

# PHUKET FANTASEA THREATRE Barrettes and Diaphragm Walls

Technical Reference No. 12/99

## GENERAL

The Phuket Fantasea Theatre is located on Kamala beach, Phuket island, south of Thailand. It has basements up to 12.4m deep, to accommodate lifting facilities for the theatre stages and podiums. 1.0m thick diaphragm walls with toe depths 18.0m to 21.0m were used for excavation and basement construction with top-down method. Foundation barrettes of 1.0x2.7m founded in weathered granite at depths of 21.0m, support the building. The maximum excavation depth was about 17.0m. Barrettes were designed as a column and cast up to ground level to support the roof structure and reinforced concrete beams of the ground floor slab during basement excavation. A combination of the reinforced concrete beams and steel deck were constructed first to laterally support to the diaphragm wall and excavation for basement construction then followed.

During excavation for basement construction, xx pumping wells were used to lower the ground water level.

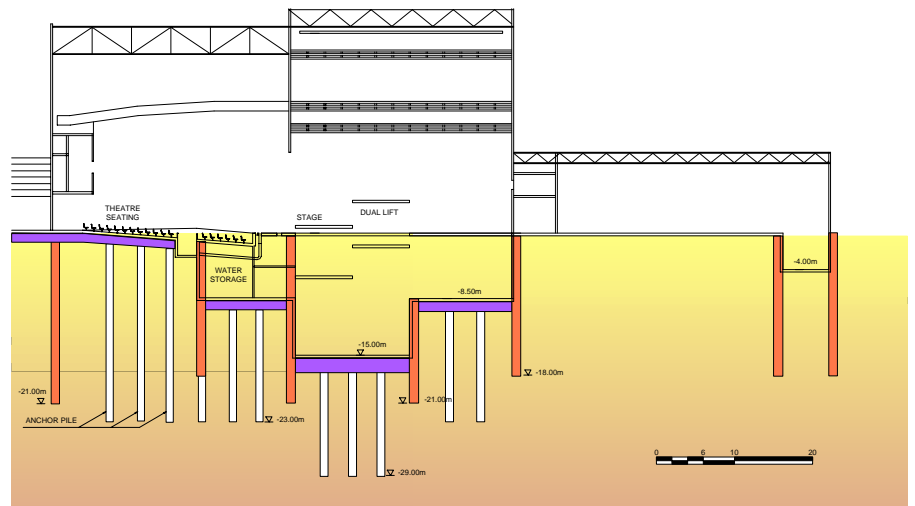
A total of 151 anchor piles with toe depths up to 29.0m were installed for basement slabs to resist the uplift pressure caused by high groundwater level.



General view of diaphragm wall construction.

## WORK UNDERTAKEN

BARRETTE:	16 nos. of 1.0mx2.7mX21.0m
DIAPHRAGM WALLS:	7,410 sq.m. (1.00m Thick)
INSTRUMENTATION:	3 Inclinometer Tubes in the wall.



Sectional view.

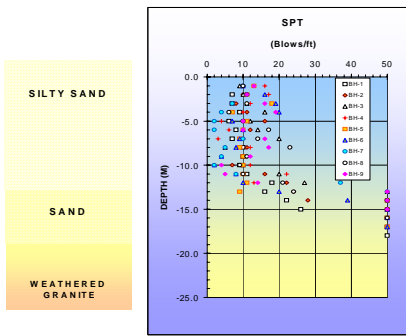
<b>TYPE OF WORK:</b>	Barrettes and Diaphragm Walls
<b>OWNER:</b>	Phuket Fantasea Co., Ltd.
<b>SUPERSTRUCTURE</b>	
<b>CONTRACTOR:</b>	Rungsaeng Jaree Co., Ltd.
<b>DESIGNER:</b>	Consultants One Hundred and Ten Co., Ltd.
<b>PERIOD:</b>	1997



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Subsoil conditions.



Clamshell grab for diaphragm wall and barrette work.



Casting a diaphragm wall panel.



Anchor piles installation in progress (by other).



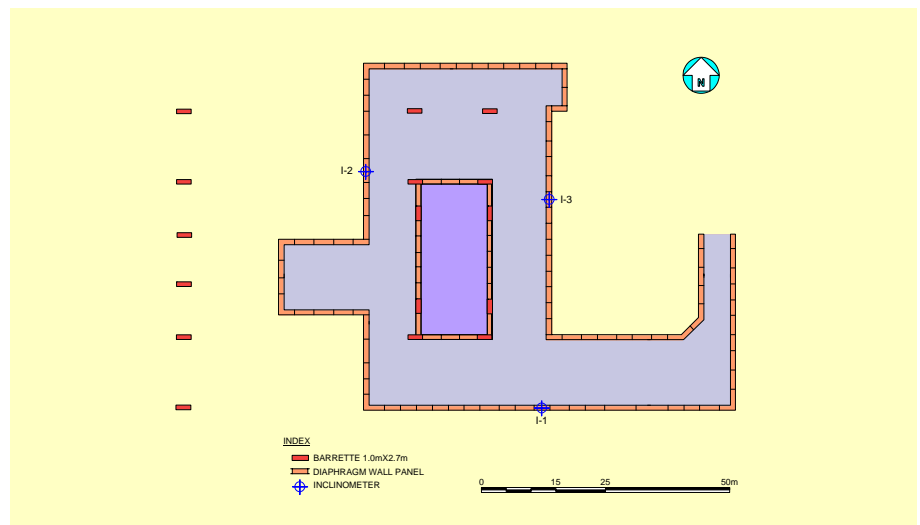
Excavation for a barrette.



Basement excavation in progress, using Top-Down Method.



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Layout of diaphragm walls and barrettes.

### References:

- Thasnanipan, N. Anwar, M. A., Maung, A. W. and Tanseng, P. (1999), "Performance Comparison of Bored and Excavated Piles in the Layered Soils of Bangkok", Symposium on Innovative Solutions in Structural and Geotechnical Engineering in Honor of Professor Seng-Lip Lee, AIT, Bangkok, May 14-15, 1999.
- Thasnanipan, N., Maung, A. W. and Tanseng, P. (1998), "Barrettes Founded in Bangkok Subsoils, Construction and Performance", Thirteenth Southeast Asian Geotechnical Conference, Taipei, Taiwan, ROC, November 16-20, 1998. Pp. 573-578.
- Thasnanipan, N., Singtowkaew, K. and Tanseng, P. (1998), "Experience in Construction of Barrette Founded in Bangkok Subsoils, Construction and Performance (in Thai)", The Fifth National Convention on Civil Engineering, Pattaya, Thailand, March 24-26, 1999. Pp. GTE-144-149.

