

The Consultant's Project Experience in the Construction Supervision Service

No.	Project Name	Project Area	Project Description	Project Duration	Client	Project Cost (MB)
Wastewater Collection and Treatment Systems						
1.	Construction Supervision for Eastern Industrial Estate (Map Ta Phut) Wastewater Collection and Treatment Systems	Tambon Mab Ta Phut, Amphoe Muang, Rayong, project area approx.1,500 rais (240 ha).	<ul style="list-style-type: none"> • The construction supervision services provided include equipment approvals, shop drawing reviews, supervising, inspecting and measuring construction, inspecting materials and equipment delivered to the site, witnessing tests of materials and equipment, supervising plant commissioning, maintaining records of construction progress and of the inspections and tests. PTC also coordinated between the owner and contractors as well as making recommendations to the owner and contractors concerning the operation and maintenance training. • The details of facilities supervised are as follows : <ul style="list-style-type: none"> - Wastewater Collection System consists of 20 km of PVC wastewater collection pipes measuring up to 400 mm in diameter conveying wastewater generated from each plot to the central wastewater treatment plant. - Wastewater Treatment Plant, the plant is the activated sludge system with a capacity of 12,000 cu.m/day, comprising primary treatment system and secondary treatment system. 	Oct.1992 to Dec.1994	Hemaraj Land and Development Public Co., Ltd.	191.6
2.	Supervision and Project Management of The Contract for Rattanakosin Wastewater Treatment Plant	Rattanakosin Area, Bangkok, project area approx. 4.14 km ²	<ul style="list-style-type: none"> • The construction supervision services provided include reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment. The Construction of wastewater interceptors required special construction techniques due to their locations underneath the existing canals. PTC also coordinated all parties involved such as the BMA, main contractor, subcontractors and other governmental agencies such as Rattanakosin Island Cultural Committee. and supervising contractors concerning the operation and maintenance training. • The project comprises of the construction of wastewater collection system conveying wastewater generated in the Rattanakosin Area to the new central wastewater treatment plant at Ban Pam Thom. Rattanakosin area covers the area of approximately 4.14 sq.km in which many historical sites such as the Grand Palace are located. • The details of facilities supervised are as follows : <ul style="list-style-type: none"> - Wastewater Collection System ; The system consists of combined sewer overflow structures (CSO) and interceptor pipelines. Wastewater from the existing sewers are collected to the inceptors via CSO's and conveyed to the wastewater treatment plant. The interceptors are capable of conveying up to 5 times of average flow rate. The total interceptor length is approximately 14 km with pipe diameter measuring up to 1,500 mm. - Wastewater Treatment Plant ; A central wastewater treatment is constructed on a plot of land of approximately 6,720 sq.m. Due to limited available space, PTC had recommended and designed a 4-storeyed treatment plant, using two-stage activated sludge system. The plant was designed for an average flow of 40,000 cu.m/d. It is capable of nitrogen and phosphorus removal and included a sludge disposal system. 	Sept.1993 to May 2000	Bangkok Metropolitan Administration	862.0

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3.	Consultancy services for Supervision and Project Management of The Contract for Turnkey Construction for Bangkok Wastewater Project – Stage I	Dusit, Phra Nakhon, Pom Prap Sattru Phai, Samphanthawong, Phaya Thai, Pathumwan, Ratchathewi and Huai Khwang District, Bangkok, project area approx. 38 km ²	<ul style="list-style-type: none"> As part of the association with Dorsch Consult Ingenieurgesellschaft mbH, Consulting Engineers Salzgitter GmbH, Tesco Co., Ltd. and Systems Engineering Co., Ltd., in the capacity of BMA's construction supervisor, PTC was involved in reviewing the Project Contractor, NOSS Consortium's design for interceptor pipelines and wastewater treatment plant, supervising the construction of interceptors and Treatment plant. Parts of the main interceptors were constructed underneath the canals, which required special construction techniques. The project comprises of wastewater collection system, which consists of sewage overflow chambers and interceptor pipelines, and a central wastewater treatment plant, which is capable of treating wastewater at the average flowrate of 350,000 cu.m/day and a peak flowrate of 450,000 cu.m/day. The plant is located at the BMA compound in Din Daeng. The treatment system used is activated sludge with nutrient removal, constructed in multi-story style to maximize the limited available space. 	30 Sept.1993 to 1998	Bangkok Metropolitan Administration	6,382.8
4.	Supervision of Turnkey Construction of Sewerage and Wastewater Treatment Plant for Phuket Municipality	Phuket Municipality, Phuket project area approx. 12.0 km ²	<ul style="list-style-type: none"> The construction supervision services provided include reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, clarifying and interpreting the contract, monitoring construction schedule and progress, supervising plant commissioning, and operation and maintenance staff training. PTC undertake coordination among all parties involved such as the PWD, main contractor, subcontractors, Municipality and other governmental agencies. The project components are the construction of 1.1 km of drainage pipes, 8.6 km of intercepting sewers and a wastewater treatment plant which is an oxidation ditch process with treatment capacity of 12,000 cu.m/day. 	10 Aug.1994 to 26 Mar.1997	Public Works Department	390.0
5.	Construction Supervision for Songkhla Municipality Drainage and Wastewater Treatment Systems Project	Songkhla Municipality, Songkhla project area approx. 6.7 km ²	<ul style="list-style-type: none"> The construction supervision services provided include reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, supervising plant commissioning and turning-over of the systems to the Municipality. PTC also coordinated among all parties involved such as the PWD, main contractor, subcontractors, Municipality and other governmental agencies. The project comprised the construction of drainage and intercepting sewers and a central wastewater treatment plant that used aerated lagoon process with the treatment capacity of 21,900 cu.m/day. 	1 Nov.1995 to Aug.2001	Public Works Department	299.7
6.	Construction Supervision of Pattanee Municipality Drainage, Wastewater Collection and Treatment Systems Project	Pattanee Municipality, Pattanee project area approx. 4.8 km ²	<ul style="list-style-type: none"> The construction supervision services provided include reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, supervising plant commissioning and turning-over of the systems to the Municipality. PTC also coordinated among all parties involved such as the PWD, main contractor, subcontractors, Municipality and other governmental agencies. The project comprised the construction of drainage and intercepting sewers and a central wastewater treatment plant that used wastewater stabilization pond process with the treatment capacity of 27,000 cu.m/day. 	1 Nov.1995 to July.2001	Public Works Department	348.0

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No.	Project Name	Project Area	Project Description	Project Duration	Client	Project Cost (MB)
7.	Construction Supervision for Chonburi Municipality Drainage and Wastewater Treatment Systems Project	Chonburi Municipality, Bangsai Municipality Bansuan Municipality and Samet Subdistrict Administrative Organization, Chonburi, project area approx. 14.5 km ²	<ul style="list-style-type: none"> The construction supervision services provide in this contract comprise reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, clarifying and interpreting the contract, monitoring construction schedule and progress, supervising plant commissioning, and operation and maintenance staff training. PTC undertakes coordination among all parties involved such as the PWD, main contractor, subcontractors, Municipality and other governmental agencies. The construction consists of the following components : <ul style="list-style-type: none"> Drainage system : 3 km of drainage pipes with diameter measuring up to 1,200 mm and 1.2 km of box culverts ranging up to 2,000 x 2,000 mm size. Wastewater collection system : 5 km of intercepting pipes measuring up to 1,750 mm, sewage lifting stations and combined sewage overflow structures. Wastewater treatment plant : a two stage activated sludge wastewater treatment plant with a capacity of 22,000 cu.m/day 	2 Mar.1998 to 15 June 2001	Public Works Department	565.0
8.	Construction Supervision of Nakhon Ratchasima Municipality Drainage, Wastewater Collection and Treatment Systems Improvement Project	Nakhon Ratchasima Municipality, Nakhon Ratchasima project area approx. 37.5 km ²	<ul style="list-style-type: none"> The construction supervision services provided include reviewing shop drawings, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, clarifying and interpreting the contract, monitoring construction schedule and progress, supervising plant commissioning, and operation and maintenance staff training. PTC undertakes coordination among all parties involved such as the Municipality, main contractor, subcontractors and other governmental agencies. PTC also carries out the wastewater tariff study and setting up of tariff structure as well as organization study. The construction consists of the following components : <ul style="list-style-type: none"> Drainage and wastewater collection systems : drainage and wastewater collection sewers comprising 29 km of reinforced concrete pipes and box culverts ranging from pipe diameter 1,000 mm up to 2,500 x 2,500 mm box culvert, 3 overflow connection and sewage lift stations Wastewater treatment plant : wastewater stabilization pond, capacity of 45,000 cu.m/day. 	15 Jan.1998 to 18 Mar.2002	Nakhon Ratchasima Municipality	580.0
9.	Construction Management and Construction Supervision of the Turnkey Construction of Bangkok Wastewater Project Stage 1 (Remaining Works Part 4)	Dusit, Phra Nakhon, Pom Prap Sattru Phai, Samphanthawong, Phaya Thai, Pathumwan, Ratchathewi and Huai Khwang District, Bangkok, project area approx. 38 km ²	<p>Supervision and project management of the contract for construction of remaining incomplete works and supervision the Contractor's 1st year of Operation and Maintenance of Bangkok Wastewater Project- stage-1.The Services shall comprise the supervision and project management of the Project and are described in more detail below :</p> <ul style="list-style-type: none"> Approval of Alternative Designs (if any) Program of Work <ul style="list-style-type: none"> The Consultant shall examine all drawings, reports and proposals submitted by the contractor. The Consultant shall report to the Client their findings in respect of all Alternative Designs before communication approval or disapproval to the Contractor. The Consultants shall examine and approve the Contractor's program of work as submitted by the Contractor from time to time. Supervising Construction <p>The Consultant shall be responsible for the administration and supervision of the Project during the construction and maintenance period and shall in this connection undertake the following duties :</p> <ul style="list-style-type: none"> Issue to the Contractor such orders and instructions, and give such professional opinions as are necessary for the execution of the Project in accordance with the Construction Contract. 	1 Sept.2003 to 30 Sept.2005	Bangkok Metropolitan Administration	419.9

The Consultant's Project Experience in the Construction Supervision Service (cont.)

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10.	Construction Supervision of Wastewater Collection and Treatment Systems for Nakhon Ratchasima Municipality (Phase 2) Project	Nakhon Ratchasima	<p>The services provided in this contract comprise:</p> <ul style="list-style-type: none"> • Review of the detailed design for Phase 2 Works and undertake revisions where necessary to suit current conditions. • Undertake the construction supervision works which include reviewing shop drawings, issuing revisions where necessary, materials and equipment approval, supervising, inspecting and measuring construction, inspecting materials and equipment delivered on site, witnessing tests of materials and equipment, checking and certifying all payment claims, clarifying and interpreting the contract, monitoring construction schedule and progress, supervising plant commissioning, and operation and maintenance staff training. PTC undertook coordination among all parties involved such as the Municipality, main contractor, subcontractors and other governmental agencies. • Undertake the revision of the previous wastewater tariff study to reflect the actual operation and maintenance costs for the constructed Phase 1 of wastewater collection and wastewater treatment systems. As well as proposing an appropriate and public approved tariff collection system, and organization. 	29 Nov.2005 to 9 Aug. 2008	Nakhon Ratchasima	738.66
Wastewater Treatment Systems						
11.	Construction Supervision of Wastewater Treatment Plant for Chonburi Industrial Estate (Bo Win)	Tambon Bo Win, Amphoe Siracha, Chonburi	<p>The services provided include :</p> <ul style="list-style-type: none"> • construction supervision and starting up of the wastewater treatment plant; <p>Wastewater treatment plant is activated sludge system with a capacity of 8,400 cu.m./day. Primary treatment system consists of automatic screen, pumping station, grit chamber, equalization tank and neutralization tank. Secondary treatment system consists of aeration tank, sedimentation tank and chlorine contact tank. Sludge treatment system consists of sludge thickener and sludge dewatering system.</p>	Sept.1990 to May 1992	Hemmaraj Land and Development Public Co., Ltd.	95.6
12.	Construction Supervision of Wastewater Treatment Plant (2 nd Phase) for Eastern Hammaraj Industrial Estate (Map Ta Phut), Rayong.	Eastern Hammaraj Industrial Estate (Map Ta Phut), Rayong.	<ul style="list-style-type: none"> • Supervision, inspection and consulting for wastewater treatment plant with a capacity of 30,000 cu.m./day 	15 Oct.2003 to 1 Nov.2005	Eastern Industrial Estate Co.,Ltd.	77.7

The Consultant's Project Experience in the Construction Supervision Service (cont.)

No.	Project Name	Project Area	Project Description	Project Duration	Client	Project Cost (MB)
13.	Construction Supervision Consultant Services for Main Transformer Station No. 2 and Wastewater Treatment Plant Second Stream for the Second Bangkok International Airport Project	Suvarnabhumi Airport, Samut Prakan	<ul style="list-style-type: none"> • WWTP Second Stream is designed to have the treatment capacity of 9,000 m³/day average dry weather flow (DWF), with a hydraulic capacity provided for up to 3 DWF. The combined capacity of WWTP First and Second Streams is 18,000 m³/day which is sufficient for serving the airport operation up to 60 MAP capacity. The estimated average daily wastewater flows for 45 MAP and 60 MAP are 12,066 m³/day and 16,180 m³/day, respectively. • The construction of WWTP Second Stream can be classified into two major works : the construction of WWTP Second Stream treatment processes and related facilities, and the modifications work for WWTP First Stream. • The construction works to be undertaken under the WWTP Second Stream Construction Contract will consist of the following works: <ul style="list-style-type: none"> - Construction of WWTP Second Stream Facilities - Modifications of WWTP First Stream - Extension of site services, internal roads, and connection to existing roads and services within the plant, including the construction of a car park shelter. 	13 Jun.2005 to 12 Oct.2006	The Airports of Thailand Public Company Limited	205.14
14.	Construction Supervision of Wastewater Treatment Plant (3 rd Phase) for Eastern Hammaraj Industrial Estate (Map Ta Phut), Rayong.	Eastern Hammaraj Industrial Estate (Map Ta Phut), Rayong.	<ul style="list-style-type: none"> • Supervision, inspection and consulting for wastewater treatment plant with a capacity of 60,000 cu.m./day 	29 Nov.2010 to 8 Aug.2012	Eastern Industrial Estate Co.,Ltd.	128.0
Infrastructure System						
15.	Construction Supervision of Infrastructure System for Kabinburi Industrial Zone, Prachin Buri.	Kabinburi Industrial Zone, Amphoe Kabinburi, Prachinburi project area approx. 2,400 rais. (380 ha).	<ul style="list-style-type: none"> • The scope of construction supervision services included equipment approvals, shop drawing reviews, supervising, inspecting and measuring construction, inspecting materials and equipment delivered to the site, witnessing tests of materials and equipment, supervising plant commissioning, maintaining records of construction progress and of the inspections and tests. PTC also coordinated between the owner and contractors as well as making recommendations to the owner and contractors concerning the operation and maintenance training. • The details of facilities supervised are as follows: <ul style="list-style-type: none"> - Surface water treatment plant, with a capacity of 21,000 cu.m./day, consists of raw water pumping station, flocculation tank, sedimentation tank, sand filters, clear well and a pump station, and sludge lagoons. - Water distribution system, consists of an elevated tank and a distribution network with the total pipe length of 40 km. - Wastewater collection system, consists of GRP pipe, 43 km. long and 7 lift stations. - Drainage system consists of RC pipe, 20 km. long, and RC ditch, 26 km long. - An aerated lagoon wastewater treatment plant, with a capacity of 20,000 cu.m./day at BOD concentration of 500 mg/l. - Flood protection system, consists of dike and drainage ditch connected to public canal. 	1 Mar.1991 to 30 Jan.1995	Kabinburi Industrial Zone Co., Ltd.	450.0
16.	Construction Supervision of Infrastructure System for Cariberg Brewery (Thailand) Co., Ltd.	Amphoe Sena, Phra Nakhon Sri Ayuttaya	<ul style="list-style-type: none"> • Details of the construction supervision are as follows: <ul style="list-style-type: none"> - Water treatment system with a capacity of 100 and 400 cu.m./hr. - Flood protection system - Wastewater collection system - Fire protection system 	Nov.1992 to Jan.1994	Carlberg Brewery (Thailand) Co., Ltd.	50.0

The Consultant's Project Experience in the Construction Supervision Service (cont.)

No.	Project Name	Project Area	Project Description	Project Duration	Client	Project Cost (MB)
<i>Water Treatment System</i>						
17.	Detailed Design of Water Supply System for Thai Petrochemical Industry Public Co.,Ltd.	Amphoe Muang, Rayong	<ul style="list-style-type: none"> • Details of the construction supervision are as follows: <ul style="list-style-type: none"> - Raw water pumping system consists of a raw water pump station extracting raw water from Ban Khai River, and the transmission pipe - Water treatment plant with a capacity of 1,000 cu.m/day including a clearwell and a transmission pump station - Treated water transmission system consists of a treated water transmission pipe approximately 20 km long - Water distribution system - Factory fire fighting system 	Feb.1992 to Aug.1993	Thai Petrochemical Industry Public Co.,Ltd.	200.0