

Portishead B Power Station

Buildings and Civil Engineering - summary

The turbine house, annexe, bunker bay, and boiler house are grouped into one building. The building is steel framed and the structural steel is of welded construction and is encased in brickwork faced with golden brown engineering bricks. The turbine house brickwork is 18 inches thick.

The twin chimneys are sited on the west side of the power station: they are 380 feet above ground level. The chimney stools are of reinforced concrete and the barrel is of brick construction lined with acid resisting bricks. The chimneys have an internal diameter tapering from 26 ft 6 inches to 20 ft and a wall thickness tapering from 5 ft 3 inches to 13½ inches.

Foundations for both chimneys consist of a concrete slab 50 ft square and 6 ft thick, bearing on Lower Carboniferous strata at 23 ft above Ordnance datum.

The extremely high tidal range that prevails in the Severn Estuary (the second highest in the world) affected the design of the circulating water system and made for considerable civil construction at Portishead. Four culverts are driven through rock out to a dredged channel in the Estuary. These culverts connect to three 45-foot diameter Pump pits 79 feet deep in the turbine house, each pit being associated with two turbo-alternator sets. The culverts, which are concrete lined, are each about a third of a mile in length.

The power station requires some 18,000,000 gallons of cooling water per hour to be taken from the Severn estuary. The water passes through the culverts from the dredged channel to the screen house. Two cableways under the lock at the entrance to the Portishead Dock, which involved further tunnelling, accommodate the 132,000-volt cables from the six turbo-alternators via 72,000-kilovoltampere transformers to the outdoor switching station which is sited to the east of the dock. These cable tunnels each have two vertical shafts 12 feet in diameter, 83 feet deep and the horizontal tunnels are each 8 feet in diameter and 345 feet long.

Extracted from CEGB booklet published 1960.