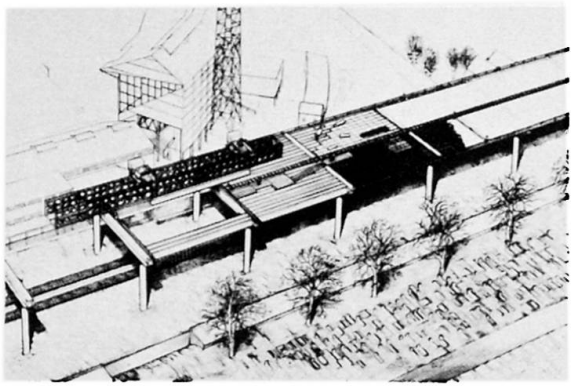


Figure 4: Stage II

Precast beams will be delivered at high level and launched into position using a purpose made erection girder. The beams are designed to be capable of carrying construction traffic before the deck slab is concreted.

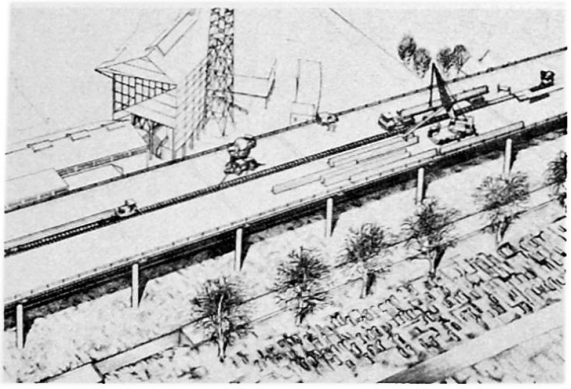


Figure 5: Stage III

The completion of the highway structure, including the concreting of the deck, the placing of parapets, the laying of kerbs, the fixing of crash barriers and the laying of bituminous surfacing, would follow the earlier stages as a continuous process as shown in Figures 5 and 6.

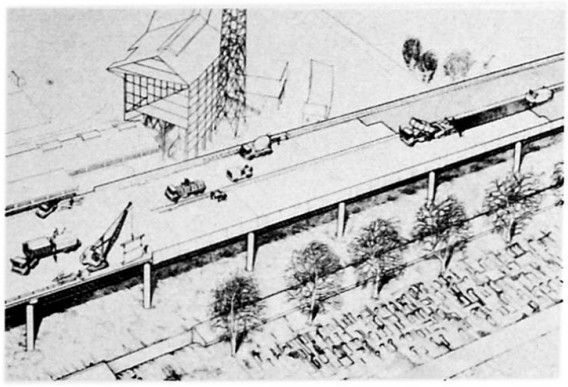


Figure 6: Stage IV

## 3. Interchange Structures

At the southern end of the route, shown in a photograph of a model in Figure 7, it divides and moves away from the railway. The curved structures at the interchanges, clear of the rail tracks, are designed using continuous cast in-situ prestressed concrete giving the maximum economy in materials.

## 4. Conclusion

It is considered that in the special case of constructing long viaducts over rail tracks which must be kept in operation during building, the maximum economy in cost will be associated with a design giving the contractor the greatest possible flexibility in programming and the greatest simplicity in the actual operations to be carried out. In this special situation the complications involved in building continuous structures are seldom likely to produce the best solution.

SUMMARY

The design of an elevated highway over 4 km of railway is described. It is considered that, in this situation, simplicity of construction will produce maximum economy.

RESUME

Ce travail décrit le projet d'une route surélevée de 4 km, recouvrant le tracé du chemin de fer. On considère que dans ce cas, c'est la simplicité de la construction qui apportera le maximum d'économie.

ZUSAMMENFASSUNG

Die Arbeit beschreibt das Projekt einer 4 km langen Hochstrasse mit Ueberführung über die Eisenbahnlinien. In diesem Falle ergibt die Einfachheit der Konstruktion maximale Wirtschaftlichkeit.