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DISCUSSION

Birmingham Inner Ring Road

B. R. COWLES & S. G. PIGGOTT

Mr Cowles

The Inner Ring Road was built with two main objectives: to enlarge the business and shopping areas of the city centre and to provide a solution to the traffic problems in the same area.

84. The completed road has now been in use for four years and an assessment can be made of its performance. The latest estimated figures for office and shopping floor space in the central area are 0.62 million m² and 0.53 million m² respectively. These show an increase of approximately 50% compared to the corresponding figures before the Ring Road was built.

85. With regard to the traffic problem, on the Ring Road itself traffic generally travels freely and at speeds close to the permitted limits. Figures for all the traffic routes in the central areas of the city before and after the road opening show that speeds have increased from 18.3 to 24 km/h at the same time that flows have increased from 2100 pcu's to 2560 pcu's.

86. Also consequent on the provision of the Ring Road has been the restriction of traffic entering the central shopping area and the laying out of 'pedestrianized' streets. This has considerably improved the environmental quality of the area and has been highly praised by people who use it.

87. From the performance of the Ring Road since 1971 the Authors consider both the main objectives have been achieved.

Mr J. Dallaway, Ove Arup & Partners

At the time of the construction of part of the Inner Ring Road I worked for W. V. Zinn and Associates, and had something to do with the Lancaster Circus intersection.

89. I have been impressed, in walking round the remainder of the Inner Ring Road, by the care with which the pedestrian areas within the gyratories (mentioned in § 54) have been handled. A great deal of attention has been given to making these pleasant places for pedestrians to be in. They are not just bare areas of paving for people to race across as quickly as possible. This is particularly true of the St Chad's interchange, where there is a most delightful mosaic mural.

90. The particular interchange with which I was concerned is not quite as handsomely treated in this respect as some of the others; in fact it is a bit starved, and I would like to know why this is so.

Mr J. E. L. Barron, Eastern Gas

I am sure that architects would take exception to the distinction drawn between architectural appearance and the functional aspect of the buildings.

92. I much prefer the functional appearance of the new buildings to the very heavy and ornate old buildings that they replace. Perhaps architects should apply their talents more on the walls of underpasses and tunnels, which I find generally fairly drab. They need to have some colour or variety.

DISCUSSION

93. I have three questions. First, in retrospect are there any features of the design which now the Authors would change or approach in a different way?

94. Second, looking to the future, with the increase in the cost of labour and materials, the accent on conservation of energy and the new Act regarding noise abatement coming into effect, how would these affect the Authors' approach to the design of a similar project?

95. As a gas engineer I am conscious of the vast problem of dealing with relocation of services before building new roads. Did the Authors encounter any special difficulties in this respect and did they develop any ideas on how underground services could be better organized to facilitate their maintenance and extension?

Mr A. C. Watson, Sir William Halcrow & Partners

It was mentioned that there were problems in designing for pedestrian walkways. What sort of problems are these? If a street is taken over without change it looks rather odd with just pedestrians wandering down it, for there is no reason then to have a street with a straight line of shops on either side.

Mr D. S. Warren, formerly Borough Engineer and Surveyor; County Borough of Dudley

First of all I should like to confirm Mr Cowles' statement that the Ring Road has greatly improved the movement of traffic in Birmingham. I do this more in a layman's capacity, because I have occasion to go in during rush-hour periods and it has had a most marked effect. I regret the loss of some of the old buildings. Some of the older character of Birmingham has gone for good, but this is something which has to be accepted in order to have the benefits of buildings which are functional.

98. Could the Authors tell us a little of the snags they came across on two aspects of the work, first, the construction of the tunnels, and, second, the installation and particularly the maintenance of the escalators of the open-air type.

Mr F. R. Bishop, University of Aston

I am one of the users of Birmingham, living in the dormitory town of Walsall. My journey by road used to take 45 minutes, if I was lucky. With the completion of the scheme I am now able to get from my home to my office in 12 minutes.

100. I remember walking round the area at the time that the Ring Road was under construction. At that time it was in an underpass with the gyratory at ground level. The noise from the flyover was terrible, and a colleague from the University of Aston was bitterly critical of what civil engineers were doing. I asked if he used a car. He said 'Of course'. I said 'That is what we are doing, keeping the traffic moving'. A couple of years afterwards I asked him if he was pleased with the scheme and he said he was highly delighted with what Birmingham has done.

The Chairman, Mr R. S. Alford

Referring to § 10 this mentions buses being kept on the Ring Road itself, but later it is stated that buses are using the city centre. It is a great service to the people of Birmingham if the buses go into the shopping centre. Could the Authors comment on future plans, as to whether buses are to remain in the centre or whether the public will be required to get off the bus on the Ring Road and walk? Even 300 yd is a problem with a heavy shopping basket.

102. With regard to § 25 and the waiting lanes on the road itself, I wonder if these are of value and how the cars are accommodated. With speeds of 40 miles/h and more, even if there is a restriction it could be dangerous with cars moving in and out of parking lots and meter points presumably for short-term use. How many cars are parked in this way?

103. Referring to car parking (§ 72) 7500 spaces are quoted. This seems to be a

small number. Are there other car parks not mentioned? For a city the size of Birmingham it is surely nowhere near enough. In Colchester we have plans for 7000 with a population of 60 000.

104. Turning to the constructional side, Birmingham has been able to buy land outside the highway limit. At Colchester this was extremely difficult. The DoE was not receptive to buying land outside the limits of the highway. Perhaps Birmingham had additional powers, but there is no doubt that a ring road essentially requires the purchase of land outside the line of the highway, (a) for redevelopment and (b) to provide additional areas for landscaping.

105. I gather that the carriageway base was of continuous reinforced concrete. Mention is made of 30 ft bays, but was laying continuous throughout the day, or was it considered necessary to insert joints at 30 ft spacings? Did 4 in. of asphalt actually stop cracking? At Colchester hair cracking occurred over a continuously laid reinforced concrete base. What is the Authors' experience of this?

106. With regard to escalators, Colchester has one which is subject to abuse by vandals. More details of the fail-safe mechanism would be helpful. Are there emergency buttons on the escalators which children could press? If so, were these glass covered?

Mr Cowles and Mr Piggott

Mr Dallaway referred to the finishes at Lancaster Circus. It is true that this island was treated somewhat differently from the others. The surrounding buildings included the General Hospital and the University of Aston. It was felt that, as there would be many students in the area, more sitting out space, both paved and turfed, would be advantageous. This has produced a more simple overall design than in the other islands; however, there are many areas of shrubs and trees and when matured these will soften the appearance considerably.

108. **Mr Barron** raised three points. Dealing with the first he asked if the job were done again would any changes be made. As the road was designed between 15 and 25 years ago there must essentially be many modifications to the design, both in layout and structural detail, if done today.

109. Dealing only with broad principles of design more weight could have been given to the needs of the pedestrians as against those of the vehicles. It is difficult to vary road levels where there are existing access points to buildings but, no doubt, some changes could have been made.

110. In some cases where steps have been provided for pedestrians it might have been possible to introduce ramps, but where steps were inevitable escalators should be provided. The only other major change would be to extend the land acquisition at junctions to increase the capacity of the surface level roads.

111. The second question was about cost, conservation of energy and noise abatement. As to present-day costs it is our opinion that the Ring Road has in economic terms more than justified itself. Even with present high construction costs, if done at today's rates it would still pay the city to build it. On conservation of energy any redesign would have to have regard to adequate provision for public transport vehicles. As regards noise, measurements were taken at the Lancaster Circus overpass which indicated that traffic noise would not be a problem to the occupants of nearby buildings. To our knowledge there have been no complaints of noise generated by Ring Road traffic and modifications on this score would not be needed.

112. **Mr Barron's** third question was about relocation of mains. It is indeed true that the relocation of the multitude of services in central areas of cities is a major problem. In the case of the Ring Road they were more difficult than normal because of the presence of TV cables and of major trunk mains which pass through the city centre to areas beyond the boundary. Construction of combined mains tunnels as was done at Paradise Circus, particularly if they can be built in advance of the road-works, is the most efficient way of resolving this problem. It is also advantageous to

have as much mains work as possible in the road contractor's contract obviating many of the problems associated with programming of the sections of the work.

113. **Mr Watson** referred to pedestrian walkways looking very much like paved over streets. Although it is normally impossible to change the buildings, the 'street effect' can be minimized by the careful design of the various features, which should all be done to a pedestrian scale, e.g. lamp columns should be lowered to about 4 m instead of the normal 8 m. Features to break up the visual aspect such as kiosks, seats, flower tubs, etc., should be included and possibly most important, the drainage should be reformed to do away with the old kerb line channels.

114. Replying to **Mr Warren**, we would like first to thank him and also **Mr Bishop** for the complimentary remarks about the Ring Road performance. Very few problems were encountered during the construction of the tunnels. This was largely due to the nature of the ground, which consisted of well cemented sand. In the driven sections there was some seepage of water into the Queensway tunnel which necessitated the resealing of the construction joints after completion.

115. In the cut-and-cover sections the major problem arose over the supporting of the various services passing over the excavation. This was mostly a problem of the cost involved in providing satisfactory supports clear of the working area.

116. Possibly the most difficult problems were associated with the design and construction of that part of the open-cut tunnel over which the new Central Library complex was subsequently built. Some of the foundations of the buildings had to be constructed integrally with the tunnel structure.

117. On **Mr Warren's** question of outside escalators, also raised by the Chairman, the major difficulty was associated with the escalator being delivered as a complete unit. During installation this caused considerable problems in traffic control both of vehicles and pedestrians. Once installed and operational there were many stoppages of the escalator due to vandalism. However, these have reduced as time has gone by. Apart from this factor, maintenance has been normal and has not involved excessive cost. The fail-safe arrangements include: automatic braking in the event of a broken chain drive, or if the tension carriage moves beyond safe limits; a governor to prevent any overspeed of the steps; a non-reversing device; and an overload switch which operates, for example, if any object is caught between the skirt and the steps, or between the comb plate and the steps. There is, of course, an emergency button for operation by the general public. These are recessed but not glass covered.

118. **Mr Alford** raised a number of points. With regard to 'bus services, any future policy will be decided by the West Midlands Authority but the Authors do not see any possibility of the services being entirely excluded from the central area enclosed by the Ring Road. Since the completion of the Ring Road a small 'bus for shoppers has been introduced to circulate within this area.

119. On waiting lanes provision is made for 70 car spaces. These are all meter controlled and do not appear to cause any traffic problems. They are very useful for short-stay waiting associated with the frontage shops. The figures given for car parking relate to firm commitments. The overall car parking provision in the central area has been planned at 25 000 spaces, but this may be modified.

120. We entirely agree with the Chairman's remarks about the acquisition of frontage land for a road construction of this type. We are sure that it is of great advantage to the community to have the frontage land developed in conjunction with the road construction, and this can best be achieved by the local authority having direct control of the land.

121. The concrete base was laid with regular construction joints at 30 ft centres. The only surface cracking to date has occurred on the elevated section of Masshouse where the construction joints, due to the supporting structural design, were at 40 ft centres. From experience on other concrete base roads in the city the Authors feel that 4 in. of asphalt is about the minimum required to prevent cracking.