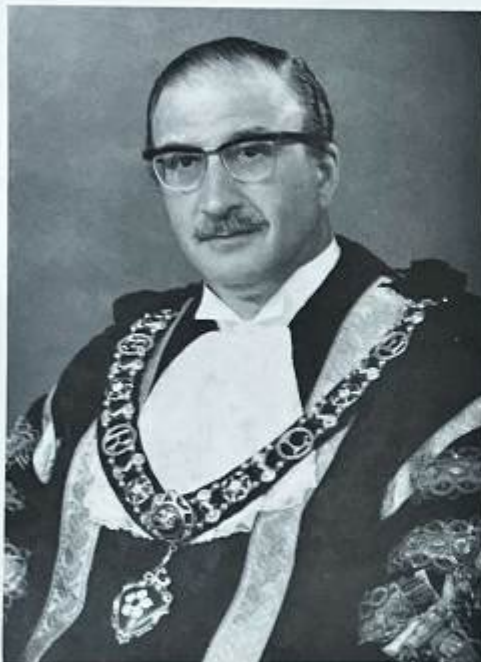


# SOUTHGATES UNDERPASS

## SOUTHGATES UNDERPASS

OPENED BY THE RIGHT WORSHIPFUL THE LORD MAYOR OF LEICESTER, ALDERMAN SIR MARK HENIG · 2nd MAY 1968



#### **FOREWORD**

by  
**THE RIGHT WORSHIPFUL THE LORD MAYOR OF LEICESTER**  
(Alderman Sir Mark Henig)

Despite the many administrative, financial and technical difficulties encountered, the construction of the Southgates Underpass will long remain a testimony to the resourcefulness and ability of municipal engineering, planning and architectural co-operation which exists in the City of Leicester.

Under the leadership of Mr. W. R. Shirrefs, the City Engineer, the construction of this complex highway, the first of its kind in Leicester, has been accomplished; it will undoubtedly ease the traffic congestion in the central areas of the City and forms part of the City Council's solution to the many problems posed by the motorised society in which we live.

Warmest congratulations to all who have been engaged in its construction from the very earliest stages. This magnificent highway is a fitting tribute to their foresight and engineering skill.

Lord Mayor.



Excavations in progress

Page 6



#### INTRODUCTION

The opening of parts IV and V of the Central Relief Road is in many ways representative of the work of the Traffic Committee. Within this single scheme are to be found examples of traffic regulation orders, traffic signal installations, one-way carriageways, a gyratory system and separation by the Underpass and by subways of vehicles from people and of vehicles from vehicles.

Since its inception in 1959, under the Chairmanship of the present Lord Mayor, the Traffic Committee has done much to maintain and improve traffic flows on the City's highways, from major engineering works such as the present to the institution of simple arrangements like the "yellow box" and the "give way" rule at roundabouts.

In the past three years some twenty traffic light systems have been installed and your Committee now looks forward to the institution of the more sophisticated linked systems, whereby a "green wave" allows groups of cars to run unimpeded through a series of lights thus making traffic movement more predictable and helping to maintain the excellent record of safety on our City's roads.

Chairman, Traffic Committee.



### HISTORICAL BACKGROUND

The site now occupied by the Southgates Underpass has been a focal point in the City's communication system for almost 2,000 years.

It was the Romans (the first highway engineers) who, whilst constructing the Fosse Way (Exeter to Lincoln Road) established the base Ratae Coritanorum to defend the crossing point of the River Soar, and which grew to become the present day City of Leicester.



### 14th Century Growth

The 14th Century saw the beginning of a splendid period of Leicester history. The Royal Prince, the Earl of Lancaster, lived at the Castle bringing wealth to the town. Newark Hospital and the Collegiate Church of St. Mary (of the Annunciation) were founded in this period, in which the population of the town was about 5,000.

### Traffic Problems

In the 18th century the town's population trebled to 17,000, most of the medieval gates being demolished in 1774 as they had already become an obstruction to traffic.

The Southgates area achieved even greater significance with the coming of the internal combustion engine and the motor car, as it became the focus for main roads radiating to East Anglia and Birmingham (A47), Bath and Lincoln (A46) and Northampton, the Potteries and South Lancashire (A50).

In more recent times the construction of the first stages of the Central Relief Road (Vaughan Way), and the opening of the M1 have brought still further traffic into the area, aggravating a situation which was already fast becoming intolerable; with long queues of stationary vehicles the order of the day.

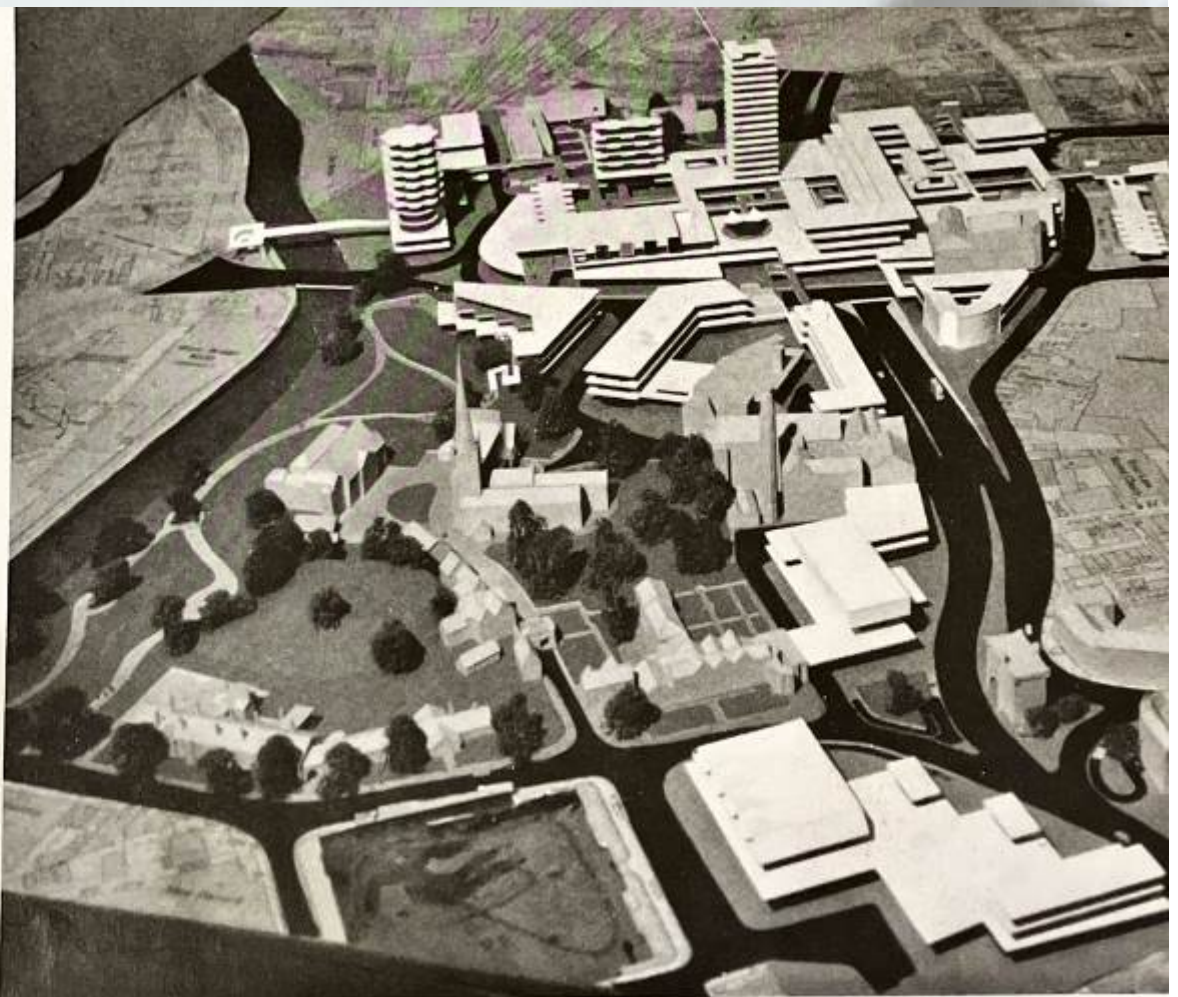
The Southgates Underpass was conceived specifically to overcome this situation.



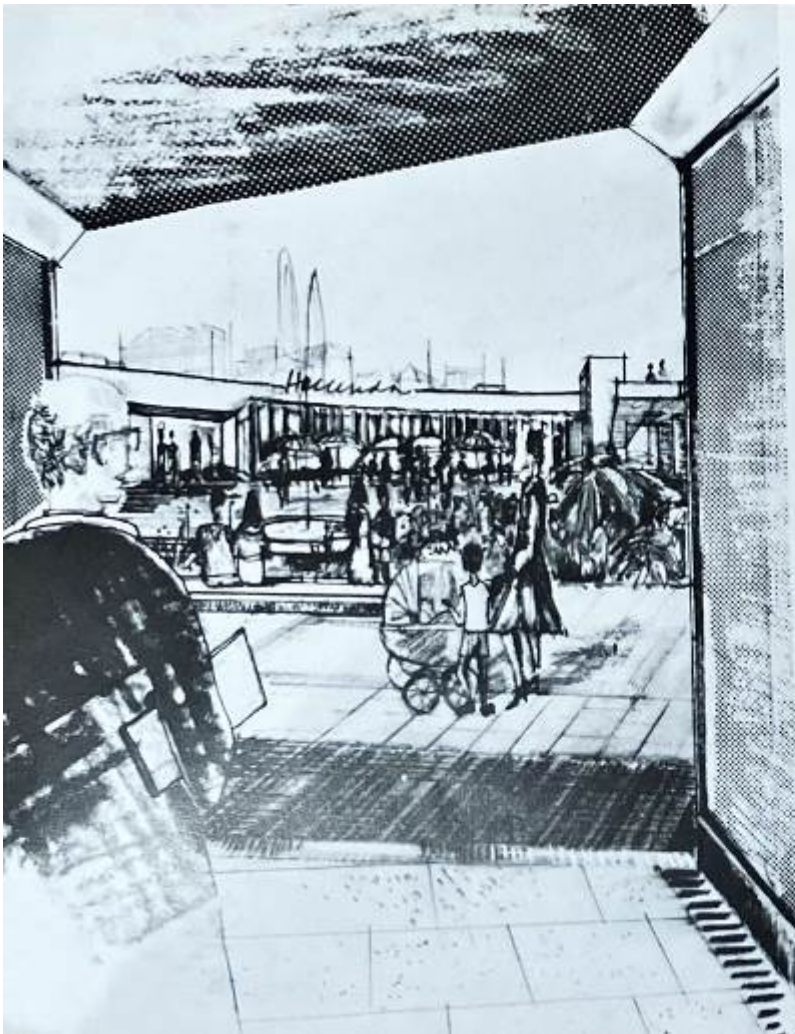
Historical Evolution. *Top:* Roman period. *Centre:* Medieval period *Bottom:* In 1857.

• *Southgates*

Figure 8



One possibility for future development.



Pedestrian concourse

Page 10

## PLANNING

### Criteria

The main requirements of the scheme were:

- (i) It should be economical.
- (ii) It should create an environment in which traffic could proceed with a minimum of delay at all times.
- (iii) It should make adequate provision for the safety and convenience of the pedestrian.
- (iv) It should cause the least possible disruption to the social and commercial life of the area.
- (v) It should be aesthetically pleasing.

After much detailed investigation it became apparent that the most satisfactory solution would be an underpass to carry the predominantly north-south flows of traffic using Vaughan Way and the A50 beneath the east-west flows of the A47 and A46. Conflicting traffic movements at surface level would be greatly reduced by the introduction of a one-way system formed from the existing street network, traffic signals controlling the major access points.

### For those on Foot

The large numbers of pedestrians wishing to cross the southern portion of the site en route to the Newark bus station and the Colleges of Art and Technology are catered for by a system of subways, whilst the smaller pedestrian flows at remaining points will be accommodated by special phases at traffic signals.

Great care has been taken in the planning of the pedestrian ways to eliminate the claustrophobic effect which almost immediately springs to mind at the mention of subways. On the contrary, passers by will be led almost by invitation as it were into spacious low level concourses open to the sunlight, where they will find paved areas with seats, ornamental flower beds, covered museum exhibits, shops and conveniences.

### Joining the Old and the New

No scheme of this magnitude could possibly be carried out without inflicting a certain amount of disruption and inconvenience, but a feature of the Southgates redevelopment is that whenever possible this has been turned to good effect.

For instance, the Vaughan College and Jewry Wall Museum were built in happy proximity to the Roman ruins near St. Nicholas Church, whilst the new buildings needed for the Colleges of Art and Technology were grouped around the existing centre forming a campus with direct access to the low level concourses. The opportunity will be taken of renovating the 14th Century Newark Gateway, itself in direct communication with the pedestrian system, and it will eventually form a museum for military costumes.

Street names of historical interest have wherever possible been preserved, though with fewer streets in the new network some will unfortunately be lost.

### Plans for the Future

Finally the scheme should not be looked at in isolation, for it forms but one link in the chain of improvement schemes comprised within the City Council's Rolling Programme for highway works. The gyratory system round the Granby Halls to the south, the West Bridge Gyratory to the west and improvements to the existing sections of the Central Relief Road in the north will all combine with the scheme in providing much needed relief from congestion in the Central Area in general.

## DESIGN

The design team worked under the general direction of:

|                          |  |
|--------------------------|--|
| Assistant City Engineer  | N. H. Buchi, B.Sc.(Eng.), C.Eng., M.I.C.E.   |
| Chief Assistant Engineer | J. D. Chadwick, B.Sc.(Tech), C.Eng., A.M.I.C.E., A.M.I.Mun.E. succeeded by<br>D. E. Sharpe, C.Eng., A.M.I.C.E., A.M.I.Mun.E. |

The team:

|                                       |   |
|---------------------------------------|---|
| Chief Assistant Engineer (Structural) | A. E. Horsfield, C.Eng., A.M.I.C.E., A.M.I.Struct.E., A.M.I.Mun.E., A.M.T.P.I.                                      |
| Principal Assistant Engineer          | K. D. Heeps, C.Eng., A.M.I.C.E., A.M.I.Mun.E.   |
| Senior Assistant Engineers:           |   |
| Highways                              | R. Paxton, C.Eng., A.M.I.C.E., A.M.I.Mun.E. succeeded by<br>P. J. Fletcher, B.Sc., C.Eng., A.M.I.C.E., A.M.I.Mun.E. |
| Structural                            | J. Challoner, C.Eng., A.M.I.C.E. succeeded by<br>J. E. Woodward, Dip.C.E., A.M.I.C.E.                               |
| Drainage                              | M. J. Moseley, C.Eng., A.M.I.C.E., A.M.I.Mun.E.   |
| Lighting Engineer                     | F. R. Grant, Dip.I.E.S.   |
| Architect (City Architect's Dept.)    | R. Bellamy, Dip.Arch., A.R.I.B.A.   |

The underpass, almost 500 feet long, provides two carriageways each of 2 lane width. It is constructed in reinforced concrete with internal walls faced with white faience tiles. The roof is painted white for good light reflectivity.

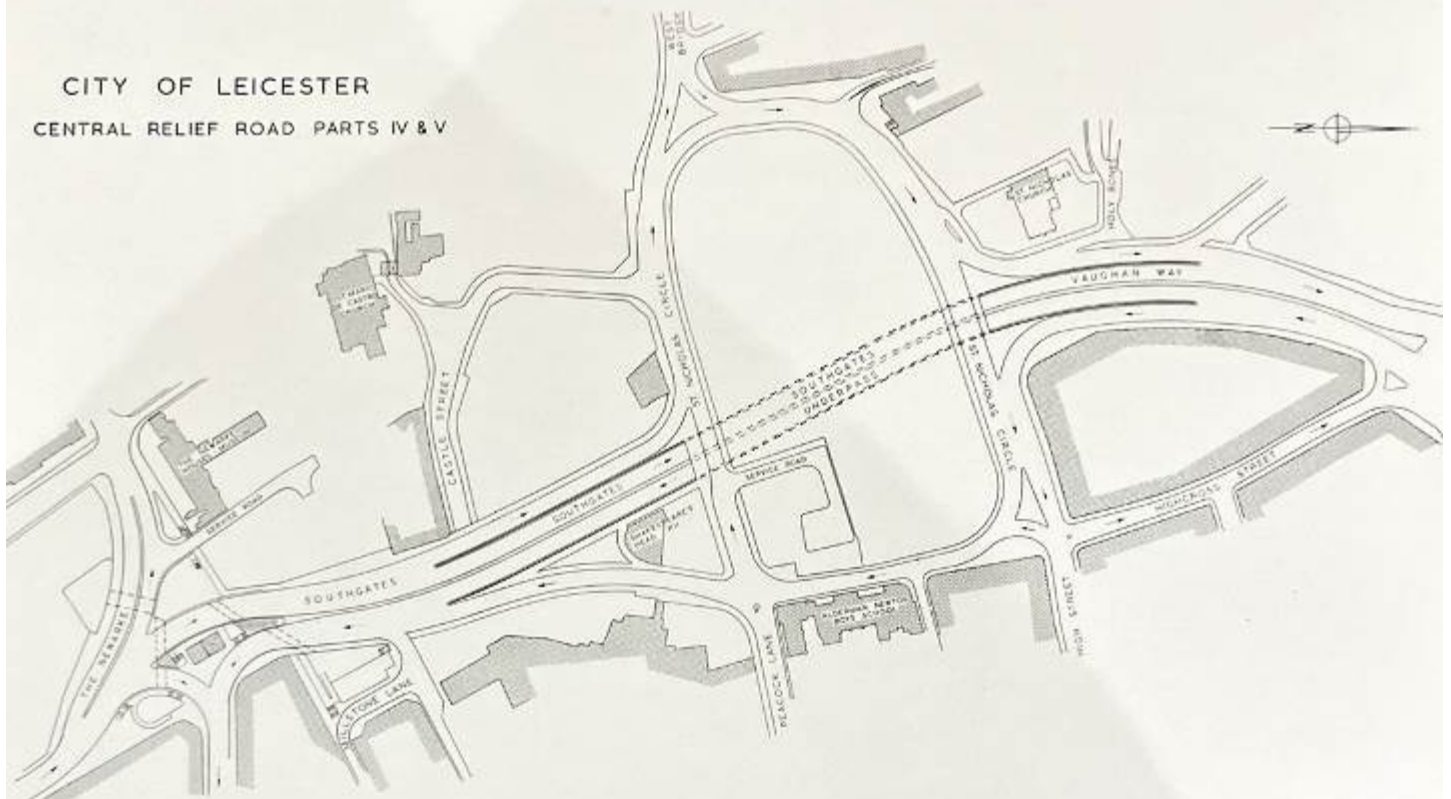
Tunnel lighting is by continuous strips of fluorescent lamps positioned over each traffic lane, whilst the ramps are lit by conventional columns governed by photo-electric cells.

No special ventilation system has been installed, for during normal operation sufficient air movement will be generated by the passage of traffic. In the event of an accident or breakdown, however, carbon monoxide detection equipment coupled to "Switch off Engine" signs will come into operation should any dangerous build-up of exhaust gas occur. Emergency telephones and fire hydrants have also been provided.

The insitu concrete finish to the ramp walls has been protected by a silicon resin waterproof membrane which will also prevent staining, and pedestrian subways and concourses are to be faced with mosaic tiles in a variety of colours and patterns. Rubber flooring is specified in all subways to reduce noise.

The advice and assistance of the City Architect, Stephen George Esq., M.C., B.Arch. (Liverpool), A.R.I.B.A., and the City Planning Officer, W. K. Smigielski Esq., Ing.Arch. (Warsaw), M.T.P.I., were sought during the formulation of the scheme and were greatly valued.

## CITY OF LEICESTER CENTRAL RELIEF ROAD PARTS IV & V





Side walls under construction.

Page 14

## CONSTRUCTION

---

### THE SUPERVISORY STAFF

|                             |  |
|-----------------------------|--|
| Resident Engineer           | W. B. Warren, C.Eng., A.M.I.C.E., A.M.I.Mun.E. |
| Assistant Resident Engineer | R. N. Adams, B.Sc.                             |
| Assistants                  | P. Riddington, B.Sc.<br>F. Furby<br>L. London  |
| Clerk of Works              | G. Cox<br>R. Mackey                            |

---

The Underpass was constructed by the "cut and cover" process and involved the removal of some 40,000 tons of earth. Over 17,000 tons of concrete and 8,000 tons of steel have been incorporated in the main structure alone.

Several large sewers and service mains were to be severed by the excavations and this entailed substantial drainage works and rerouting of mains. Sewers up to 4 ft. 6 in. in diameter have been constructed, and wherever possible this work has been carried out in tunnel to avoid surface disturbance. A special duct has been constructed beneath the carriageway west of the Newark Gateway in order to accommodate two large water mains. In addition a multiplicity of smaller pipes and cables were unearthed during the works and all required re-routing to the satisfaction of the appropriate Statutory Undertaker, some passing through the roof deck of the Underpass in steel tubes cast in during construction.

### Roman Relics

One interesting aspect of the scheme is that the Museum staff have been able to exploit the excavations to uncover the Roman remains in the area. Many interesting finds have been made. The well known mosaic Peacock Pavement, previously uncovered in the basement of a building in Applegate Street has been taken up and is now preserved in the Jewry Wall Museum.

### Traffic During Construction

Perhaps the greatest single difficulty arising out of the scheme came in coping with the enormous volume of traffic in the vicinity of the works. A certain amount of conflict was inevitable, but every effort was made to reduce this to a minimum. The co-operation of the Police, the City Transport Department and the main contractor in this matter is gratefully acknowledged, and thanks are due to the general public for their forbearance.

**W. R. SHIRREFS**  
*City Engineer*

**J. MARSDEN GILL**  
*Deputy City Engineer*

## SOUTHGATES UNDERPASS

### Main Contractor

Messrs Hardow Ltd.,  
Birmingham

Directors

M. J. Harborow, A.M.I.H.E.

T. Dowd

Site Agent

T. P. O'Sullivan

General Foreman

J. McGlynn

### Sub Contractors

Waterproofing to Structures  
Bitumen Base and Asphalt Surfacing  
Cathodic Protection to sheet piles  
Crash Fencing

Messrs Evode Limited  
M. T. Surfacing Limited  
Cumberland Engineering Co. Ltd.  
Varley and Gulliver Limited

### Main Suppliers

Faience Tiles  
Concrete Products  
Coated and quarried materials  
Concreting aggregate and sub-base materials  
Steel Reinforcement  
Steel Sheet Piles  
Concrete Sewer Segments  
Cement  
Epoxy Resin Paint  
Water bars

Messrs Shaw-Hathernware Limited  
E. C. C. Quarries Limited  
Bardon Hill Quarries Limited  
Wanlip Gravels Limited  
G.K.N. Limited  
B.R.C. Limited  
South Durham Iron and Steel Co. Ltd.  
Spun Concrete Limited  
Rugby Portland Cement Co. Limited  
Montgomerie-Stobo Limited  
Servicised Limited

### Acknowledgments

|            |        |  |
|------------|--------|--|
| Photograph | Page 2 | By P. Brutnall Esq., Town Clerk's Dept.    |
| "          | Page 4 | By <i>Leicester Mercury</i> .              |
| "          | Page 7 | By Elliott & Fry Ltd., London.             |
| Sketches   |        | By R. Bellamy Esq., City Architect's Dept. |

