



**motorway M74**



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Scottish Development Department  
(Roads Division)  
Consulting Engineers  
Babtle Shaw and Morton CCE  
Main Contractor  
Tarmac Civil Engineering Limited



## *in early use*

ON 2nd December, 1966, Stage I of the Hamilton By-pass Motorway M 74 was opened by the Secretary of State for Scotland; nineteen months later Stage II is ready for use. Five miles added to the earlier nine complete the work, bringing to its climax the highroad that runs from Gretna to the fringe of Glasgow.

Already some of the benefits of the new motorway have made themselves felt: Larkhall has experienced an easing of traffic congestion that for years it could scarcely have imagined; Hamilton, sorely pressed for so long, is drawing breath more comfortably, thanks to the use of the interchange with the A 723 to Motherwell, one of the busiest roads in Scotland, and to the advance opening of a section of Stage II. Now, almost literally overnight, Bothwell and Uddingston are to be sharing in the betterment.



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**preliminary problems** NO highway nowadays can have the arrow-straight directness of a Roman road, but the gradual curves of the M 74 — designed on the “flowing alignment” principle — show clearly the care with which the choice of route was made. Interference with buildings was minimal, but another major problem presented itself instead — the need to cross the unpromising Low Parks area of Hamilton. Here, over the years, the ground has settled no less than 17 feet as a result of coal mining operations, and for long, severe flooding of the River Clyde has been occurring. Conditions have been aggravated by the fact that down-river, beneath Bothwell Bridge, there were no workings and little or no subsidence has taken place; consequently the rock outcrop on which this bridge is founded has acted as a submerged barrage. Special preliminary site and model investigations were carried out, however, so that it was possible to determine economic bridge spans and safe levels for the massive embankments of imported fill that would be required.

STAGE II of the motorway begins just north of the A 723 interchange. Significantly, the carriageways change here from two-lane to three-lane, ample margin having had to be allowed for the traffic growth that was anticipated when the initial surveys, centred on Hamilton, were carried out as far back as 1960.



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## service areas

MOTE HILL, to the left, is said to be the site of the castle of Rederech and Langoreth, King and Queen of Cadzow, who in 568 were converted to Christianity by St. Kentigern. Imaginatively perhaps, the hillock and its castle may have inspired the circular tower design of the restaurant and cafe building which is to be the striking focal point of the northbound service area just beyond. This area will have filling stations, repair workshops, ample parking spaces and quiet grounds planted with horse chestnuts, sycamores, geans, maples, limes and a profusion of other trees.

It will provide a welcome pull-in for travellers nearing journey's end in Glasgow, just as the corresponding southbound area, two miles farther on, will be ideally placed to help those setting out on the 90 minute run to Carlisle and beyond.

The layout of these two service areas will be typical of the landscaping that is much in evidence all along the motorway, especially the careful grading of side slopes in cuts and on embankments, and the planting of many thousands of trees — already to be seen in the vicinity of the A 723 interchange (built as part of Stage I).

THOSE who took part in bringing the motorway across the Low Parks area will not easily forget what was involved, in particular the toil during weeks of atrocious winter weather when bulldozers and drag-lines bogged down in seas of mud or became marooned in swirling floodwaters. The construction work here demanded a co-operative effort by the contractors of both stages of the motorway: first, excavation of the peaty morass, then addition of a free-draining base of rock taken from cuts on the line of the motorway east of Larkhall and blaes from the old Palace Colliery bing. To this the Stage II contractor added the road base and structure — carried out in orthodox flexible construction — as

well as the necessary drainage.

One important aspect of M 74, apt perhaps to be forgotten, is the part it will play in giving visitors possibly their first impressions of the industrial heart of Scotland: the new image that is gradually taking the place of the old. To the right the skyline of Motherwell's new town centre, to the left the views towards Hamilton — golf course and race course, 16-storey tower block of the Teachers' Training College and, more distantly, the County Council offices — are fair exchange for a bleak panorama of bings. Eventually, too, the motorway may well be at the heart of the projected Strathclyde regional park, with its artificial boating-lake and surrounding open spaces, not least in importance the bird sanctuary, celebrated for its wintering ducks and migrant waders.



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## **raith bridge**



CARRYING the twin three-lane carriageway 450 feet across the Clyde, the Raith Bridge is of outstanding structural interest and is indeed one of the most notable features in the whole length of the motorway. It is not easily viewed from close at hand, but even distantly from near Bothwell Bridge — preferably with the river running brown in spate — one can appreciate its clean sweeping lines and the value of its spacious flood spans.



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TO the layman the story of its construction — a German technique used for the first time in Britain — is like that of a military operation. Once the supporting piers were in position, the two independent steel superstructures, made up of massive 140-foot girders that weighed in all some 990 tons and had already been welded in readiness on the north bank, were literally launched — with appropriate camber — across-river on rollers. Positioned first on temporary supports 20 inches higher than the piers, the superstructures had their concrete decking added, "tied" with hundreds of shear connectors; then, after a suitable period to allow this slabbing to mature, the steelwork was jacked down on to the piers to give a deck of inherently increased strength. Meanwhile round the abutments every precaution was being taken to nullify the erosive effects of the inevitable future flood-waters: huge wire basket-like "gabions" filled with rock were placed on the blaes as though to withstand some prolonged mediaeval siege.



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to Stirling

PROJECTED M73

MARYVILLE JUNCTION

UDDINGSTON

River Clyde

to Glasgow

M74

SERVICE AREA

M74

A725 INTERCHANGE

A74

BOTHWELL

BELLSHILL

STIRLING

CARLISLE

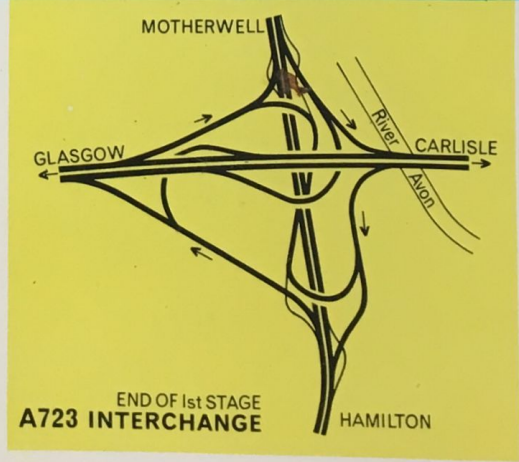
River Clyde

# motorway M74

*second stage*



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## bothwellhaugh interchange



HALF A MILE beyond Raith is the Bothwellhaugh interchange, of the "flyunder roundabout" variety and the only one on the motorway of near-standard layout. Of chief importance here is the slip road available to switch northbound traffic speedily and simply on to the A 725, a busy route which itself is in process of major improvement — by the end of 1968 it will provide a dual carriageway link, by-passing Bellshill, with the A 8 between Glasgow and Edinburgh. Temporarily at least, this alternative will offer motorists the quickest finish to their route from Carlisle into Glasgow.

Not far beyond the interchange is the abrupt scarp which, on clear days, gives sudden long vistas across the Low Parks area to motorists southward bound. This higher ground is penetrated by a cut, in places as much as 40 feet deep yet seemingly quite shallow on account of the easy grading of its slopes.

The spoil-tip of mud to be seen on the right just at the nose of the scarp, heaped and crumpled like a massive brown-grey avalanche, is not particularly sightly prior to landscaping. In its own way, however, it pays a remarkable tribute to those of the contractor's labour force of between 400 and 450 who, in the course of construction of Stage II, excavated over two million cubic yards of unsuitable material — almost twice the amount of suitable material removed.







*Uddingston Bridge*

## **bridges en route**



OF the 40 bridges needed along the entire motorway — 18 on Stage II — Raith may take pride of place; many others nevertheless have features which give them more than mere passing interest. One third of the total are of the multi-span slab type supported on tapered circular columns, and these were found to have numerous advantages. The solid concrete plinths at the base of the columns — under the Fallside Road bridge, for instance — are incorporated to minimise damage in the event of accidents, while also of road safety interest is the “saw toothed” texturing of abutments, as at Powburn Toll bridge, particularly useful at night for the partial reflection of headlights. Most awkward to construct was the skew-angle bridge required to carry the motorway over the electrified railway line at Uddingston.

Here the work of building the piers and positioning the massive precast concrete beams had to go on despite inexorable limitations imposed by a 20-minute train service. Approaching this bridge and skirting Uddingston Industrial Estate, almost a mile of embankment was necessary.

For this, because of the unsound foundation, lighter density pulverised fuel ash was imported from coal-fired generating stations and built in 12-inch layers, each layer being thoroughly rolled and allowed to settle before the next was spread.

Farther on, the more closely built-up surroundings stress the difficulties there would have been had it not been possible to choose a line with little disturbance to property. One resident, incidentally, who took less kindly than most to being asked to move elsewhere was a local donkey!

*Bothwellpark Bridge  
Powburn Toll Bridge  
Raith Bridge*





## Scotland's first motorway to motorway

CLIMAX and showpiece of the whole motorway is the Maryville junction, the spectacular link with the projected M 73 in the first three-level and first inter-motorway junction in Scotland.

Basic design here was especially important and also especially difficult because of restrictions of space — to the north steeply rising ground, to the east Uddingston housing developments,

to the south the Clyde. and to the west the North Calder Water and Daldowie Crematorium. Due consideration finally dictated the choice of a T-shaped directional layout, with the various crossings, united with suitable curves and grades, into a single three-level structure. On the most unpromising-looking terrain of sticky, silty clay the whole intricate drawing-board pattern has gradually become reality. Here as impressively as anywhere the activities of drag-lines and dump trucks, of bulldozers and scrapers and blade-graders, often in the foulest of weather conditions, could be watched to advantage. Now, 50 feet above the motorway, the huge upper bridge — supported at the centre reserve by a steel box portal with inclined legs — is ready to carry the future M 73 to Glasgow traffic; through these legs the lower bridge will be taking traffic into the M 73 from the north-bound stream on M 74. For the upper bridge the box girders are curved in plan to the same radius as the roadway, whereas the greater radius of the lower permitted the use of straight beams, thus simplifying fabrication.



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POSSIBLY, however, most interest of all lies in regarding Maryville as a vital key to the road-pattern of the future. From the north-aligned stub of the junction the new M 73 Maryville Link Road — construction of which is likely to be under way before the end of 1968 — will lead to an intersection with the Glasgow Edinburgh road near Baillieston and thence to a terminal interchange on the Glasgow-Stirling road near Mollinsburn, stages expected to be completed in the next two to three years.

## the future

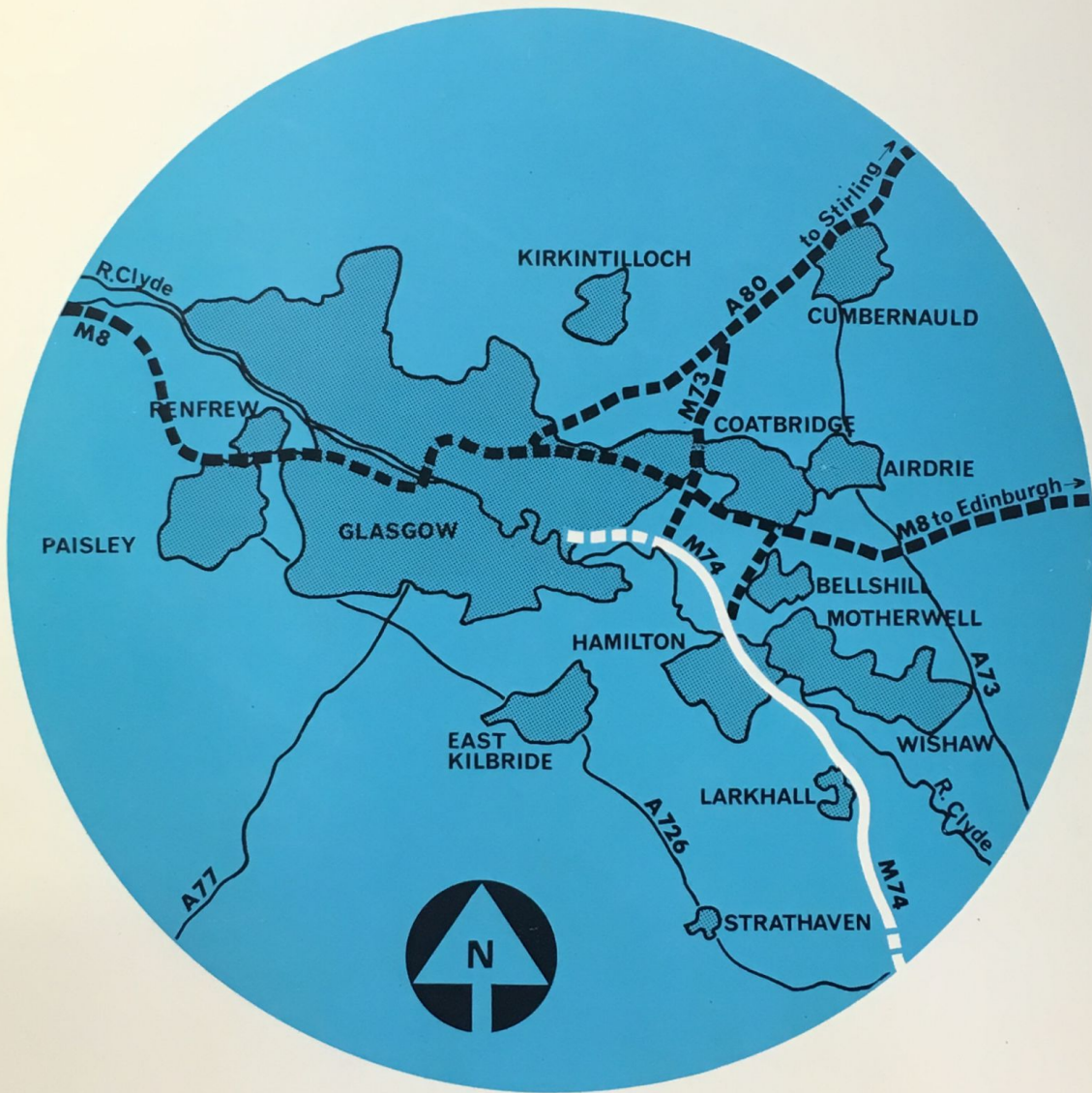
In due course the M 74 will drive straight on into the heart of Glasgow; for the time being, however, the continuation from Maryville will have to follow the familiar lines with the familiar congestion. But once Stage 1 of M 73 is ready, it will provide a fast, uncomplicated alternative — in due course via the Monkland motorway — to the Townhead interchange and such as may exist of the Glasgow Inner Ring Road.

Thus, purposefully, the new pattern is emerging, the planning and the craftsmanship and the toil of the present fashioning the essential foundations on which the Scotland of tomorrow will depend.



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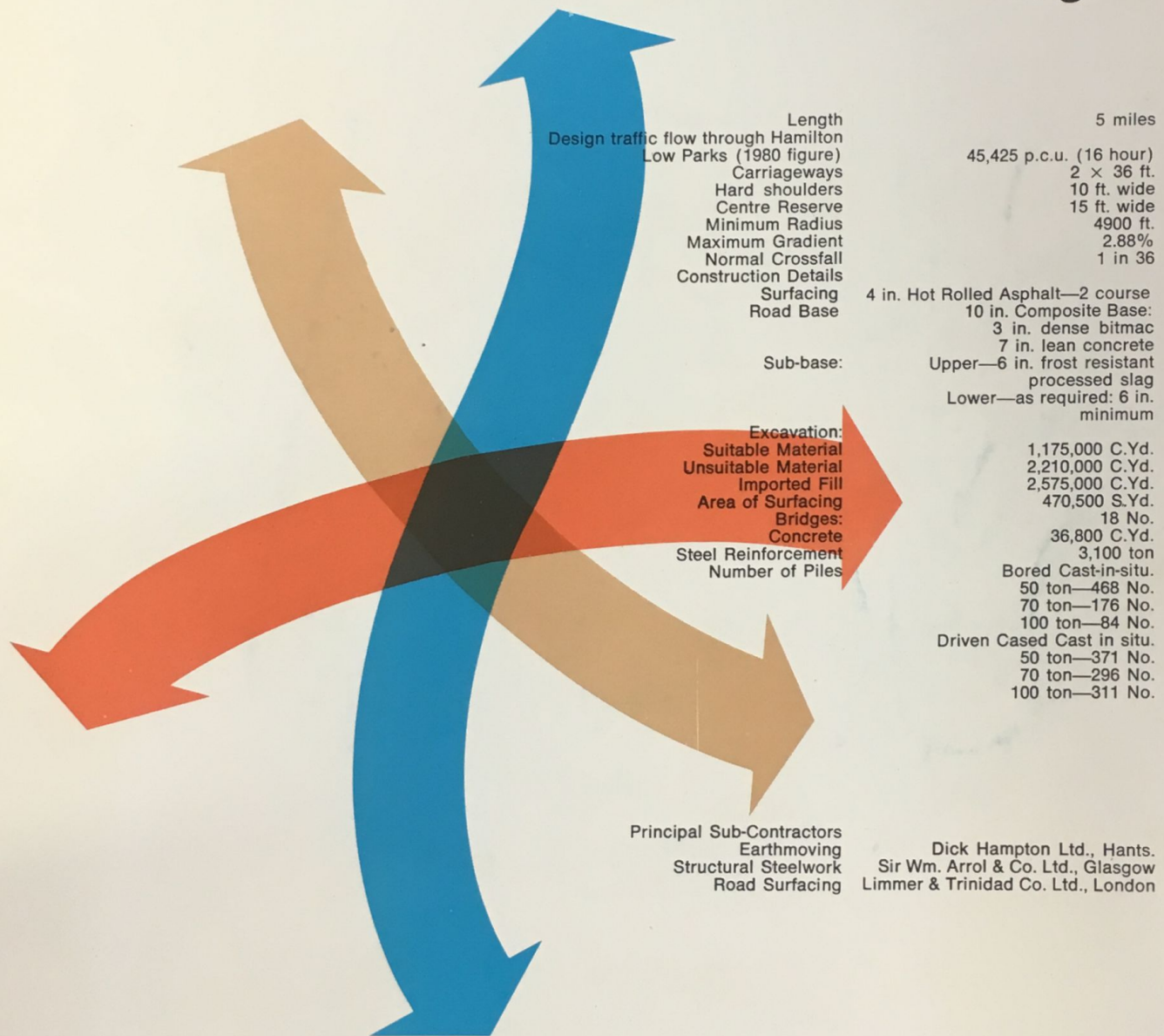


***in relation to others***



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## technical data stage 2





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**Glasgow**

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