

Artist's impression of the proposed Severn bridge. Note the inclined hangers which assist the damping of the bridge

The Severn Bridge

THE Minister of Transport has announced that tenders are being invited for construction of the foundations and substructure of the Severn suspension bridge and of access roads to the site. Erection of the bridge superstructure and the building of the Wye Bridge and eastern and western approach roads will be carried out by further contracts, timed to enable the whole scheme to be completed within five to six years. The project is being phased with the construction of the Forth road bridge.

The proposed suspension bridge, which will cross the Severn between Aust and Beachley where a motor ferry now operates, will have a main span of 3240ft. It will cost about £11,000,000, while the Wye bridge viaduct, and approach roads linking the bridges with the A.38 at Almondsbury on the east and the A.48 at Crick on the west will cost a further £5,000,000. Negotiations for acquisition of land are nearing completion.

The contract now out to tender involves construction of the two main piers forming the bases of the steel towers; the anchorages for the main cables; the approach viaduct on the Aust side, and the access road to it.

The east main pier (on the Aust side) and the east anchorage will both be constructed on the tidal foreshore of the river, using hollow precast concrete blocks, placed in position when the tide is low, and joined together with steel reinforcement and concrete filling placed *in situ*. The pier will be 140ft long, 42ft wide and 63ft high, and will be solid. The anchorage will be a pair of massive blocks 145ft long, 40ft wide and 120ft high, separated by an enclosed space; each block will contain some hollow chambers and galleries.

On the Welsh side of the river, the west main pier will be similar to that opposite, but will be supported on caissons. The west anchorage will be similar to the east, but constructed on dry land.

The east approach viaduct will run from the Aust Cliff to the east anchorage in three spans of 170ft each.

The Severn bridge itself will be a steel suspension bridge on concrete piers with steel towers about 470ft high. The main span will be 3240ft—only slightly less than the 3300ft span of the Forth road bridge—and each of the two side spans will be 1000ft long. The road level will be approximately 130ft above high water mark of ordinary tides at the piers and 150ft in the centre. Under conditions of maximum temperature and loading the minimum clearance for navigation at the centres of the span will be 120ft. The width between parapets of the bridge will be 118ft. Twin 24ft carriage ways will be constructed, and provision made for cycle tracks and footpaths.

The bridge over the River Wye will be 1340ft long and will have twin carriageways, cycle tracks and footpaths. It is estimated that 40,000 tons of steel and 120,000 tons of cement will be required for the two bridges and approach viaducts. The new approach roads will be restricted to motor traffic, though cycle and pedestrian traffic will be allowed to use the

bridges. Access to the road over the bridge, apart from terminal junctions on A.38 to the east, and A.48 on the west, will be limited to two junctions with existing major roads.

The schemes for the bridges over the Severn and Wye and the immediate approach roads were prepared by Messrs. Mott, Hay and Anderson, as consulting engineers, in association with Messrs. Freeman, Fox and Partners. Sir Percy Thomas is the consulting architect. The final design of the Severn bridge, which we illustrate, is now being considered by the Royal Fine Art Commission. The Minister of Transport intends that the Severn and Wye bridges, in common with other major bridge and tunnel projects, should be financed by tolls.

Spot Welder

A MEDIUM duty spot welding machine now made by Electro Mechan-Heat, Ltd., of Lower Teddington Road, Kingston-upon-Thames, Surrey, has a nominal rating of 50kVA at 50 per cent duty cycle. Designed primarily for use with 18-22 gauge bright mild steel sheet, this machine is capable of producing up to 300 spot

welds per minute and is suitable for stitch-welding.

The welding head slides on hardened steel rollers which are mounted on ball bearings and have "V"-shaped profiles which engage the knife-edge of a hardened steel guide. Welding pressure at the electrode tips is of the order of 1100 lb per square inch at an air-line pressure of 80 lb per square inch, the head being operated by a standard 5in diameter air cylinder. An air reservoir incorporated reduces the effect of pressure irregularities when working at high welding speeds. An air pressure regulator has also been provided. An optional "high lift" air cylinder allows the electrode tips to be opened to a maximum of 5in for the insertion or removal of work pieces and returned to the normal gap for welding.

Electrode clamps fitted to the upper and lower arms are movable and may be turned horizontally through 180 deg. to facilitate the spot welding of long sections. The electrode holders can be adjusted vertically in the clamps, and the lower arm can be raised or lowered through 8in of movement.

For machines fitted with the high lift air cylinder, two foot pedals are supplied. Depression of the first pedal brings the welding head down to a normal spot-welding position and operation of the second pedal initiates the welding cycle. The welding cycle is controlled by a three-stage or four-stage electronic timer in conjunction with an ignition contactor. Squeeze, weld, forge and off times can each be varied between 3 and 70 cycles (based on a 50 cycle a.c. supply) by a setting of stepless controls.

The machine, to be seen in our illustration, is equipped with a standard "Electro Mechan-Heat" stacked-core transformer and heat regulation is obtained through an eight-position tap link panel. The equipment is normally supplied to operate on any two phases of a 400/440V 50 cycle three-phase supply.

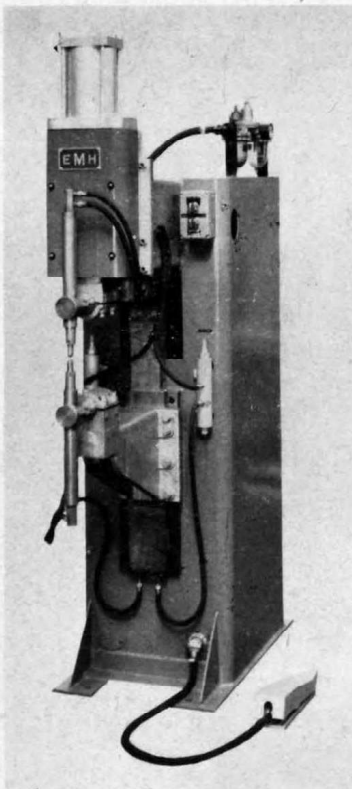
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Drum Abrasive Band Sanders

A RUBBER drum sander attachment for portable tools introduced by B. O. Morris, Ltd., Briton Road, Coventry, is designed to hold the abrasive band by centrifugal force during the grinding operation and no tools are required when changing bands. The attachment comprises a rubber drum with inclined slots extending from its periphery towards the centre and over this drum an abrasive band can easily be slipped. When the spindle is rotated centrifugal force imparts an outwards movement of the rubber sections between the slots to give a firm grip on the band.

The drums are available for three sizes of abrasive bands—1in diameter by 1in wide; 2in diameter by 1in wide; and 4in diameter by 1½in wide. The smallest size drums have a spindles with a ¼in shank and can be used on tools with a speed range of 10,000 to 20,000 r.p.m.; the second size, also with ¼in shanks, are suitable for speeds from 5000 to 12,000 r.p.m.; and the largest drums have a ¾in shank and can be used at 3000 to 9000 r.p.m.

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Medium-duty spot welder capable of producing up to 300 welds per minute and for use with 18-22 gauge steel sheet