THE YORK WATERWORKS COMPANY

SIWARD'S HOW WATER TOWER

OFFICIAL OPENING
30th MAY 1957

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Official Opening by

SIR JOHN DUNNINGTON-JEFFERSON
D.S.O., V.L.

Chairman of the East Riding County Council

30th MAY 1957

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View from Heslington Road.

Front elevation of Tower.

View from Heslington Road.

THE water supply of York has, from the beginning in 1677, been associated with towers, commencing with Lendal Tower, a masonry structure which, in the latter half of the eighteenth century, was surmounted by a tank believed to be 10 ft. higher than it is today. A steam driven pump raised water from the river into the tank, from which it flowed through wooden pipes direct to the City.

In 1846 the construction of Severus Hill Service Reservoir inaugurated the supply of filtered water at 126 ft. above O.D., and in 1896 was supplemented by a standpipe to increase the pressure.

A second tower, constructed at Severus Hill in reinforced concrete, and completed in 1914, embodied the existing standpipe as inlet and overflow. A height of more than 100 ft. above ground, provided for a top water level of 191 ft. above O.D., the cylindrical tank 46 ft. 6 ins. diameter, with a depth of 30 ft., has a capacity of 300,000 gallons, and, at

the time of construction, was understood to be the largest in Great Britain.

The third tower, at Siward's How, to be officially opened today, having a capacity of one million gallons, is again believed to be the largest completed water tower in this country.

When The York Waterworks Company considered post-war planning, the need for increased elevated storage was of paramount importance in order to equalise the widely varying rates of treatment and pumping due to increasing demand, which impose difficult and uneconomical operation of the plant.

Thorough investigation of the hydraulic requirements influenced by the existing Severus Hill tower, pumping plant and trunk mains, indicated the necessity for a minimum storage capacity of one million gallons, with the top water level at 175.0 ft. above O.D., and a depth of approximately 15 ft.

The topography of the York region offered no suitable site for a Service Reservoir within reasonable distance of the City and very limited choice of sites suitable for the construction of a water tower at the required elevation, without disproportionate expenditure on the supporting structure.

The site selected as being most suitable for the proposed tower lies on Heslington Hill, some $2\frac{1}{2}$ miles to the East of the City, immediately adjacent to an ancient tumulus known as Siward's How, which is about 120 ft. above sea level. This site possessed the additional advantage of being situated in the region of increasing demand and low pressure, on the opposite side of the City from the works and existing tower.

The necessary overall height of tower required on this site was about 80 feet, and if the most economical form, from a purely structural point of view, had been adopted, it would require to have been about 106 feet square on plan.

Architectural opinion, however, expressed the view that such proportions were undesirable, and that an effort should be made to break up the elevations and skyline, whilst not attempting to disguise the purpose of the structure.

Consideration of the structural problem on these lines led up to the proposal to adopt the form of a large square central tower, each corner of which would be eclipsed by a smaller octagonal one, and after considering several variations of this form in the light of valuable guidance given by the Company's Consulting Architects, a final scale model was made

View from Newland Park Estate.

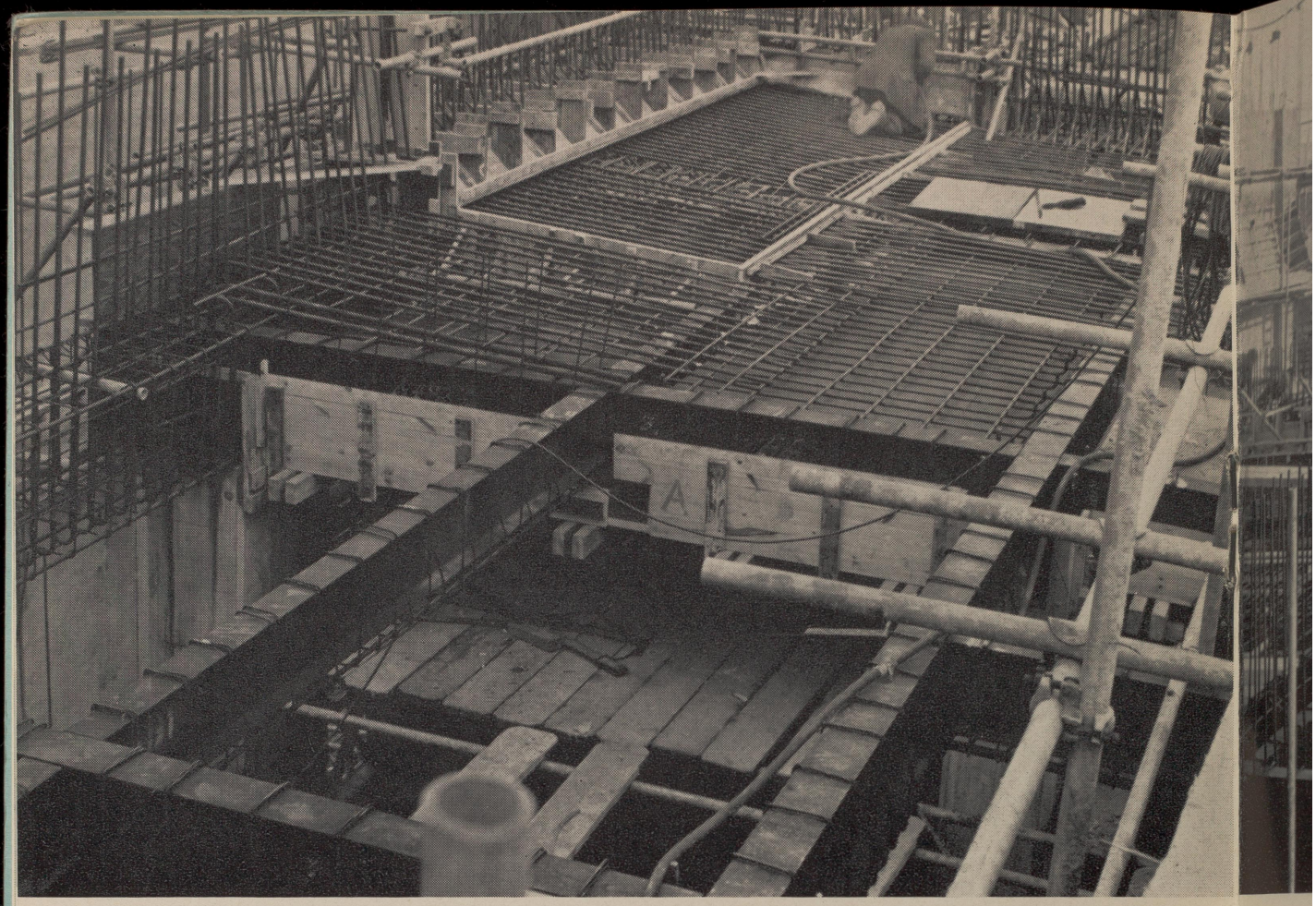
and submitted to the Royal Fine Arts Commission for an expression of their opinion.

After making helpful suggestions, their approval was unanimous, so the Company, feeling satisfied that the structure would be æsthetically acceptable, had no hesitation in proceeding with the detailed design and construction accordingly.

Although the tower was originally designed as an entirely reinforced concrete structure, and received Ministerial approval in principle, the Steel Restriction Order created difficulties, so it was decided to re-design the foundations in mass concrete, as a result of which a preliminary contract for the foundations was sanctioned, the work being completed in August 1953, by which time the main contract for the super structure and tank had been allocated.

Structural Details

Upon the mass concrete foundations, the supporting structure up to gallery level is of normal reinforced concrete



Construction of tank floor and supporting steelwork.

design, but, above that level, the "Ritchie" system of construction was employed, in which one part of the essential reinforcement takes the form of a comparatively light structural steel framework capable of carrying the whole of the loads incidental to construction, the remainder of the reinforcement in the completed members being provided by the addition of mild steel bars.

The central portion of the tank is 83 ft. 6 ins. square and each octagonal portion has an in-radius of 17 ft. 9 ins., the whole tank being divided by full height division walls into four equal and separately operable compartments. It is carried on a series of a hundred 20 in. square columns enveloped by a 5 in. thick outer screen wall and embodies an 8 in. thick floor slab, walls which vary in thickness from 16 ins. at the base to 9 ins. at the top and a $4\frac{1}{2}$ in. thick roof slab, construction or contraction joints being provided between each separately cast section of the work.