JP McCafferty. 1993

LOTHIAN
REGIONAL COUNCIL

# Gogar Roundabout — Grade Separation

### *Background*

The original at-grade Gogar roundabout was constructed to provide access to the A720 City Bypass and South Gyle Industrial Estate from the A8 Glasgow Road. Developers submitted a planning application for a retail park in the area lying between Glasgow Road and South Gyle Broadway and a commercial park between South Gyle Broadway and the City Bypass. A traffic impact study was carried out which indicated that the existing at-grade roundabout would be unable to cope with the projected increased traffic flows, particularly those generated by the retail park. For this reason, although planning consent was granted in June 1989, it contained a suspensive condition that, whilst construction of the retail park could proceed, trading could not begin until the proposed M8 extension was constructed and operational. For various reasons the proposed M8 extension has suffered setbacks and by 1991 it was obvious that it would not be available until 1996 at the earliest. The Developers then entered into discussions with the Regional Council with a view to finding an alternative solution to their problem. The Council agreed that conversion of the at-grade roundabout to a grade-separated junction would allow the projected traffic flows to be accommodated. A revised planning application was lodged prior to Christmas 1991. Consent was granted in February 1992 with the condition that the retail park could begin trading only when a grade-separated junction at Gogar was operational. Construction of the grade-separated junction will therefore enable the retail park, Gyle Centre, to trade three years earlier than they might otherwise have done.

### *Implementation*

Following granting of planning consent a target trading date of Autumn 1993 was set by the Developers (The City of Edinburgh District Council, Marks and Spencer plc and Safeway Stores plc) who then called upon the expertise of Lothian Regional Council's Department of Highways asking them to implement the design and construction of the grade-separated roundabout. The Department envisaged that the construction work alone would take 62 weeks and therefore decided that the best way to achieve the target date was to let a design/build contract.

Following this decision advertisements were placed in relevant publications both here and abroad to recruit interested to the advertisements from which 7 were chosen to receive an outline design brief for a flyover. They were given two presentation which had to include drawings, slides and any appropriate alternative design. From the preliminary pre selected to prepare a more detailed design and presentation. The result of this was that Balfour Beatty Limited were and build their alternative proposal of an underpass. The underpass leaves open the option to construct a flyover Bypass to the Forth Bridge.

## *Design*

As stated above, a two-week period was allowed for the 7 chosen groups to prepare preliminary designs which statement, programme and indication of costs, much of the decision making process took place during this perio

Balfour Beatty along with their Designers, Scott Wilson Kirkpatrick, identified the main constraints that would inf

(a) Traffic flows — the retail development in South Gyle is expected to increase peak flows by 60%.

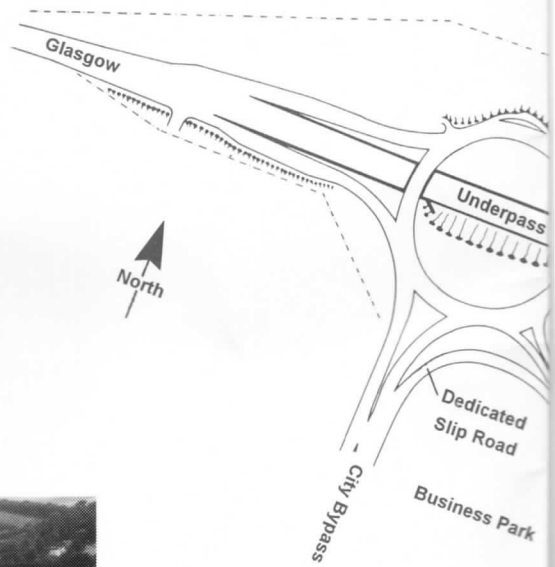
(b) Existing Public Utility Services.

(c) Height Restrictions — Any new works would have to be less than 12m above the existing level due to the proximity of Edinburgh Airport's runway 13.

(d) Future options — provision for a northward extension of the City Bypass had to be included.

(e) Time.

After analysing the constraints the Designers concluded that the Underpass Scheme was the best solution. As well as solving the height restriction problem and leaving open as many options as possible for the future, it met the requirements for the projected traffic flows




The retaining walls at each of the slab. The overhead gantry structu diameter cast *in-situ* bored piles.

## *Traffic Management*

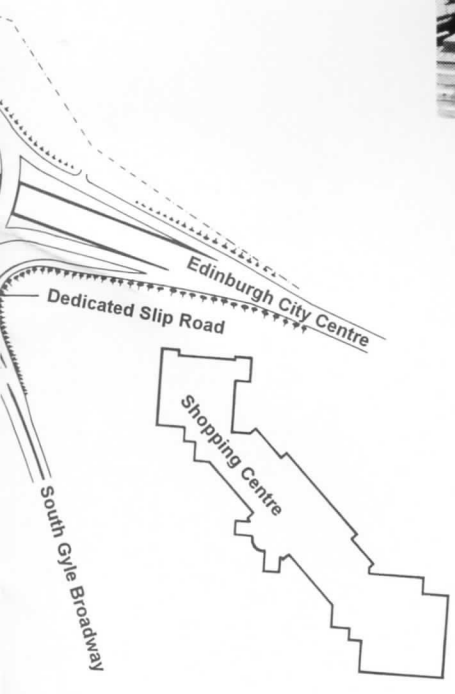
This is one of the busiest roundabo which were required to ensure bu there was little or no disruption t

To enable construction of the b roundabout. Each time the traffic l were involved in transferring the

roups. There were 22 replies
eeks to prepare a preliminary
ntations a short list of 3 were
varded the contract to design
t a later date, from the City

ad also to include a method

ence the design as being:—




## *Construction*

The Contract was awarded in March 1992. The works on site started in May of that year with a contract period of 62 weeks. To allow the design to be finalised individual design packages were identified. The completion of each was linked to the main construction programme. Works on site commenced with only the geometry, service diversions and drainage packages completed.

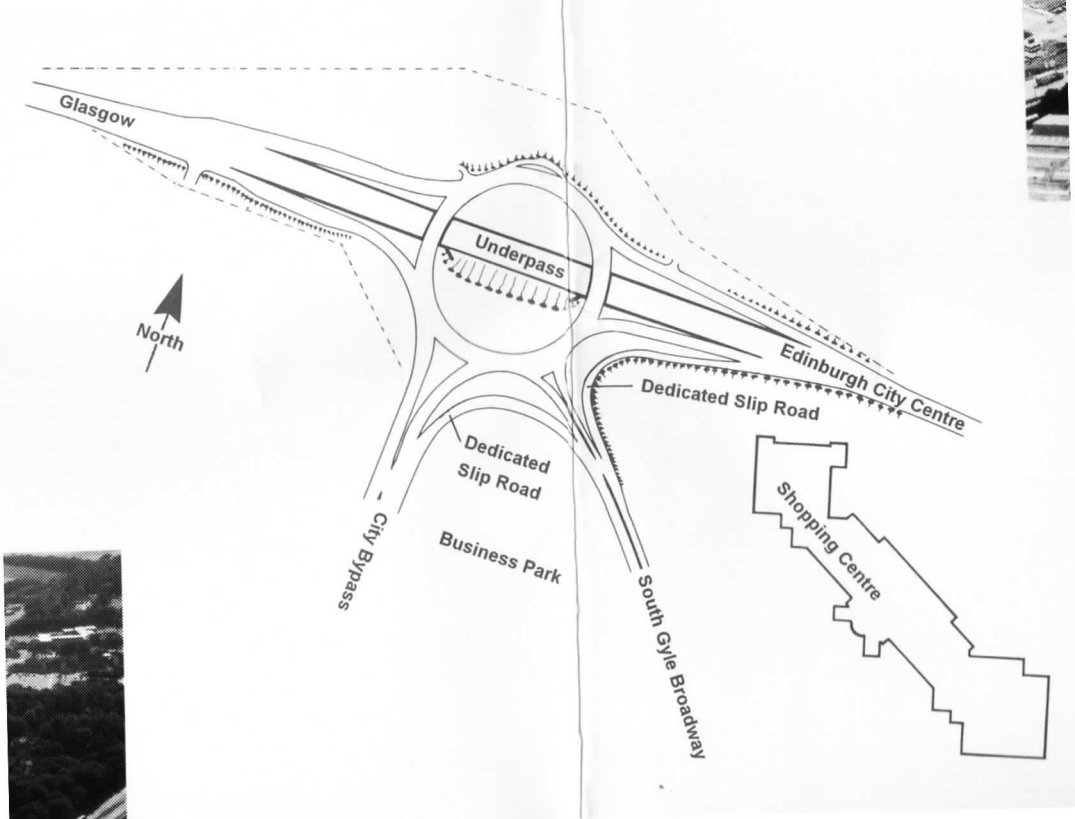
## *Structures*

The retaining walls have been formed by contiguous cast *in-situ* bored piles. The diameters of the piles vary from 600mm-1050mm and they act in cantilever. The piles are faced over their exposed height with a nominal 100mm thick skin of *in-situ* facing concrete and are tied together at the top by an *in-situ* reinforced capping beam.

ridges are propped by the deck structure which consists of precast concrete beams and an *in-situ* concrete deck
; at each end of the site are precast concrete beams and columns set into an *in-situ* concrete base resting on 600mm

s in Scotland and so, obviously, the traffic management requirements were considerable. The temporary diversions
lability of the Underpass Scheme were considered at the pre-tender design stage. The final design was such that
traffic flows.

ges, which carry the roundabout over the underpass, temporary roads were constructed within the existing
out changed the computer controlled traffic signals required repositioning and retiming. A total of 8 separate phases
undabout from the old to the new layout.


Glasgow
Underpass
North
Edinburgh City Centre
Dedicated Slip Road
Dedicated
Slip Road
City Bypass
Business Park
South Gyle Broadway
Shopping Centre

## Services

All public utilities required major diversions. Of these the British Telecom multiway ducts running east/west through the roundabout and the British Gas high pressure transmission pipeline running north/south through the roundabout posed the biggest problems. The implications of the cost and time involved in diverting the BT cables led to road geometry being utilised to avoid diversion works. There was no alternative to diverting the gas pipeline therefore this work had to be phased into the construction programme.

## Project Costs

It is estimated that the out-turn cost of the scheme will be £7.4 million. This includes design and construction costs and items such as land acquisition, public utility diversions, topographical and geotechnical surveys and site supervision.

Funding is by The City of Edinburgh District Council, Marks and Spencer plc, Safeway Stores plc and the Scottish Office.

**Facts and Figures:**

| | | |
|---|---|---|
| Cast *In-Situ* Bored Piles | — | 652 No. |
| Overall Length of Bored Piles | — | 6,600 lin m |
| Structural Concrete | — | 10,000 $m^3$ |
| Formwork | — | 5,000 $m^2$ |
| Excavation | — | 70,000 $m^3$ |
| Surfacing | — | 30,000 $m^2$ |

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## Client:—

Lothian Regional Council
George IV Bridge, Edinburgh

## Engineer for the Works:—

Director of Highways
18/19 Market Street, Edinburgh

## Contractor:—

Balfour Beatty Construction (Scotland) Limited

## Design Services:—

Scott Wilson Kirkpatrick

## Principal Sub-Contractors:—

Stent Foundations
Siemens Plessey
Oldrob Ltd
George A Walker
Walkway Contracting Co Ltd
Pirie & Co (Paisley) Ltd
Andrew Dick & Son Ltd
Lothian Regional Council — InRoads
J J Boyle Ltd
Wimpey Geotech Ltd
Markon Ltd
Concrete Maintenance & Grouting Ltd
ITT Flygt Ltd
Pathfinder Signs Ltd

## Principal Suppliers:—

A R C Pipe Ltd
Asset International Ltd
Costain Dow Mac
Fosroc Expandite Ltd
John Fyfe Ltd
CSC Crop Protection Ltd
Tarmac (Roadstone) Ltd
Tilcon Ltd
Seniors Reinforcement (Northern) Ltd
Russells Quarry Products Ltd
M & D Russell Ltd
Rom Ltd
RMC Catherwood
Tarmac Structural Concrete Ltd


## Acknowledgements:—

The Regional Council would like to thank the following organisations for their co-operation.

Lothian and Borders Police
British Telecommunications plc
Scottish Power plc
British Airport Authority
Civil Aviation Authority
British Gas plc (Scotland)

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# GOGAR ROUNDABOUT — GRADE SEPARATION
# OFFICIAL OPENING CEREMONY

*You are cordially invited to attend the opening by the Chair of Lothian Regional Council, Transportation Committee, Councillor R. H. S. Muir of the Gogar Roundabout — Grade Separation at 11.00 a.m. on Friday 16 July 1993.*

*A reception will then be held at the Maybury Conference and Banqueting Centre (Maybury Hotel), Maybury Road, Edinburgh*

*R.S.V.P.*

40071 —

Gogar opening etc

# Gogar Roundabout - Grade Separation

## Official Opening Ceremony

HPW Safety

## Friday 16 July 1993

## Programme

| | |
|---|---|
| **0930** | Transport leaves Lothian Regional Chambers, Parliament Square, Edinburgh. |
| **1000** | Meet at Maybury Conference and Banqueting Centre for coffee. |
| **1030** | Buses leave Maybury for Gogar. |
| **1045** | Alight at Gogar East Ramp. |
| **1100** | Ribbon cutting ceremony by the Chair of Lothian Regional Council, Transportation Committee, Councillor R.H.S. Muir. |
| **1120** | Board buses at West Ramp (weather permitting) for tour of site. |
| **1145** | Return to Maybury for pre-lunch drinks. |
| **1200** | Official welcome, speeches and unveiling of plaque. |
| **1230** | Buffet lunch. |
| **1400** | Transport returns to Regional H.Q. |

**NOTE:** **Since parking at the site is at a premium it would be advantageous for you to use the transport provided from Parliament Square. If this is impossible then there is limited parking at the Maybury. No private vehicles will be permitted to park on the site or in the compound.**