



LANCASHIRE COUNTY COUNCIL
HIGHWAYS AND BRIDGES COMMITTEE

NORTH OF ST. HELENS-ORMSKIRK-
SOUTHPORT TRUNK ROAD, A570
THE RAINFORD BY-PASS AND ITS
EXTENSIONS

(FROM WINDLE SMITHIES TO FOUR LANE ENDS, BICKERSTAFFE)

OPENING CEREMONY

TO BE PERFORMED BY

COUNTY ALDERMAN ALFRED BATES, M.C.
Chairman of the Lancashire County Council

WEDNESDAY, DECEMBER 13TH, 1950.

The Highways and Bridges Committee

County Alderman A. Bates, M.C. (*Chairman of the County Council.*)
County Alderman A. Smith, J.P. (*Vice-Chairman of the County Council.*)

Chairman

County Alderman Sir Frederick Hindle.

Vice-Chairman

County Alderman W. J. Bridge.

County Aldermen

W. Alderson.	H. Gorton.
T. Atkinson, J.P.	P. Ley, J.P.
G. H. Ashworth, J.P., M.A.	Sir Percy Macdonald, J.P.
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B. Drake.	W. E. W. Todd.
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Officers

Sir Robert Adcock, C.B.E., D.L.
Clerk of the County Council.

James Drake, B.Sc., M.I.C.E., M.I.Mun.E.
County Surveyor and Bridgmaster.

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NORTH OF ST. HELENS-ORMSKIRK-SOUTHPORT
TRUNK ROAD, A570
THE RAINFORD BY-PASS AND ITS EXTENSIONS
(FROM WINDLE SMITHIES TO FOUR LANE ENDS, BICKERSTAFFE)

GENERAL DESCRIPTION.

The scheme has involved the construction of 5.98 miles of new road, comprising 5.63 miles of dual carriageways, cycle tracks, footways, etc., to a total width of 120 feet, and 0.35 miles of single carriageway road and footways within a width of 60 feet, together with one major bridge and a large amount of ancillary works.

The location of the new road, and of that which it supersedes for through traffic use, is shown on the attached sketch plan.

Its purpose is primarily to relieve the acute congestion and danger which arose from the inability of the existing road in Rainford to accommodate the increase in its traffic load following upon the construction of the Liverpool—East Lancashire Road. The superseded route, of which the width averaged only some 35 feet, was of most unsatisfactory alignment, as can be seen from the sketch plan ; moreover, being built-up to an appreciable extent, it could only be widened by carrying out demolition to a prohibitive extent.

Although often referred to as the " Rainford By-Pass," the newly-completed scheme consists also of the reconstruction to modern standards of the old road north and south of the by-pass proper, for a distance of 1.08 miles on the St. Helens side and 2.50 miles on the Ormskirk side, the by-pass itself being 2.40 miles in length.

Since the work began, the Ministry of Transport have recognised the importance of the route by transferring it from Class I to Trunk Road status.

HISTORY AND DETAILS.

The scheme has passed through many vicissitudes since its inception in 1937. It was halted by the outbreak of war ; a completed portion then served a military use for some years as a parking area for tanks ; the post-war completion of the work was jeopardised by lack of cement ; and finally the roadworks specification was radically changed to permit the use of materials in easy supply.

The history and details of the project are set out overleaf in a chronological form.

1937.

Rainford Urban District Council asked that a by-pass of Rainford should be constructed as a matter of urgent necessity.

The County Surveyor, at that time Mr. Peter Schofield, considered that provision should be made not only to by-pass Rainford but to improve the entire route from the East Lancashire Road at Windle to Southport, dealing first with the length south of Bickerstaffe.

This proposal was approved by the County Highways and Bridges Committee, of which County Alderman Sir Percy Macdonald, J.P., was then Chairman.



VIEW OF OLD ROAD IN RAINFORD LOOKING NORTH

1938.

Detailed plans for the length from Windle to Bickerstaffe, including the by-pass of Rainford, were submitted to the Ministry of Transport, and in September, 1938, the scheme was approved and grant indicated at the rate of 60 per cent.

Figure No. 1 on the sketch plan illustrates the widths, thicknesses and types of materials agreed.

Tenders were invited, and that of Messrs. W. Turner (Ardwick), Ltd., Manchester, was accepted in the sum of £233,417.

1939.

Work was commenced in February, 1939, upon the centre section of the contract, *i.e.*, the length by-passing Rainford.

Good progress was made up to the commencement of hostilities in September, and by the end of the year a large part of the centre section had been completed except for the cycle tracks and footways ; on the southern length, between the by-pass and Windle, the earthworks and carriageway formation were partially complete.

1940—45.

Work was finally suspended in the summer of 1941, by which time the centre section was complete. The contract was terminated by payment of £109,450 to the contractor in respect of the proportion actually executed.

In 1943 the completed length was requisitioned by the War Department for use in accommodation and repair of tanks and military equipment, with the exception of a short length of the easterly carriageway (from Bottle and Glass Brow to Pasture Lane) which remained in public use as a two-way road. In addition an area of land which had been acquired between the centre section and Windle for the new road was taken over by the Ministry of Supply for use as a cotton store.

1946.

As soon as the Ministries concerned terminated their occupation of the roadway and land, the County Surveyor (Mr. James Drake) took steps to have the completed length of the by-pass opened to traffic.

The wear and tear by tracked vehicles had damaged the surface and kerbs of both carriageways. At a cost of £50,612 which was reimbursed from Government funds, approval was given for the carriageways to be carpeted with two-coat hot-rolled asphalt, 2½ inches thick, and for the damaged kerbs to be replaced. Messrs. Wirksworth Quarries, Ltd., obtained the contract for asphaltic work. The other incidental work was carried out by direct labour under supervision of the County District Surveyor (Mr. H. K. Hinds).

In April, 1946, the route was transferred to Trunk Road status, and as a consequence the Ministry of Transport became Highway Authority for the road, the County Council acting as their agents and being fully reimbursed for the cost of all further new work or maintenance. The whole of the design and construction work subsequent to this date has been carried out by the County Council as agents for the Ministry of Transport, the Divisional Road Engineer being Mr. A. H. Dodd, O.B.E., B.Eng., A.M.I.C.E.

Earlier in the same year, the County Surveyor was asked by the Chief Engineer of the Ministry of Transport (then Major Aldington, C.B., M.I.C.E., M.Inst.T.) and the Divisional Road Engineer, if he could suggest a scheme suitable to absorb unemployment in the Liverpool area, and he pressed the desirability of completing the Rainford project.

The County Highways and Bridges Committee, under the Chairmanship of Sir Frederick Hindle, approved the action of the County Surveyor.



VIEW OF OLD ROAD SHOWING RIGHT-ANGLE BEND AT TOP OF BOTTLE AND GLASS BROW

The plans of the uncompleted portion of the scheme were revised to comply with post-war changes in highway engineering standards and submitted to the Ministry of Transport, together with proposals for certain temporary diversions round dwelling-houses of which demolition had to be postponed in view of the housing shortage. Permission to invite tenders was given in August, 1946, and Messrs. W. Turner (Ardwick), Ltd., were once more successful, this time in the sum of £271,366 for a reduced length of 3.58 miles of road. Work commenced in November, 1946.

1947.

During 1947 it rapidly became apparent that the national shortage of cement would affect progress most adversely, and perhaps prohibitively.

It had been intended that the carriageways should consist of 10 inches thick, double-reinforced, concrete slabs on a 9-inch thick shale base. For the cycle tracks concrete had also been selected, the specification providing for 4-inch thick unreinforced slabs on a 4-inch thick shale bed.

After some months of doubt as to the fate of the scheme, the County Surveyor proposed that the concrete specification should be abandoned in favour of bituminous macadam. On the suggestion of the Divisional Road Engineer a revised scheme was submitted to the Ministry of Transport, incorporating two 4-inch layers of broken stone under a bituminous surface, instead of the single-layer stone pitching which is more usual in this form of construction. In these amended proposals concrete was also eliminated in the cycle tracks.

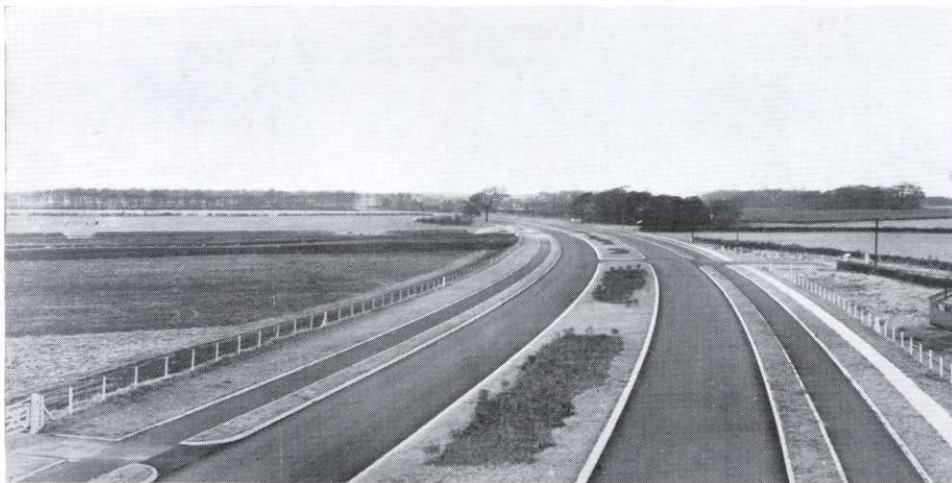
The revised specifications were approved by the Ministry of Transport and sanction was given to re-commence the work after new rates for the affected items had been negotiated with the Contractors.

Figure No. 2 on the sketch plan shows a typical cross-section of the work as finally carried out under the post-war contract.

In the meanwhile, the re-surfacing of the dual carriageways on the centre portion was completed, and this length of 2.40 miles was re-opened to traffic.

1948.

Construction in accordance with the new specification began in the spring of 1948, and the whole length of the scheme was made available to the Contractor, except for some 150 yards immediately adjacent to the railway bridge. This length was deferred until the railway bridge could be re-constructed and, as described later, was carried out to an experimental specification by direct labour.



TYPICAL VIEW OF COMPLETED ROAD LOOKING NORTH FROM WHEATSHEAF HOTEL

1949.

Work proceeded on the roadworks contract. The Ministry of Transport approved a scheme for re-constructing Rainford Railway Bridge which had been prepared by the Civil Engineer, British Railways, London Midland Region (Mr. J. Briggs, O.B.E., M.I.C.E.), and tenders were invited by him. The contract was awarded to Messrs. L. Fairclough, Ltd., Adlington, in August, on their tender of approximately £45,000. Bridgeworks commenced on the site in December, and are described in a later paragraph.

1950.

Work on the main roadworks contract was completed in June.

The railway bridge superstructure was rolled into its final position in July.

The remaining portion of roadworks was commenced by direct labour in September, and will be completed in time for the opening ceremony.

GENERAL NOTES.

1.—*Cost.*

The cost of the entire project, excluding the amount of £50,612 expended on repair of wartime damage at the centre section but including the bridgeworks which were carried out under the direction of the Railway Executive, was approximately £465,446.

The details are recapitulated below. Figures in each case are based on the final measured bill, or an approximation where the final account is not yet settled :—

<i>Roadworks—</i>	£	£
Pre-war work	110,946	
Post-war work —		
(a) Contract	214,300	
(b) Direct Labour	40,200	
Cost of acquiring Lands and Property	33,900	
	<hr/>	
TOTAL COST OF ROADWORKS	399,346	
 <i>Bridgeworks—</i>		
Construction of Rainford Railway Bridge (including Railway Executive's charges)	49,000	
 <i>General—</i>		
Administration and Salaries of Resident Engineers and Clerks of Works (County Council Charges) ...	17,100	
TOTAL COST OF SCHEME	<hr/>	£465,446

Of the above total cost, the County Council contributed £51,647, being that proportion of the expenditure to which they were committed prior to the transfer of the route to Trunk Road status.

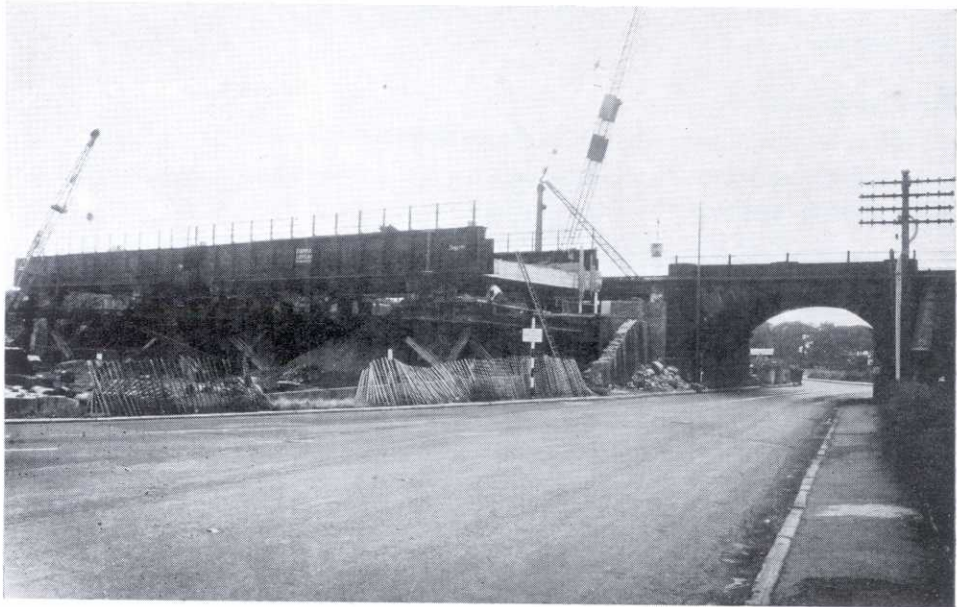
2.—*Principal Quantities of Work and Materials.*

In carrying out the work, the following main items of labour and materials were involved :—240,000 cubic yards of excavation and imported filling ; 15½ miles of surface water drains ; 40 miles of road and cycle track kerb ; 108,000 tons of shale under carriageway or cycle track ; 67,000 square yards of 10 inches thick concrete ; 55,000 tons of 8-inches thick hardcore ; and 21,400 tons of bituminous macadam. The whole of the bituminous macadam was laid by County Council operated Barber-Greene spreaders, 15 per cent. by the Ministry of Transport machine on loan to the County Council, and the remainder by County Council owned machines.

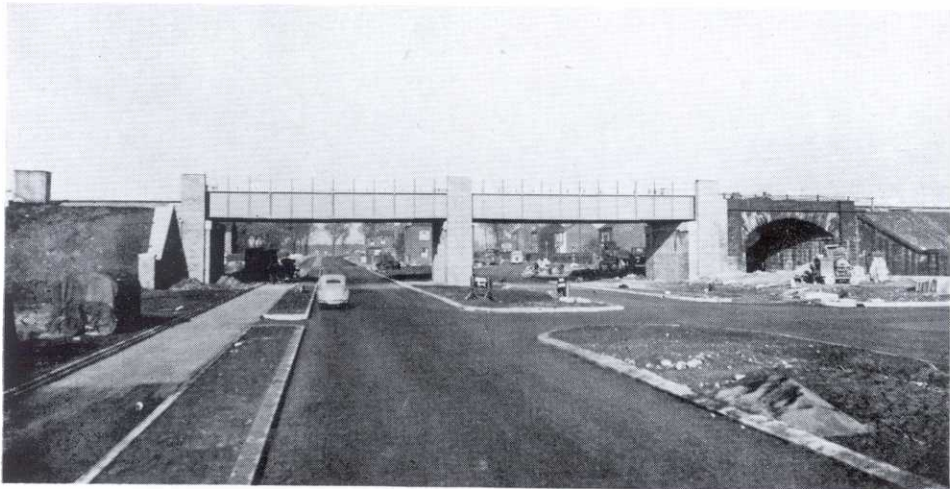
3.—*Rainford Railway Bridge.*

As mentioned earlier, the bridge was designed and constructed under the direction of Mr. J. Briggs, O.B.E., M.I.C.E., Civil Engineer, British Railways, to the approval of the Ministry of Transport.

Its construction was necessary in order to pass the new road with the necessary headroom of 16 feet 6 inches under the Liverpool—Bolton line of British Railways. It is of steel girder construction, having two 60-foot spans supported on brick-faced concrete abutments, with a pier sited on the central reserve. The nature of the ground necessitated reinforced concrete piling of the foundations.



RAINFORD RAILWAY BRIDGE NO. 2062
BRIDGE SUPERSTRUCTURE ERECTED ON STAGING PRIOR TO ROLLING INTO FINAL POSITION



RAINFORD RAILWAY BRIDGE NO. 2062
VIEW OF COMPLETED BRIDGE LOOKING NORTH. ROADWORKS IN COURSE OF CONSTRUCTION

Special care was taken, in consultation with the County Surveyor, to select a type of brick which would give a pleasing appearance to the face-work.

To minimise interference with train traffic, the bridge superstructure, weighing 600 tons, was assembled alongside and level with the track and then rolled into position on a Sunday. This reduced the period of complete stoppage of train services to 30 hours.

The main contractors were Messrs. L. Fairclough, Ltd., and the steelwork was supplied and erected by Messrs. Dorman, Long, Ltd.

4.—*Mining Subsidence.*

Since it was known that old colliery workings existed under part of the area traversed by the scheme, investigations were made as to whether the new road was likely to be affected.

Boreholes were made at the shafts and over the known area of these old workings to determine whether cavities existed in the worked-out seams, but none was discovered sufficiently near the surface for danger of settlement to exist.

In three instances, disused shafts were found within the highway boundaries near Crank Road. Although they had been filled in, a reinforced concrete raft was laid over one of them which was located in the carriageway in order to prevent any danger to traffic arising from subsidence.

5.—*Experimental Roadwork on Railway Bridge Approaches.*

With the approval of the Divisional Road Engineer, the County Surveyor has taken the opportunity, in conjunction with Mr. A. J. Lyddon, C.B.E., M.I.C.E., Director of the Federation of Coated Macadam Industries, of carrying out certain experimental work when constructing the road adjacent to the railway bridge.

The form of construction shown on Figure No. 2 in the sketch plan has been amended on this length by substituting, in place of the 8-inches thickness of hardcore, two 3-inch layers of macadam which had been pre-coated, prior to laying, with a small amount of bitumen. The specification of the 3-inch thick bituminous macadam coat immediately underlying the running surface has also been varied by reducing the maximum size of stone used and by eliminating all material less than $\frac{3}{8}$ -inch gauge.

Apart from the shale under-base, all materials used in constructing the carriageways of the scheme were laid by Barber-Greene spreaders.

It is felt that there is a promising future, both for the form of construction adopted for the major part of the scheme (which has since been used in many cases elsewhere in the County) and for the experimental specification mentioned above.

There is little difference between the costs of these two methods and that of the normal pitching specification, but they have the great advantage of saving a considerable amount of time and labour, and it is also felt that a better running surface will result.

6.—*Planting of Centre Verges.*

In view of economic considerations, the pre-war concept of comprehensive tree and shrub planting has had to be limited to a programme only sufficient to provide an anti-dazzle screen where the alignment of the road makes this necessary.

The types of shrubs which have been planted were selected by the Ministry of Transport Horticultural Adviser (Mr. L. E. Morgan, N.D.H.), and the work was carried out by direct labour in accordance with specifications and location plan prepared by him.

7.—*Properties Demolished.*

The number of dwelling-houses demolished in the course of the work amounted to only 13, comprising one farmhouse and 12 old cottage-type properties.

The tenants of the cottages were re-housed in new accommodation erected by the Earl of Derby Estates. Possession of three of the original houses was given to wartime evacuee families at the request of Rainford Urban District Council ; since these families elected to remain in the area after the war, they were ultimately accommodated in new houses provided by the Urban District Council.



RECONSTRUCTED ROUNDABOUT AT JUNCTION WITH LIVERPOOL—EAST LANCASHIRE ROAD
AT WINDLE. COMMENCEMENT OF NEW ROAD SHOWN ON RIGHT

It will be observed on the site that two short lengths of the new road deviate round dwelling-house properties, totalling 13 in number. This was done in order to preserve these properties until such time as the general housing situation may ease sufficiently for consideration to be given to completing the road in its final form.

8.—*Density of Traffic.*

At the time of the Ministry of Transport traffic census in 1938, the maximum daily flow recorded along the route (at Four Lane Ends, Bickerstaffe) amounted to 6,023 vehicles and 2,173 cycles.

9.—*Dual Carriageways in Lancashire.*

The scheme comprising 5.63 miles of dual carriageways is nearly two miles longer than the greatest continuous length of dual carriageways previously constructed in Lancashire, which was the Formby By-pass.

It brings the total length of this type of road to 19.28 miles in the Administrative County, and with the short lengths at Scholes Bank, Horwich, and Church Street, Adlington, marks the completion of all work of this type at present authorised in Lancashire.

Since it is universally accepted by highway engineers that dual carriageways have a tremendous advantage over single carriageways from the point of view of road safety, it is to be regretted that present economic difficulties have temporarily brought such work to an end.

10.—*Staff.*

Members of the senior staff of the County Surveyor's Department not previously mentioned but who were intimately connected with the scheme are : Chief Assistants: Mr. M. Edwards, B.Eng., A.R.I.C.S., M.I.Mun.E. (1946—47) ; Mr. F. Hewson, A.M.I.C.E., M.I.Mun.E. (1947—50) ; Resident Engineers : Mr. E. L. Hogg, A.M.I.C.E. (1939—41) ; Mr. G. T. Reece, M.Eng., A.M.I.Mun.E. (1946—47) ; Mr. J. L. Mellor, A.M.I.Mun.E. (1947—50).

Of the Divisional Road Engineer's staff, Mr. L. P. F. Hubbard, B.Sc., A.M.I.C.E., A.M.I.Mun.E., and Mr. G. Stockley, B.Sc., A.M.I.C.E., were the most closely concerned with the project.

The members of the Railway Executive staff most closely engaged in the design and construction of the railway bridge are Mr. F. Turton, M.I.Struct.E., Bridge Assistant, London Midland Region, and Mr. G. F. Kent, A.M.I.C.E., District Engineer, Liverpool.

LANCASHIRE COUNTY COUNCIL
 NORTH OF ST.HELENS - SOUTHPORT TRUNK ROAD A.570. WINDLE SMITHIES - FOUR LANE ENDS, BICKERSTAFFE.

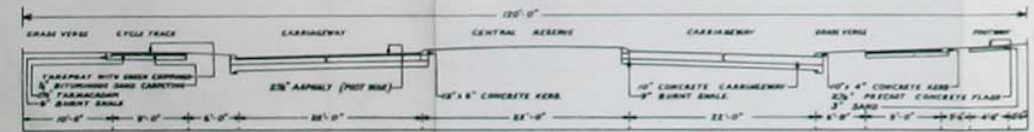
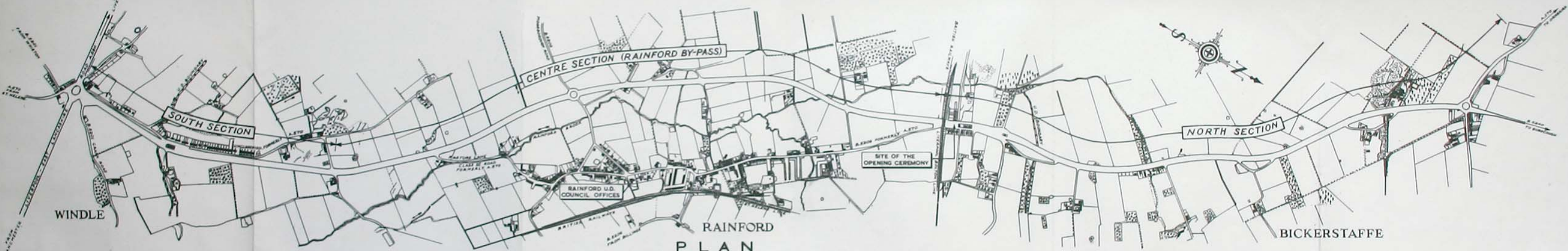


FIG.1 CENTRE SECTION (RAINFORD BY-PASS)

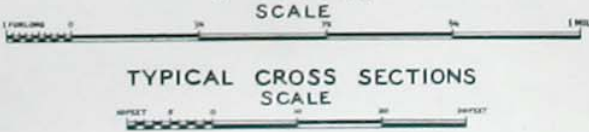


FIG.2 NORTH & SOUTH SECTIONS

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