

BANGKOK WASTEWATER - SATHORN PUMP STATION

Diaphragm Wall

Technical Reference No. 18/2000

GENERAL

The Sathorn Pump Station is one of the interceptor pump stations for the Bangkok Wastewater Treatment Plant Project, Yannawa Works. It is a deep rectangular underground chamber located on Chong Nonsi Road, Sathorn, Bangkok. The chamber has 0.8m thick cast in-situ diaphragm walls with toe depth of 20.0m below ground level. It was designed for maximum excavations depths of up to 16.2m inside the chamber to allow construction of a 1.5m thick base slab and internal structures. The pump station is located mostly in and below the existing khlong/cannel so that a temporary coffer dam was used for construction of diaphragm wall and the pump station.

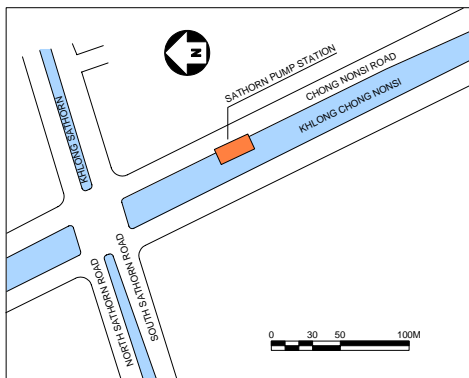
The pump station has two bulk head openings to receive inflow and outflow 2.25m diameter pipes at 12.5m and 6.2m below ground level respectively.



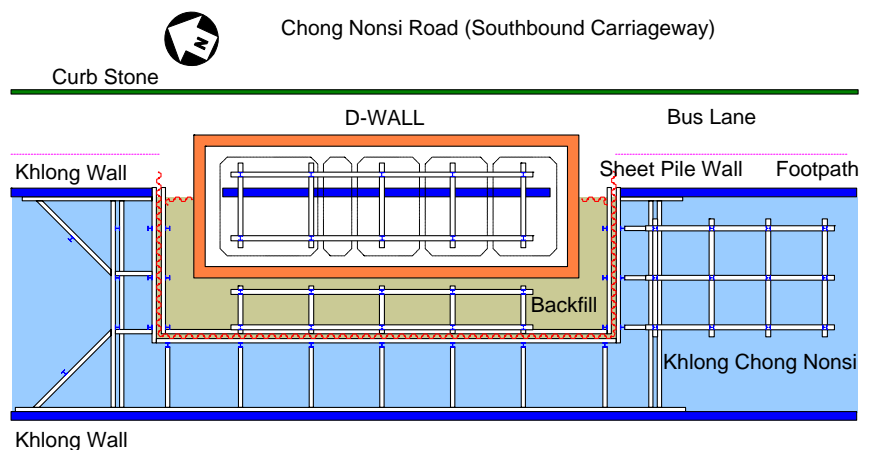
Diaphragm wall construction for Sathorn Pump Station.

WORK UNDERTAKEN

DIAPHRAGM WALL:	1,245.00sq.m. (0.8m Thick)
COFFERDAM:	656.00sq.m.
INSTRUMENTATION:	2 Inclinometer Tubes in the wall.



Location of Sathorn Pump Station.



Cofferdam and working platform for diaphragm wall construction.

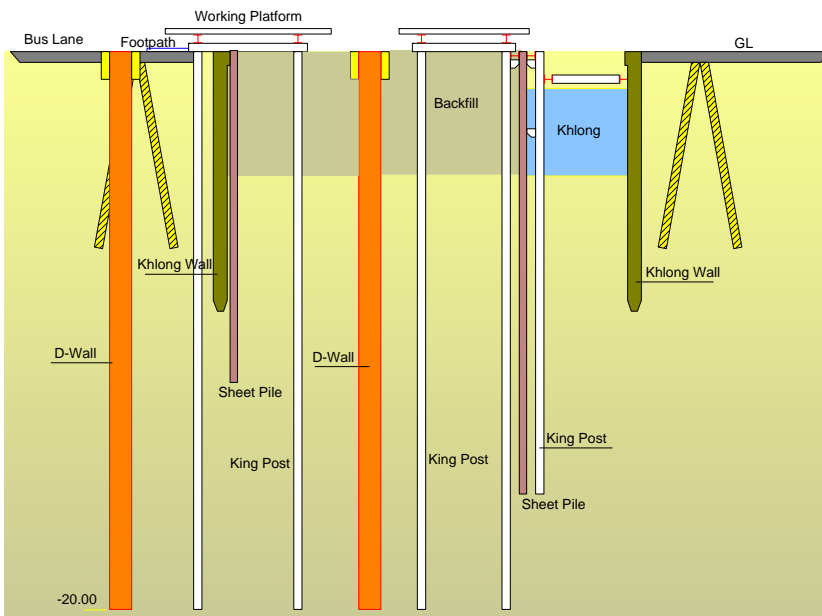
TYPE OF WORK:	Cast in-situ Diaphragm Wall
OWNER:	Bangkok Metropolitan Administration
SUPERSTRUCTURE	
CONTRACTOR:	Samsung – Lotte – CEC Joint Venture
DESIGNER:	Ove Arup and Partners International Ltd.
PERIOD:	1996



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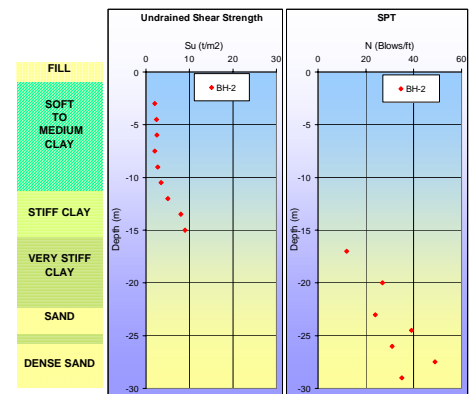
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Sectional view of temporary work for diaphragm wall construction in the khlong.

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Subsoil conditions.



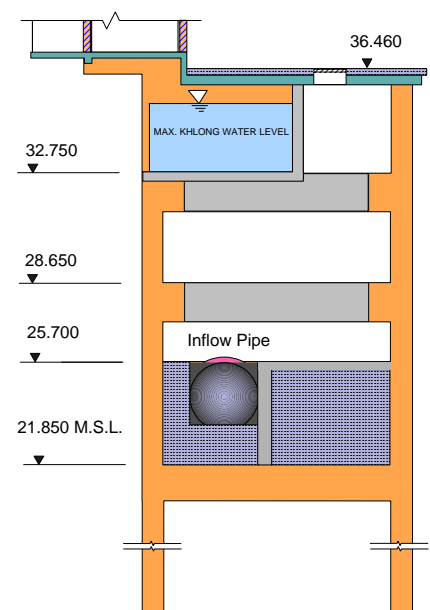
Sathorn pump station.



Diaphragm wall panel excavation.



Installing a 20m-long reinforcement cage for a diaphragm wall panel.



Sectional view of pump station.

References:

- Puller, M. (1996), "Deep Excavations – A Practical Manual", published by Thomas Telford Publishing, London. Pp. 245-249.
- Xanthakos, P. P. (1994), "Slurry Walls as Structural Systems, Second Edition", published by McGraw-Hill Inc. Pp. 772-791.
- Padfield, C. J. & Mair, R. J. (1991), "Design of Retaining Walls embedded in Stiff Clay", CIRIA Report 104.

