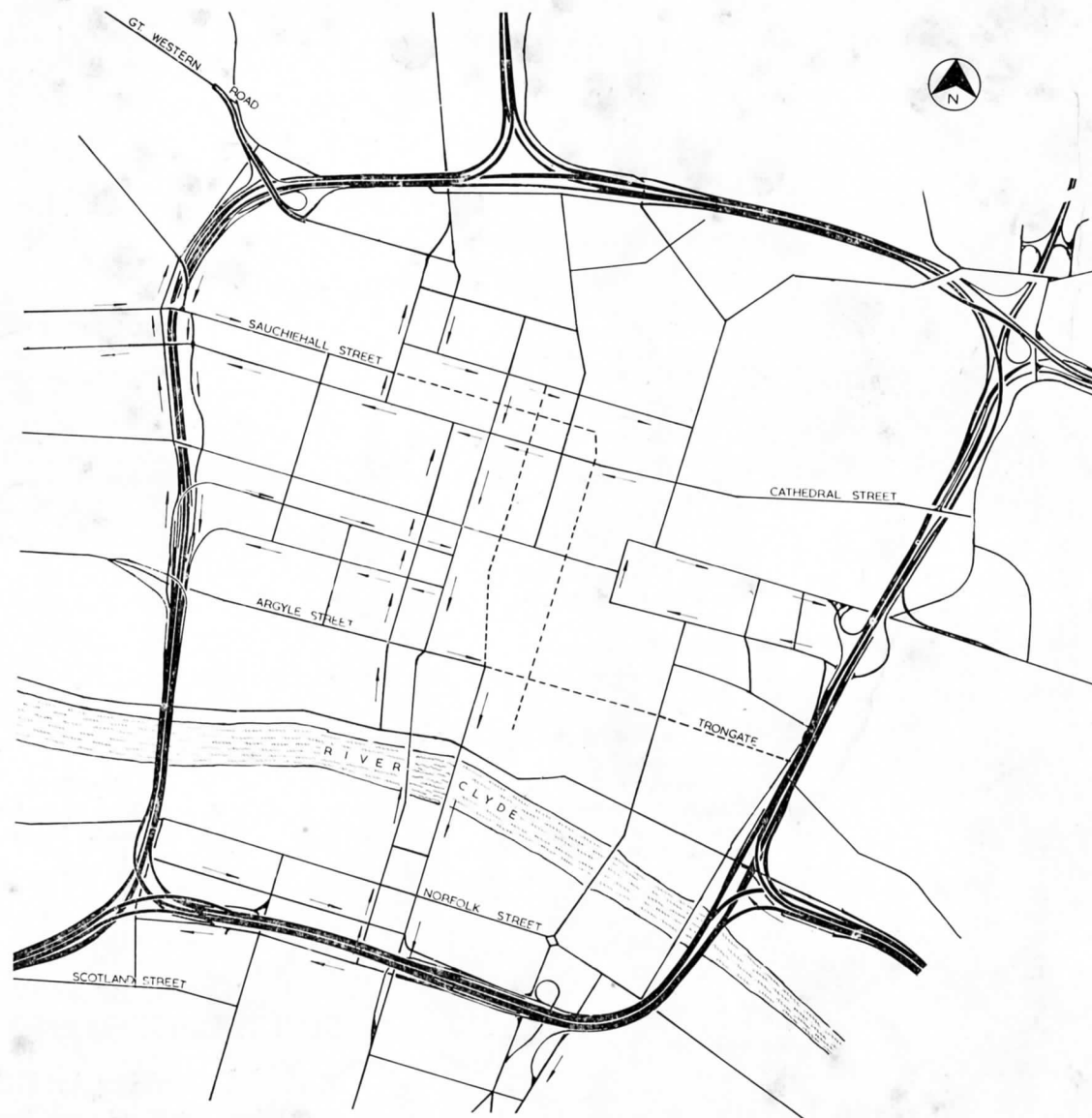


# GLASGOW INNER RING ROAD

*HPM Cofferty*



## TOWNHEAD STAGE 1

**OPENING OF TOWNHEAD STAGE 1**  
by  
**THE SECRETARY OF STATE FOR SCOTLAND**  
**THE RIGHT HON. WILLIAM ROSS, M.B.E., M.P.**

on  
**5th APRIL 1968**

**The Corporation of The City of Glasgow**  
**Highways Committee 1967/1968**

**The Right Hon. The Lord Provost (John Johnston, LL.D., J.P.)**

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**Master of Works & City Engineer**

**John Armour, C. Eng., M.I.C.E., M.I.Mun.E., M.T.P.I.**

**Contractors**

**Marples Ridgway Ltd.**

**Consulting Engineers**

**Scott Wilson Kirkpatrick & Partners**

**Consulting Architects**

**Wm. Holford and Associates**

## INTRODUCTION

As part of a major programme of urban renewal Glasgow is planning the construction of a new system of urban motorways. At the heart of this system is the Glasgow Inner Ring Road a motorway which is to encircle the Central Area of Glasgow, siphoning off through traffic and providing centre bound traffic with easy vehicular access. The first major contract of the Inner Ring Road proposal has now been completed. This scheme is known as Townhead Stage 1 and is the first stage of Townhead Interchange a major intersection at the north east corner of the Ring Road.

Although it forms part of a long term plan the scheme is so designed to provide immediate relief to an existing traffic bottleneck caused by the convergence of 3 major radial routes. This relief will be greatly enhanced by the completion of the roads programmed for the next 10 years which will extend the Townhead scheme both east and west, to provide a continuous motorway route across the city from Glasgow Airport in the west to the Edinburgh and London roads in the east—incorporating the north and west flanks of the Inner Ring Road as a motorway by-pass to the City Centre. The final plan will require the construction of more than 50 miles of new roads costing more than £150 million (1965 costs) over a period of some 25 years.

## GENERAL DESCRIPTION

The scheme is the first stage of the interchange formed by the junction of the proposed Springburn Expressway, which is to be a main radial route to the north of Glasgow, the proposed Monkland Motorway, which is to be a main radial route to the east of Glasgow, and the proposed Inner Ring Road. Each of these projects is scheduled for completion at a different period of the construction programme, and the complexity of the first stage is substantially increased by the numerous sequences through which it must pass before the road system is finally completed.

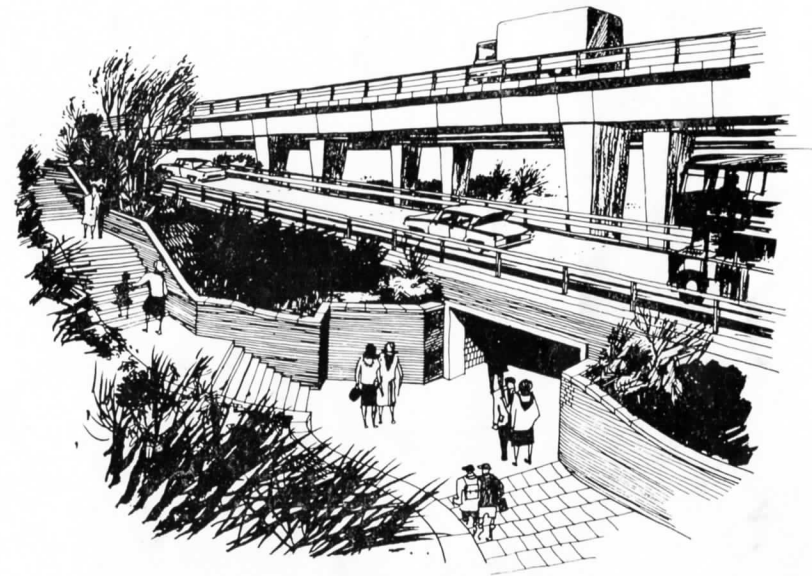
The first stage consists of about 5,000 feet of dual carriageway motorway and a new all-purpose relief road which overpasses the motorway. The motorway flies over Castle Street which is a main north-south trunk route and in so doing gives valuable traffic relief to this congested road.

At the western end of the scheme the contract was extended to make provision for an improved connection with Garscube Road and Craighall Road. This connection is made via Ramps S and T which will ultimately form a point of junction to the final motorway system, and the realignment of an existing street known as Dobbie's Loan.

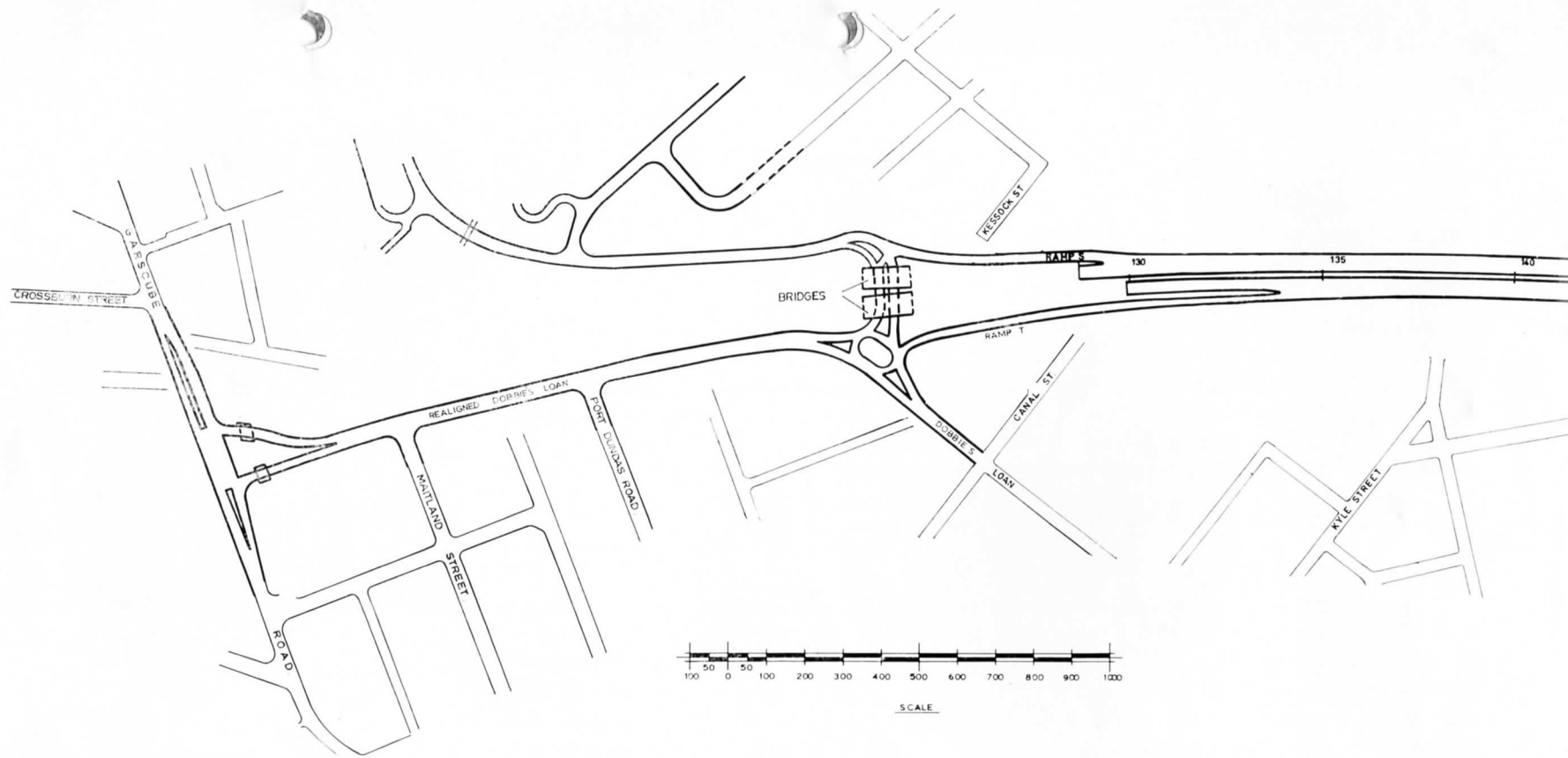
At the eastern end of the scheme traffic is diverted to Alexandra Parade (the main Edinburgh Road) by a temporary connection which will be cut when the Monkland Motorway is constructed. A stub extends beyond this temporary connection to provide a traffic-free platform for connection to the Monkland Motorway. Two stubs are left for ultimate connection to the eastern flank of the Inner Ring Road when this is constructed. These are initially used to form an additional temporary connection to surface streets. Two further stubs are left to provide for the construction of the ramps which will ultimately connect to the Springburn Expressway.



*Ramps J and K East—Under construction*



*Ramps J and K East—Preliminary sketch*



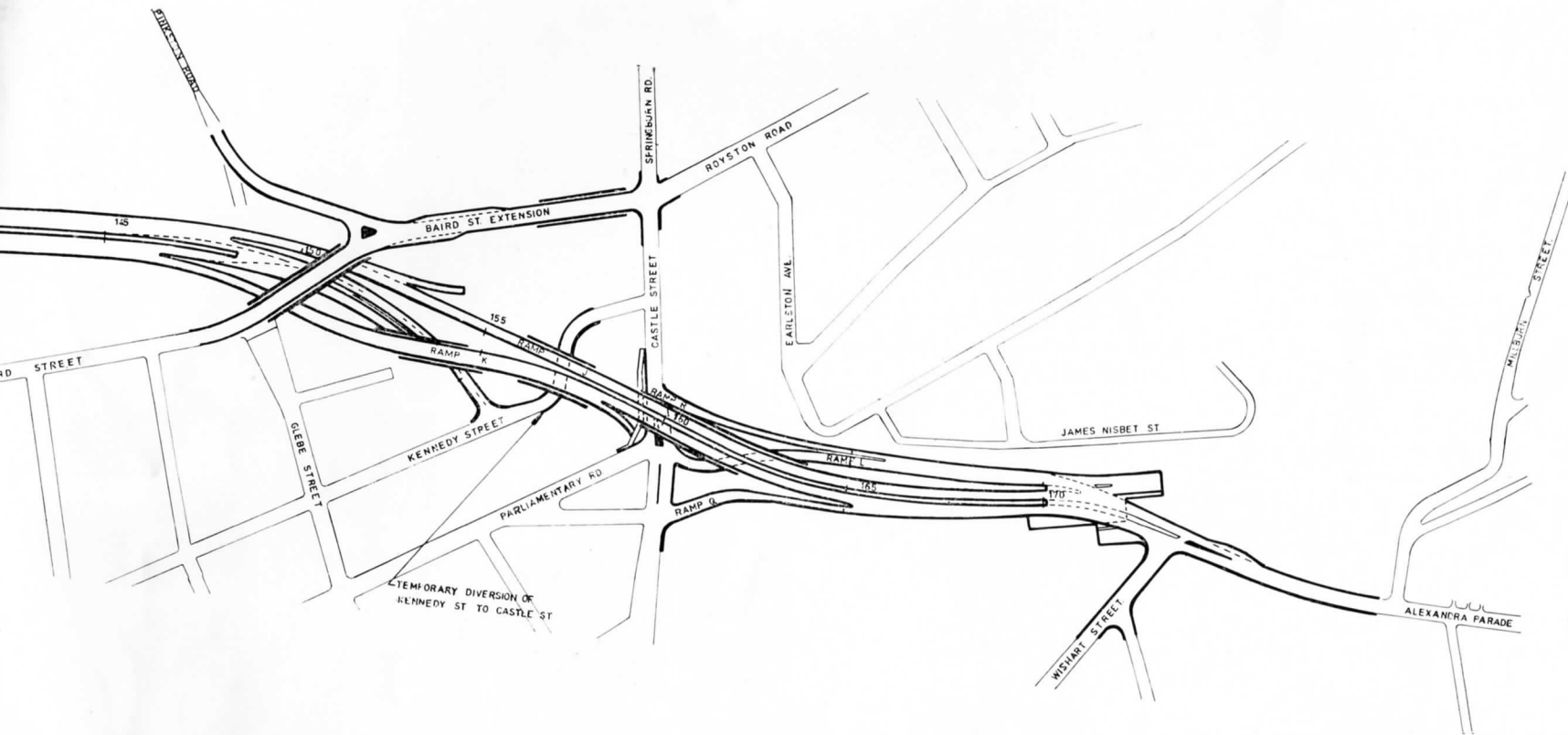
The end of Alexandra Parade has been closed and all traffic is now routed onto the motorway by the temporary connection and thence to Castle Street via Ramps L, R and Q; these ramps will form part of the completed interchange but some temporary work was involved to make the necessary connection to Castle Street in the first stage.

The project will pass through three further stages before it is finally completed. The period 1965 to 1970 is to see the completion of the north and west flanks of the Inner Ring Road by three further major contracts which will extend the Townhead scheme to form part of a city centre by-pass.

The period 1970 to 1975 is to see the extension of this by-pass to join with the Renfrew By-pass in the west and the Hamilton By-pass in the east and to form with them a continuous motorway route across the Clydeside conurbation. At this stage the Townhead project becomes a link in a motorway chain which will carry volumes of up to 100,000 vehicles on an average weekday.

The next stage will be the completion of the Interchange and of the south and east flanks of the Inner Ring Road. When this stage is reached connections will have been made to all of the

*Part of the footpath system*



stubs on Townhead Stage 1 and the project will have fallen into its final place in the Highway Plan.

The fact that the scheme is designed to fit into a final and more complex plan has many immediate physical implications. Complications are caused not only by the stubs which provide for the extension of the scheme but also by the construction of several bridges which are built in advance of their actual need because their construction would become substantially more difficult when the project is opened to traffic. The sequence also affects less obvious construction matters—such as the diversion of public utilities, the provision of drainage and the details of road layout. The completed interchange will include a system of pedestrian ways and will be landscaped and planted to present an attractive appearance. The interchange itself will be lit by 100 ft. high mast lighting which is being designed by the Lighting Department of Glasgow Corporation.

#### ESTIMATED COST

The estimated cost of the contract (including the Woodside 1 extension) is £3.1 million. The starting date for the Townhead contract was the 1st November, 1965; the extension started on the 3rd April, 1967. Two sections of the Works were opened to traffic during 1967.



*Ramps J and K East*



## STRUCTURES

The structures include ten bridges, six pedestrian subways and thirteen retaining walls. Reinforced or prestressed concrete was used throughout because of the flexibility of these materials in adapting structures to complex road layouts. An attempt was made to develop a recognisable theme for the bridge structures by treating them in two major groups according to the structural problem they presented. Five of them were on moderate skews of 20° or less and all of these were built as continuous reinforced concrete slabs.

Four were on heavy skews of between 35° and 70°. In this case prestressed box beams were adopted. Ramps J and K East are the longest and most complex bridges and they fell into this group. These bridges are approximately trapezoidal in plan. The skew at the east end varies but reaches its maximum of 70° clockwise on Ramp K while at the west end the skew is constant at 40° anti-clockwise. The form of these bridges had to be such that they could be built across a major surface street without closing it to traffic and also that they could follow the curved alignment of the motorway.

The box beams were constructed span by span starting at the fixed end of the bridge. The first span was cast to 15 feet beyond the pier and stressed. The second span was then cast and stressed to the first continuity being achieved by lapping the tendons over the piers. The connecting deck slab and cantilevers were then cast. The system of post tensioning used is P.S.C. 12/0.6 in. Freysinet Multistrand system. Both abutments are closed and of complex design due to the heavy skews.

The North Wallace Street footbridge was an individual problem which fell outside these groups. In this case prestressed construction was used on the main motorway spans and reinforced concrete on the approaches.

## ROADWAYS

A design speed of 50 m.p.h. for the Inner Ring Road and 40 m.p.h. for connecting ramps has been used with maximum super-elevation of 7%. The desirable maximum for gradients is 3% with an absolute maximum of 4% up and 5% down on the Ring Road and 6% on ramps. These standards are appropriate to a dense urban area as they enabled land requirements to be held to a minimum.

The pavement construction is as follows:

- 1½ in. hot rolled asphalt wearing course
- 2½ in. hot rolled asphalt basecourse
- 10 in. bitumen-bound roadbase
- 6 in. upper sub-base
- 6 in. minimum lower sub-base

Extensive alterations were required to the drainage and public services which were altered to accommodate not only the various phases of the road construction but also the radical re-development of the adjoining areas.



*Baird Street Bridge and high mast lighting*

### Electrical Consultants for Road Heating

#### Specialist Sub-Contractors:—

|                              |     |                              |
|------------------------------|-----|------------------------------|
| Dick Hampton Ltd.            | ... | Earthworks                   |
| Amalgamated Asphalt Co. Ltd. | ... | Surfacing and Water proofing |
| Wm. Allan Smith & Co. Ltd.   | ... | Road Heating                 |
| Concrete Utilities Ltd.      | ... | High Mast Lighting           |
| Morrison McLaughlin Ltd.     | ... | Welded Fencing               |
| Fencing & Smithcraft Ltd.    | ... | Fencing                      |
| Donald Park Ltd.             | ... | Guard Rails                  |
| Sandberg Ltd.                | ... | Laboratory                   |
| Expandite Ltd.               | ... | Joint Sealing                |

Messrs. Strain and Robertson.



## ROADS AND REDEVELOPMENT

THE GLASGOW HIGHWAY PLAN IN RELATION TO AREAS PROPOSED FOR REDEVELOPMENT (SHOWN HATCHED)



**ROADS AND DEVELOPMENT — AN AERIAL VIEW OF TOWNHEAD**