

Noteworthy Specification of Embedded Structure	
Reason/s for Selecting Case Study Theme	
Concerns and Considerations at Structural Design Stage	
Points of Attention during Construction	
Evaluation of Project after Construction	

Invitational project case history themes and topics

1. Geotechnical

- 1) Geologic mapping by utilizing the Press-in Piling Total System (PPTS)
- 2) Observational construction method utilizing PPTS: pile depth with refusal criteria
- 3) Design and construction of steel tubular piles installed into bedrock: analysis of bearing capacity of rock based on unconfined compressive strength of rock and load testing results
Note: It is preferable if the following information is included in the case history.
 - a) Outputs from geotechnical investigation
Depths and frequency of borings and types of in-situ testing, geophysical exploration and laboratory testing
 - b) Evaluation of geotechnical investigation data
Evaluation method on bedrock strength based on UCS of rock sample cores, rock types, characteristics of bedrock fissures and weathering
 - c) Details of load distribution mechanisms at pile toes
- 4) Shaft capacity of steel tubular piles/sheet piles relative to rock type and UCS
Similar to 3) above: Analysis of shaft capacity of rock, based on unconfined compressive strength of rock and load testing results

2. Structural

- 1) Design and construction of a circular cofferdam using steel sheet piles or steel tubular piles – circular wall with inner waling beams, no struts for rapid bulk excavation
- 2) Design and construction of a circular retaining wall using steel sheet piles or steel tubular piles – circular wall with outer waling beams
- 3) Design and construction of double sheet pile wall (twin sheet pile walls) installed close to each other
- 4) Energy pile
It is preferable if descriptions of the following aspects are included.
 - Performance and power output
 - Installation details of geothermal heat exchanger systems on piles
 - Heat collecting efficiency related to groundwater status

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- Pile Installation methods
 - Performance and cost comparison to solar energy system

- 5) Coated (painted) steel piles installed by the press-in piling method, without coating damage due to chucking or clamping (by gripping piles)
- 6) Steel pile walls installed near railways, overcoming risks of stray current
- 7) Composite piles – steel sheet piles/steel tubular piles and RC
- 8) Steel sheet pile walls or steel tubular pile walls clad with a liner wall, including vegetated facade for cosmetic or durability reasons
- 9) Slab connections of steel sheet pile walls or steel tubular pile walls – design and construction

3. Construction Techniques

- 1) Rapid construction of steel sheet piling or steel tubular piling, by utilizing mechanical pile joints
- 2) Pile base grouting for steel tubular piles, to increase base capacity (end bearing capacity)
It is preferable if the following information is included.
Grout injection method, combination of grout, injected volume, injection pressure relative to pile dimension and ground conditions
- 3) Subgrade pile shaft grouting between the surface of the steel sheet pile or steel tubular pile retaining walls and passive ground, to reduce lateral deflection of the retaining wall
- 4) Temporary reuse and maintenance of steel sheet piles
- 5) Observation of lateral deflection of retaining walls during bulk excavation and necessary countermeasures
It is preferable if the following information is included.
 - Measuring method and retaining wall measured height
 - Threshold of warning level of lateral deflection
- 6) Rapid bulk excavation, utilizing raking struts and thrust blocks

4. Pile Material

- 1) Drivability of piles for the press-in piling method – pile length vs pile stiffness
- 2) Monitoring water conductivity (permeability) of steel sheet pile or steel tubular pile cofferdam

5. Environmental

- 1) Underwater vibration caused by pile installation including the press-in piling method
- 2) Ground displacement monitoring during and after press-in piling
- 3) Design and construction application of steel sheet piles or steel tubular piles as fire-resistant walls

6. Any unclassified themes (authors' discretion)

Themes/topics (hinderances to the expansion of the press-in piling method or unknown advantages of the press-in piling method), which may affect the development of the press-in piling method.