

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Baybay, Leyte

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (3 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.03	Drilling on ordinary soils	meter	81		
2.04	Coring on rocks/gravel	meter	6		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	9		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Baybay, Leyte

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	63		
3.02	Moisture Content	test	63		
3.03	Grain Size Analysis	test	63		
3.04	Atterberg Units	test	63		
3.05	Organic Content	test	63		
3.06	Specific Gravity	test	63		
3.07	Unit Weight	test	9		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test			
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Baybay, Leyte

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Butuan City, Agusan del Norte

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Butuan City, Agusan del Norte

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
	OFFSHORE BOREHOLES (0 BH @ 30m)				
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.03	Drilling on ordinary soils	meter	-		
2.04	Coring on rocks/gravel	meter	-		
2.05	SPT at 1.5m interval	test	-		
2.06	Undisturbed sampling (UDS)	sample	-		
	INLAND BOREHOLES (3 BH @ 20m)				
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.08	Drilling on ordinary soils	meter	34		
2.09	Coring in rocks/gravel	meter	6		
2.10	SPT at 1.5m interval	test	34		
2.11	Undisturbed sampling (UDS)	sample	9		
2.12	Safety gears/equipment	sets	9		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Butuan City, Agusan del Norte

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	43		
3.02	Moisture Content	test	43		
3.03	Grain Size Analysis	test	43		
3.04	Atterberg Units	test	43		
3.05	Organic Content	test	43		
3.06	Specific Gravity	test	43		
3.07	Unit Weight	test	43		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test	9		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Butuan City, Agusan del Norte

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form. Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Cagayan de Oro City, Misamis Oriental

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Cagayan de Oro City, Misamis Oriental

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (0 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.03	Drilling on ordinary soils	meter	-		
2.04	Coring on rocks/gravel	meter	-		
2.05	SPT at 1.5m interval	test	-		
2.06	Undisturbed sampling (UDS)	sample	-		
INLAND BOREHOLES (3 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.08	Drilling on ordinary soils	meter	34		
2.09	Coring in rocks/gravel	meter	6		
2.10	SPT at 1.5m interval	test	34		
2.11	Undisturbed sampling (UDS)	sample	9		
2.12	Safety gears/equipment	sets	9		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Cagayan de Oro City, Misamis Oriental

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01 3.02 3.03 3.04 3.05 3.06 3.07 3.08 3.09	Visual Classification Moisture Content Grain Size Analysis Atterberg Units Organic Content Specific Gravity Unit Weight Unconfined Compression Consolidation	test test test test test test test test test	43 43 43 43 43 43 43 9 9		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Cagayan de Oro City, Misamis Oriental

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Davao City (Sasa), Davao del Sur

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Davao City (Sasa), Davao del Sur

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (5 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	5		
2.03	Drilling on ordinary soils	meter	135		
2.04	Coring on rocks/gravel	meter	10		
2.05	SPT at 1.5m interval	test	105		
2.06	Undisturbed sampling (UDS)	sample	15		
2.07	Safety gears/equipment	Lumpsum	9		
INLAND BOREHOLES (1 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	1		
2.08	Drilling on ordinary soils	meter	12		
2.09	Coring in rocks/gravel	meter	2		
2.10	SPT at 1.5m interval	test	12		
2.11	Undisturbed sampling (UDS)	sample	3		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
 Davao City (Sasa), Davao del Sur

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01 3.02 3.03 3.04 3.05 3.06 3.07 3.08 3.09	Visual Classification Moisture Content Grain Size Analysis Atterberg Units Organic Content Specific Gravity Unit Weight Unconfined Compression Consolidation	test test test test test test test test test	120 120 120 120 120 120 120 18 18		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Davao City (Sasa), Davao del Sur

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Babak, IGACOS, Davao

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum			
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Babak, IGACOS, Davao

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (3 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.03	Drilling on ordinary soils	meter	81		
2.04	Coring on rocks/gravel	meter	6		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	9		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Babak, IGACOS, Davao

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	63		
3.02	Moisture Content	test	63		
3.03	Grain Size Analysis	test	63		
3.04	Atterberg Units	test	63		
3.05	Organic Content	test	63		
3.06	Specific Gravity	test	63		
3.07	Unit Weight	test	63		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test	9		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Babak, IGACOS, Davao

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Mati, Davao Oriental

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Mati, Davao Oriental

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (3 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.03	Drilling on ordinary soils	meter	81		
2.04	Coring on rocks/gravel	meter	6		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	9		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
Mati, Davao Oriental

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	63		
3.02	Moisture Content	test	63		
3.03	Grain Size Analysis	test	63		
3.04	Atterberg Units	test	63		
3.05	Organic Content	test	63		
3.06	Specific Gravity	test	63		
3.07	Unit Weight	test	9		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test	9		
TOTAL FOR BILL NO. 3					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Mati, Davao Oriental

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 General Santos City, South Cotabato

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
General Santos City, South Cotabato

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (5 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	5		
2.03	Drilling on ordinary soils	meter	135		
2.04	Coring on rocks/gravel	meter	105		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	15		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
General Santos City, South Cotabato

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01 3.02 3.03 3.04 3.05 3.06 3.07 3.08 3.09	Visual Classification Moisture Content Grain Size Analysis Atterberg Units Organic Content Specific Gravity Unit Weight Unconfined Compression Consolidation	test test test test test test test test test	105 105 105 105 105 105 105 15 15		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
Conduct of Soil Investigation/Exploration
General Santos, South Cotabato

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Zamboanga City, Zamboanga del Sur

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Zamboanga City, Zamboanga del Sur

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (3 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.03	Drilling on ordinary soils	meter	81		
2.04	Coring on rocks/gravel	meter	6		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	9		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES

Conduct of Soil Investigation/Exploration
Zamboanga City, Zamboanga del Sur

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	63		
3.02	Moisture Content	test	63		
3.03	Grain Size Analysis	test	63		
3.04	Atterberg Units	test	63		
3.05	Organic Content	test	63		
3.06	Specific Gravity	test	63		
3.07	Unit Weight	test	63		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test	9		
TOTAL FOR BILL NO. 3					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Zamboanga City, Zamboanga del Sur

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Katipunan, Zamboanga del Norte

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Katipunan, Zamboanga del Norte

BILL NO. 2 - FIELD WORK

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
OFFSHORE BOREHOLES (3 BH @ 30m)					
2.01	Fabrication of drilling platform	Lump Sum	-		
2.02	Hole to hole transfer and setting-up including staking of borehole locations	holes	3		
2.03	Drilling on ordinary soils	meter	81		
2.04	Coring on rocks/gravel	meter	6		
2.05	SPT at 1.5m interval	test	63		
2.06	Undisturbed sampling (UDS)	sample	9		
2.07	Safety gears/equipment	sets	9		
INLAND BOREHOLES (0 BH @ 20m)					
2.07	Hole to hole transfer and setting-up including staking of borehole locations	holes	-		
2.08	Drilling on ordinary soils	meter	-		
2.09	Coring in rocks/gravel	meter	-		
2.10	SPT at 1.5m interval	test	-		
2.11	Undisturbed sampling (UDS)	sample	-		
TOTAL FOR BILL NO. 2					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Katipunan, Zamboanga del Norte

BILL NO. 3 - LABORATORY TESTS

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
3.01	Visual Classification	test	63		
3.02	Moisture Content	test	63		
3.03	Grain Size Analysis	test	63		
3.04	Atterberg Units	test	63		
3.05	Organic Content	test	63		
3.06	Specific Gravity	test	63		
3.07	Unit Weight	test	63		
3.08	Unconfined Compression	test	9		
3.09	Consolidation	test	9		
TOTAL FOR BILL NO. 3					P

BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Katipunan, Zamboanga del Norte

BILL NO. 4 - TECHNICAL EVALUATION REPORT

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
4.01	Technical Evaluation Report	Lump Sum	1 Report (10 copies each in book-bound form, Draft and Final Reports & 1 copy in electronic media)		
TOTAL FOR BILL NO. 4					P _____

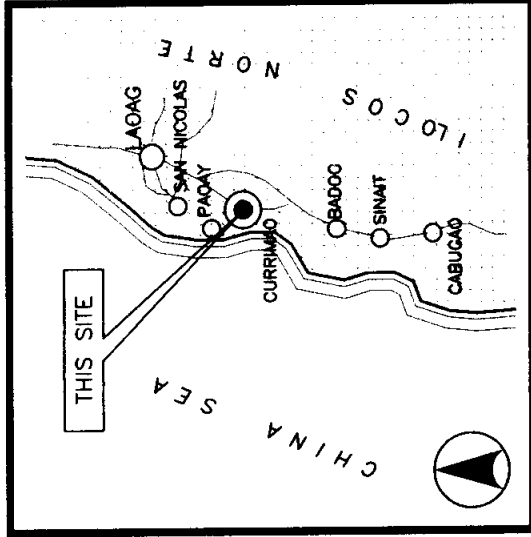
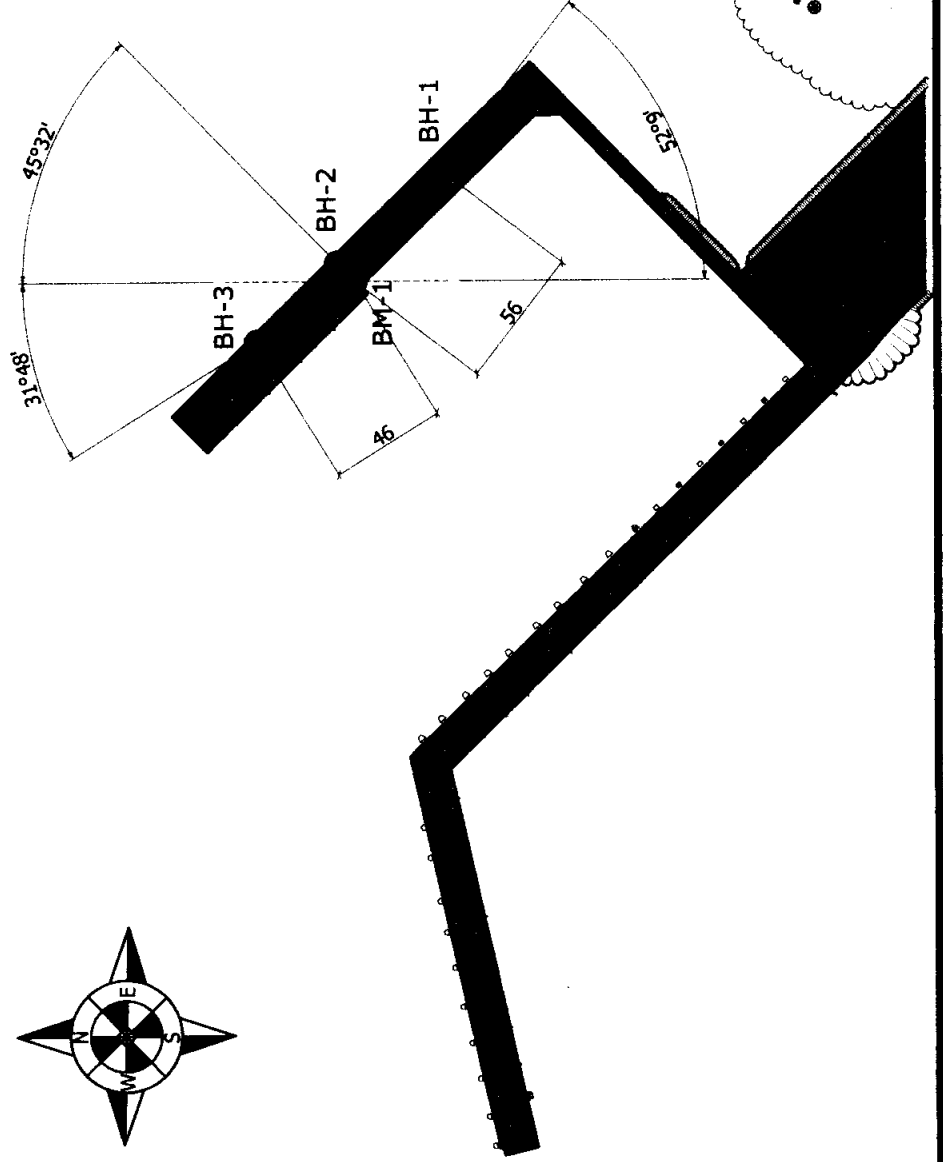
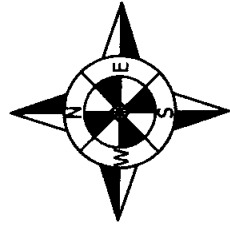
BILL OF QUANTITIES
 Conduct of Soil Investigation/Exploration
 Legazpi City, Albay

BILL NO. 1 - MOBILIZATION AND DEMOBILIZATION

ITEM NO. (1)	DESCRIPTION OF WORK (2)	UNIT (3)	QTY (4)	UNIT PRICE (5)	TOTAL PRICE (4) X (5) = (6)
1.01	Mobilization/demobilization	Lump Sum	-		
TOTAL FOR BILL NO. 1					P _____

BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED IN BETWEEN THE ACCESS TRESTLE AND THE MAIN PIER
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 52°09' E AT A DISTANCE OF 56 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 45°32' E AT A DISTANCE OF 10 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 31°48' W AT A DISTANCE OF 46 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

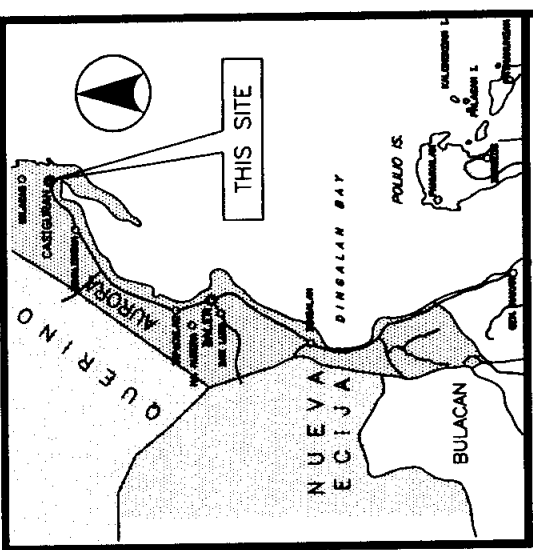
- ▬ EXISTING STRUCTURE
- ▬ PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF CURRIMAO
CURRIMAO, ILOCOS NORTE

SCALE: 1:3000

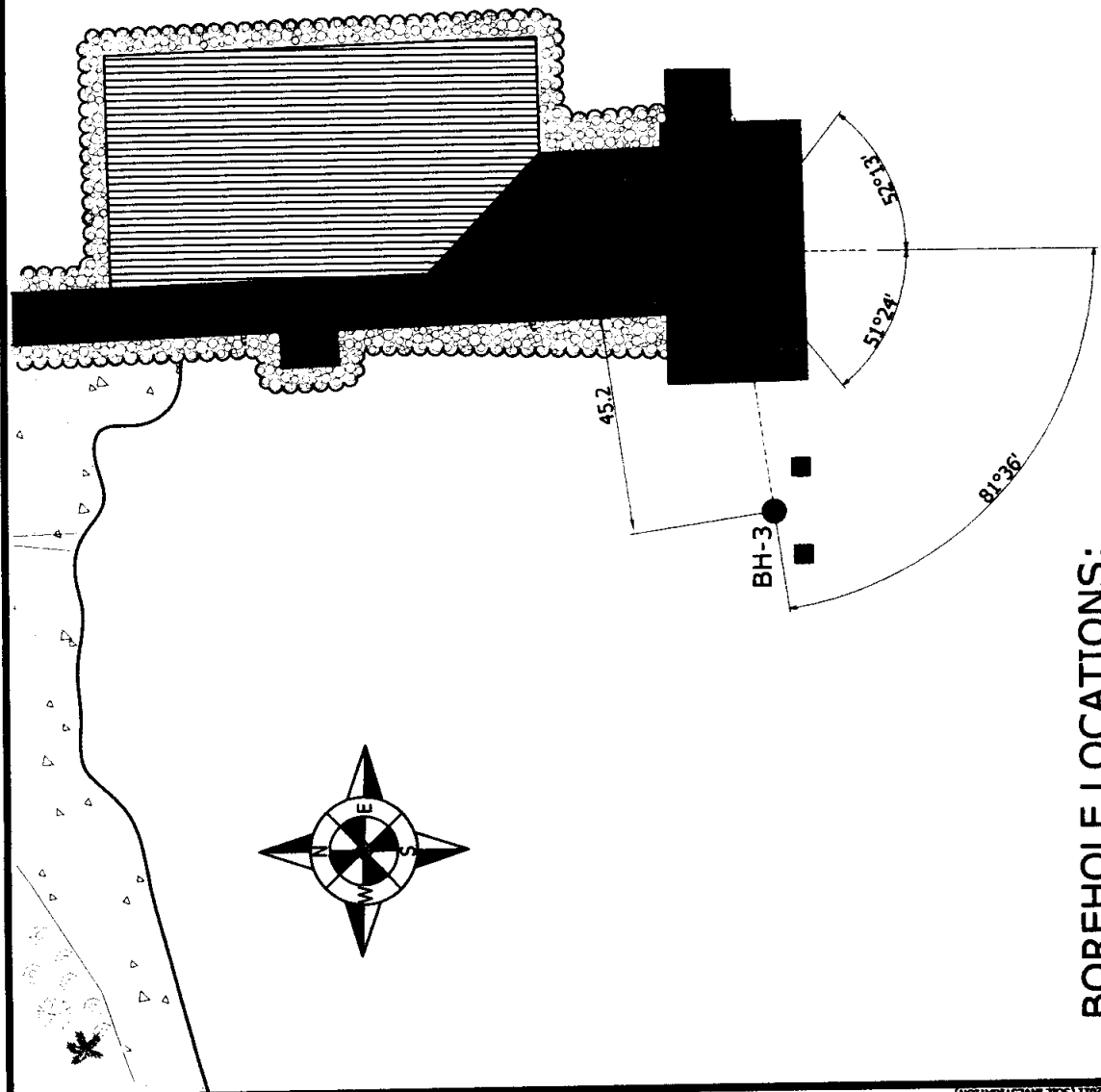


VICINITY MAP
NOT TO SCALE

LEGEND:

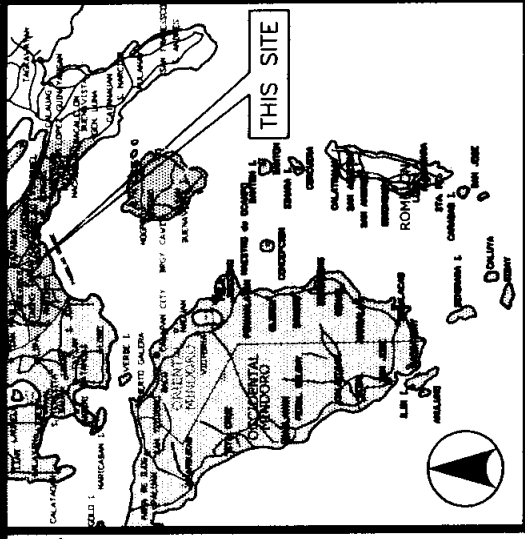
- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- UNDER CONSTRUCTION
- BENCHMARKS
- BOREHOLE LOCATIONS

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
PORT OF CASIGURAN
BRGY. DIBACONG, CASIGURAN, AURORA
SCALE: 1:1250



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 52°13' E AT A DISTANCE OF 9.5 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 51°24' W AT A DISTANCE OF 9.5 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 81°36' W AT A DISTANCE OF 45.2 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

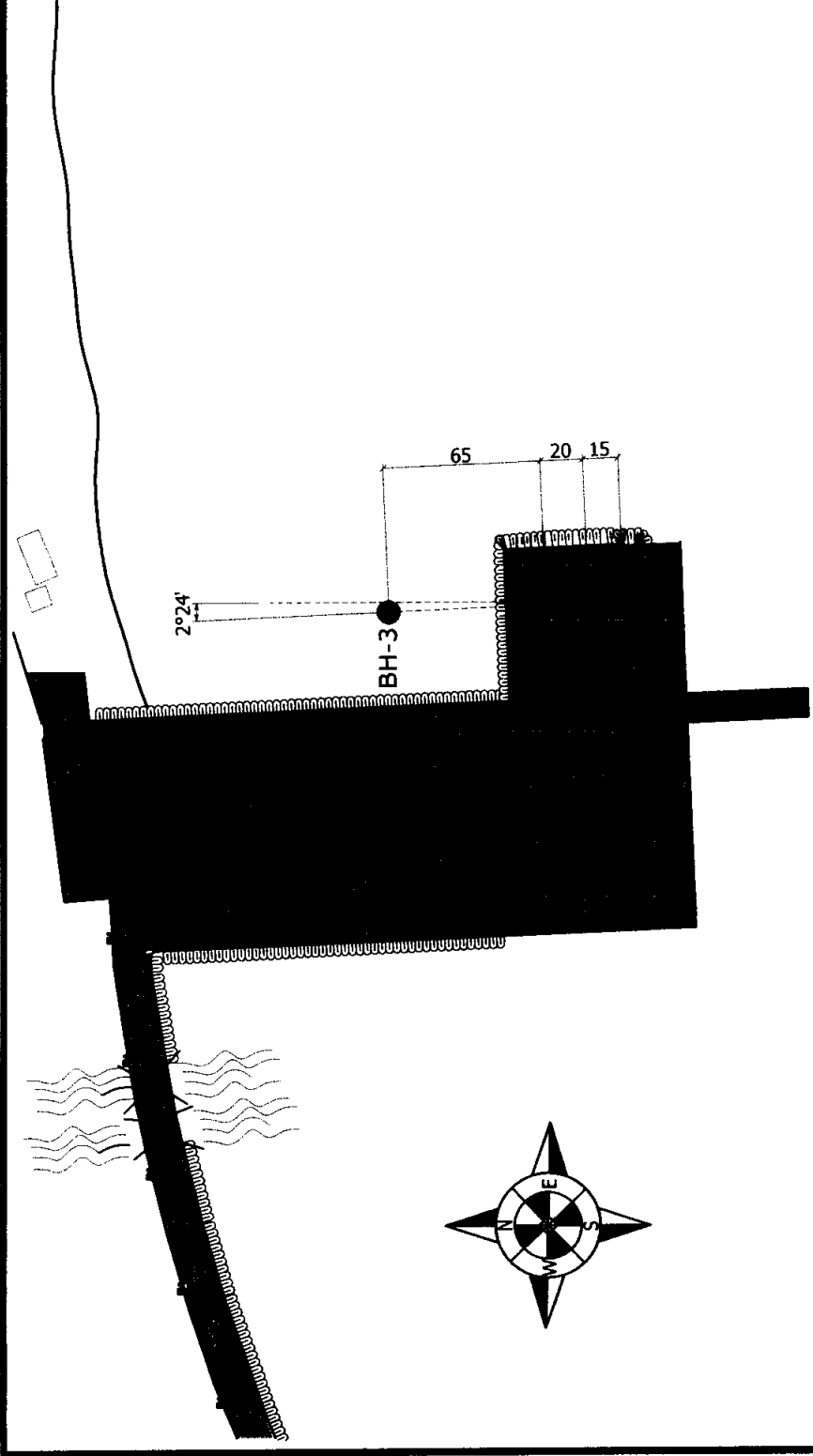
- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

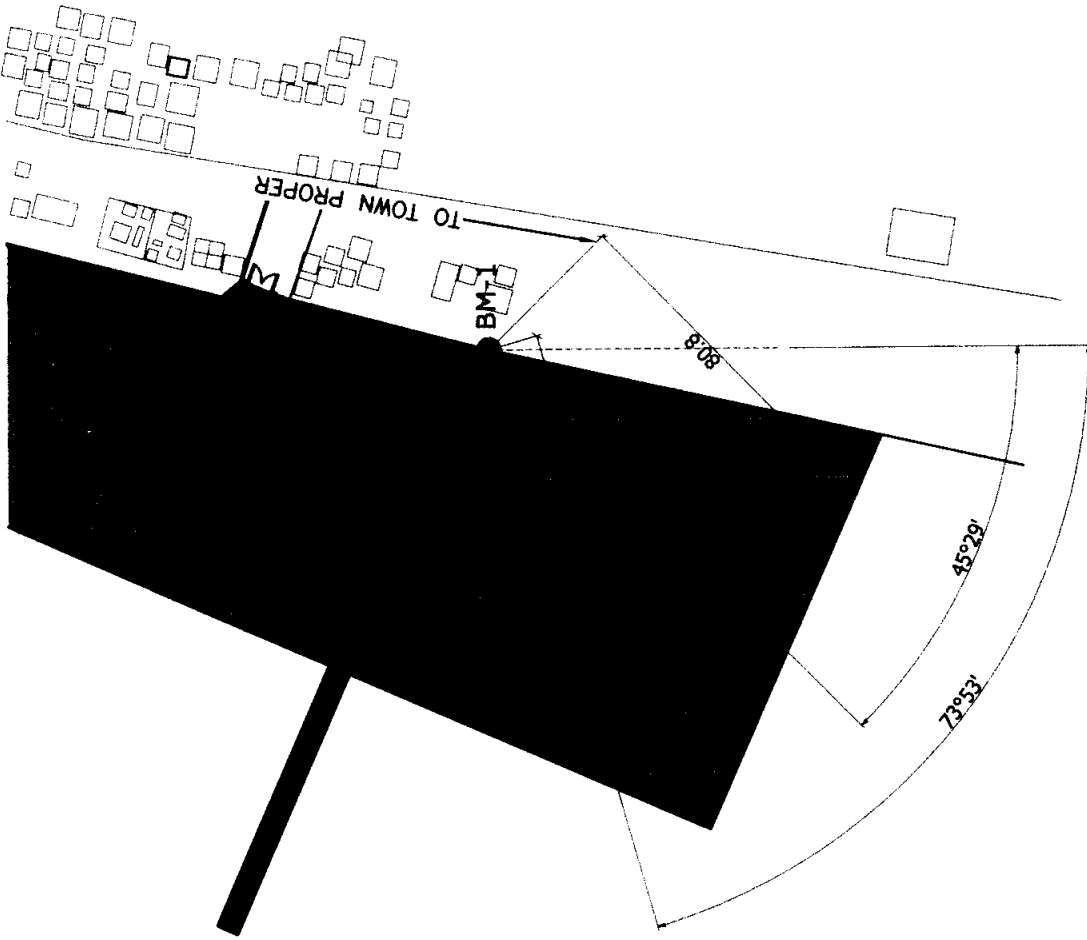
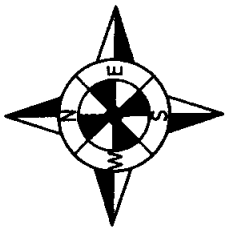
PORT OF LUCENA
LUCENA CITY, QUEZON

SCALE: 1:3000



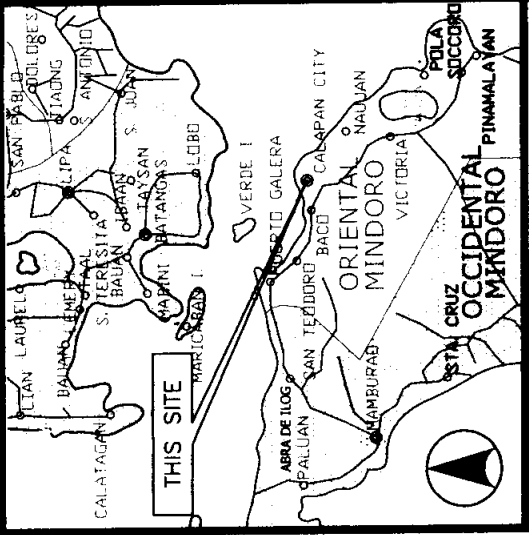
BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE NEWLY RECLAIMED BACK-UP AREA
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 2°24' W AT A DISTANCE OF 15 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 2°24' W AT A DISTANCE OF 35 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 2°24' W AT A DISTANCE OF 100 METERS FROM BM-1



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CORNER OF THE UNPAVED BACK-UP AREA
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 45°29' W AT A DISTANCE OF 80.8 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 73°53' W AT A DISTANCE OF 78 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 73°53' W AT A DISTANCE OF 39 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



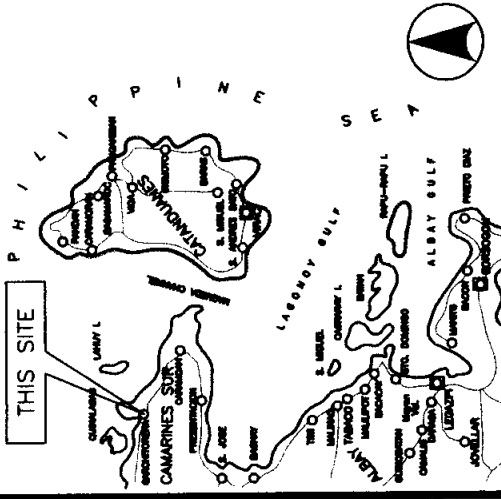
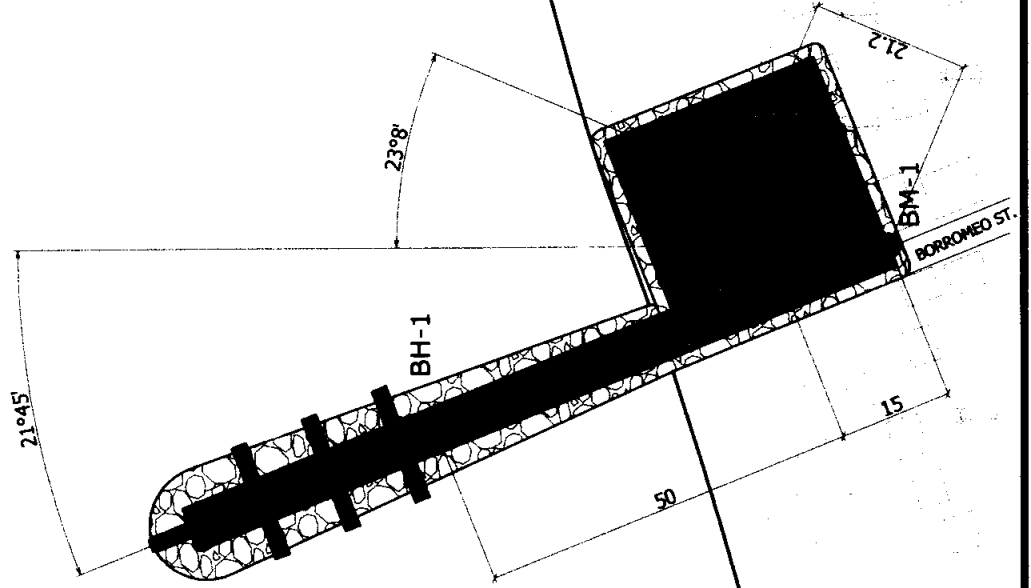
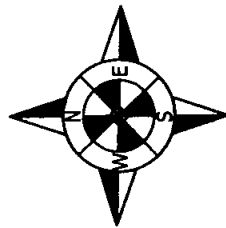
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF CALAPAN
CALAPAN CITY, ORIENTAL MINDORO

SCALE: 1:2000

BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE RIGHT END CORNER OF BORROMEO STREET
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 21°45' W AT A DISTANCE OF 65 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 21°45' W AT A DISTANCE OF 15 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 23°08' E AT A DISTANCE OF 21.2 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

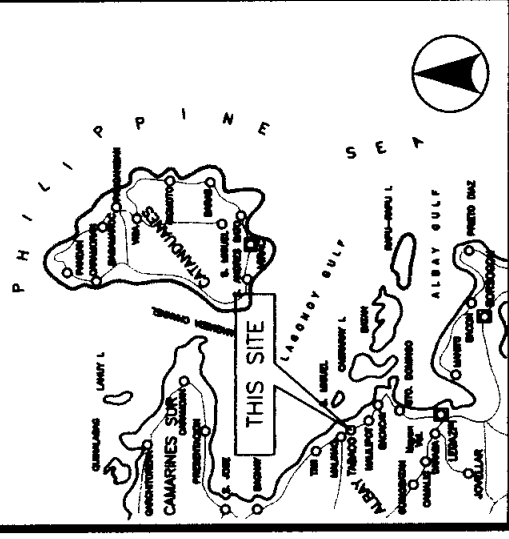
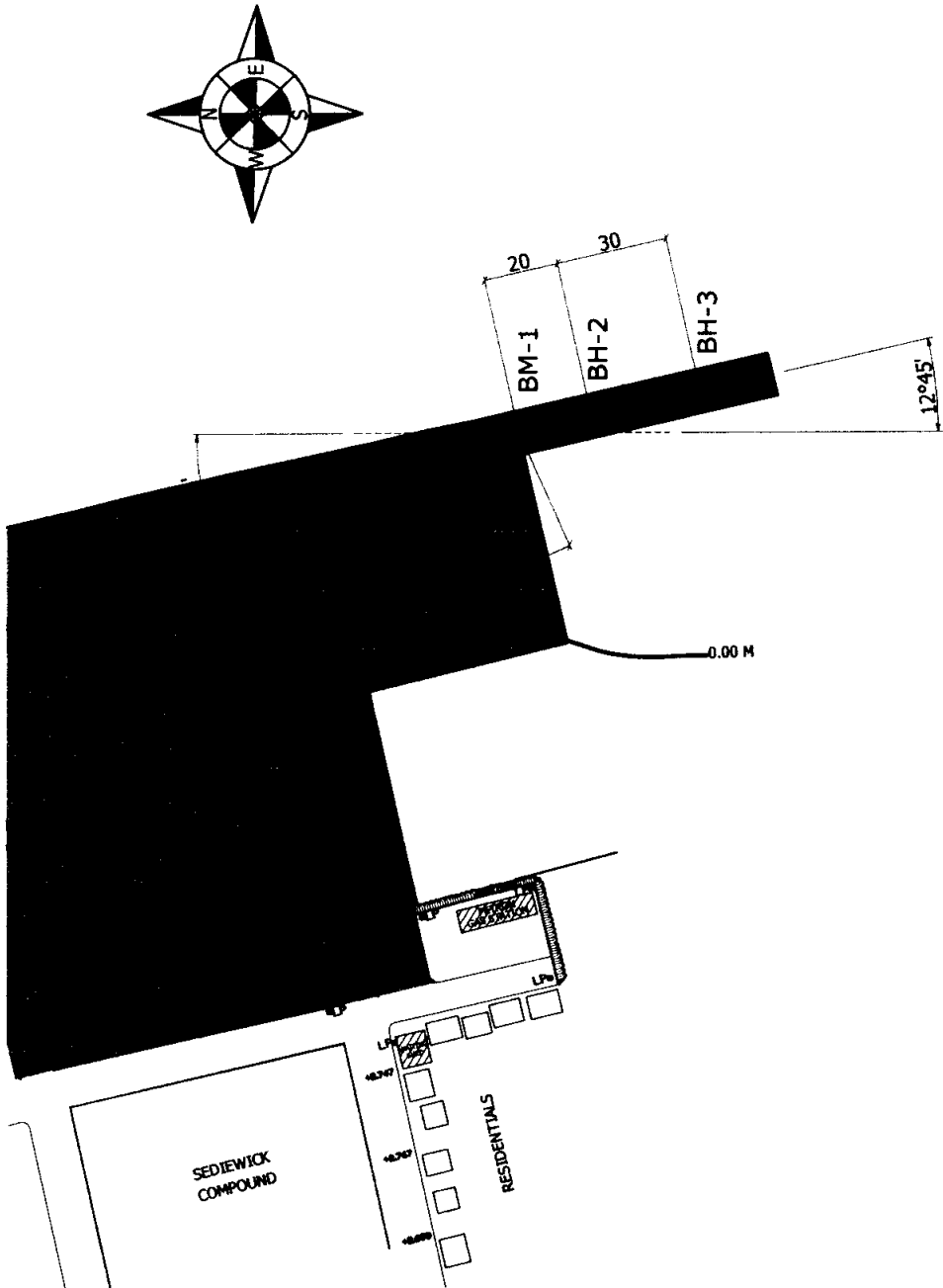


PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF GARCHITORENA
GARCHITORENA, CAMARINES SUR

SCALE:

1:1000




VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

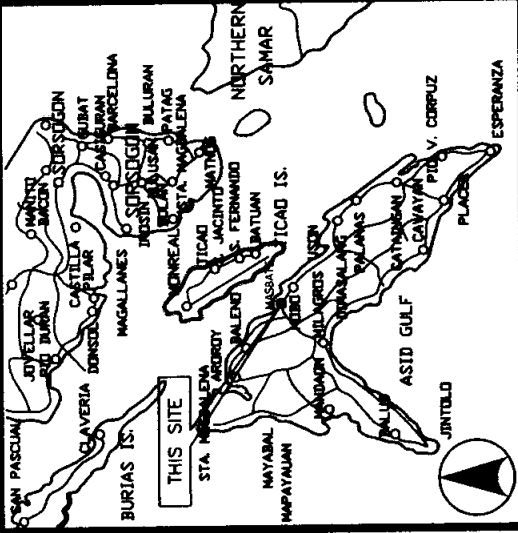
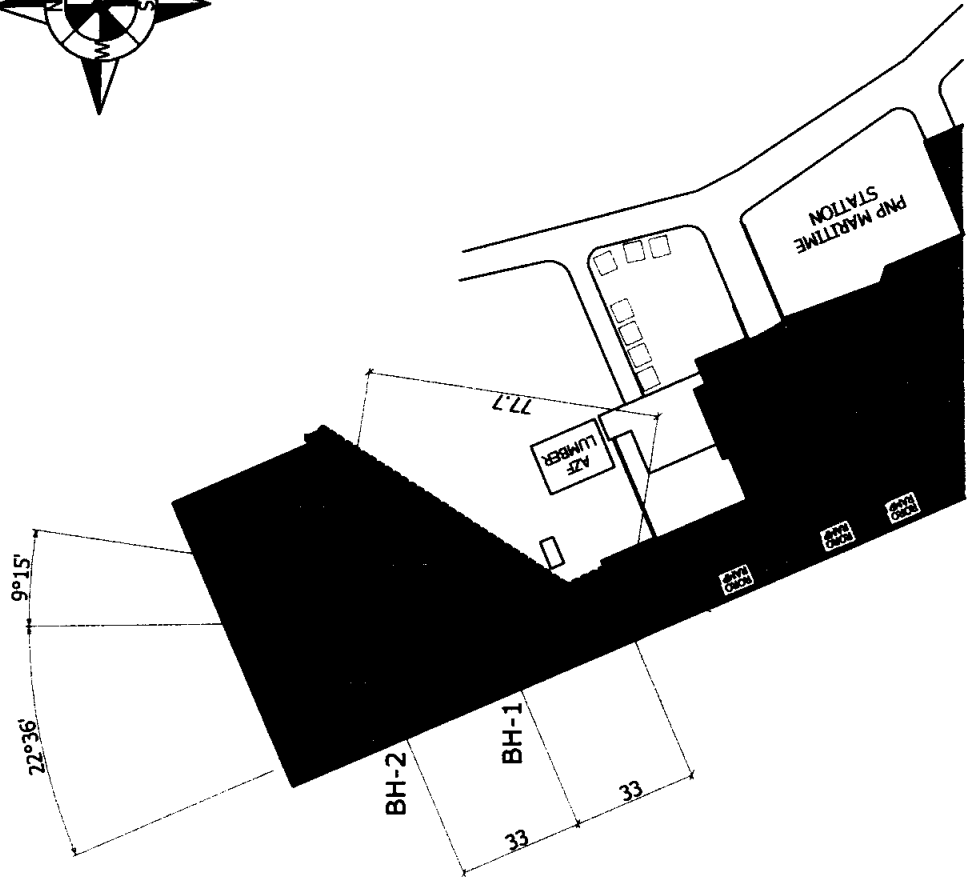
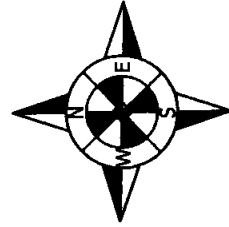
BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE SOUTHERN PORTION OF THE WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 24°11' W AT A DISTANCE OF 36 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 12°45' E AT A DISTANCE OF 20 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 12°45' E AT A DISTANCE OF 50 METERS FROM BM-1


PHILIPPINE PORTS AUTHORITY
 PROJECT DEVELOPMENT DEPARTMENT
 DEVELOPMENT PLAN
PORT OF TABACO
 TABACO CITY, ALBAY
 SCALE: 1:2000

BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED 6 METERS FROM THE EDGE OF RC WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 22°36' W AT A DISTANCE OF 33 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 22°36' W AT A DISTANCE OF 66 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 9°15' E AT A DISTANCE OF 77.7 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

PHILIPPINE PORTS
AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF MASBATE MASBATE

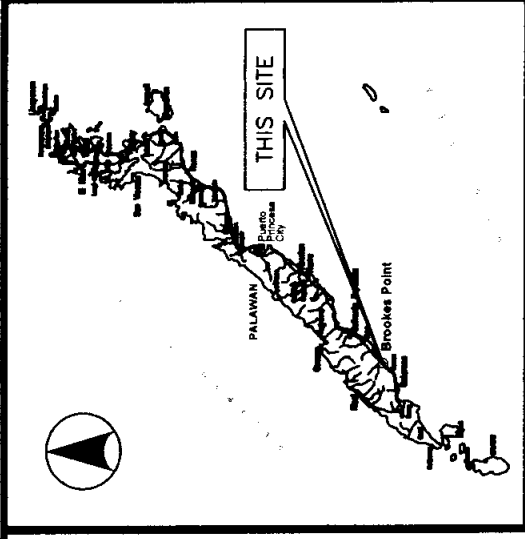
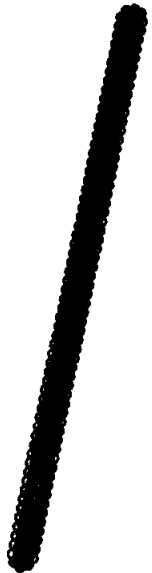
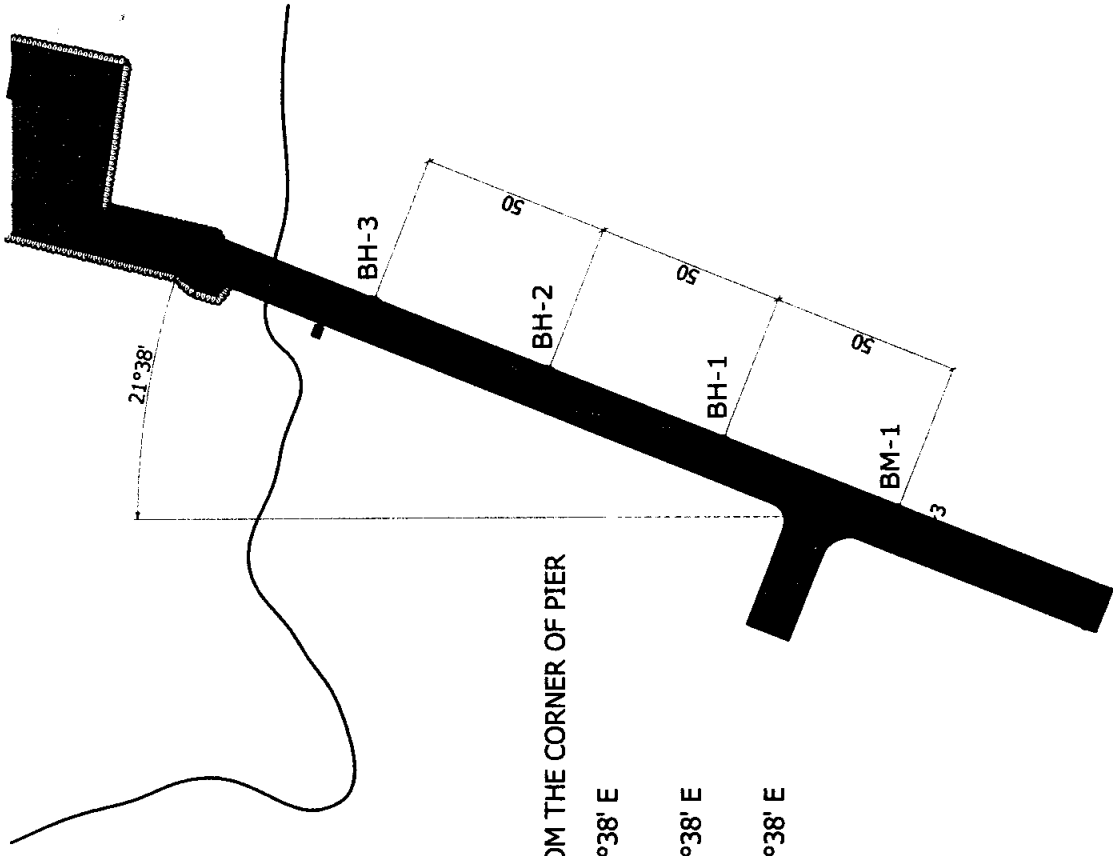
SCALE:

1:2000



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED 3 METERS FROM THE CORNER OF PIER
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 21°38' E AT A DISTANCE OF 50 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 21°38' E AT A DISTANCE OF 100 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 21°38' E AT A DISTANCE OF 150 METERS FROM BM-1

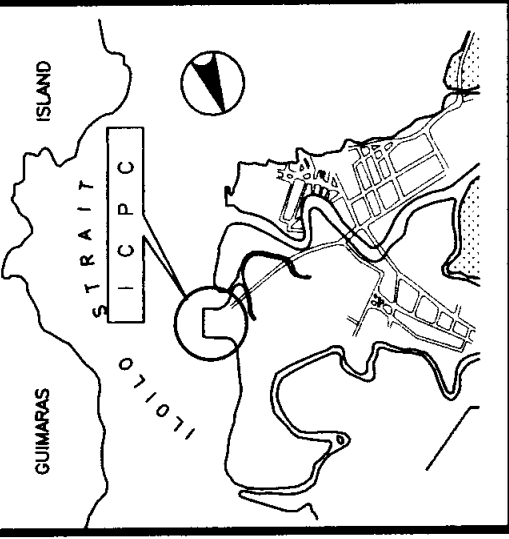


VICINITY MAP
NOT TO SCALE

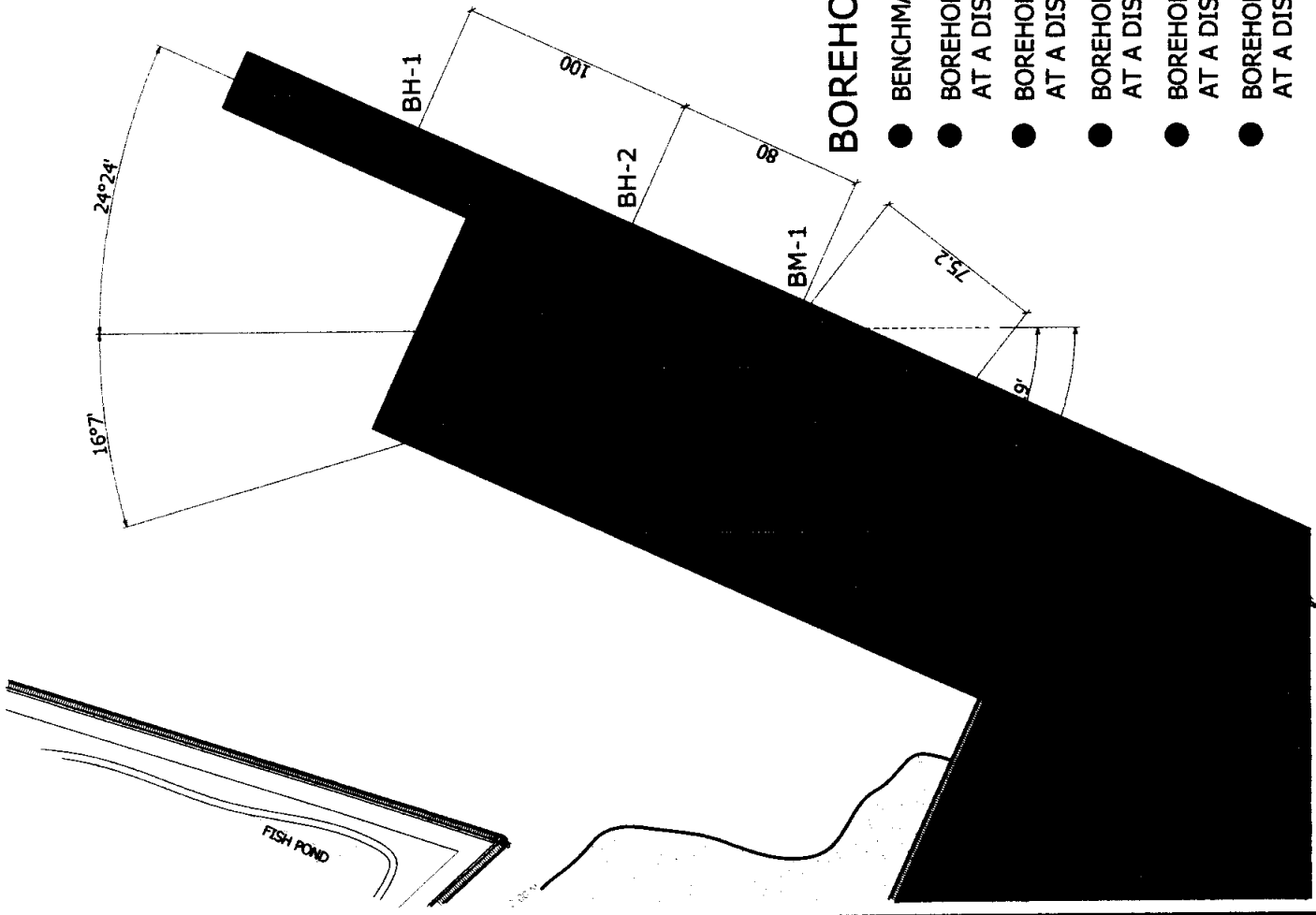
LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
DEVELOPMENT PLAN
PORT OF BROOKE'S POINT
BRGY. BULIGOY, BROOKE'S POINT, PALAWAN
SCALE: 1:2000



VICINITY MAP
NOT TO SCALE



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 24°24' E AT A DISTANCE OF 180.0 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 24°24' E AT A DISTANCE OF 80.0 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 16°7' W AT A DISTANCE OF 95.5 METERS FROM BM-1
- BOREHOLE LOCATION #4 (BH-4) LOCATED S 64°35' W AT A DISTANCE OF 95.7 METERS FROM BM-1
- BOREHOLE LOCATION #5 (BH-5) LOCATED S 38°19' W AT A DISTANCE OF 75.2 METERS FROM BM-1

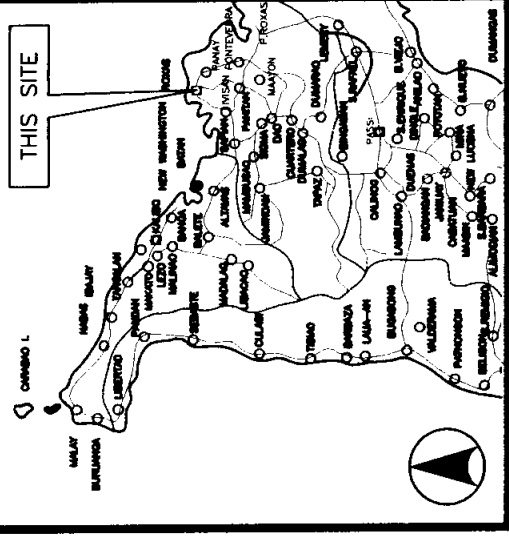
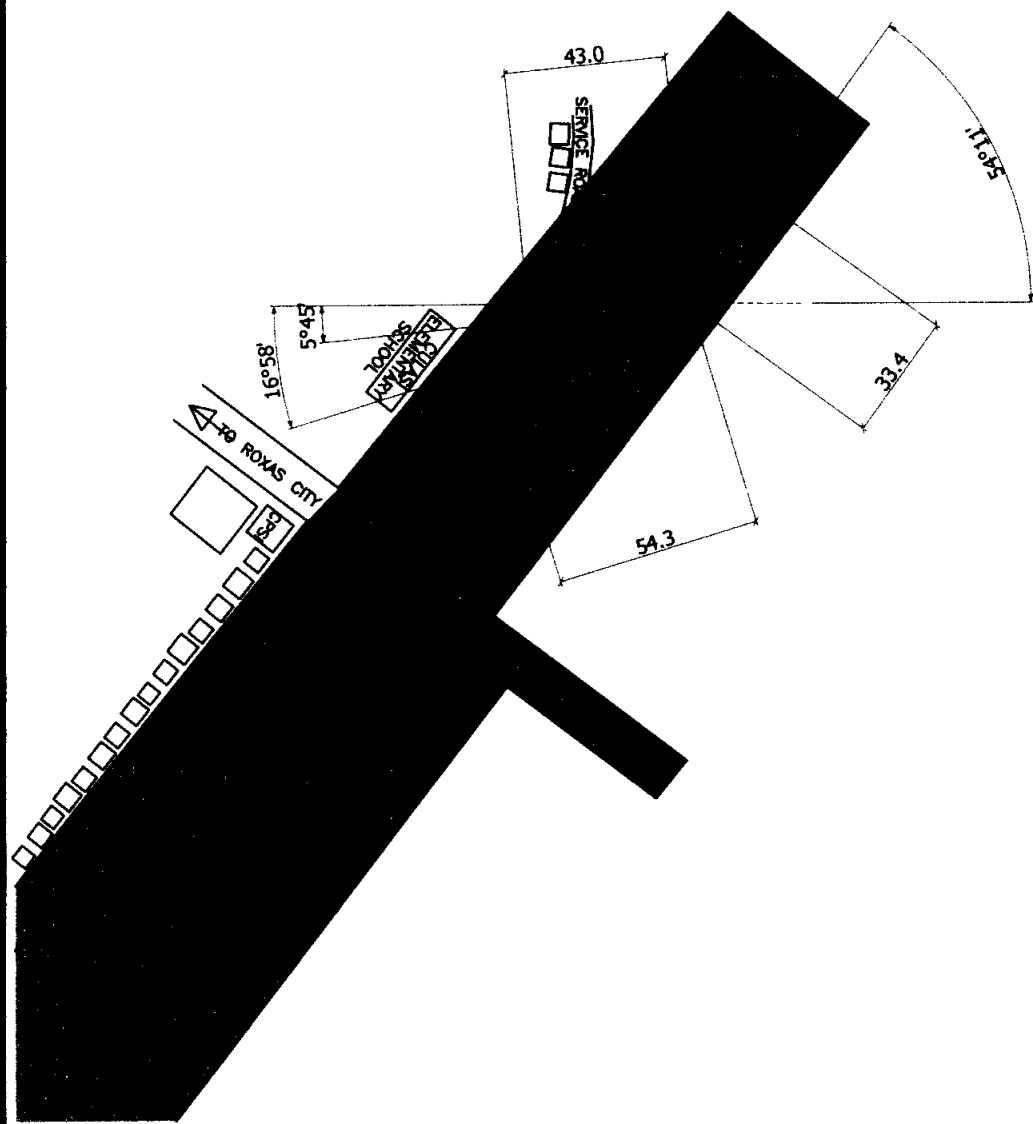
LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
ILOILO COMMERCIAL PORT COMPLEX
ILOILO CITY

SCALE: 1:3000




VICINITY MAP
NOT TO SCALE

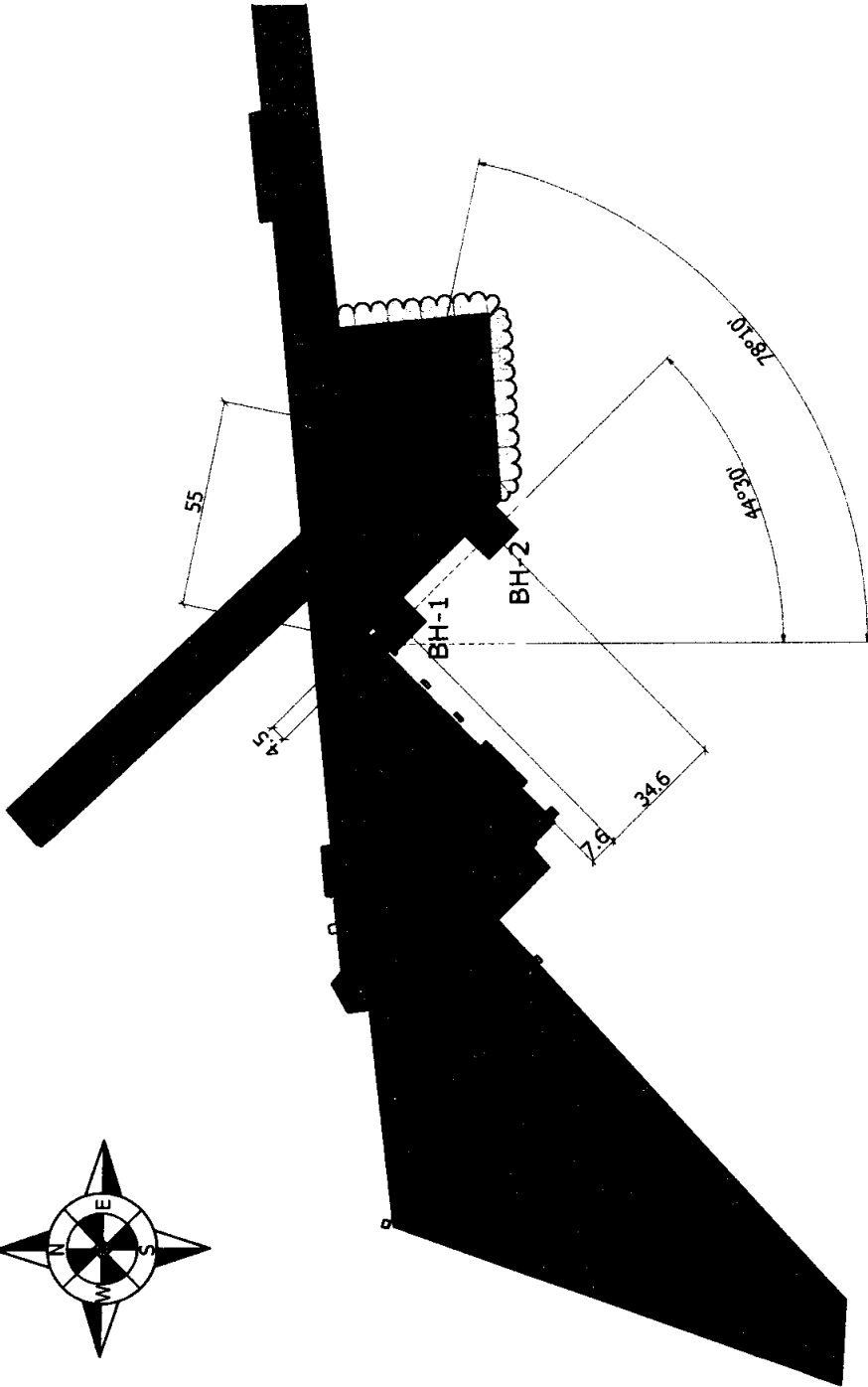
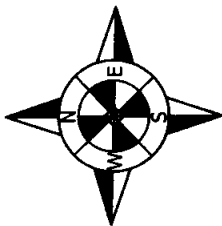
LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

BOREHOLE LOCATIONS:

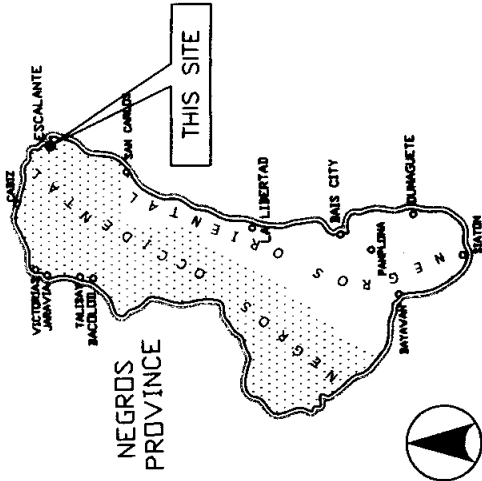
- BENCHMARK #1 (BM-1) LOCATED AT THE CORNER OF THE WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 16°58' W AT A DISTANCE OF 54.3 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 5°45' W AT A DISTANCE OF 43.0 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 54°11' E AT A DISTANCE OF 33.4 METERS FROM BM-1


PHILIPPINE PORTS AUTHORITY
 PROJECT DEVELOPMENT DEPARTMENT
 BOREHOLE LOCATIONS
PORT OF CULASI
 BRGY. CULASI, ROXAS CITY, CAPIZ
 SCALE: 1:2000



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED 4.5 METERS FROM THE CORNER OF PIER
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 44°30' E AT A DISTANCE OF 7.6 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 44°30' E AT A DISTANCE OF 42.2 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 78°10' E AT A DISTANCE OF 55.0 METERS FROM BM-1



VICINITY MAP
TO
SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF BANAGO

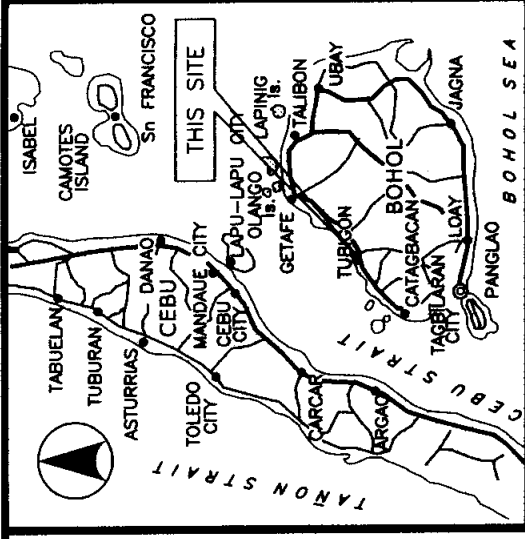
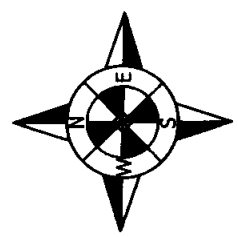
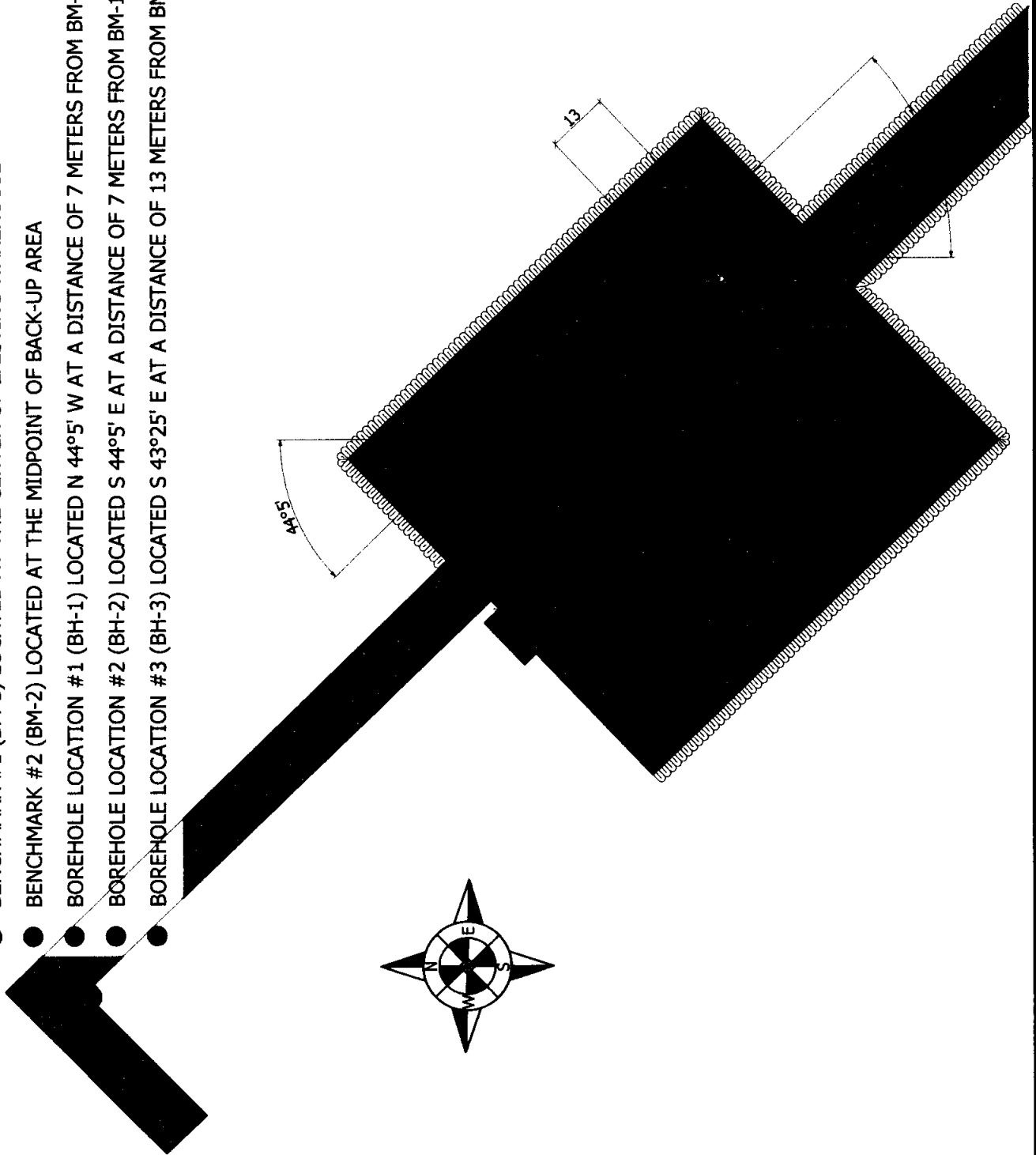
BACOLOD CITY, NEGROS OCCIDENTAL

SCALE:

1:2000

BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF EXISTING WAREHOUSE
- BENCHMARK #2 (BM-2) LOCATED AT THE MIDPOINT OF BACK-UP AREA
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 44°5' W AT A DISTANCE OF 7 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 44°5' E AT A DISTANCE OF 7 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 43°25' E AT A DISTANCE OF 13 METERS FROM BM-2



VICINITY MAP
NOT TO SCALE

LEGEND:

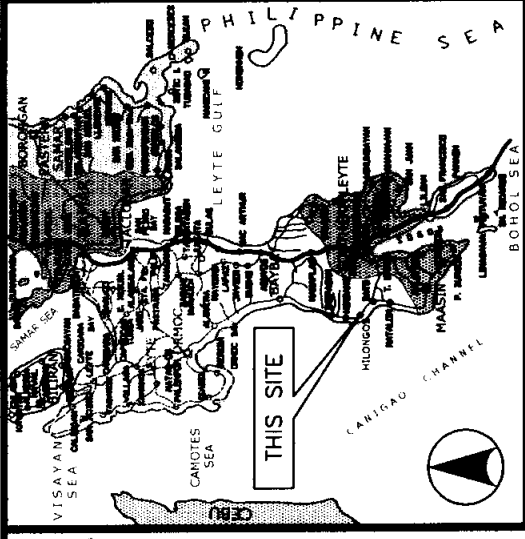
- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS





PORT OF TUBIGON
TUBIGON, BOHOL

SCALE: 1:1250



VICINITY MAP
NOT TO SCALE

LEGEND:

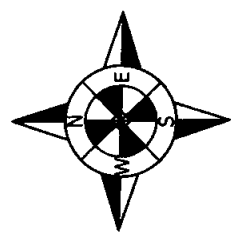
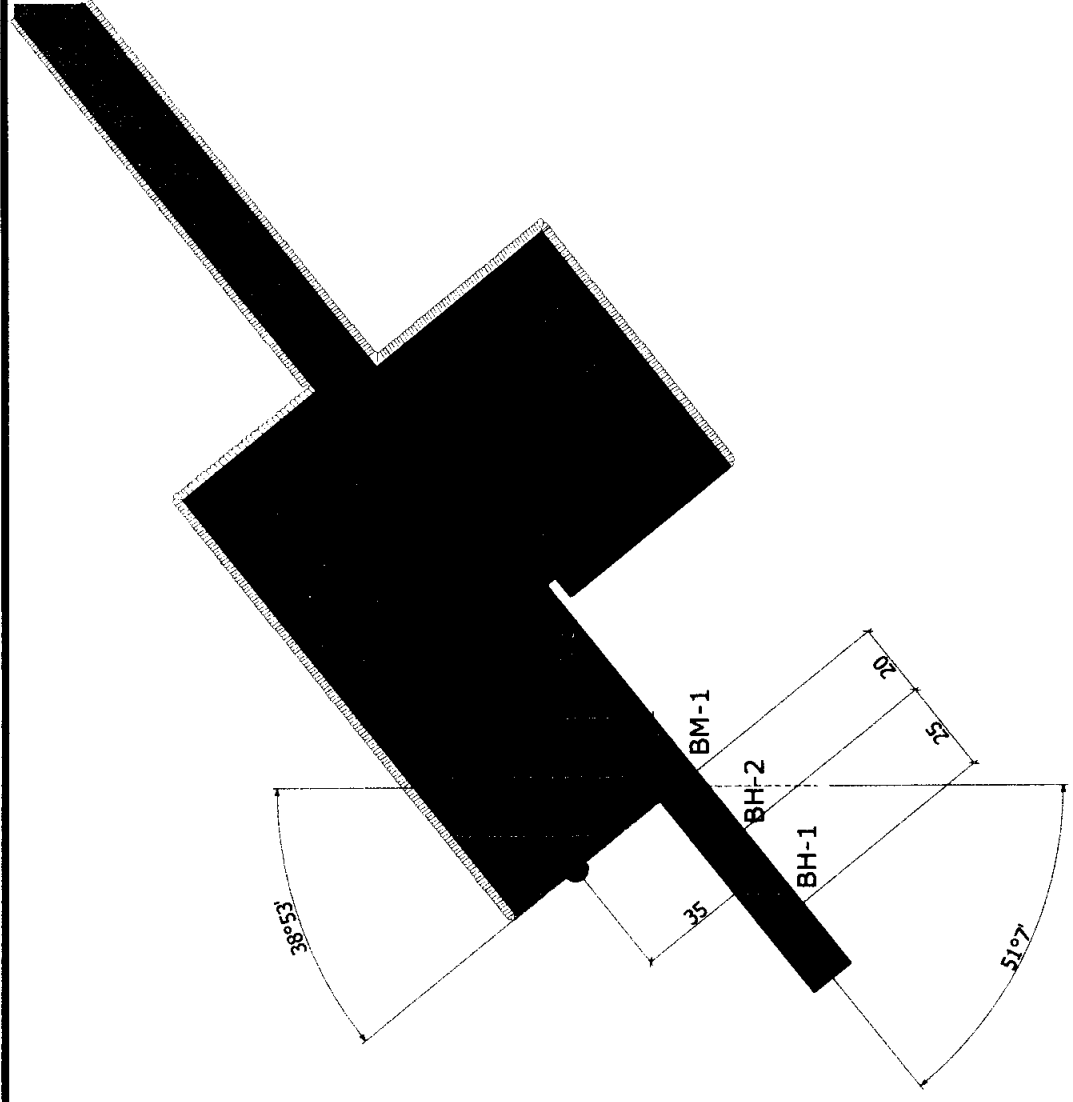
-  EXISTING STRUCTURE
-  PROPOSED DEVELOPMENT
-  BENCHMARKS
-  BOREHOLE LOCATIONS



PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

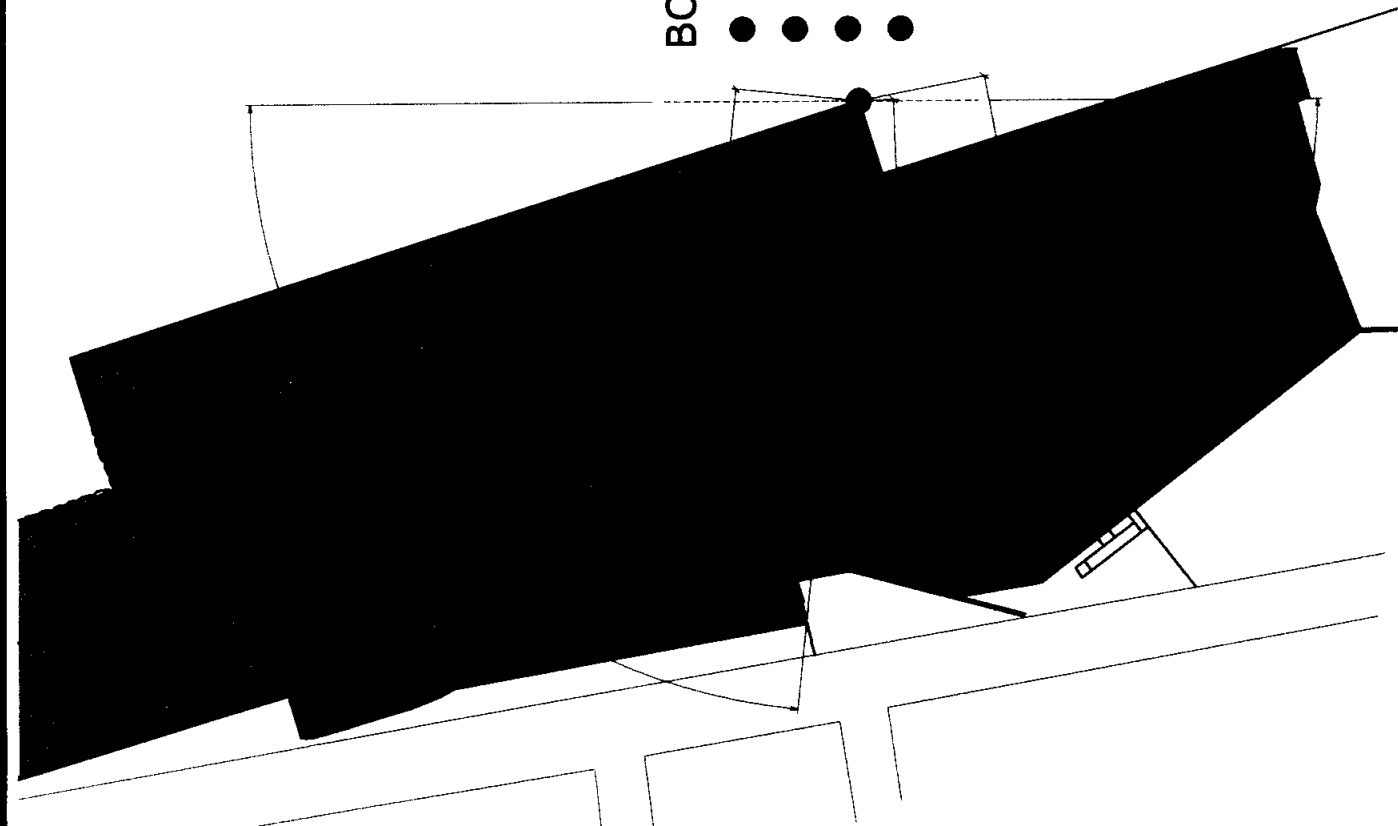
PORT OF HILONGOS
HILONGOS, SOUTHERN LEYTE

SCALE: 1:2000



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED 6 METERS FROM THE LEFT CORNER OF RC PIER
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 51°07' W AT A DISTANCE OF 45 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 51°07' W AT A DISTANCE OF 20 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 38°53' W AT A DISTANCE OF 35 METERS FROM BM-1

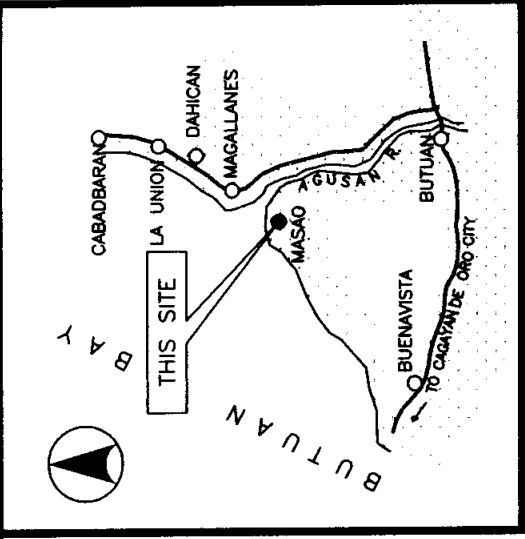


BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CORNER OF THE WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 84°8' W AT A DISTANCE OF 68.3 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 87°45' W AT A DISTANCE OF 65.0 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 78°58' W AT A DISTANCE OF 63.1 METERS FROM BM-1

LEGEND:

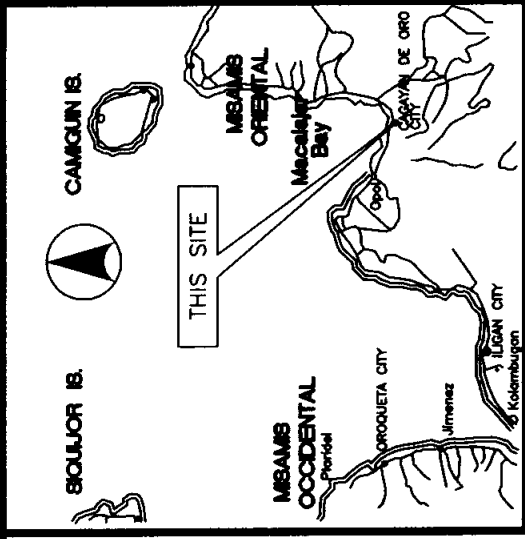
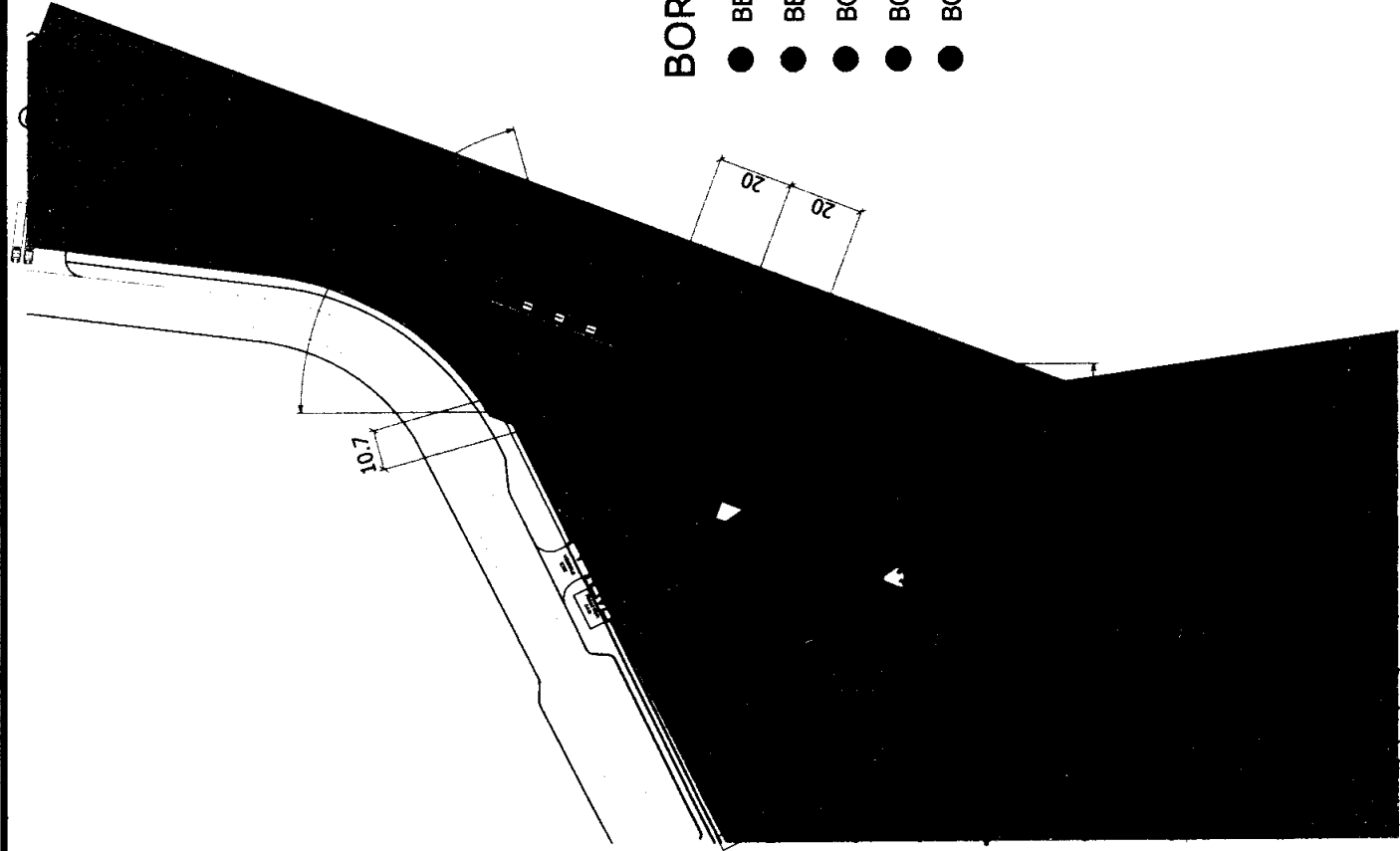
- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



VICINITY MAP
NOT TO SCALE


PHILIPPINE PORTS AUTHORITY
 PROJECT DEVELOPMENT DEPARTMENT
 BOREHOLE LOCATIONS
PORT OF BUTUAN
 BUTUAN CITY

SCALE: 1:1250




VICINITY MAP
NOT TO SCALE

BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE DOOR BESIDE THE BAGGAGE INSPECTION
- BENCHMARK #2 (BM-2) LOCATED AT THE CENTER OF THE COMFORT ROOM PARTITION
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 74°41' E AT A DISTANCE OF 10.7 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 20°44' W AT A DISTANCE OF 20.0 METERS FROM BM-2
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 20°44' W AT A DISTANCE OF 40.0 METERS FROM BM-2

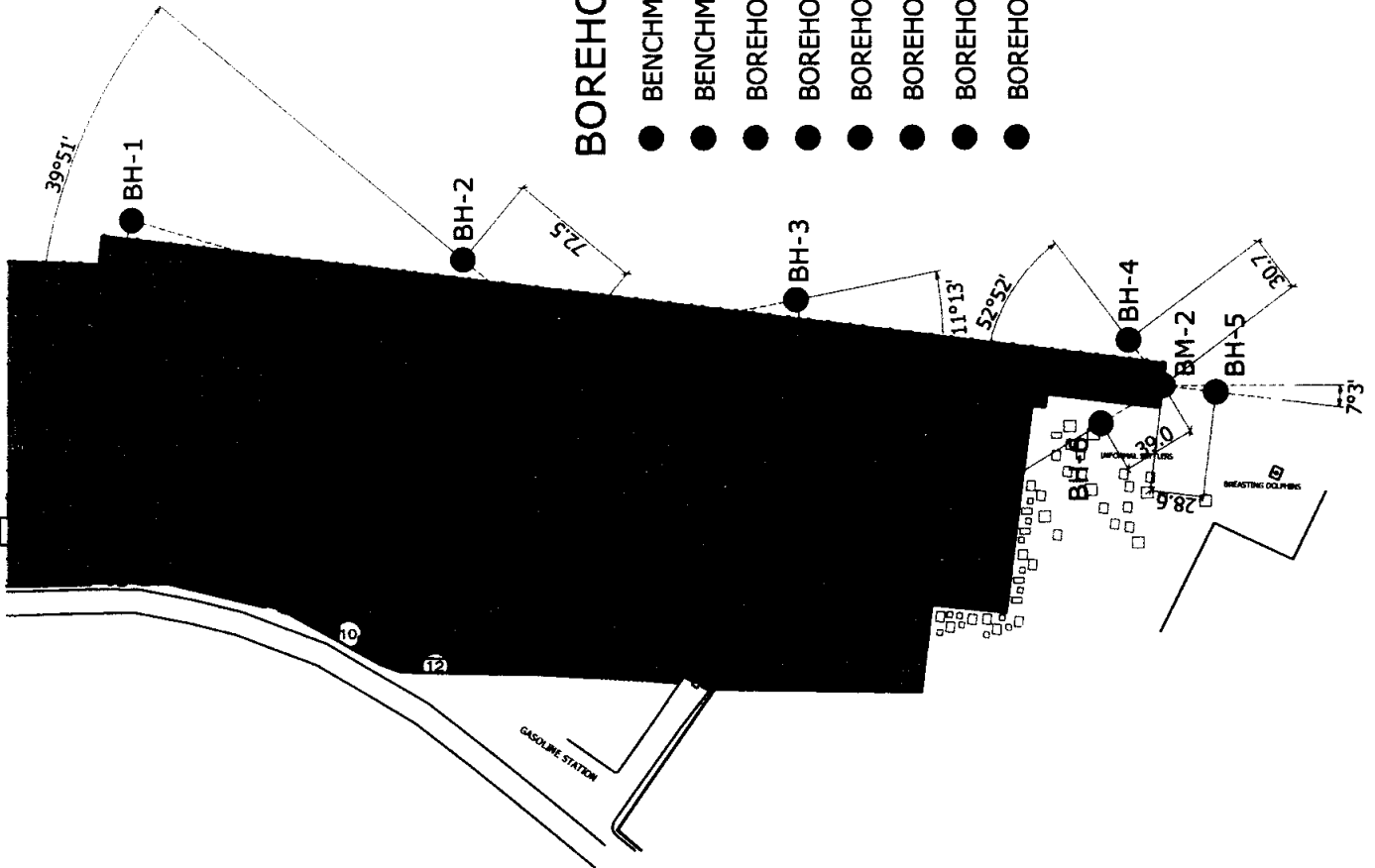
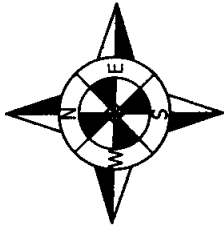
LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS


PHILIPPINE PORTS AUTHORITY
 PROJECT DEVELOPMENT DEPARTMENT
 BOREHOLE LOCATIONS
PORT OF CAGAYAN DE ORO
 CAGAYAN DE ORO, MISAMIS ORIENTAL
 SCALE: 1:2000



VICINITY MAP
NOT TO SCALE



BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CORNER OF THE TRANSIT SHED
- BENCHMARK #2 (BM-2) LOCATED AT THE CENTER OF THE EXISTING WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 16°18' E AT A DISTANCE OF 244.1 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 39°51' E AT A DISTANCE OF 72.5 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 11°13' E AT A DISTANCE OF 125.4 METERS FROM BM-1
- BOREHOLE LOCATION #4 (BH-4) LOCATED N 52°52' E AT A DISTANCE OF 30.7 METERS FROM BM-2
- BOREHOLE LOCATION #5 (BH-5) LOCATED S 7°3' W AT A DISTANCE OF 28.6 METERS FROM BM-2
- BOREHOLE LOCATION #6 (BH-6) LOCATED N 31°7' W AT A DISTANCE OF 39.0 METERS FROM BM-2

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS

PORT OF DAVAO
KM 10, SASA, DAVAO CITY

SCALE: 1:4000

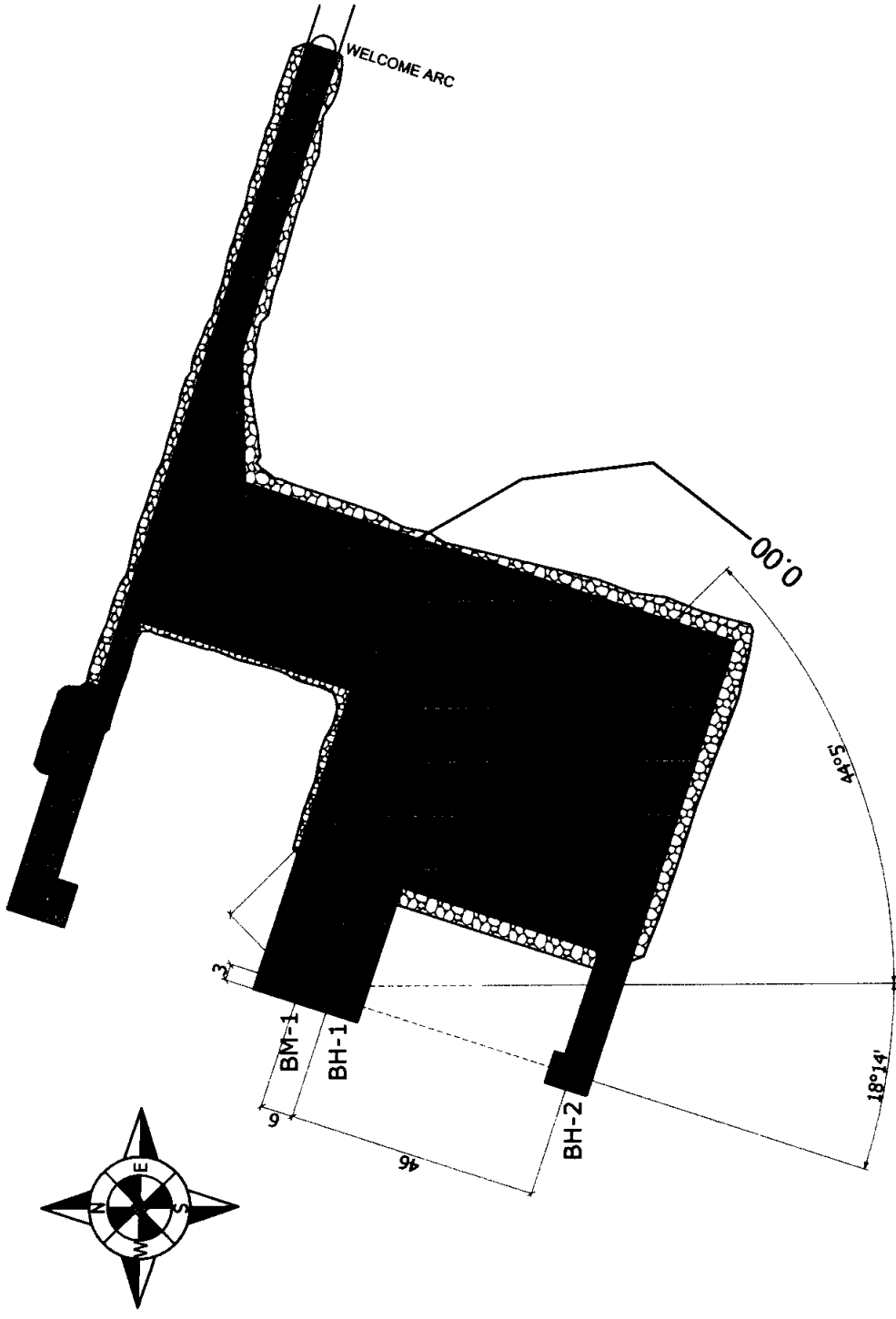


VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
PORT OF BABAK
SAMAL ISLAND, DAVAO DEL SUR
SCALE: 1:1250



BOREHOLE LOCATIONS:

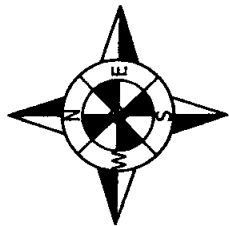
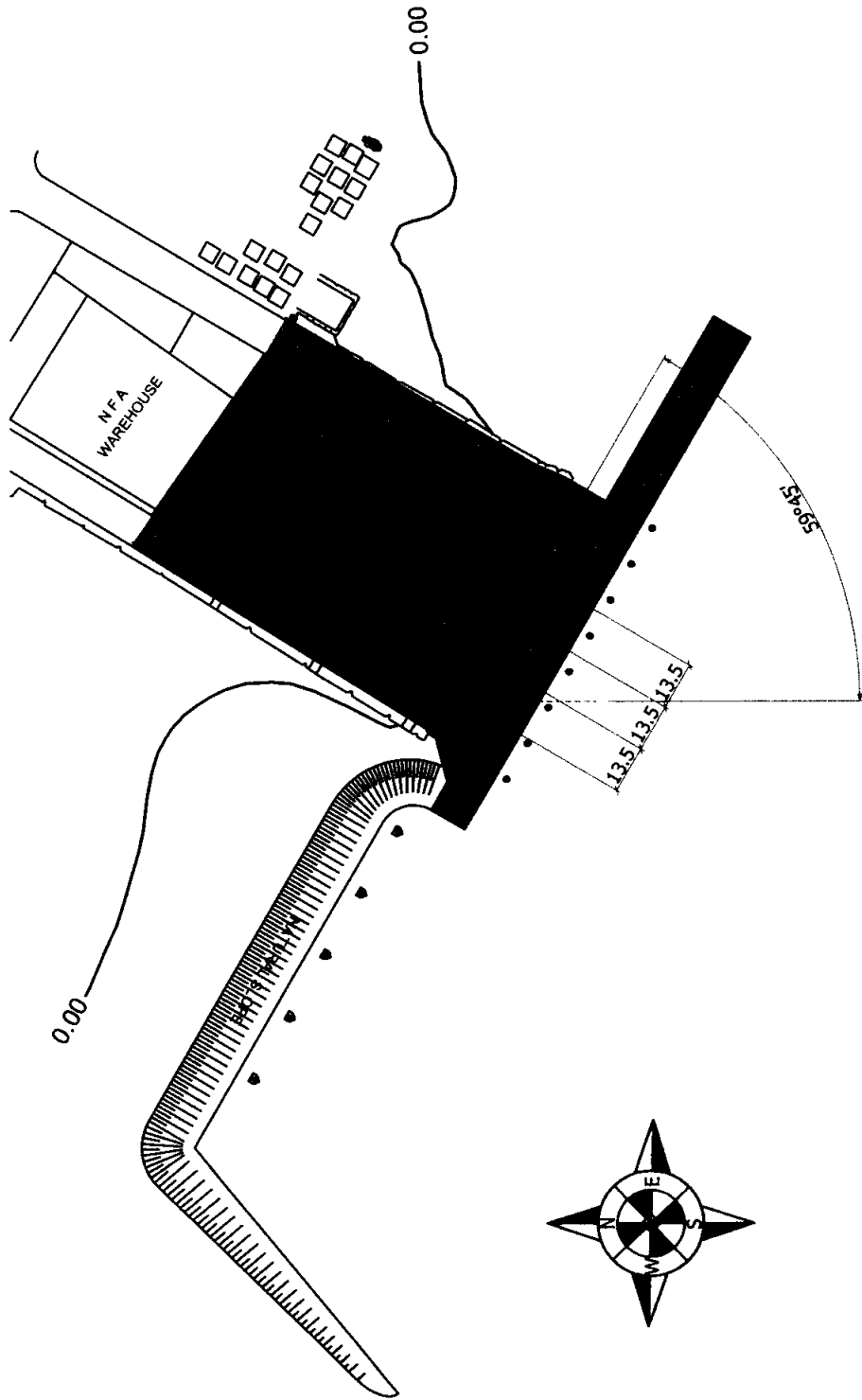
- BENCHMARK #1 (BM-1) LOCATED 3 METERS FROM THE LEFT END CORNER OF THE PIER
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 18°14' W AT A DISTANCE OF 6 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 18°14' W AT A DISTANCE OF 52 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 44°5' E AT A DISTANCE OF 60.3 METERS FROM BM-1



VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS



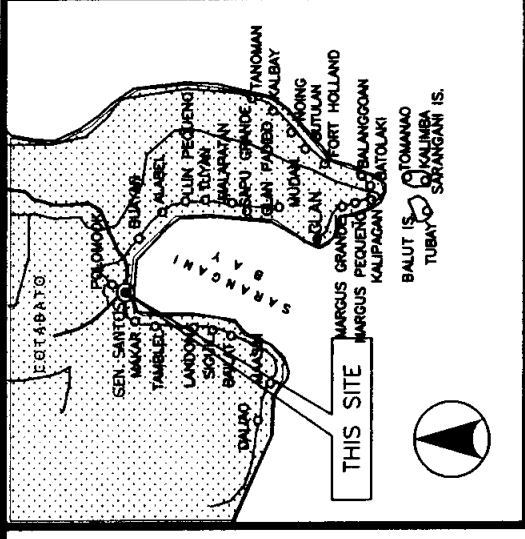
BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE BREATHER
- BOREHOLE LOCATION #1 (BH-1) LOCATED S 59°45' E AT A DISTANCE OF 13.5 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED S 59°45' E AT A DISTANCE OF 27.0 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED S 59°45' E AT A DISTANCE OF 40.5 METERS FROM BM-1

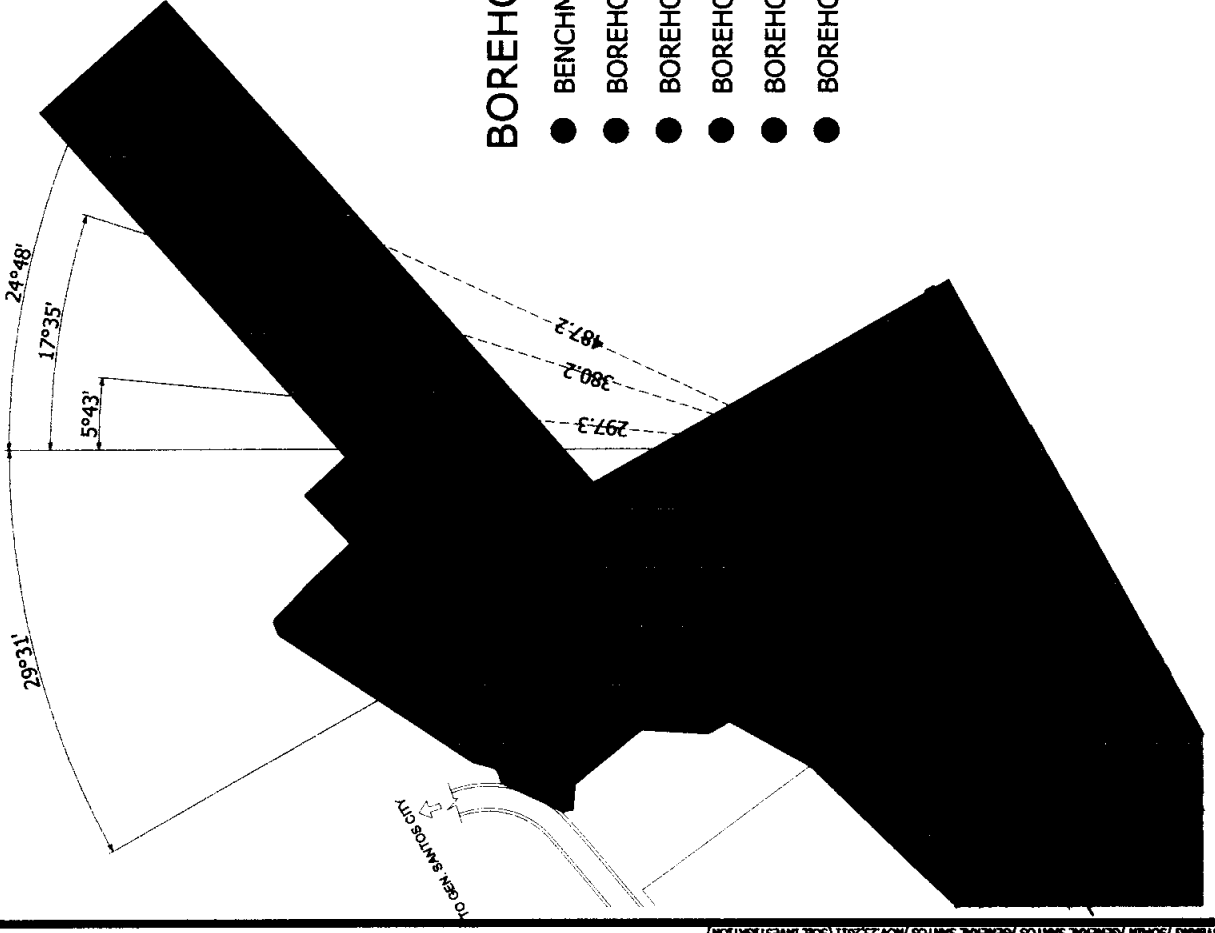
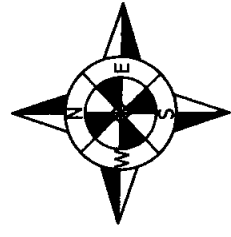
PHILIPPINE PORTS
AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
PORT OF MATI
MATI, DAVAO ORIENTAL

SCALE:

1:2000



VICINITY MAP
NOT TO SCALE



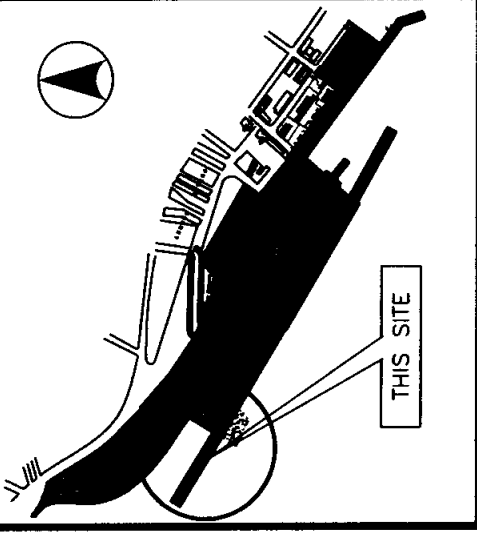
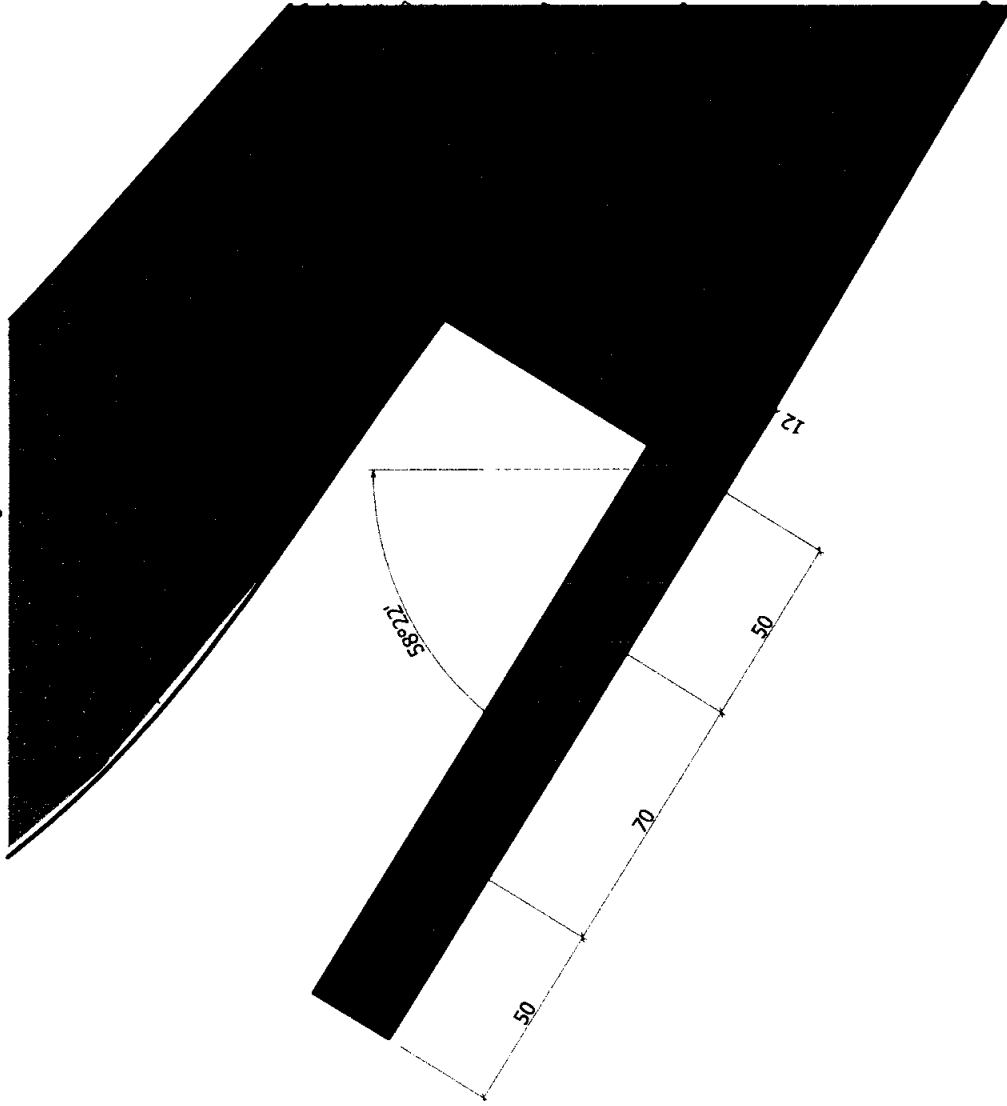
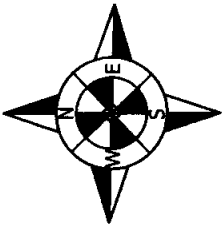
BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED AT THE CENTER OF THE NEWLY RECLAIMED BACK-UP AREA
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 29°31' W AT A DISTANCE OF 51.3 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 29°31' W AT A DISTANCE OF 211.9 METERS FROM BM-1
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 5°43' E AT A DISTANCE OF 297.3 METERS FROM BM-1
- BOREHOLE LOCATION #4 (BH-4) LOCATED N 17°35' E AT A DISTANCE OF 380.2 METERS FROM BM-1
- BOREHOLE LOCATION #5 (BH-5) LOCATED N 24°48' E AT A DISTANCE OF 487.2 METERS FROM BM-1

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS


PHILIPPINE PORTS AUTHORITY
 PROJECT DEVELOPMENT DEPARTMENT
 BOREHOLE LOCATIONS
PORT OF GENERAL SANTOS
 MAKAR WHARF, GENERAL SANTOS
 SCALE: 1:5000



VICINITY MAP
NOT TO SCALE

LEGEND:

- EXISTING STRUCTURE
- PROPOSED DEVELOPMENT
- BENCHMARKS
- BOREHOLE LOCATIONS

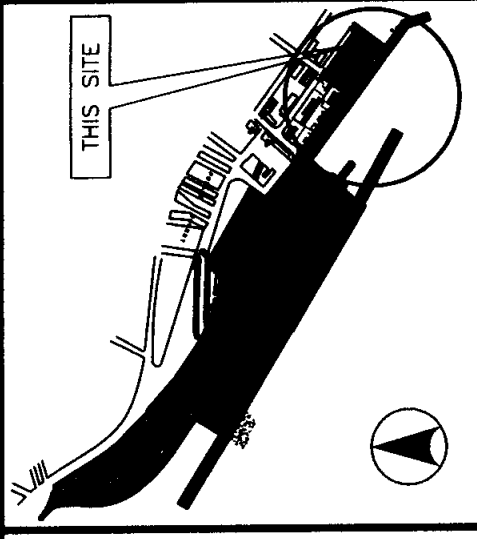
BOREHOLE LOCATIONS:

- BENCHMARK #1 (BM-1) LOCATED 12 METERS FROM THE CORNER OF RC WHARF
- BOREHOLE LOCATION #1 (BH-1) LOCATED N 58°22' W AT A DISTANCE OF 50 METERS FROM BM-1
- BOREHOLE LOCATION #2 (BH-2) LOCATED N 58°22' W AT A DISTANCE OF 120 METERS FROM BM-1

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
PORT OF ZAMBOANGA
ZAMBOANGA CITY





SCALE:

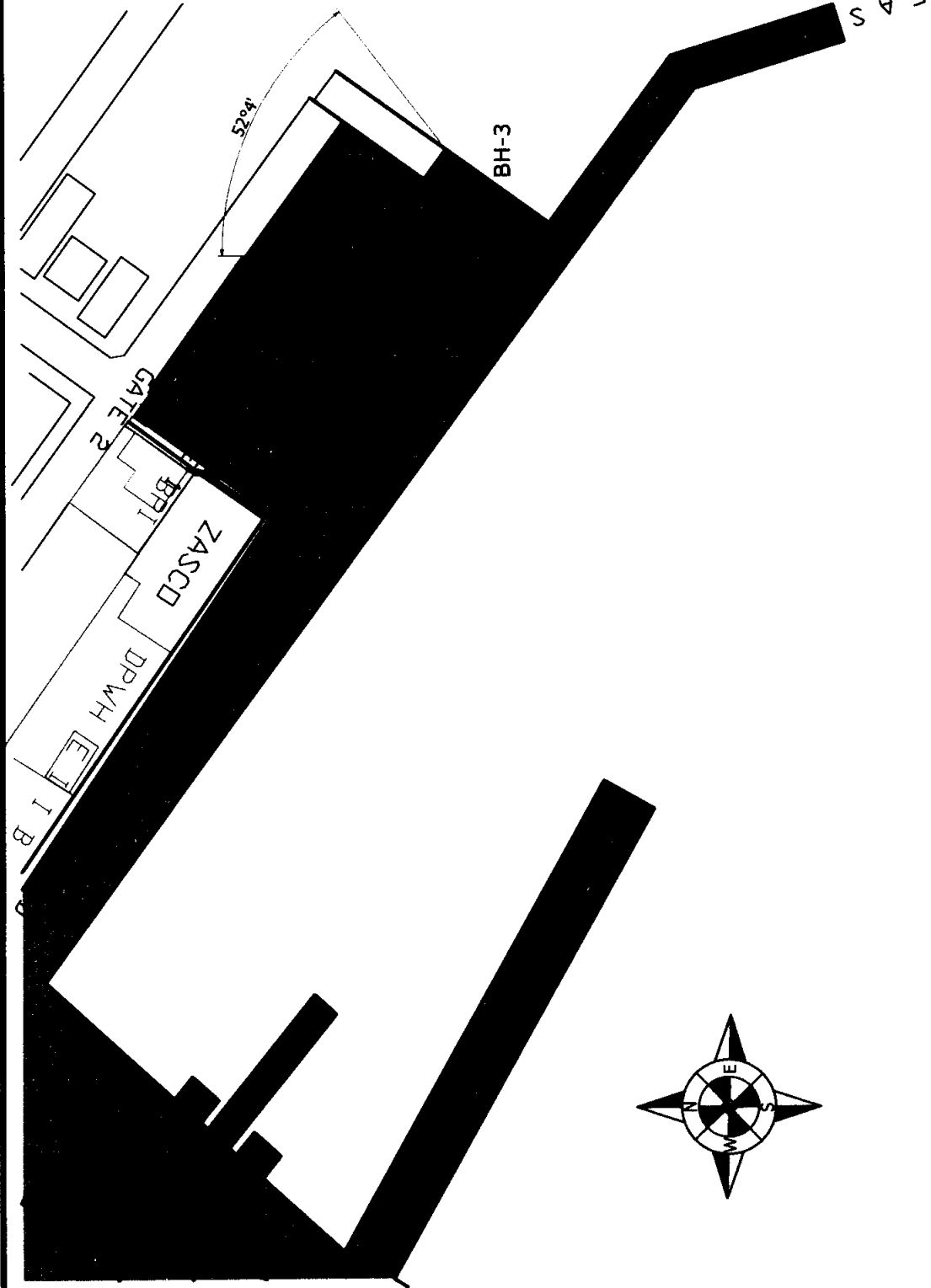
1:2000



VICINITY MAP
NOT TO SCALE

LEGEND:

-  EXISTING STRUCTURE
-  PROPOSED DEVELOPMENT
-  BENCHMARKS
-  BOREHOLE LOCATIONS



BOREHOLE LOCATIONS:

- BENCHMARK #2 (BM-2) LOCATED AT THE CORNER OF FAST CRAFT FERRY PIER
- BOREHOLE LOCATION #3 (BH-3) LOCATED N 52°04' E AT A DISTANCE OF 20.9 METERS FROM BM-2

PHILIPPINE PORTS AUTHORITY
PROJECT DEVELOPMENT DEPARTMENT
BOREHOLE LOCATIONS
PORT OF ZAMBOANGA
ZAMBOANGA CITY

SCALE: 1:2000

Section VIII. Appendices

I. Description of Services

Give detailed descriptions of the Services to be provided, dates for completion of various tasks, place of performance for different tasks, specific tasks to be approved by Client, etc.

II. Reporting Requirements

List format, frequency, and contents of reports; persons to receive them; dates of submission; etc. If no reports are to be submitted, state here "Not applicable."

III. Key Personnel and Sub-Consultants

List under:

1. Titles [and names, if already available], detailed job descriptions and minimum qualifications, and staff-months of service, and estimated periods of engagement for each, including a copy of a satisfactory medical certificate.
2. Same information as in no. 1 for Key foreign Personnel to be assigned to work outside the Government's country.
3. Same information as in no.1 for Key Local Personnel.
4. List of approved Sub-Consultants (if already available) and Counterpart personnel (if allowed); same information with respect to their Personnel as in no.'s 1 and 2.

IV. Breakdown of Contract Price

List here the elements of cost, including expenditures in foreign currency(ies) denominated and payable in Philippine Peso, used to arrive at the itemized breakdown of the contract price:

1. Monthly rates for Personnel (Key Personnel and other Personnel)
2. Reimbursable expenditures

3. Applicable taxes

V. Services and Facilities Provided by the Client

Give detailed description of the services and facilities made available to the Consultant, and the time and manner of its availment.

VI. Consultant's Representations Regarding Costs and Charges

Breakdown of Remuneration Rates, WB funded projects using Quality Based Selection, Selection Based on the Consultant's Qualifications and Single Source Selection.

1. Review of Remuneration Rates

1.1 The remuneration rates for staff are made up of salary, social costs, overheads, fee that is profit, and any premium or allowance paid for projects away from headquarters. To assist the Consultant in preparing for financial negotiations, a sample form giving a breakdown of rates is attached (no financial information should be included in the Technical Proposal). Agreed breakdown sheets shall form part of the negotiated contract.

1.2 The Procuring Entity is charged with the custody of Government funds and is expected to exercise prudence in the expenditure of these funds. The Procuring Entity is, therefore, concerned with the reasonableness of the firm's Financial Proposal, and, during negotiations, it expects to be able to review audited financial statements backing up the Consultant's remuneration rates, certified by an independent auditor. The Consultant shall be prepared to disclose such audited financial statements for the last three years, to substantiate its rates, and accept that its proposed rates and other financial matters are subject to scrutiny. Rate details are discussed below.

(i) Salary

This is the gross regular cash salary paid to the individual in the Consultant's home office. It shall not contain any premium for work away from headquarters or bonus (except where these are included by law or government regulations).

(ii) Bonus

Bonuses are normally paid out of profits. Because the Procuring Entity does not wish to make double payments for the same item, staff bonuses shall not normally be included in the rates. Where the Consultant's accounting system is such that the percentages of social costs and overheads are based on total revenue, including bonuses, those percentages shall be adjusted downward accordingly. Where national policy requires that thirteen (13) months' pay be given for twelve

(12) months' work, the profit element need not be adjusted downward. Any discussions on bonuses shall be supported by audited documentation, which shall be treated as confidential.

(iii) Social Costs

Social costs are the costs to the Consultant of staff's non-monetary benefits. These items include, *inter alia*, pension, medical and life insurance costs, and the cost of a staff member being sick or on vacation. In this regard, the cost of leave for public holidays is not an acceptable social cost nor is the cost of leave taken during the Contract if no additional staff replacement has been provided. Additional leave taken at the end of the Contract in accordance with the Consultant's leave policy is acceptable as a social cost.

(iv) Cost of Leave

The principles of calculating the cost of total days leave per annum as a percentage of basic salary shall normally be as follows:

$$\text{Leave cost as percentage of salary}^1 = \frac{\text{total days leave} \times 100}{[365 - w - ph - v - s]}$$

It is important to note that leave can be considered a social cost only if the Procuring Entity is not charged for the leave taken.

(v) Overheads

Overhead expenses are the firm's business costs that are not directly related to the execution of the project and shall not be reimbursed as separate items under the Contract. Typical items are home office costs (partner's time, non-billable time, time of senior staff monitoring the project, rent, support staff, research, staff training, marketing, etc.), the cost of staff not currently employed on revenue-earning projects, and business promotion costs. During negotiations, audited financial statements, certified as correct by an independent auditor and supporting the last three years' overheads, shall be available for discussion, together with detailed lists of items making up the overheads and the percentage by which each relates to basic salary. The Procuring Entity does not accept an add-on margin for social charges, overhead expenses, etc., for staff who are not permanent employees of the firm. In such case, the firm shall be entitled only to administrative costs and fee on the monthly payments charged for subcontracted staff.

(vi) Fee or Profit

The fee or profit shall be based on the sum of the salary, social costs, and overhead. If any bonuses paid on a regular basis are listed, a corresponding reduction in the profit element shall be expected. Fee or profit shall not be allowed

¹⁰ Where w = weekends, ph = public holidays, v = vacation, and s = sick leave.

on travel or other reimbursable expenses, unless in the latter case an unusually large amount of procurement of equipment is required. The Consultant shall note that payments shall be made against an agreed estimated payment schedule as described in the draft form of the Contract.

(vii) Away from Headquarters Allowance or Premium

Some consultants pay allowances to staff working away from headquarters. Such allowances are calculated as a percentage of salary and shall not draw overheads or profit. Sometimes, by law, such allowances may draw social costs. In this case, the amount of this social cost shall still be shown under social costs, with the net allowance shown separately. For concerned staff, this allowance, where paid, shall cover home education, etc.; these and similar items shall not be considered as reimbursable costs.

(viii) Subsistence Allowances

Subsistence allowances are not included in the rates, but are paid separately and in local currency. No additional subsistence is payable for dependents — the subsistence rate shall be the same for married and single team members.

UNDP standard rates for the particular country may be used as reference to determine subsistence allowances.

2. Reimbursables

2.1 The financial negotiations shall further focus on such items as out-of-pocket expenses and other reimbursables. These costs may include, but are not restricted to, cost of surveys, equipment, office rent, supplies, international and local travel, computer rental, mobilization and demobilization, insurance, and printing. These costs may be either fixed or reimbursable in foreign or local currency.

3. Bank Guarantee

3.1 Payments to the Consultant, including payment of any advance based on cash flow projections covered by a bank guarantee, shall be made according to an agreed estimated schedule ensuring the firm regular payments in local and foreign currency, as long as the services proceed as planned.

AGRE



SEP 26 2011

Bonifacio Drive, South Harbor, Port Area, Manila 1018, Philippines, P.O. Box 436, Manila, Philippines
Tel. No. (0632) 527-8356, Fax No. (0632) 527-4855, http://www.ppa.com.ph

MEMORANDUM

F O R : The General Manager
F R O M : The Assistant General Manager, Engineering Office
S U B J E C T : **PROCUREMENT OF TECHNICAL SERVICES FOR THE CONDUCT OF SOIL INVESTIGATION AT SELECTED PORTS (PACKAGE 2)**

The conduct of soil investigation is a very important part of the planning process and is intended to establish the basis for the preliminary and subsequently the detailed engineering design of port structures.

In view of the lack of existing or updated records on soil investigation from which to base the preliminary and detailed engineering design of proposed port structures to be constructed, this Package of Soil Investigation will seek to obtain the required information and/or data for foundation design analysis and evaluation of alternative types of structures to ensure the structural stability of proposed port structures and minimize if not avoid, costly variations during project execution.

The soil investigation under the proposed project will involve the drilling of a total of eighty two (82) boreholes (14 inland and 68 offshore) at the following ports:

Port	Proposed Project
PDO-Manila/Northern Luzon	
1. Casiguran, Aurora	Additional wharf improvement
2. Currimao, Ilocos Norte	Proposed conversion of cruise berth to cargo berth
PDO-Southern Luzon	
1. Lucena City, Quezon	Expansion project
2. Calapan City, Oriental Mindoro	Development of back-up area
3. Garchitorena, Camarines Sur	Port development
4. Tabaco City, Albay	Port expansion project
5. Legazpi City, Albay	Rehab/improvement project
6. Matnog, Sorsogon	Port expansion project
7. Masbate City, Masbate	Port expansion project
8. Puerto Princesa City, Palawan	Expansion project (wharf extension & back-up area)
9. Brooke's Point, Palawan	Relocation of existing breakwater/port improvement/development
PDO-Visayas	
1. Iloilo City (ICPC), Iloilo	Proposed construction of three (3) warehouses and back-up area (Phases 1 & 2)
2. Culasi (Roxas), Capiz	Improvement and expansion project
3. Banago, Negros Occidental	Port development
4. Tubigon, Bohol	Construction of terminal building & site development
5. Hilongos, Leyte	Improvement/expansion project
6. Baybay, Leyte	Expansion project
PDO-Northern Mindanao	
1. Butuan City, Agusan del Norte	Proposed Port Operations Building (POB) of PMO-Nasipit
2. Cagayan de Oro City, Misamis. Or.	Proposed construction of new PTB

By 2010, PPA shall have met the international standards in port facilities and services in at least ten (10) ports in support of national development.

MISSION We commit to provide reliable and responsive services in our ports, sustain development of our port communities and the environment, and be a model corporate agency of the government.

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PDO-Southern Mindanao	
1. Davao City (Sasa), Davao del Sur	Port development (Phase 1) and improvement of Container Yard
2. Babak, IGACOS, Davao	Proposed expansion (Phase 2)
3. Mati, Davao Oriental	Proposed reclamation of breather area
4. General Santos, South Cotabato	Port expansion and reclamation Construction of warehouse
5. Zamboanga City, Zamboanga del Sur	Extension of RC wharf and proposed construction of two (2) RORO ramps
6. Katipunan, Zamboanga del Norte	Port development

As an integral component of detailed engineering, the same is explicitly required in the procurement of infrastructure projects as provided under *Section 17.6, Detailed Engineering for Procurement of Infrastructure Projects of the Revised IRR of R.A. 9184*, which reads, thus "No bidding and award of contract for infrastructure projects shall be made unless the detailed engineering investigations, surveys and designs, including the acquisition of the ROW, for the project have been sufficiently carried out and duly approved in accordance with the standards and specifications prescribed by the Head of the Procuring Entity concerned or his duly authorized representative, and in accordance with the provisions of Annex "A" of this IRR.

The project for the technical services in the conduct of soil investigation for selected ports is included in the Revised Medium Term Public Investment Program (MTPIP CY 2010-2016) of PPA.

In view of the foregoing and the need for technical data in order to proceed with the detailed engineering of proposed priority projects, Engineering Office is requesting authority to proceed with the procurement of the project's consultancy services in accordance with the attached Terms of Reference (TOR) for the Technical Services for the Conduct of Soil Investigation at Selected Ports (Package 2) and budgetary requirement in the amount of **P16,488,569.72** (please refer to attached cost estimate and Program of Work).

For your consideration/approval, Sir.



TOMAS B. CARLOS

APPROVED:



JUAN C. STA. ANA
General Manager

encl: a/s

cf: AGME

Republic of the Philippines
PHILIPPINE PORTS AUTHORITY

**TERMS OF REFERENCE FOR THE TECHNICAL SERVICES
FOR THE CONDUCT OF SOIL INVESTIGATION AT SELECTED PORTS
(Package 2)**

I. GENERAL

There are no existing or updated records on soil investigations at the following selected ports on which to base the preliminary or detailed engineering design of structures to be constructed thereat:

<u>Port</u>	<u>Proposed Project</u>
PDO-Manila/Northern Luzon	
1. Casiguran, Aurora	Additional wharf improvement
2. Currimao, Ilocos Norte	Proposed conversion of cruise berth to cargo berth
PDO-Southern Luzon	
1. Lucena City, Quezon	Expansion project
2. Calapan City, Oriental Mindoro	Development of back-up area
3. Garchitorena, Camarines Sur	Port development
4. Tabaco City, Albay	Expansion project
5. Legazpi City, Albay	Rehab/improvement project
6. Matnog, Sorsogon	Port expansion project
7. Masbate City, Masbate	Port expansion project
8. Puerto Princesa City, Palawan	Expansion project (wharf extension & back-up area)
9. Brooke's Point, Palawan	Relocation of existing breakwater/port improvement/development
PDO-Visayas	
1. Iloilo City (ICPC), Iloilo	Proposed construction of three (3) warehouses Back-up area (Phases 1 and 2)
2. Culasi (Roxas), Capiz	Improvement and expansion project
3. Banago, Negros Occidental	Port development
4. Tubigon, Bohol	Construction of terminal building & site development
5. Hilongos, Leyte	Improvement/expansion project
6. Baybay, Leyte	Expansion project
PDO-Northern Mindanao	
1. Butuan City, Agusan del Norte	Proposed Port Operations Building (POB) of PMO-Nasipit
2. Cagayan de Oro City, Misamis Or.	Proposed construction of new PTB
PDO-Southern Mindanao	
1. Davao City (Sasa), Davao del Sur	Port development (Phase 1) and improvement of Container Yard
2. Babak, IGACOS, Davao	Proposed expansion (Phase 2)
3. Mati, Davao Oriental	Proposed reclamation of breather area
4. General Santos, South Cotabato	Port expansion & reclamation Construction of warehouse
5. Zamboanga City, Zamboanga del Sur	Extension of RC wharf Proposed construction of two (2) RORO ramps
6. Katipunan, Zamboanga del Norte	Port development

The purpose of this package of soil investigation is to obtain the needed information for foundation design analysis and for the evaluation of alternative type of structures. The PPA may order additions or deletions from this package.

II. SCOPE OF WORK

A. Coverage

The work shall cover the drilling of and testing of soil samples from eighty two (82) boreholes, of which sixty eight (68) shall be drilled offshore each to a depth of about 30 meters below seabed and/or have attained an N-value of 40 or whichever comes first and fourteen (14) shall be drilled inland each to a depth of about 20 meters below the ground level. (Please refer to Annex 1). All boreholes must be referred to benchmarks designated by the PPA. The actual number of boreholes, their locations and depths are subject to change depending on field conditions. A Geodetic Engineer shall determine the actual location of the borehole based on the coordinates specified in the development plan using GPS technology/system. The contract duration for this package is eight (8) months.

B. Description of Work

1. Soil Exploration. This shall consist of drilling test holes, classification of soils and making of field tests on soil characteristics. In addition, laboratory tests shall be made as specified. A complete report shall be required giving soil classifications and their engineering characteristics including **3D settlement analysis**.

- Depth of ground water before and 24 hours after the drilling
- Soil borings through ordinary soils (depth: 0-15m)
- Soil borings through hard soils/rock (depth: 5m)
- Split-spoon sampling (1m interval for the first 3 meters, 1.5m interval thereafter or when there is noticeable change in the soil characteristics based on texture and color, whichever comes first)
- Standard Penetration Tests (similar to split-spoon sampling criteria)
- Undisturbed sampling using thin-walled Shelby tube sampler (one sampler every 10m deep when there is encountered soft to medium stiff cohesive samples with SPT readings ranging from 2 to 7 blows per foot of soil penetration)
- -Stop criterion of soil boring for each borehole when: there is 5 consecutive SPT N values of 50 blows per foot of soil penetration or more or 7.5 meters deep into hard or very dense soil stratum or 5 meters coring into bedrock or 30 meters below sea bed level (for offshore boreholes) or 20 meters deep below Existing Ground Line (for inland boreholes), whichever comes first. Soil boring/drilling which needs to be extended beyond 30 meters or 20 meters in the case of offshore boreholes or inland boreholes, respectively, because the above criterion is not met, shall be referred to the PPA Engineer/authorized representative who witnesses the drilling on-site. In such a case, drilling shall be drilled down to a maximum of 50 meters below sea bed level only if no very dense or hard soils or rock cores are intersected. Furthermore, in no case shall the drilling terminate earlier than 12 meters deep for either offshore or inland boreholes if competent stratum is observed (whether hard or very dense soils or continuous rock cores).

Pertinent ASTM standards are to be met in the conduct of the investigation.

If rock is encountered, holes shall be terminated after core drilling continuously for five (5) meters in the rock.

- a. **Soil Classification.** Soils shall be described according to the Unified Classification System of ASTM D2487. A visual field classification of soils by a competent Geologist or Geotechnical Engineer supplemented by laboratory tests shall be made.
- b. **Penetration.** The Standard Penetration Test (SPT) shall be carried out in accordance with ASTM D1586. Disturbed (split-spoon) samples shall be performed at intervals of 1 meter for the first 3 meters and every 1.5 meters thereafter. Representative samples shall be collected and shipped for laboratory testing. At least one undisturbed (Shelby tube) sample, 2½ inch diameter x 24" long or larger, shall be extracted from

each distinct soft to medium stiff cohesive stratum. The depth of the undisturbed sample shall be subject to the directions of PPA.

- c. Testing. The soil/rock samples to be scheduled for laboratory tests shall be selected by the PPA. The types of test shall be referred to ASTM standard procedures as follows:

1)	Visual Soil Classification (SPT)	ASTM D2488/D2487 2217/ASTM D1586
2)	Gradation	ASTM D422/E100 Part 41
3)	Atterberg Limits	ASTM 421/423
4)	Natural Water Content	ASTM D2216
5)	Unit Weight	ASTM 2049/D1556/D2167
6)	Organic Content	ASTM D2974
7)	Specific Gravity	ASTM D854/C127
8)	Consolidation Test	ASTM D2435
9)	Unconfined Compression Test	ASTM D2166-06

2. Procedure

- a. Pre-drilling Coordination Meeting. Prior to the mobilization of the drilling teams/crews of the Contractor to the priority port sites, a coordination meeting with the PPA Engineers in charge of monitoring the project activities to discuss among others, the type and size of structures (pier, causeway, wharf, back-up area, building, among others) to be built on each port site as clearly indicated in the Port Development Plan in relation to the borehole location and designation as superimposed therewith. The members of the PPA Engineering Design Group shall discuss with the Contractor's Engineers/Consultants the specific soil parameters that they find relevant to the specific structure to be constructed.
- b. Technical Advice. The Contractor's Experts/Engineers shall be available, if consulted, to give/submit their professional written opinion on technical matters that may arise in the course of the PPA Engineer's design of such foundation structures and during the implementation of the proposed structure.
- c. Inspection. No work shall be performed in the absence of an authorized representative of the PPA.

The Contractor shall not remove casing or equipment from any completed boring except with the express permission of the authorized representative and until said representative has had the opportunity to obtain all relevant data prior to removal.

- d. Size of Boring in Sampling. Samples shall be obtained either intermittently or continuously as specified herein with a minimum diameter of 1-3/8 inch. The sizes of boreholes shall be sufficient for the above size of sample. Intermittent sampling shall mean disturbed (split-spoon) samples taken at specified intervals and undisturbed (Shelby tube) samples at each change of soil type or if soft cohesive soils are required, they shall be obtained with thin-wall samplers. Samples shall be prepared in accordance with the applicable requirements of the section herein on "Preserving Samples."
- c. Penetration on Boulders or Rock Layers. Boulders or rock layers encountered in drilling shall be cored to determine the character and size or thickness of the materials. After coring, the hole may be enlarged by reaming or by other means as approved by the PPA. Where it will be necessary to reduce the size of the borehole in order to reach the target

depth and obtain the required samples, the minimum casing diameter shall be of such size as to permit the use of a 1-5/8 inch core bit.

3. Supplemental Boring

- a. Abandoned Borings. Borings that are abandoned or lost before reaching the required depth, or from which unsatisfactory samples are obtained, shall be supplemented by other borings adjacent to the original in order to obtain satisfactory samples and the required information. Penetration to the depth where the original boring was abandoned may be made by any method selected by the Contractor that in the opinion of the PPA will permit satisfactory completion and sampling below the elevation not satisfactorily reached by the abandoned boring.
- b. False Start. It is intended that the borings be made so as to clear all underwater pipes, conduits, and other underwater structures. However, should the Contractor be unable to complete any boring due to underwater structures, obstacles or obstructions which the PPA considers are of unusual nature and that failure to penetrate them is not the fault of the Contractor's method or equipment, a false start will be allowed. In such cases, if directed by the PPA representative, another boring will be made in the adjacent vicinity.

4. Casing

- a. Advancing. Boring through overburden soils shall be suitably cased to permit obtaining samples of the size or sizes specified or as directed. Casing may consist of standard pipes and couplings or flush pointed pipes, and shall be advanced vertically by driving, chopping and washing, coring or by any method consistent with the manner and type of sampling described for the specified boring, and as approved by the PPA. In all borings where rock is to be cored below the cased overburden, the casing shall be firmly seated to the rock, and the hole cleaned of all loose material before commencing coring operations.
- b. Removal. All casing shall remain the property of the Contractor and shall be removed on the completion of the work.

5. Split Spoon Drive Sampling

- a. Sampler Description. Samplers for drive samples shall be of the standard split spoon type having an outside diameter of two (2) inches and an inside diameter of one and three eighths (1-3/8) inches for NW size holes. The sampler shall have a minimum inside length of sixteen (16) inches and shall be equipped with hardened tool shoe valve at the top. The Contractor shall also provide a core catcher at the bottom of the sampler when difficulty is experienced in recovering samples.
- b. Sampling Procedures. At the points where drive samples are to be taken, advancement of the borehole shall be stopped and the hole or casing shall be completely cleaned of disturbed soil, segregated coarse material and any clay adhering to the walls of the casing. The cleaning shall extend to at least the bottom edge of the casing and should preferably advance the hole a few inches further in order to by-pass disturbance caused by the cutting edge of the casing. Cleaning shall be done with shielded jets suitable to the relative resistance of the various subsurface strata; the drive sampler shall be driven in the following manner:
 - 1) The 1-3/8 inch inside diameter drive sampler shall be driven with a 140-lb. hammer a free fall of 30 inches.

- 2) The drive sampler shall be driven to a depth of 18 inches or as directed by the PPA representative and the number of blows shall be recorded for each 6-inch depth of penetration. If the samples obtained are less than 12 inches long, the sampling operation shall be repeated.

6. Undisturbed Sampling

- a. General. Undisturbed Shelby tube samples, 2-1/2 inches in diameter x 24 inches long, shall be taken from all holes as specified herein and called for in these Technical Specifications.

Undisturbed samples shall be taken in cohesive soils whenever the soil conditions would permit driving of the Shelby tube sampler.

- b. Sampler Description. The thin wall tube (Shelby tube) sampler shall consist of 16 or 18 gauge barrel, approximately 36 inches, or longer and will be equipped with a reliable check valve at the top. The tubes shall be provided with a sharp cutting edge and a positive inside clearance. The inside diameter of the cutting edge shall be 0.7 to 1.5 percent less than the inside diameter of the sampler tube.

- c. Sampling Procedure. Before each sample is taken, the casing or borehole shall be carefully cleaned out with a deflected jet or clean out auger as approval by the PPA. The inside of the tube shall be thoroughly cleansed prior to taking the sample. The sampler shall be forced into the soil at a distance of 24 inches at the rate ranging from ¼ to ½ foot per second by hydraulic pressure. The sampler shall not be driven with a drop hammer to obtain samples. No undisturbed samples shall be accepted if the recovery is less than 24 inches long, unless expressly approved by the PPA field representative. After an acceptable undisturbed sample is obtained, the sample shall be preserved as specified in Section 8 "Preserving Samples."

In layers of soft to medium stiff cohesive soils (i.e. N-values ranging between 2 to 7 blows per foot of soil penetration), undisturbed Shelby-tube samples shall be obtained at an intervals of not more than ten meters or as otherwise directed by the PPA Engineer.

7. Rock Coring

- a. General. The term rock shall apply to any material that cannot be sampled by drive sampling as described herein. Where rock layers or boulders are encountered in the overburden above the specified bottom elevation of any borings, they shall be cored as described under "Penetration on Boulders or Rock Layers." Where ledge rock is encountered above the specified bottom elevation of any boring, it shall be cored to the depths as specified in the Proposal and as directed by PPA representative.
- b. Sampler Description. Rock coring shall be performed with a double tube swivel type core barrel as standardized by the Diamond Core Drill Manufacturers Association (DCMA) equipped with diamond-set bottom discharge core bits and standard core lifters and core gage. Core barrels shall be of 5 to 10 ft. length to obtain a continuous rock core 5 feet long, and unless otherwise specified or directed by PPA representative, the sampler shall produce a minimum core of 1-3/4 inches in diameter.
- c. Sampling Procedure. Casing through overburden shall be seated tightly on the rock at the elevation of the rock coring. The Contractor shall operate his drills at such speeds and with such water pressures that

will ensure maximum core recovery in whatever kind of rock is being drilled. Where soft or broken rocks are encountered the Contractor shall reduce the length of "runs" to less than 1.5m. as may be required to reduce core loss and core disturbance to the minimum.

Failure to comply with the foregoing procedures shall constitute justification for PPA to require redrilling at the Contractor's expense of any boring from which the core recovery is unsatisfactory. The Contractor shall exercise particular care in recording water losses, rod jerks and other unusual experience that will throw light on the nature and extent of any fractures in the core samples.

8. Preserving Samples

- a. General. The Contractor shall provide material, equipment and labor necessary for preserving samples. Wax or masking tape shall be used to ensure proper sealing of sample containers.
- b. Drive Samples. Representative specimen of each sample shall be preserved. The containers for preserving samples shall be maximum ten-ounce large-necked, round, screw top, air-tight, durable clear plastic jars, and the specimen shall be sealed with a threaded cap, and cohesive soil samples shall be further sealed by dipping the cap and threads into wax immediately after capping.

Each glass jar or undisturbed sample core liner shall have weatherproof labels giving the following information:

Project: _____
Type of Sample: _____
Borehole No: _____ Elevation: _____ Location: _____
Coordinates of the borehole: _____
Jar No.: _____ Depth of Sample: _____
Visual Description of Samples: _____
Penetration (Blows/15 cm): _____

Shipping boxes: Each box of samples shall be identified with weatherproof labels or marking indicating the following:

Project Description: _____
Project Location: _____
Boring No.: _____ Sample No.: _____

- c. Undisturbed Samples. Undisturbed samples from boring for preservation shall be treated in the following manner: A maximum of one inch of the undisturbed materials from the top and bottom of each sample shall be preserved as prescribed for Drive Samples. The ends of the sample tube shall be filled to the top with wax added in the increments to prevent voids, after which they shall be capped with tight fitting copper or galvanized steel caps bound on with friction tape and dipped in wax. Undisturbed samples shall be labeled and identified as directed by PPA.
- d. Rock Cores. Rock cores shall be suitably boxed, marked and identified in a manner satisfactory to PPA. Cores shall be boxed in the same sequence in which they were obtained in the field.

Cores from each drilling run shall be separated from adjacent with from wooden blocks on which the depths of the beginning and end of the run shall be clearly, accurately and permanently indicated. Cores of soft rock which may be damaged in the normal course of shipping shall be further preserved by wrapping them first in polyethylene plastic. The

container itself shall be marked to show borehole number, box number, depth and the date the sample was taken.

9. Records

- a. General. The Contractor shall keep accurate driller's logs and records of all work accomplished under this contract and shall deliver complete, legible copies of these logs and records to PPA upon completion of the work or at such other time or times as he may directed. The PPA or his representative shall have the right to examine such records at any time prior to their delivery to him. Separate logs shall be made for each boring. All depths and elevations shall be measured in meters, and shall be referenced to proper benchmarks or datum as designated by PPA representative.
- b. Records. Records shall contain the following information:
- 1) Results of all details of each borehole arranged in tabular form, giving full information on the location, type of boring, vertical arrangement, and the thickness and classification of the materials penetrated.
 - 2) Location, elevation and depth, type, number and date of each sample and test taken.
 - 3) Heights of drop and weight of drop hammer for taken drive samples.
 - 4) Size and length of casing used in each borehole.
 - 5) Length in inches of samples of coring run.
 - 6) Length in recovery for all samples and coring.
 - 7) Elevation of refusal or rock if encountered.
 - 8) Approximate force required to press in undisturbed samples.
 - 9) Driving energy in inch-pounds and blow count data for six-inch penetration of drive sampler and for each twelve-inch penetration of casing.

10. Reference Elevation

The seabed elevation of each borehole should be included in the boring log based on Mean Lower Low Water (MLLW). Elevations above MLLW shall be marked positive (+) while those below shall be marked negative (-). In the absence of Tide Gauge in the area for locating the level of the MLLW, the elevation of the permanent existing structures such as pier, wharf, finish pavement of back-up area, may be used as reference.

11. Submission of Samples

At such time as PPA may direct, all samples and cores selected by PPA representative shall be carefully boxed by the Contractor and shipped accordingly. Boxing shall be made in such a manner that will protect all soil and core samples from excessive disturbance while being shipped to the Soils Laboratory for testing. Payment for shipping samples shall be included in the bid proposal.

III. MEASUREMENT AND PAYMENT

The quantities listed in the Proposal are approximate only and do not govern final payment. Payments to the Contractor will be made only for the actual quantities of the contract items performed in accordance with the Technical Specifications and shall be considered as full compensation for furnishing all labor, materials, equipment plant, facilities, and services for the performance of the work.

IV. SETS OF TESTS REQUIRED AND REPORTS

- A. Soil Classification. Soils shall be described in accordance with the Unified Soil Classification System (USCS). Each individual stratum shall be measured and described in writing. All thin layers, joints or partings shall be noted. Slices of samples may be prepared and slowly air-dried to reveal stratifications and laminations.

The visual description shall state the color, class of soil (gravel, sand, silt, clay or peat), the relative sizes of non-cohesive soil particles (coarse, medium or fine sand) and the relative cohesiveness and strength of clayey soils (high, medium or low). Any significant factors shall be noted such as the presence of shells, varves, roots and odor of the soil. All soil samples shall be tested in accordance with the ASTM or AASHTO specifications where applicable.

- B. Final Report. After completion of the laboratory-testing program, a draft report clearly defining and summarizing all the works performed together with the 3D settlement analysis for traffic load of 500 and 750 pounds per square foot (psf), soil bearing capacity, pile capacity, recommended foundation and pile length depending on the type of structure to be constructed, including the findings and recommendations of a competent Soils Engineer of the Contractor, shall be submitted to PPA. The draft report shall be book-bound and shall contain among others a description of the test procedure, the number of tests for each type, boring logs, maps, summary tables of the results and complete details and analysis/computation and evaluation of the results of each test, grain size analysis curves, summary or recommended soil particles and Atterberg Limit worksheets..

The Final Geotechnical Report shall contain the methodology of geotechnical investigation performed, the result of field investigation including field logs, description of site conditions, profile of soil conditions, result of laboratory tests, summary of geotechnical data and photos. The Final Report (10 copies) in book-bound form and (1 copy) in electronic media (CD-R disks and/or CD-RW disks) in a format and form replicating the paper-print copies, incorporating all revisions deemed appropriate by the Philippine Ports Authority should be submitted within 20 days after receipt of comments on the Draft Final Report from the PPA. The boreholes logs, development plan indicating the actual borehole location and soil profile shall be submitted in AUTOCAD format.

V. PAY ITEMS

- A. Mobilization and Demobilization

1. Payment will be made at the contract lump sum price for mobilization and demobilization for this exploration work, and shall include full compensation for all labor, materials, transportation charges, and incidentals necessary to complete the mobilization, manning and demobilization of all equipment, including the drilling rigs, appurtenances, supports, etc. Payment on this item will be made only after completion of fieldwork for this exploration.

- B. Boring

1. Measurement will be made of the actual number of vertical lineal or borehole in place and accepted.
2. Payment will be computed based on the number of linear meters, measured as provided above, using the contract unit price for borings. Such payment shall include full compensation for furnishing, installing and removing the drill rig and accessories for all drilling work, penetrating boulders or hard layers encountered, installing and removing casing, for submitting records or borings and/or excavation for incidentals necessary to complete the item.

C. Standard Penetration Tests (SPT)

1. Each test performed and accepted will be measured as a complete unit.
2. Payment will be made and measured based on the actual number of units performed and at the applicable unit price for SPT.

D. Undisturbed Sample (UDS)

1. Each sample taken and accepted will be measured as a complete unit.
2. Payment will be made and measured based on the actual number of units performed and at the applicable unit price for UDS.

E. Coring in Rocks

1. Measurement for payment will be made based on the actual number of lineal meters penetrated with the use of coring bit in rock, boulder, gravel, or hard formations.
2. Payment will be computed based on the actual number or lineal meters measured as specified above and at the applicable contract unit price for coring in rock.

F. Laboratory Tests

Payment will be made based on the actual number of specified tests, as required in the specification, or as may be required by PPA, and at the applicable contract unit price.

G. Equipment and Miscellaneous Items (see Attachment "A")

The Contractor shall specify the major equipment - owned, rented or leased and to be purchased - that will be utilized in the performance of these services, their main specifications and the estimated times of use shown in an equipment utilization schedule. The equipment requirements for this undertaking are as follows:

Quantity	Unit	Particulars
4	units	Rotary Spindle Hydraulic Rig (three (3) - owned; one (1) - leased)
3	units	3.5hp Water Supply Pump (three (3) - owned)
1	unit	5hp Duplex (two piston) Engine Water Pump (one (1) - leased)
4	sets	Tripod (four (4) - owned)
8	pcs.	NW Casing (eight (8) - owned)
20	pcs.	AW Rod (twenty (20) - owned)
4	sets	Split Spoon with 70 kgs. Jar Hammer plus Plate (four (4) - owned)
4	pcs.	NQ Core Barrel (four (4) - owned)
4	pcs.	Starting Barrel (four (4) - owned)
4	sets	Water Swivel (four (4) - owned)
4	assemblies	Drilling Barge or Pontoon with at least 4 anchors for each project site (four (4) - owned)
1	unit	Motorized Service Boat (owned/leased)
2	sets	Surveying Equipment (Total Station, Theodolite or GPS) (One (1) - owned; One (1) - leased)

Payment of purchased office and other equipment such as computers, printers, copiers, peripherals and accessories shall be made upon turnover to PPA. Similarly, miscellaneous items such as rental of service vehicles, shipment of samples, and employment of security services, provision of safety signage (caution tape and barricades) and individual safety gears/gadgets of the drilling team e.g. safety shoes, safety vest, hard hat, goggles, gloves, safety belts, among others, shall be made in lump sum after the work has been completed.

VI. BILLING AND OTHER FORMS

The Contractor shall prepare their billing and other forms in accordance with those that may be prescribed by PPA.

VII. REQUIRED EXPERTISE AND PROPOSALS

The Contractor shall specify the key personnel or experts that will be utilized in the performance of these services, their qualifications (education, training and experience) and the times that they will serve shown in a manpower schedule. The following minimum specialization is anticipated to be required in the Study:

- Soil Engineer
- Geologist/Geotechnical Engineer
- Civil Engineer
- Geodetic Engineer


VIII. REPORTS

The Draft and Final Reports shall include the results of all required tests performed and accepted on this exploration work including the settlement analysis. The report shall include the findings, evaluations and recommendations as more specifically defined in Section No. IV (B).

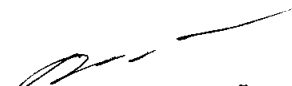
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OFFICE EQUIPMENT SPECIFICATIONS

1. **Computer (2 units)** – Internationally branded desktop computer from any of the following – HP/Compaq, Toshiba, Fujitsu, Acer, Dell, NEC, Sony, Acer or IBM; Operating System – Windows 7 PRO Desktop PC, Processor – Intel Core i7-2600S 2.8GHz, Memory – 4GB to 8GB DDR3-10600/1333Mhz, Internal Drives – 1 TB SATA 3G Hard Disk Drive (7200 rpm), Graphics – AMD Radeon HD 6570 with Avivo technology up to 3839 MB total available graphics, with 2GB DDR3 dedicated, Monitor –X2301 23” Sword Micro-Thin LED, Keyboard – Wireless keyboard & Mouse, Original licensed copy of MS Office 2010.
2. **Digital Camera (1 unit)** – Internationally branded from any of the following – Kodak, Fujifilm, Canon, Olympus, Pentax, Sony or Panasonic: 16.2 Mega Pixel T Series 4x Optical Zoom Cyber-shot: Underwater Sweep Panorama, iSweep Panorama and 3D Still Image, “Exmor R” CMOS Sensor, AVCHD Full HD movie recording, water-proof (up to 5 meters), 25mm wide angle Carl Zeiss^R Vario-Tessar Lens; Gross Pixels - Approx. 16.8 Mega Pixels, Processor – BIONZ, Sensor Type ½.3” Exmor R CMOS Sensor, Optical Zoom – 4x, Precision Digital Zoom – Approx. 16x, F Number – 3.5 – 4.6, Focal Length – 4.43 – 17.7mm (25-100mm), LCD – 3.0” (921K Pixels), Xtra Fine LCD, Touch Screen, Stamina (Battery Life) – 250 shots/125mins, Battery System – Lithium ION Battery, USB – 2.0 Hi-speed
3. **Communication Equipment (2 units)** – Internationally branded cellular phone from any of the following – Nokia, Sony Erickson, Samsung, Panasonic, LG, etc.; Size and Weight: Height - 115.2mm (4.5 in.), Width - 58.6mm (2.31 in.), Depth – 9.3mm (0.37 in.), Weight – 137 grams (4.8 ounces); Cellular and Wireless: UMTS/HSDPA/HSUPA (850, 900, 1900, 2100 MHz), GSM/EDGE (850, 900, 1800, 1900 MHz, 802.11 b/g/n Wi-Fi (802.11 n 2.4GHz only), Bluetooth 2.1 + EDR wireless technology: Power and battery; Built –in rechargeable lithium-ion battery, Charging via USB to computer system or power adapter: Capacity; 16GB or 32GB flash drive: Display; Retina display, 3.5-inch (diagonal) widescreen Multi-Touch display, 960-by-640-pixel resolution at 326 ppi, 800:1 contrast ratio (typical), 500 cd/m² max brightness(typical), Fingerprint-resistant oleophobic coating on front and back: Camera, photos and video; Video recording, HD (720P) up to 30 frames per second with audio, 5-megapixel still camera, VGA-quality photos and video at up to 30 frames per second with front camera, LED flash, phot and video geotagging: Bluetooth enabled; Multimedia Player; SMS/MMS; Wireless email; Organizer; Browser; Phone; Corporate Data Access.
4. **Camcorders (2 units)** – Internationally branded from any of the following – Sony, Canon, Panasonic, etc.: 1920 x 1080 Full HD video with the ultra-compact HDR-CX 130 Handycam camcorder. It features an “Exmor R” CMOS sensor for superior low-light performance, a wide angle G lens, plus 42x extended zoom for getting closer to the action. “Exmor R” CMOS Sensor; 29.8mm wide angle G

lens; 30x optical zoom (42x extended zoom); Optical Steady Shot with Active Mode; 3.0 Clear Photo LCD; Intelligent Auto mode. HP Video Codec – MPEG4-AVC/H.264, SD Video Codec – MPEG2-PS, Media Storage Type – Memory Stick PRO Duo™ (Mark2)/PRO-HG Duo™/SD/SDHC/SDXC Memory Card, Image Sensor – 1/4" "Exmor R" CMOS Sensor, Image Processor – BIONZ™, Lens/Filter Diameter – G Lens/37mm, Optical/Digital Zoom – 30x/350x, Audio Format – Dolby Digital 2ch Stereo, Dolby Digital Stereo Creator, Maximum Still Image Resolution (Photo Mode) – 3.3 Mega Pixels (2112 x 1584, 4:3), LCD Screen Size and Type – 3.0" Clear Photo LCD (230K dots/Wide 16:9), Touch Panel