

The Consultant's Project Experience in the Master Plan Study, Feasibility Study and Detailed Design of Flood Protection and Drainage Systems

No.	Project Name	Project Area	Project Description	Type of Project					Project Duration	Client	Project Cost (MB)
				MP	FS	DD	IEE	EC			
1.	Detailed Design of Flood Protection System for Nakhon Sawan Region	Nakhon Sawan Municipality and Region, Project Area 124.82 km ² .	<ul style="list-style-type: none"> ● Study and identify the protection area for flood protection. ● Review feasibility study of drainage and flood protection systems in the municipality and region. ● Detailed design and specify period for each phase of construction. Construction of the system is divided into 3 contracts or phases. <ul style="list-style-type: none"> – 1st contract : construction of dike for catchment area No.1 and 2, consists of river side polder, elevated road and 2 pump stations. – 2nd contract : construction of dike for catchment area No.3, consists river side polder, elevated road and 2 pump stations. – 3rd contract : construction of all remain works from 1st and 2nd contract. ● Cost estimate and preparation of tender documents. ● Economic and financial analysis ● Undertake the initial environmental examination ● Undertake organization study to determine appropriate organization responsible for the flood protection system. 	✓	✓	✓	✓	✓	23 Sept.1996 to 18 July 1997	Public Works Department	1,704.0
2.	Detailed Design of Drainage System Rehabilitation, Silphakom University, Wang Tha Phra Campus	Silphakom University, Wang Tha Phra Campus	<ul style="list-style-type: none"> ● Detailed design of drainage system rehabilitation, Silphakom University, Thaphra Campus. The work included studying the existing drainage system, verification of existing problems and detailed design for rehabilitation system to conform to BMA drainage system and BMA regulation. Prepare bid document, the calculation of engineering and cost estimation of the construction. 			✓			29 Oct.1998 to 3 Nov.1998	Silphakom University	5.9
3.	Feasibility Study for Nakhon Sithamarat Flood Alleviation Project	Amphoe Muang and Praprom, Nakhon Sithamarat, Project Area 766 km ² .	<ul style="list-style-type: none"> ● Study and analyze the drainage system and solve the flood problem. ● Propose and prioritize the measures and areas to be implemented for urgent or short-term and long-term implementation plans. ● Conduct the feasibility study of high-prioritized projects for the urgent implementation plan. ● Conduct the feasibility study of the work/project for the long-term implementation plan. ● Study and analyze the impact on the society, the organization and the environment and propose the appropriate mitigation measures for the short-term implementation projects together with the long-term implementation projects. ● Study and analyze the causes and factors that lead to the flood problem and the obstacle of the drainage in the overall picture of the study area and focus on the areas requiring urgent implementation. ● Study and analyze the flood protection capacity to cope with the runoff from various rivers, and the capacity to drain flooded water outside of the area under the existing situation together with the project under construction. ● Study and analyze the appropriate drainage and flood protection systems for the overall picture of the study area and the high-prioritized area to be implemented first. ● Feasibility design the feasible urgent implementation projects as a result of the feasibility study. 		✓		✓	✓	27 Oct.2000 to 25 Jan. 2002	Royal Irrigation Department	350.75 (Short-term) 2,085.68 (Long-term)

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4.	The Detailed Design of Flood Protection Systems for Urban Area in Phrae	13 Municipalities of Phrae	<ul style="list-style-type: none"> Feasibility study of the detailed design for flood protection systems for community areas in Phrae with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. The Master Plan for flood protection systems for all 13 municipalities in Phrae had identified three prioritized areas which are eligible for the feasibility study. These areas are Phrae Municipality and connected community, Thunghong Municipality; both of which are the main communities located within the Phrae Town Planning area, and Denchai Municipality. From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Phrae has identified 2 areas suitable for the project implementation as follows: Phrae Municipality (area 1) and Denchai Municipality (area 1) 	✓	✓	✓	✓	✓	20 June 2001 to 9 Feb.2003	Public Works Department	1,307.68 Phrae 248.33 Denchai
5.	Chantaburi Flood Alleviation Project	Chantaburi	<ul style="list-style-type: none"> Master Plan to Rectify the Flooding Problem, which include flood prevention system, drainage system and forecast/alarming system for every urban areas within Chanthaburi province and its neighboring provinces. The master plan will consider the whole picture of the problems at the river basin level to alleviate the damages from flooding disaster in the river basin. The master plan will also prioritize the related implementation plans, which include details of each rectifying measure; format, responsible agency, budget allocation & implementation plan, by categorizing into emergency and long-term implementation plan according to the engineering, socioeconomic, economic and environmental criteria. Feasibility and Environmental Impact Study of the Flood-Problem Rectifying Measures. Some parts of the study included in the emergency implementation plan are as shown in the followings: Surveying and mapping of essential areas required by the study. <ul style="list-style-type: none"> Surveying and analysis of the economic and social aspect in the areas both benefited and affected from the project. Estimation of construction, operating and maintenance cost etc. Surveying and analysis of the damages and both direct & indirect benefits from the project, which may include intangible benefits assessment. Economic feasibility analysis of the project. Environmental impact study and rectifying measures: <ul style="list-style-type: none"> * Environmental impacts on water quality such as sedimentation, erosion, waterway communication, land-use, transportation etc. issues both during the construction and after the completion of the project, and field surveying of the local residents' attitude on the project and rectifying measures. * Impacts on the local residents/social and rectifying measures for the impacts. 	✓	✓	✓	✓	✓	9 April 2002 to 2 July 2003	Royal Irrigation Department	145.43 Emergency Plan536.85 Long Plan

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			<ul style="list-style-type: none"> ● Preparing tender design drawing of each system and bidding documents for the construction under the emergency implementation plan, which include: <ul style="list-style-type: none"> - Additional topographic surveying and mapping. - Geological and foundation surveying at proposed construction sites; water-regulating building etc. - Soil characteristics testing for data accompanying detailed design. - Detailed design criteria of each system. - Prepare inventory list/calculation sheet and construction cost estimation. - Prepare bidding documents and Tender design drawings. ● Prepare public relation media and arrange the project's public relation/hearing for accompanying the consideration of feasible rectifying measures in order to establish agreement and participation among the local people. ● Establish and calibrate mathematical model used as an assisting tool for water management and flood forecasting. Prepare the model's operation manual & technology transfer and contingency plan for migration during flood-disaster. ● Study and propose a governing organization structure that leads to the effective river basin management for alleviating flood-disaster. ● Prepare mapping shown flood and land-slide risk areas. ● Prepare public procedure manual when facing flood-disaster. 								
6.	Master Plan, Feasibility Study and Detailed Design of Flood Protection System for Urban Area in Nakhon Si Thammarat	19 Municipalities of Nakhon Si Thammarat	<ul style="list-style-type: none"> ● Feasibility study of the detailed design for flood protection systems for community areas in Nakhon Si Thammarat with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. ● The Master Plan for flood protection systems for all 19 municipalities in Nakhon Si Thammarat had identified five prioritized areas which are eligible for the feasibility study. These areas are Nakhon Si Thammarat Municipality and connected community, Tha Pae Municipality, Bang Chak Municipality, Pak Nakhon Municipality and Cha-Uat Municipality ● From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Nakhon Si Thammarat has identified 4 areas suitable for the project implementation as follows: <ul style="list-style-type: none"> - Nakhon Si Thammarat Municipality and connected community - Tha Pae Municipality - Bang Chak Municipality - Pak Nakhon Municipality 	✓	✓	✓	✓	✓	17 May 2005 to 6 Nov.2006	Department of Public Works and Town & Country Planning	8,200.0 (MP : 19 areas) 1,163.8 (FS : 5 areas)

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7.	Master Plan, Feasibility Study and Detailed Design of Flood Protection System for Urban Area in Nakhonsawan	18 Municipalities of Nakhonsawan	<ul style="list-style-type: none"> ● Feasibility study of the detailed design for flood protection systems for community areas in Nakhonsawan with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. ● The Master Plan for flood protection systems for all 18 municipalities in Nakhonsawan had identified 8 prioritized areas which are eligible for the feasibility study. From the review of Master Plan Study by analyzing more detail on causes and factors of flood problem occurred in total 8 studied areas ● From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Nakhonsawan has identified 7 areas suitable for the project implementation as follows: <ul style="list-style-type: none"> - Nakhon Sawan Municipality and its neighboring - Tambon Chum Saeng Municipality and its neighboring - Tambon Krok Phra Municipality and its neighboring - Tambon Kao Liao Municipality and its neighboring - Tambon Banphot Phisai Municipality and its neighboring - Tambon Phayuha and its neighboring - Tambon Lat Yao Municipality and its neighboring - And the addendum area in Tambon Thap Krit Municipality 	✓	✓	✓	✓	✓	25 Apr.2006 to 12 Nov.2007	Department of Public Works and Town & Country Planning	5,094.98 (MP : 18 areas) 3,655.33 (FS : 8 areas)
8.	Master Plan Study, Feasibility Study and Detailed Design of Flood Protection Systems for Communities in Phayao Province	13 Municipalities of Phayao	<ul style="list-style-type: none"> ● Feasibility study of the detailed design for flood protection systems for community areas in Phayao with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. ● The Master Plan for flood protection systems for all 13 municipalities in Phayao had identified 4 prioritized areas which are eligible for the feasibility study. From the review of Master Plan Study by analyzing more detail on causes and factors of flood problem occurred in total 4 studied areas, namely Mueang Phayao, Dok Khamtai and Pong Municipalities, plus one municipality as identified by the master plan study results. This result selected Chiang Kham Municipality. ● From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Phayao has identified 4 areas suitable for the project implementation as follows: <ul style="list-style-type: none"> - Phayao Municipality and its neighboring - Tambon Dok Khamtai Municipality and its neighboring - Tambon Pong and its neighboring - Tambon Mae Chai and its neighboring 	✓	✓	✓	✓	✓	9 Aug.2007 to 28 Nov.2008	Department of Public Works and Town & Country Planning	2,737.70 (MP : 13 areas) 1,806.1 (FS : 4 areas)

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9.	Master Plan Study, Feasibility Study and Detailed Design of Flood Protection Systems for Communities in Mae Hong Son Province	5 Municipalities and 2 Subdistrict Administration Organization of Mae Hong Son	<ul style="list-style-type: none"> Feasibility study of the detailed design for flood protection systems for community areas in Maehongson with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. The Master Plan for flood protection systems for all 7 areas in Maehongson had identified 5 prioritized areas which are eligible for the feasibility study. From the review of Master Plan Study by analyzing more detail on causes and factors of flood problem occurred in total 5 studied areas, namely Mueang Maehongson, Tambon Pai, Tambon Mae Sarieng Municipalities and Pang Ma Pha Subdistrict Administration Organization, plus one municipality as identified by the master plan study results. This result selected Tambon Mae La Noi Municipality. From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Maehongson has identified 4 areas suitable for the project implementation as follows: <ul style="list-style-type: none"> Mueang Maehongson Municipality and its neighboring Tambon Pai Municipality and its neighboring Tambon Mae Sarieng and its neighboring Pang Ma Pha Subdistrict Administration Organization and its neighboring 	✓	✓	✓	✓	✓	17 Apr.2008 to 7 Oct.2009	Department of Public Works and Town & Country Planning	1,224.62 (MP: 7 areas) 1,249.80 (FS: 5 areas)
10.	Master Plan Study, Feasibility Study and Detailed Design of Flood Protection Systems for Communities in Buriram Province	53 Municipalities of Buriram	<ul style="list-style-type: none"> Feasibility study of the detailed design for flood protection systems for community areas in Buriram with the main objectives of protecting and mitigating future flood damage. The study which consists of the preparation of a master plan for flood protection systems, a feasibility study for selected areas and the detailed design of the flood protection system. The Master Plan for flood protection systems for all 16 areas in Buriram had identified 4 prioritized areas which are eligible for the feasibility study. From the review of Master Plan Study by analyzing more detail on causes and factors of flood problem occurred in total 4 studied areas, namely Mueang Buriram, Muang Nangrong, Tambon Satuak and Tambon Prakonechai municipalities From the results of economical analysis, it can be concluded that the Feasibility Study for the Detailed Design of Flood Protection Systems for the Community Areas in Maehongson has identified 4 areas suitable for the project implementation as follows: <ol style="list-style-type: none"> Muang Buriram municipality Muang Nangrong municipality Tambon Satuak municipality Tambon Prakonechai municipality 	✓	✓	✓	✓	✓	20 July 2010 to 10 Nov.2011	Department of Public Works and Town & Country Planning	1,593.20 (MP: 16 areas) 1,069.84 (FS: 4 areas)

Remarks : MP : Master Plan

FS : Feasibility Study

DD : Detailed Design and Tender Documents Preparation

IEE: Initial Environmental Examination

EC : Economic and Financial Evaluation