Data Book Appendix O

Geotechnical Investigation Data

PREPARATORY SURVEY
FOR
FLOOD RISK MANAGEMENT PROJECT
FOR
CAGAYAN DE ORO RIVER (FRIMP-CDOR)
IN
THE REPUBLIC OF THE PHILIPPINES

FINAL REPORT

VOLUME V DATA BOOK

Appendix O
Geological Investigation Data

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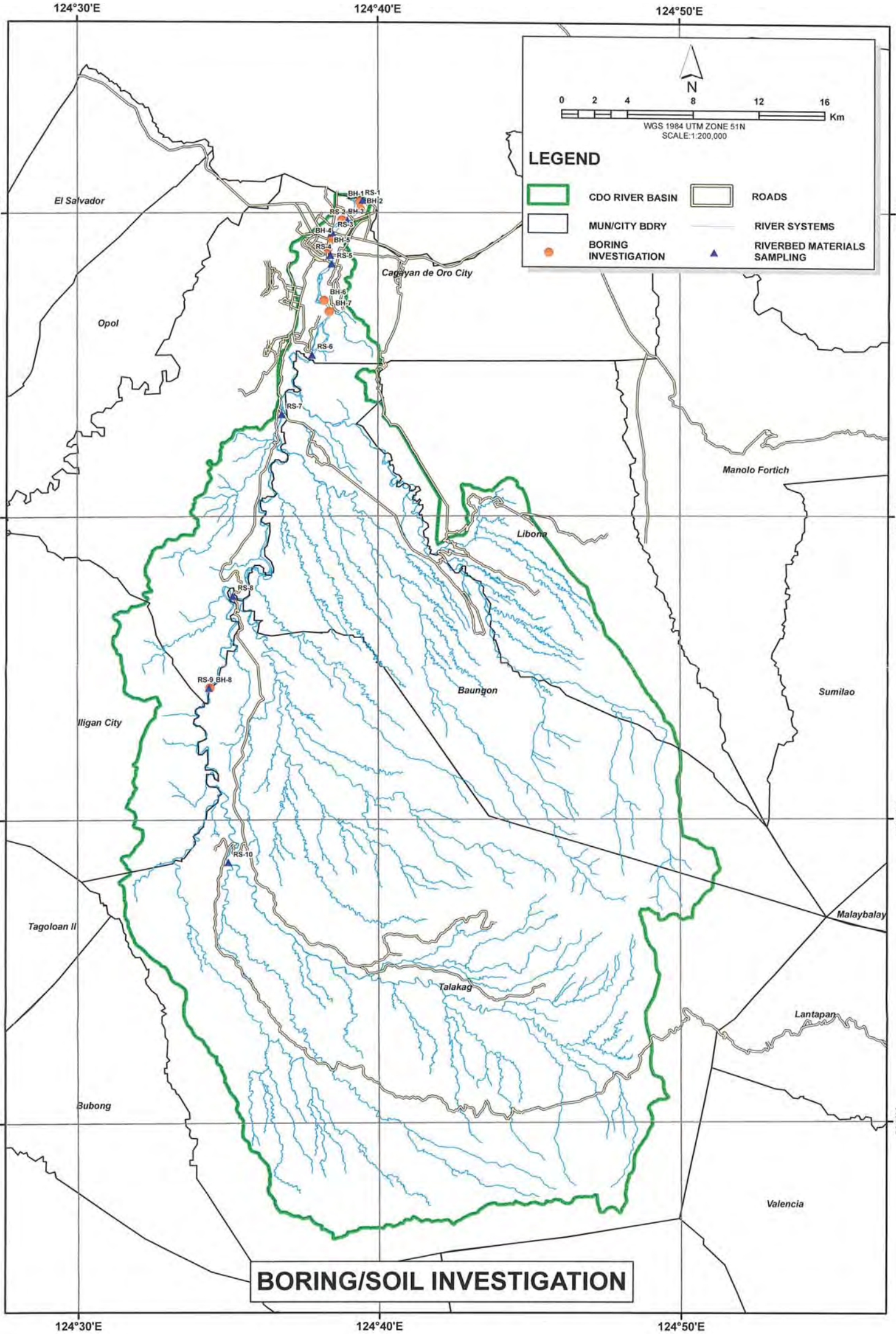
O.1 Geological Investigation for Master Plan Study



BORING/SOIL INVESTIGATION

O.1 Geological Investigation for Master Plan Study

(1) Boring Data with Laboratory Test Results

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

LOCATION : *BRGY. BON BON, CAGAYAN DE ORO*

BORING NO.: **BH-1**
FINAL DEPTH: **30.00 m.**
GWT: **3.00 m.**
DATE STARTED: **Oct. 23, 2012**
DATE FINISHED: **Oct. 25, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: *——— *Sample description was based on tactile and visual examination.*							
2	(2.05-2.5 m) Brown, *silty SAND*. (Rec: 45/15 cm.)	ss-1	Very loose	*	3			
3								
4	(4.55-5.0 m) Gray, *fine to medium SAND*, with some fine gravel and traces of non-plastic silt. (Rec: 45/35 cm.)	ss-2	Loose	SP-SM	10			Gs=2.70
5								
6								
7	(7.05-7.5 m) - same materials - (Rec: 45/45 cm.)	ss-3	Med. dense	-	12			
8								
9								

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

LOCATION : *BRGY. BON BON, CAGAYAN DE ORO*

BORING NO.: **BH-1**
FINAL DEPTH: **30.00 m.**
GWT: **3.00 m.**
DATE STARTED: **Oct. 23, 2012**
DATE FINISHED: **Oct. 25, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
10	(10.0-10.45 m) Dark brown, *sandy SILT*, non-plastic, with traces of decayed materials. (Rec: 45/45 cm.)	ss-4	Loose	ML	8			Gs=2.72
11								
12	(12.0-12.45 m) Dark gray, *silty SAND*. (Rec: 45/25 cm.)	ss-5	Loose	"	9			
13								
14								
	(14.55-15.0 m) Gray, *SAND* and *non-plastic SILT* mixture, with traces of decayed materials. (Rec: 45/25 cm.)	ss-6	Loose	SM-ML	9			Gs=2.70
15								
16								
17	(17.05-17.5 m) Gray, *sandy SILT*, non-plastic. (Rec: 45/45 cm.)	ss-7	Med. dense	"	11			
18								
19								

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

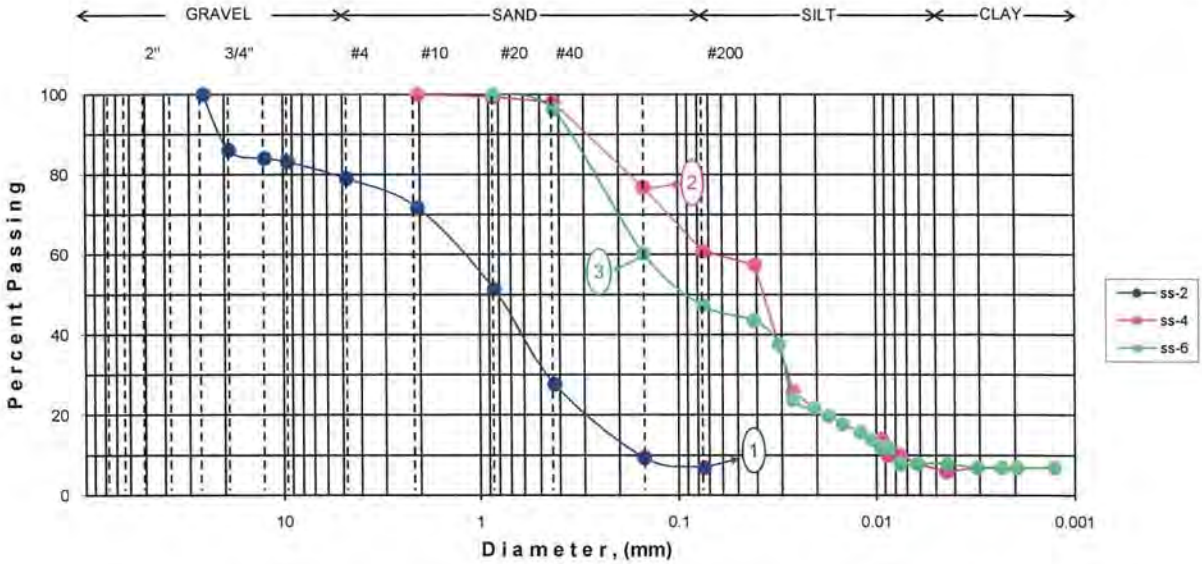
LOCATION : *BRGY. BON BON, CAGAYAN DE ORO*

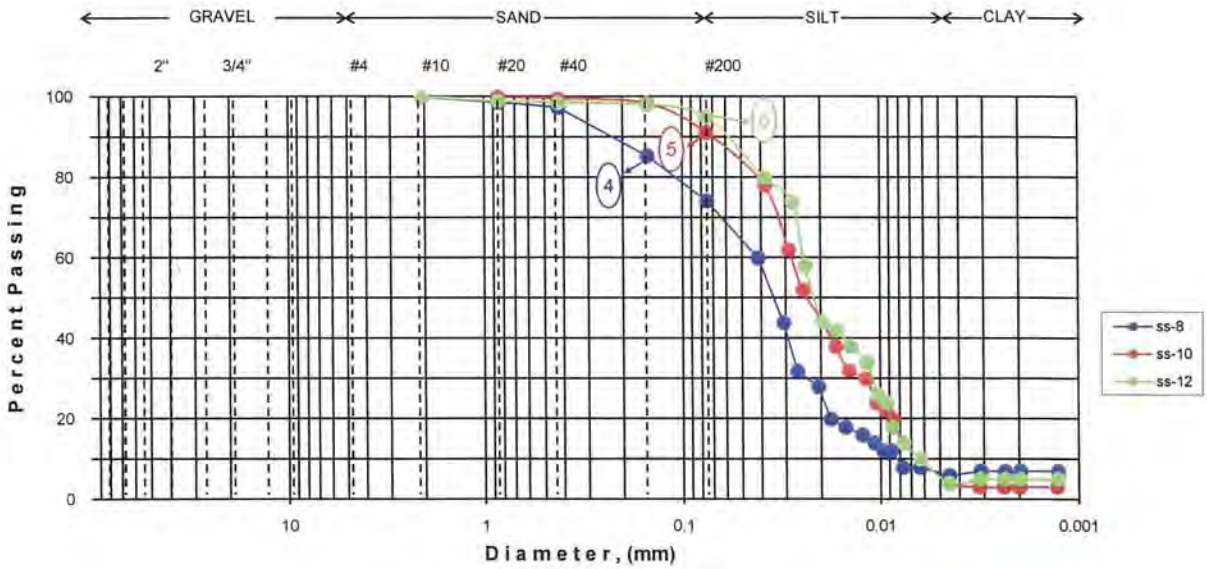
BORING NO.: **BH-1**
FINAL DEPTH: **30.00 m.**
GWT: **3.00 m.**
DATE STARTED: **Oct. 23, 2012**
DATE FINISHED: **Oct. 25, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
20	(20.0-20.45 m) Grayish brown, *non-plastic SILT*, with some sand and traces of decayed materials. (Rec: 45/45 cm.)	ss-8	Med. dense	ML	12			Gs=2.67
21								
22	(22.05-22.5 m) Gray, *clayey SILT*. (Rec: 45/45 cm.)	ss-9	Med. stiff	*	6			
23								
24								
25	(25.0-25.45 m) Gray, *clayey SILT*, slightly plastic, with traces of sand. (Rec: 45/45 cm.)	ss-10	Stiff	ML	11		7	Gs=2.64
26								
27	(27.05-27.5 m) - same materials - (Rec: 45/45 cm.)	ss-11	Stiff	*	9			
28								
29								
30	(29.55-30.0 m) Gray, *clayey SILT*, slightly plastic, with traces of sand. (Rec: 45/45 cm.) *End of Borehole @ 30.00 m.*	ss-12	Stiff	ML	11		5	Gs=2.66

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. BON BON, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-1	ss-2	5.00-5.45	1	13.60	NP	NP	NP	SP-SM	Gray, fine to medium SAND
BH-1	ss-4	10.00-10.45	2	41.77	NP	NP	NP	ML	Dark brown, sandy SILT, non-plastic
BH-1	ss-6	15.00-15.45	3	49.41	NP	NP	NP	SM-ML	Gray, SAND and non-plastic SILT mixture
BH-1	ss-8	20.00-20.45	4	41.22	NP	NP	NP	ML	Grayish brown, non-plastic SILT
BH-1	ss-10	25.00-25.45	5	55.60	39	32	7	ML	Gray, clayey SILT, slightly plastic
BH-1	ss-12	29.55-30.00	6	52.35	37	30	7	ML	Gray, clayey SILT, slightly plastic

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. BON BON, CAGAYAN DE ORO** BOREHOLE NO.: **BH-1** DATE TESTED: **Nov. 13, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2		SS-4		SS-6	
Depth (m)	4.55-5.00		10.00-10.45		14.55-15.00	
Volume of Flask @ 20°, ml	100	100	100	100	100	100
Method of air removal	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	181.73	192.10	193.80	188.22	181.30	182.89
Temperature, °C	30	30	29	29	29	29
Wt. of Flask + Water = Wbw	150.15	160.60	162.11	156.55	149.80	151.31
Wt. of Dry Soil = Ws	50	50	50	50	50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.42	18.5	18.31	18.33	18.5	18.42
Specific Gravity, Gs = Ws / Ww	2.71	2.70	2.73	2.73	2.70	2.71
Viscosity Correction	0.9957	0.9957	0.9960	0.9960	0.9960	0.9960
Specific Gravity corrected for Temp.	**2.70**	**2.69**	**2.72**	**2.72**	**2.69**	**2.70**

Sample Number	SS-8		SS-10		SS-12	
Depth (m)	20.00-20.45		25.00-25.45		29.55-30.00	
Volume of Flask @ 20°C	100	100	100	100	100	100
Method of air removal	Rolling	Rolling	Rolling	Rolling	Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	187.53	193.16	181.44	181.12	180.77	182.74
Temperature, °C	30	30	29	29	29	29
Wt. of Flask + Water = Wbw	156.18	161.86	150.37	149.93	149.50	151.51
Wt. of Dry Soil = Ws	50	50	50	50	50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.65	18.7	18.93	18.81	18.73	18.77
Specific Gravity, Gs = Ws / Ww	2.68	2.67	2.64	2.66	2.67	2.66
Viscosity Correction	0.9957	0.9957	0.9960	0.9960	0.9960	0.9960
Specific Gravity corrected for Temp.	**2.67**	**2.66**	**2.63**	**2.65**	**2.66**	**2.65**

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

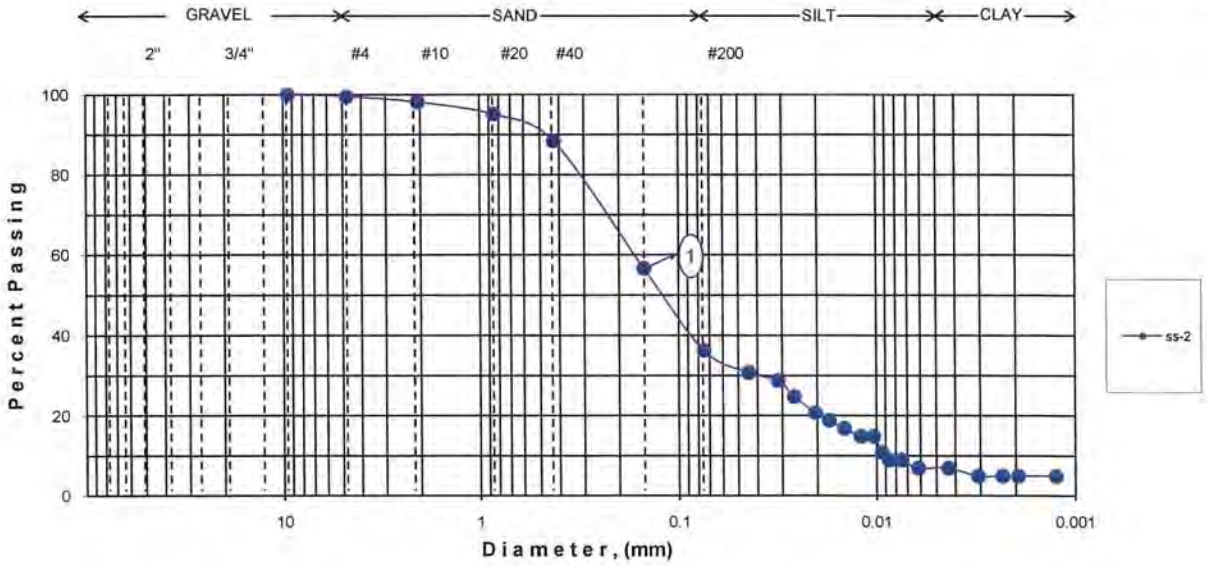
LOCATION : *BRGY. SAN ROQUE, BLOCK 4, MACABALAN, CAGAYAN DE ORO*

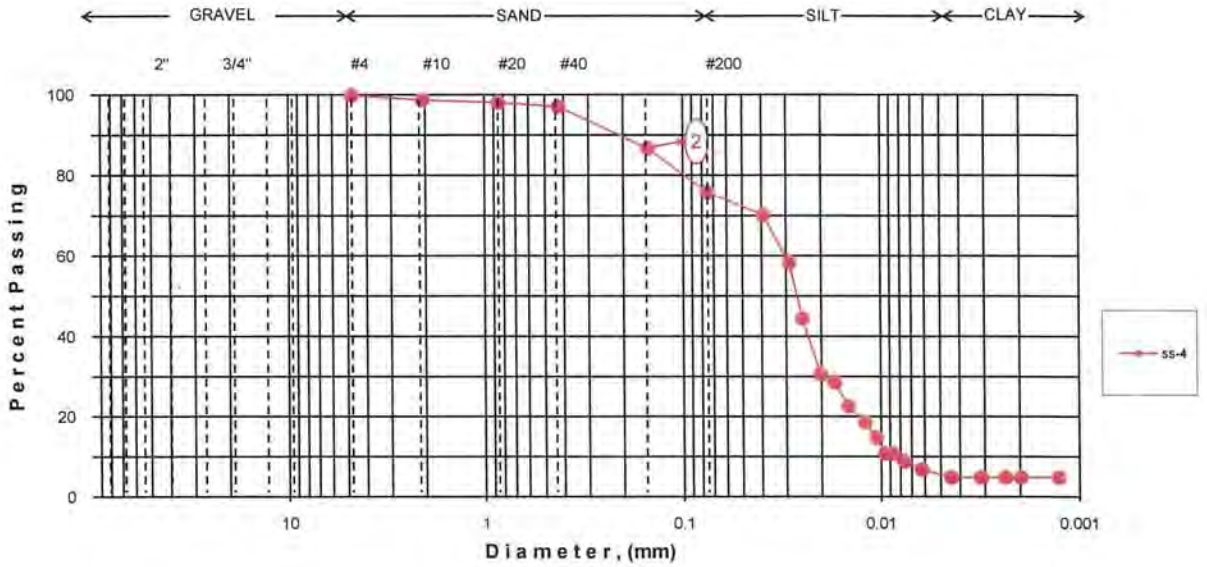
BORING NO.: **BH-2**
FINAL DEPTH: **10.00 m.**
GWT: **2.00 m.**
DATE STARTED: **Oct. 27, 2012**
DATE FINISHED: **Oct. 27, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: *——— *Sample description was based on tactile and visual examination.*							
1								
2	(2.05-2.5 m) Brown, *silty SAND*. (Rec: 45/45 cm.)	ss-1	Very loose	*	2			
3								
4								
5	(5.0-5.45 m.) Gray, *silty SAND*, non-plastic. (Rec: 45/40 cm.)	ss-2	Very loose	SM	4			Gs=2.72
6								
7	(7.05-7.5 m) Gray, *silty SAND*. (Rec: 45/40 cm.)	ss-3	Very loose	*	4			
8								
9								
10	(9.55-10.0 m) Gray, *clayey SILT*, slightly plastic, with some sand. (Rec: 45/45 cm.) *End Borehole @ 10.00 m.*	ss-4	Soft	ML	4		9	Gs=2.71

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. SAN ROQUE, BLOCK 4, MACABALAN, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-2	ss-2	5.00-5.45	1	39.48	NP	NP	NP	SM	Gray, silty SAND, non-plastic
BH-2	ss-4	9.55-10.00	2	52.50	34	25	9	ML	Gray, clayey SILT, slightly plastic

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO** BOREHOLE NO.: **BH-2** DATE TESTED: **Nov. 13, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2				SS-4	
Depth (m)	5.00-5.45				9.55-10.00	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	192.43	193.22			192.78	193.72
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	160.82	161.46			161.18	162.18
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.39	18.24			18.4	18.46
Specific Gravity, Gs = Ws / Ww	2.72	2.74			2.72	2.71
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.71**	**2.73**			**2.71**	**2.70**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

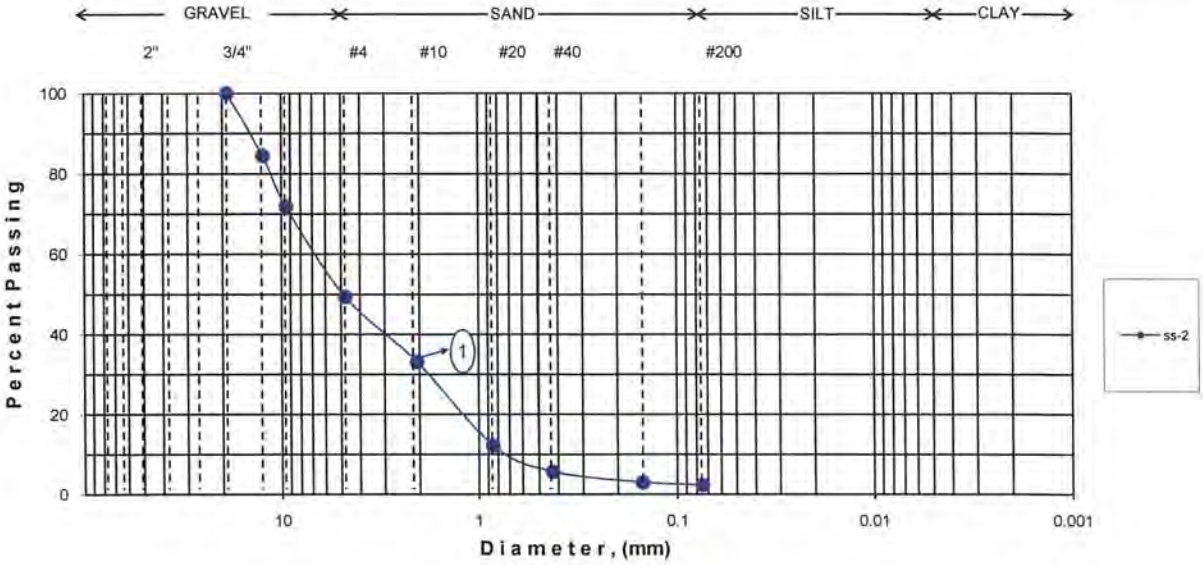
LOCATION : *BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO*

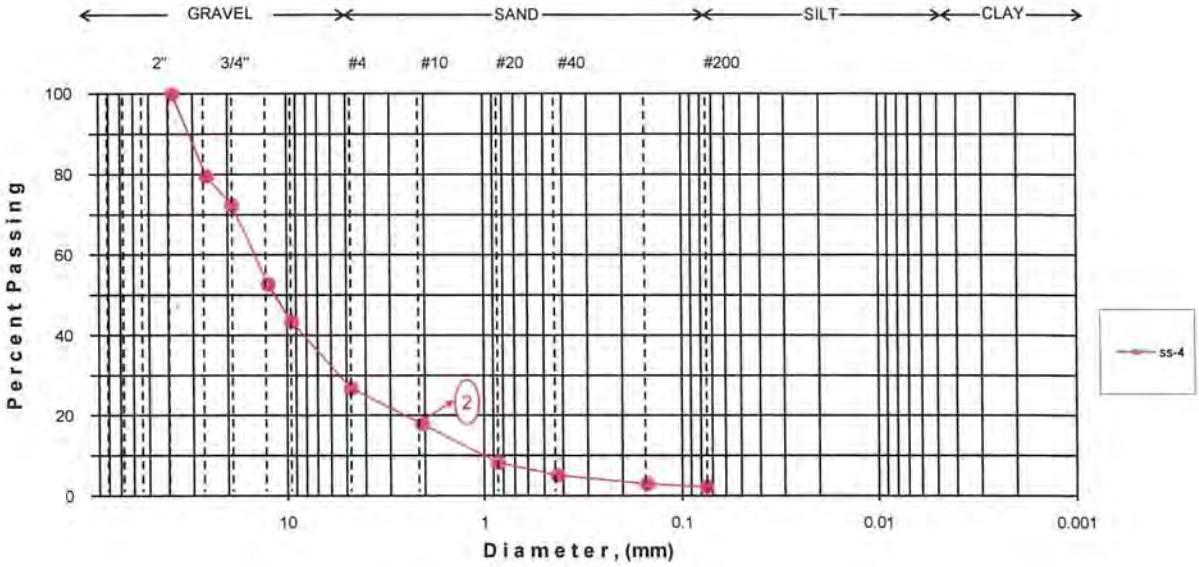
BORING NO.: **BH-3**
FINAL DEPTH: **10.00 m.**
GWT: **2.50 m.**
DATE STARTED: **Oct. 28, 2012**
DATE FINISHED: **Oct. 28, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: * *Sample description was based on tactile and visual examination.*							
2	(2.05-2.5 m) Gray, *silty SAND*, non-plastic. (Rec: 45/45 cm.)	ss-1	Loose	*	4			
4.55-5.0 m.	Gray, *SAND* and *GRAVEL* mixture, with traces of non-plastic silt. (Rec: 45/30 cm.)	ss-2	Loose	GW-SW	5			Gs=2.76
7	(7.05-7.5 m) - same materials - (Rec: 45/25 cm.)	ss-3	Loose	*	7			
9.55-10.0 m	Gray, *GRAVEL*, with some sand and traces of non-plastic silt. (Rec: 45/35 cm.)	ss-4	Loose	GW-GM	7			Gs=2.71
10	*End Borehole @ 10.00 m.*							

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-3	ss-2	4.55-5.00	1	9.77	NP	NP	NP	GW-SW	Gray, SAND and GRAVEL mixture
BH-3	ss-4	9.55-10.00	2	9.43	NP	NP	NP	GW-GM	Gray, GRAVEL

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO** BOREHOLE NO.: **BH-3** DATE TESTED: **Nov. 12, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2				SS-4	
Depth (m)	4.55-5.00				9.55-10.00	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	181.82	182.67			181.68	182.32
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	149.91	150.69			150.04	150.69
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.09	18.02			18.36	18.37
Specific Gravity, Gs = Ws / Ww	2.76	2.77			2.72	2.72
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.75**	**2.76**			**2.71**	**2.71**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

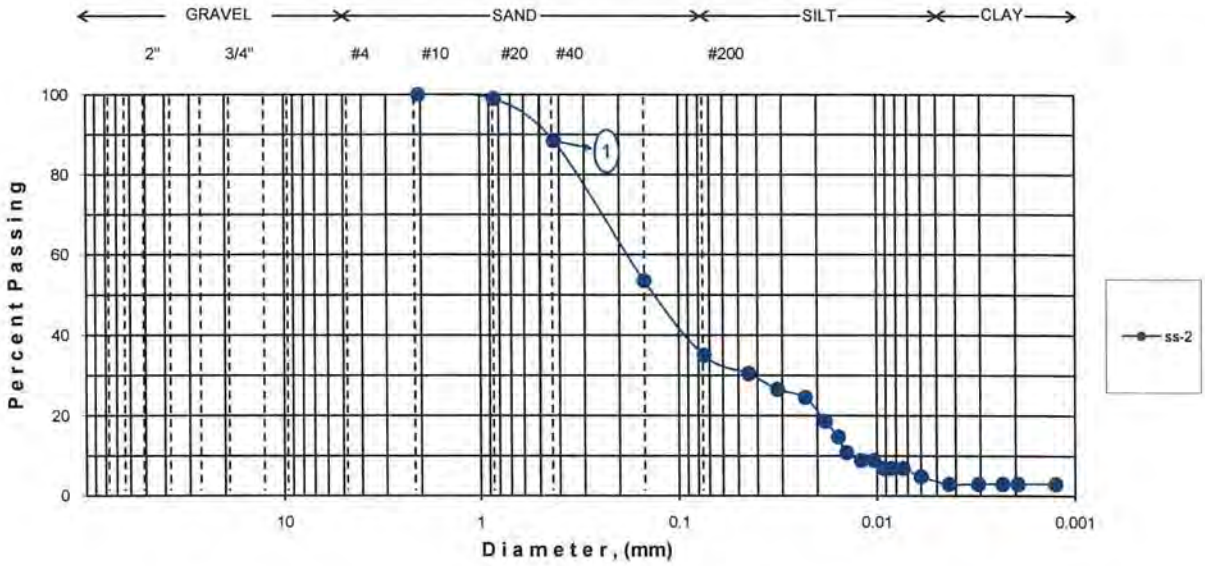
LOCATION : *KAUSWAGAN, CAGAYAN DE ORO*

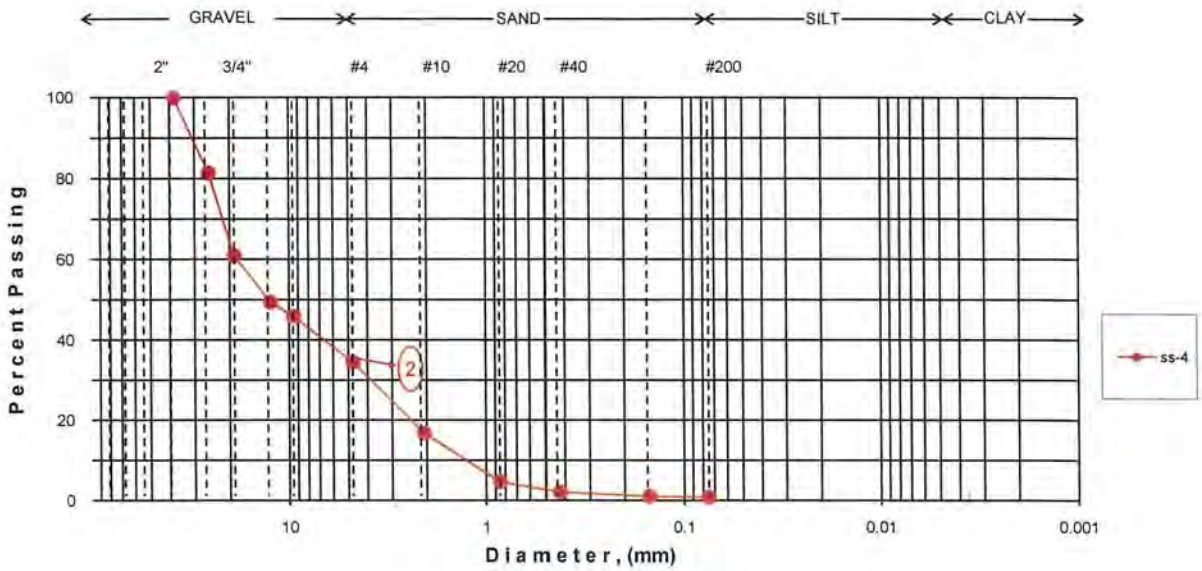
BORING NO.: **BH-4**
FINAL DEPTH: **10.00 m.**
GWT: **2.00 m.**
DATE STARTED: **Oct. 29, 2012**
DATE FINISHED: **Oct. 29, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: *——— *Sample description was based on tactile and visual examination.*							
1								
2								
	(2.5-2.95 m) Dark gray, *clayey SILT*, slightly plastic, with sand. (Rec: 45/45 cm.)	ss-1	Soft	*	2			
3								
4								
5	(5.0-4.45 m.) Dark gray, *silty SAND*, non-plastic. (Rec: 45/45 cm.)	ss-2	Very loose	SM	4			Gs=2.73
6								
7	(7.05-7.5 m) - same materials - (Rec: 45/45 cm.)	ss-3	Loose	*	9			
8								
9								
	(9.55-10.0 m) Dark gray, *sandy GRAVEL*. (Rec: 45/40 cm.)	ss-4	Med. dense	GP	13			
10	*End Borehole @ 10.00 m.*							

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), KAUSWAGAN, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-4	ss-2	5.00-5.45	1	34.83	NP	NP	NP	SM	Dark gray, silty SAND, non-plastic
BH-4	ss-4	9.55-10.00	2	7.15	NP	NP	NP	GP	Dark gray, sandy GRAVEL

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: KAUSWAGAN, CAGAYAN DE ORO BOREHOLE NO.: BH-4 DATE TESTED: Nov. 16, 2012 TESTED BY: BEC / APO SHEET NO. 1 of 1
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2					
Depth (m)	5.00-5.45					
Volume of Flask @ 20°, ml	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	181.17	193.24				
Temperature, °C	30	30				
Wt. of Flask + Water = Wbw	149.50	161.46				
Wt. of Dry Soil = Ws	50	50				
Wt. of Water, Ww = Ws + Wbw - Wbws	18.33	18.22				
Specific Gravity, Gs = Ws / Ww	2.73	2.74				
Viscosity Correction	0.9957	0.9957				
Specific Gravity corrected for Temp.	**2.72**	**2.73**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

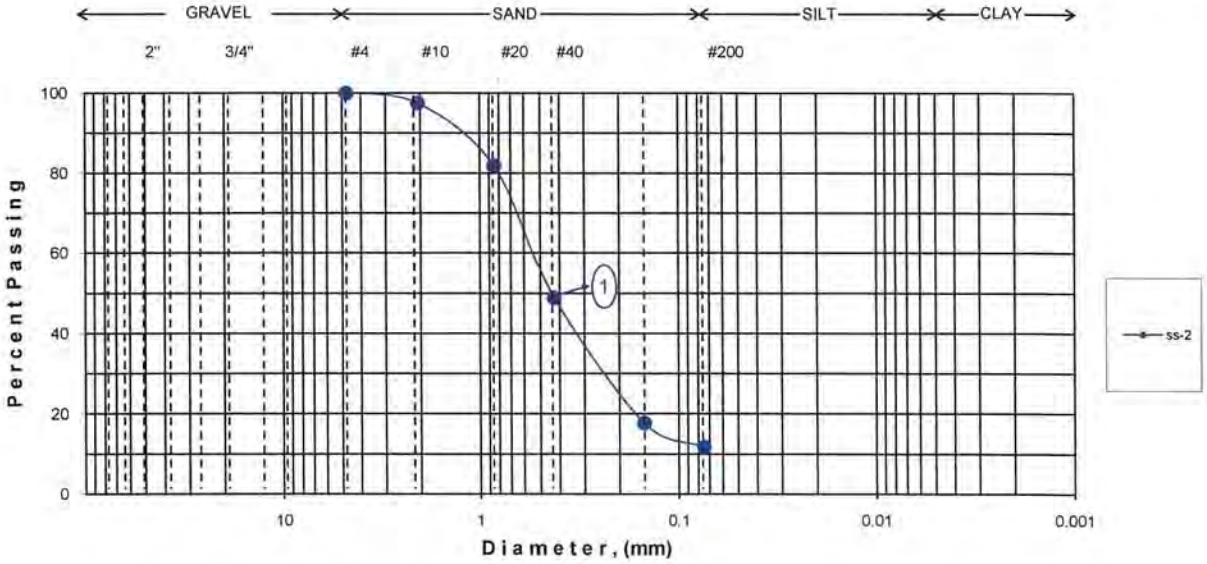
LOCATION : *CARMEN, CAGAYAN DE ORO*

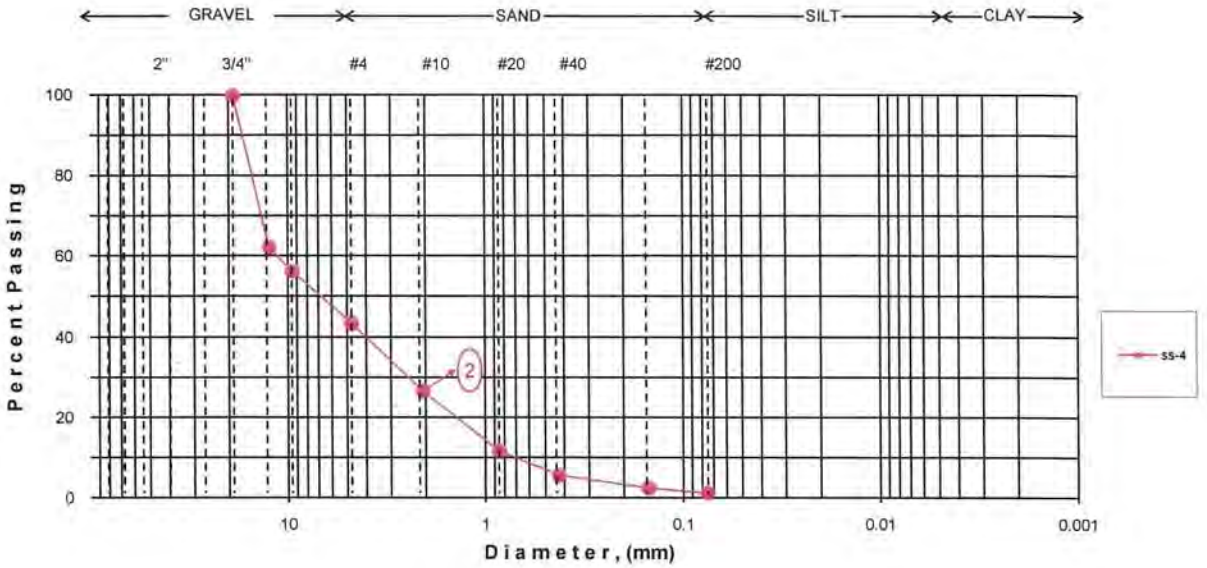
BORING NO.: **BH-5**
FINAL DEPTH: **10.00 m.**
GWT: **3.00 m.**
DATE STARTED: **Oct. 30, 2012**
DATE FINISHED: **Oct. 31, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: *——— *Sample description was based on tactile and visual examination.*							
1								
2								
3	(2.5-2.95 m) Brown, *clayey SILT*, slightly plastic, with some decayed materials. (Rec: 45/45 cm.)	ss-1	Soft	*	2			
4								
5	(5.0-5.45 m.) Gray, *fine to medium SAND*, with little amount of non-plastic silt. (Rec: 45/45 cm.)	ss-2	Loose	SM	7			Gs=2.78
6								
7	(7.05-7.5 m) - same materials - (Rec: 45/45 cm.)	ss-3	Loose	*	7			
8								
9								
10	(9.55-10.0 m) Gray, *GRAVEL*, with sand and traces of non-plastic silt. (Rec: 45/45 cm.) *End Borehole @ 10.00 m.*	ss-4	Med. dense	GP	20			Gs=2.77

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CARMEN, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-5	ss-2	5.00-5.45	1	19.22	NP	NP	NP	SM	Gray, fine to medium SAND
BH-5	ss-4	9.55-10.00	2	9.14	NP	NP	NP	GP	Gray, GRAVEL, with sand

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO** BOREHOLE NO.: **BH-5** DATE TESTED: **Nov. 12, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2				SS-4	
Depth (m)	5.00-5.45				9.55-10.00	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	182.01	180.40			183.52	182.29
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	149.84	148.35			151.51	150.27
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	17.83	17.95			17.99	17.98
Specific Gravity, Gs = Ws / Ww	2.80	2.79			2.78	2.78
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.79**	**2.77**			**2.77**	**2.77**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

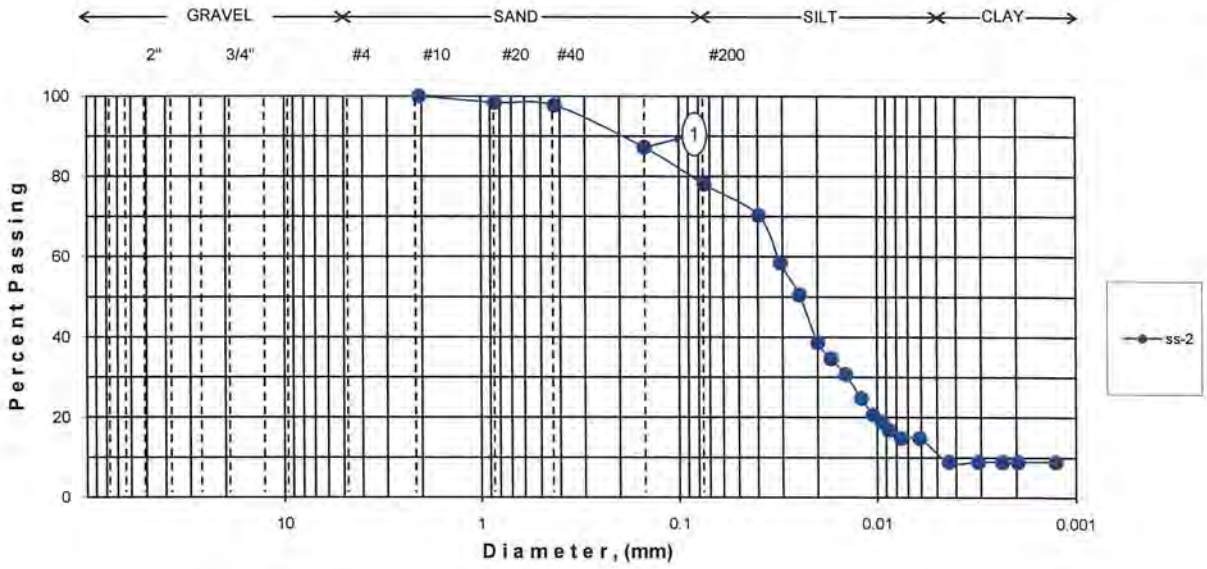
LOCATION : *BRGY. TIBASAK, CAGAYAN DE ORO*

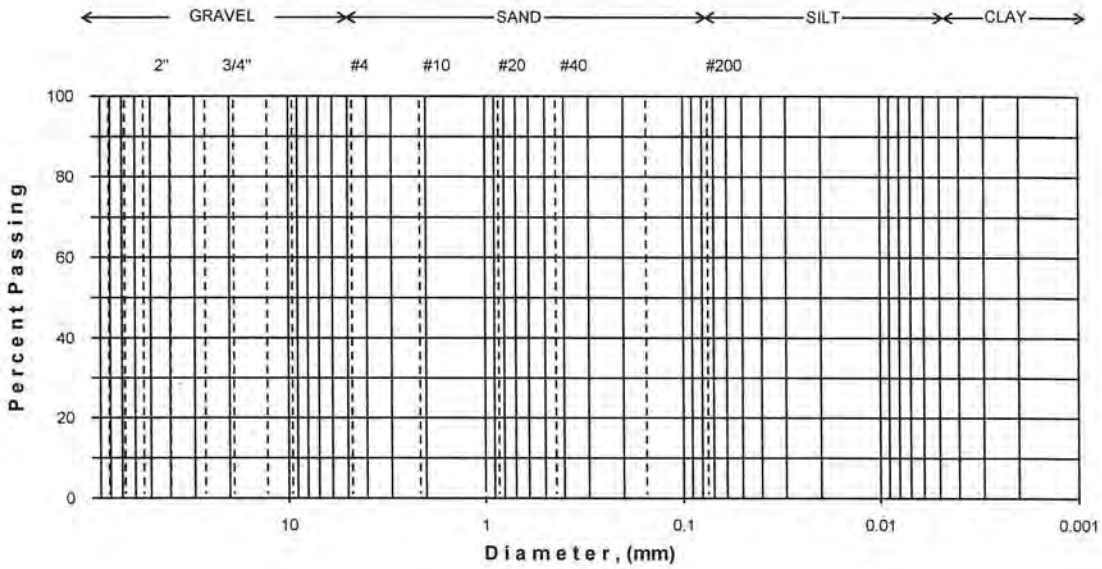
BORING NO.: **BH-6**
FINAL DEPTH: **10.00 m.**
GWT: **2.00 m.**
DATE STARTED: **Nov. 03, 2012**
DATE FINISHED: **Nov. 04, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: * *Sample description was based on tactile and visual examination.*							
2	(2.05-2.5 m) Dark gray, *clayey SILT*, slightly plastic. (Rec: 45/45 cm.)	ss-1	Stiff	*	10			
4.55-5.0 m)	Gray, *clayey SILT*, slightly plastic, with some sand. (Rec: 45/30 cm.)	ss-2	Med. stiff	ML	8		13	Gs=2.67
7	(7.05-7.34 m) Gray, *GRAVEL*. (Rec: 34/20 cm.)	ss-3	Very dense	*	50/19 cm.			
	(7.34-8.0 m) Gray, *GRAVEL/BOULDERS*. (Rec: 60/15/0 cm.)	cs-1						
8	(8.0-9.0 m) - same materials - (Rec: 100/16/0 cm.)	cs-2						
9	(9.0-10.0 m) - same materials - (Rec: 100/10/0 cm.)	cs-3						
10	*End Borehole @ 10.00 m.*							

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. TIBASAK, CAGAYAN DE ORO*

BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BH-6	ss-2	4.55-5.00	1	32.72	38	25	13	ML	Gray, clayey SILT, slightly plastic

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. BON BON, CAGAYAN DE ORO** BOREHOLE NO.: **BH-6** DATE TESTED: **Nov. 16, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-2					
Depth (m)	4.55-5.00					
Volume of Flask @ 20°, ml	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	192.10	193.23				
Temperature, °C	30	30				
Wt. of Flask + Water = Wbw	160.82	161.86				
Wt. of Dry Soil = Ws	50	50				
Wt. of Water, Ww = Ws + Wbw - Wbws	18.72	18.63				
Specific Gravity, Gs = Ws / Ww	2.67	2.68				
Viscosity Correction	0.9957	0.9957				
Specific Gravity corrected for Temp.	**2.66**	**2.67**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

LOCATION : *CARMEN, CAGAYAN DE ORO*

BORING NO.: **BH-7d**
FINAL DEPTH: **2.61 m.**
GWT: **0.70 m.**
DATE STARTED: **Nov. 06, 2012**
DATE FINISHED: **Nov. 08, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC. RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(0.55-1.0 m) Grayish brown, *silty GRAVEL*. (Rec: 45/5 cm.)	ss-1	Med. dense	*	17			
	** Sample description was based on tactile and visual examination.*							
2	(2.5-2.61 m) Gray, *GRAVEL*. (Rec: 11/2 cm.)	ss-2	Very dense	*	50/11 cm.			
3	*End of Borehole @ 2.61 m.*							
4								
5	Note: BH-7 were offset by four (4) times due to encountered bedrock formation.							
6	BH-7a = 1.0m depth BH-7b = 1.2m depth BH-7c = 1.6m depth BH-7d = 2.61m depth Total drilled depth = 6.41m							
7	The location and termination of boreholes were ordered and approved by the Client.							
8								
9								
10								

BOREHOLE LOG

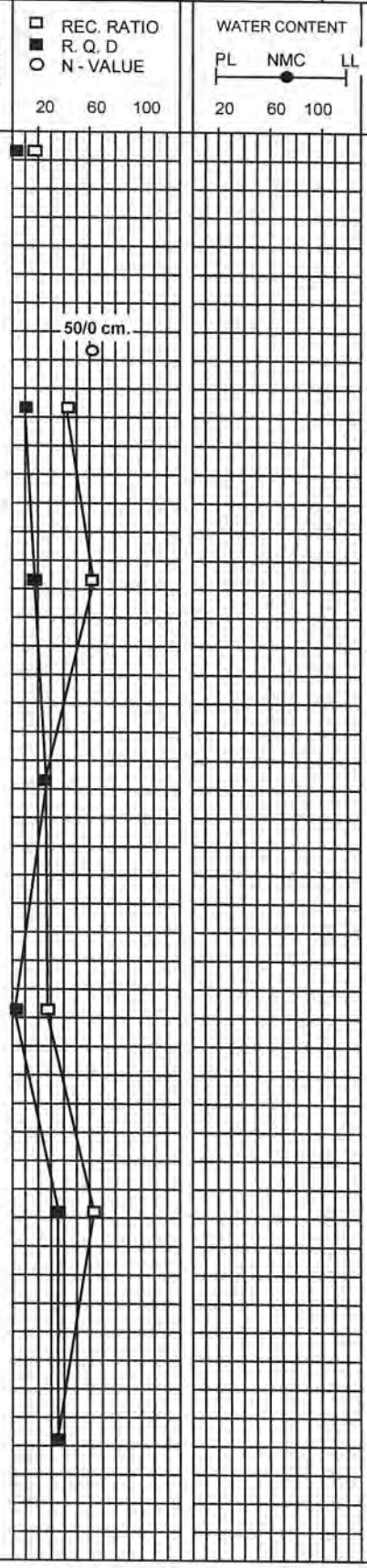
PROJECT : *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)*

LOCATION : *SITIO UGUIABAN, CAGAYAN DE ORO*

BORING NO.: **BH-8**
FINAL DEPTH: **10.00 m.**
GWT: **Not encountered.**
DATE STARTED: **Nov. 09, 2012**
DATE FINISHED: **Nov. 17, 2012**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	OTHER TEST RESULTS
	(0-0.5 m) Light gray, *GRAVEL*. (Rec: 50/8/0 cm.)	cs-1			qu (kPa)
1					
	(1.5-1.5 m) No Penetration	ss-1	Very dense	-	
2	(1.5-3.0 m) Gray, *BASALT/ANDESITE*. (Rec: 150/60/10 cm.)	cs-2			
3	(3.0-4.5 m) - same materials - (Rec: 150/90/23 cm.)	cs-3			qu=19064.
4	(4.5-6.0 m.) - same materials - (Rec: 150/36/36 cm.)	cs-4			
5					
6	(6.0-7.5 m) - same materials - (Rec: 150/37/0 cm.)	cs-5			
7					
	(7.5-9.0 m) - same materials - (Rec: 150/69/50 cm.)	cs-6			qu=47990.0
8					
9	(9.0-10.0 m) - same materials - (Rec: 100/34/34 cm.)	cs-7			
10	*End Borehole @ 10.00 m.*				



PROJECT:	PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	LOCATION:	SITIO UGUIABAN, CAGAYAN DE ORO
Borehole No.:	BH-8	Sample No.:	cs-3
Depth (m):	4.50-4.70		
Date sampled:	11-10-12	Date tested:	11-21-12
Tested by:	APO / RAC		

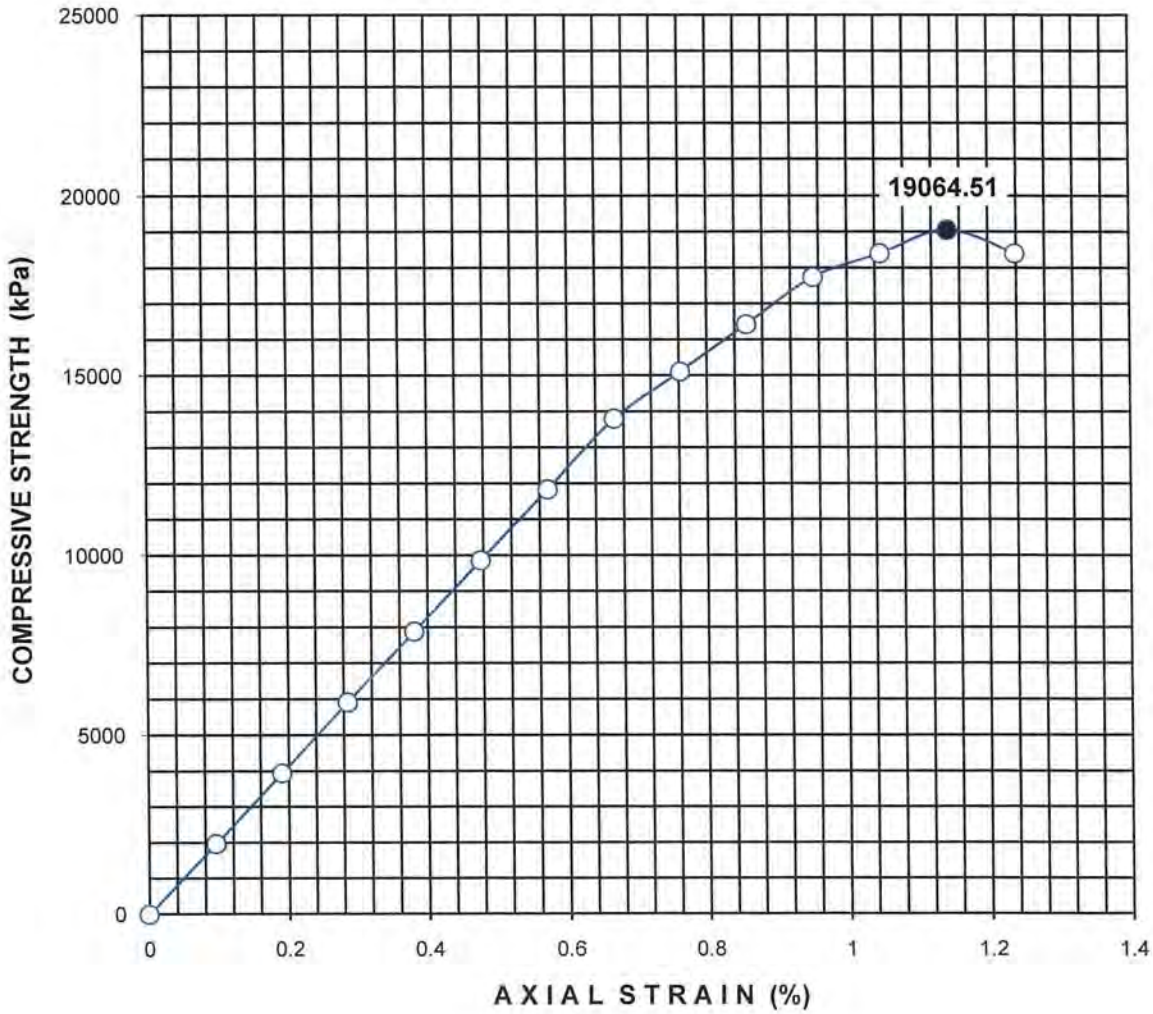
UNCONFINED COMPRESSION TEST REPORT

SAMPLE DATA:

Visual Classification: Gray, BASALT / ANDESITE

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.50
Moisture Content,	(%)=	4.14
Unit Weight,	(kN/m^3)=	22.41
Compressive Strength,	(kPa)	19064.51
Ave. Failure Strain,	(%)=	1.14

MODE OF FAILURE



PROJECT:	PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)			LOCATION:	SITIO UGUIABAN, CAGAYAN DE ORO
Borehole No.:	BH-8	Sample No.:	cs-6	Depth (m):	9.00-9.15
Date sampled:	11-10-12	Date tested:	11-21-12	Tested by:	APO / RAC

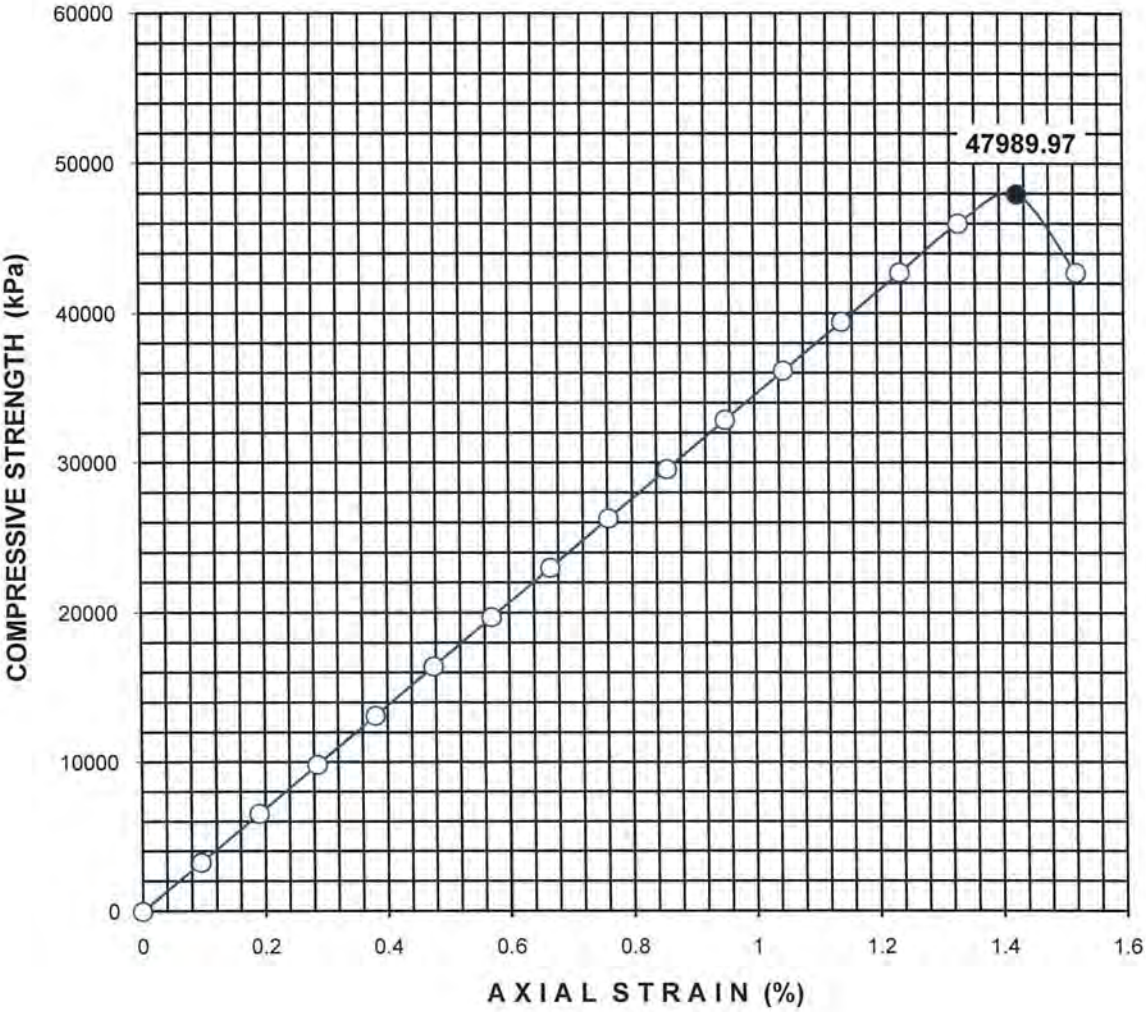
UNCONFINED COMPRESSION TEST REPORT

SAMPLE DATA:

Visual Classification: Gray, BASALT / ANDESITE

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.50
Moisture Content,	(%)=	2.81
Unit Weight,	(kN/m^3)=	22.35
Compressive Strength,	(kPa)	47989.97
Ave. Failure Strain,	(%)=	1.43

MODE OF FAILURE



O.1 Geological Investigation for Master Plan Study

(2) Riverbed Material Data

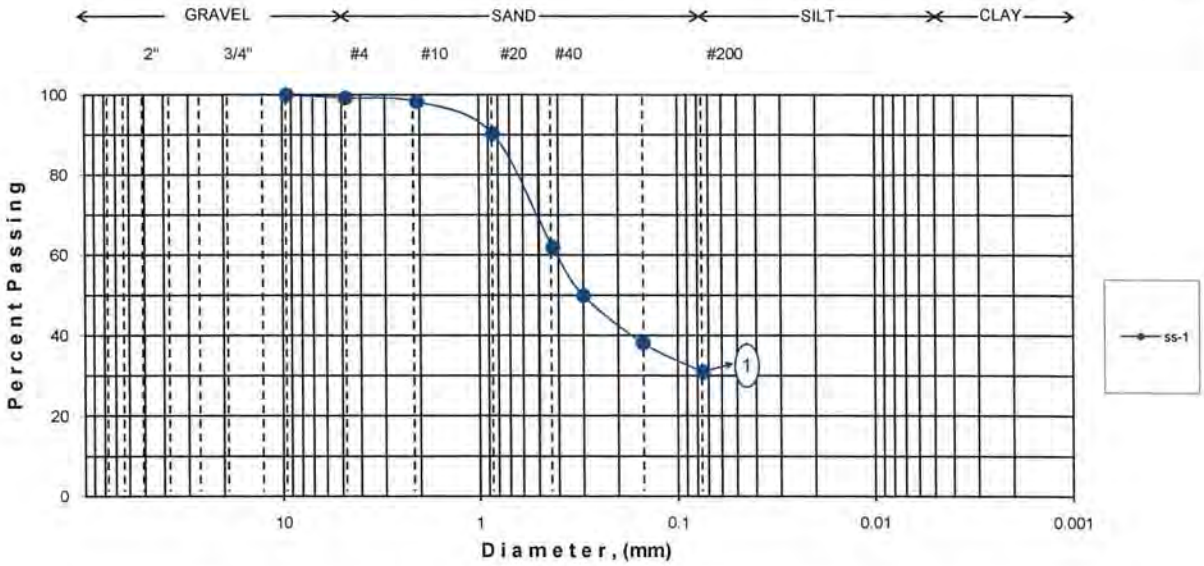
SUMMARY OF TEST RESULTS FROM RIVERBED
(PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO (FRIMP-CDOR)

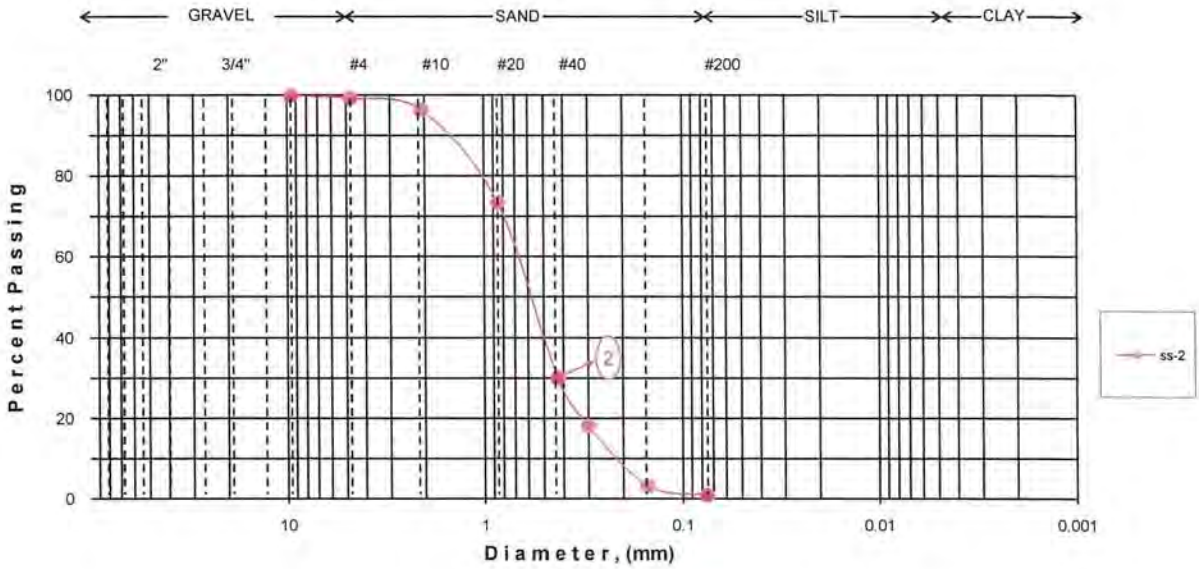
LOCATION	TP NO.	SAMPLE NO.	DEPTH (m)	SOIL DESCRIPTION	NMC (%)	SIEVE ANALYSIS % PASSING									ATTERBERG LIMITS		USCS	Specific Gravity
						1 1/2"	1"	3/8"	#4	#10	#20	#40	#100	#200	LL	PI		
Brgy. Bon Bon, Cagayan de Oro	RS-1	1	0	Light brown, silty SAND, with traces of fine gravel.	60.09			100	99	98	90	62	38	31	NP	NP	SP	2.69
		2	0.3	Gray, fine to medium SAND.	27.72			100	99	96	73	30	3	1	NP	NP	SM	2.70
Brgy. Pasil, Kauswagan, Cagayan de Oro	RS-2	1	0	Gray, coarse to medium SAND, with little amount of non-plastic silt.	14.19		100	98	94	73	40	24	19	16	NP	NP	SM	2.68
		2	0.3	Gray, coarse to medium SAND, with little amount of fine gravel.	6.38		100	93	87	59	17	3	0.54	0.14	NP	NP	SP	2.77
Osmeña Bridge, Carmen, Cagayan de Oro	RS-3	1	0	Gray, fine to medium SAND.	27.04			100	99	93	46	19	10	8	NP	NP	SW-SM	2.79
		2	0-0.30	Gray, fine to medium SAND.	19.34		100	98	96	85	54	18	3	0.55	NP	NP	SP	2.72
Carmen Steel Bridge, Carmen, Cagayan de Oro	RS-4	1	0	Gray, fine to medium SAND, with little amount of non-plastic silt.	31.66				100	99	61	22	15	13	NP	NP	SP	2.76
		2	0.30	Gray, fine to medium SAND.	23.86				100	98	84	19	2	0.71	NP	NP	SM	2.77
Rotonda Bridge, Carmen, Cagayan de Oro	RS-5	1	0	Gray, sandy GRAVEL.	2.84	93	81	53	33	19	12	5	0.23	0.08	NP	NP	GW	2.80
		2	0.30	Gray, GRAVEL, with sand.	0.91	100	81	54	41	32	18	2	0.69	0.09	NP	NP	GP	2.83
Pelaez Bridge , Cagayan de Oro	RS-6	1	River	Gray, fine to medium SAND, with traces of fine gravel and non-plastic silt.	14.22		100	99	98	93	70	43	11	6	NP	NP	SM	2.76
		2	Riverside	Gray, medium to fine SAND, with little amount of fine gravel and non-plastic silt.	24.23	100	96	83	77	70	62	49	22	19	NP	NP	SM	2.80

SUMMARY OF TEST RESULTS FROM RIVERBED
(PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO (FRIMP-CDOR)

LOCATION	TP NO.	SAMPLE NO.	DEPTH (m)	SOIL DESCRIPTION	NMC (%)	SIEVE ANALYSIS % PASSING									ATTERBERG LIMITS		USCS	Specific Gravity
						1 1/2"	1"	3/8"	#4	#10	#20	#40	#100	#200	LL	PI		
Cabula Bridge, Cagayan de Oro	RS-7	1	River	Gray, SAND and GRAVEL mixture, with traces of non-plastic silt.	13.40		100	88	52	18	6	4	2	1	NP	NP	GP-SP	2.74
		2	Riverside	Gray, silty SAND, non-plastic.	36.83				100	100	99	97	55	32	NP	NP	SM	2.77
Uguiaban Bridge, Cagayan de Oro	RS-8	1	River	Gray, medium to coarse SAND, with some fine gravel and little amount of non-plastic silt.	9.99				100	71	70	49	39	14	NP	NP	SM	2.72
		2	Riverside	Gray, fine to medium SAND, with some fine gravel and traces of non-plastic silt.	51.99	100	98	88	75	60	42	20	5	2	NP	NP	SP	2.78
Baungon, Misamis Oriental	RS-9	1	0	Gray, coarse to medium SAND, with little amount of fine gravel	15.29		100	98	81	58	36	16	1	0.56	NP	NP	SP	2.85
		2	0.30	Gray, coarse to medium SAND, with little amount of fine gravel	15.07		100	97	83	60	38	18	2	0.87	NP	NP	SP	2.86
Baungon, Misamis Oriental	RS-10	1	0	Gray, GRAVEL, with some sand.	0.94	100	84	41	23	9	1	0.71	0.56	0.46	NP	NP	GP	2.78
		2	0.30	Gray, GRAVEL, with traces of sand	1.07	59	12	7	7	7	7	4	0.91	0.15	NP	NP	GP	2.79

GRAIN-SIZE DISTRIBUTION CURVES

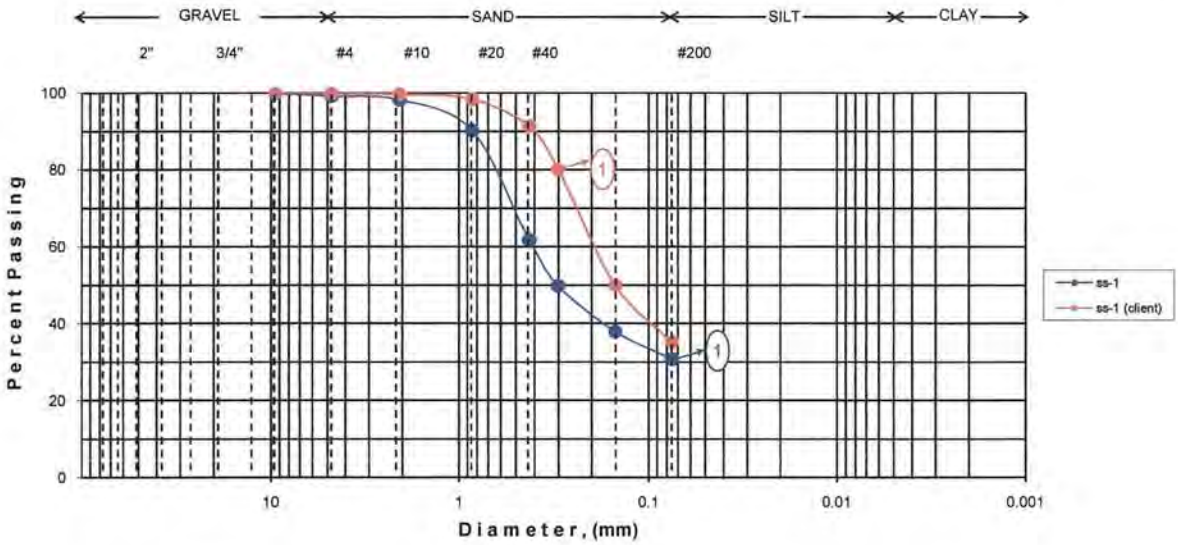


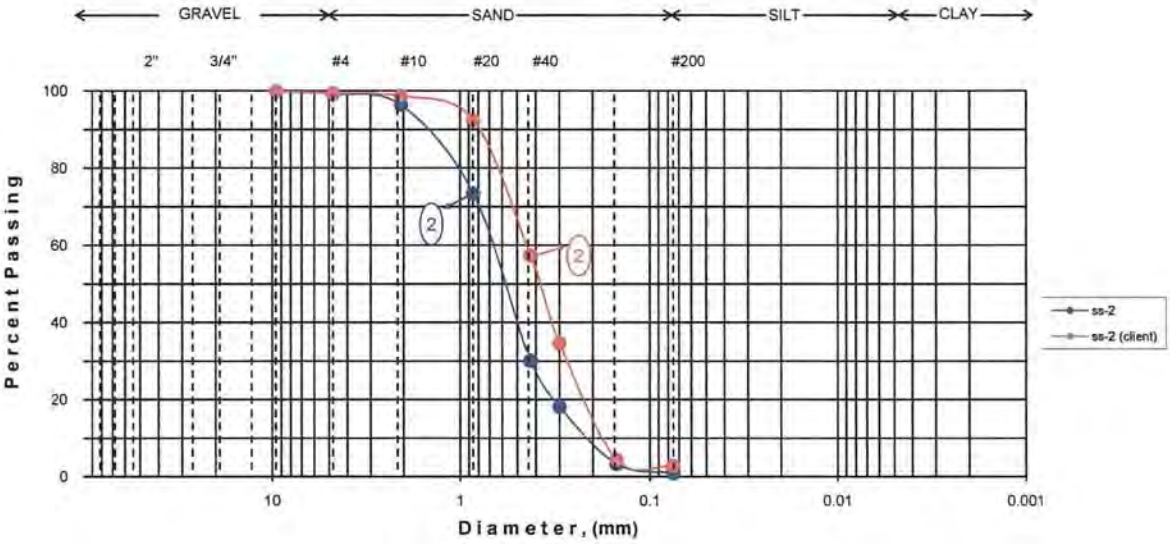


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. BON BON, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-1	ss-1	0	1	60.07	NP	NP	NP	SM	Light brown, silty SAND, non-plastic
RS-1	ss-2	0.3	2	27.72	NP	NP	NP	SP	Gray, fine to medium SAND

COMPARISON OF GRAIN-SIZE DISTRIBUTION CURVES

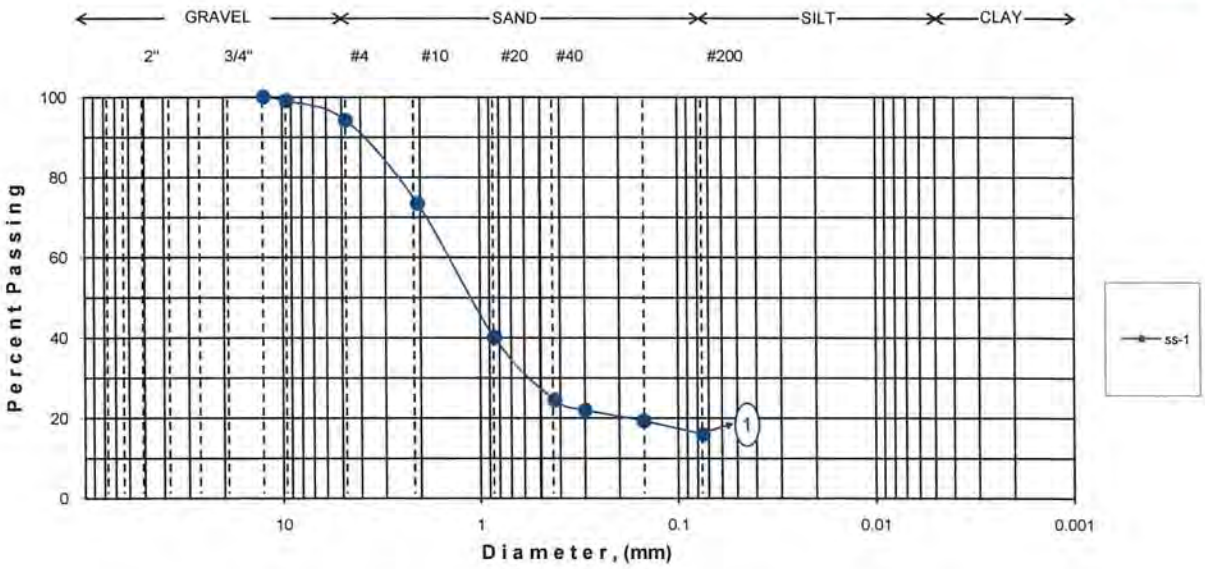


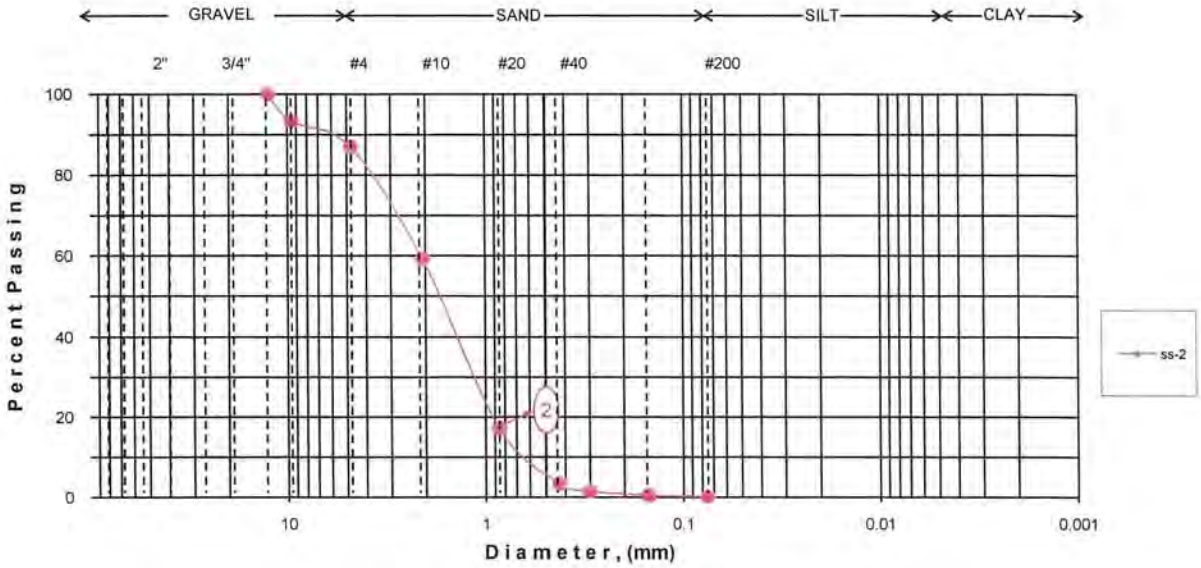


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. BON BON, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-1	ss-1	0.00	1	60.07	NP	NP	NP	SM	Light brown, silty SAND, non-plastic
RS-1	ss-1 (client)	0.00	1	44.08	NP	NP	NP	SM	Light brown, silty SAND, non-plastic
RS-1	ss-2	0.30	2	27.72	NP	NP	NP	SP	Gray, fine to medium SAND
RS-1	ss-2 (client)	0.00	2	26.55	NP	NP	NP	SP	Gray, fine to medium SAND

GRAIN-SIZE DISTRIBUTION CURVES

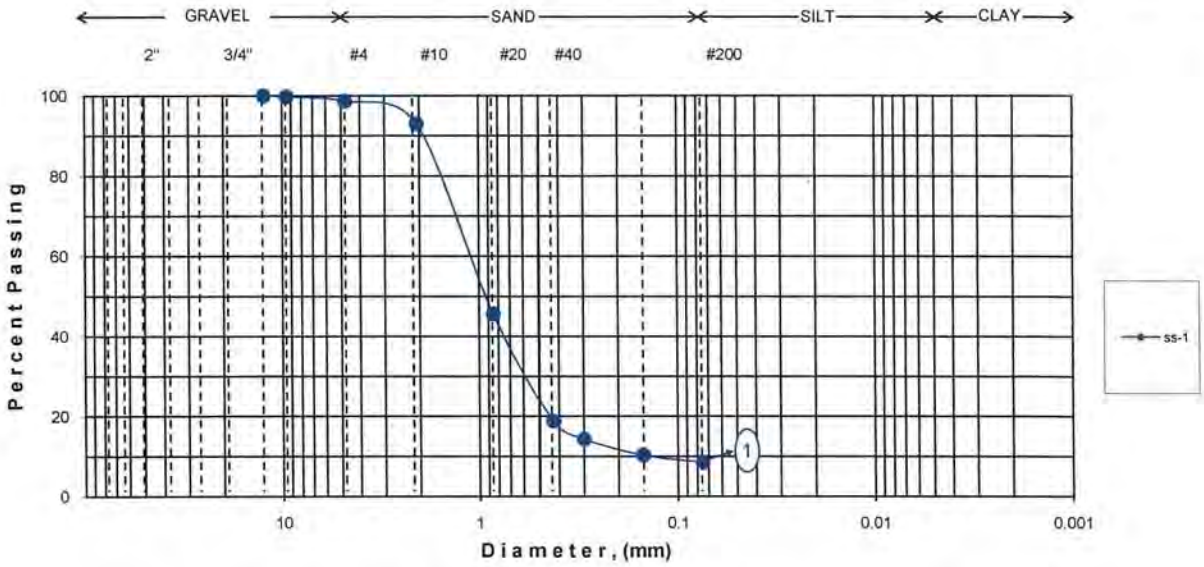


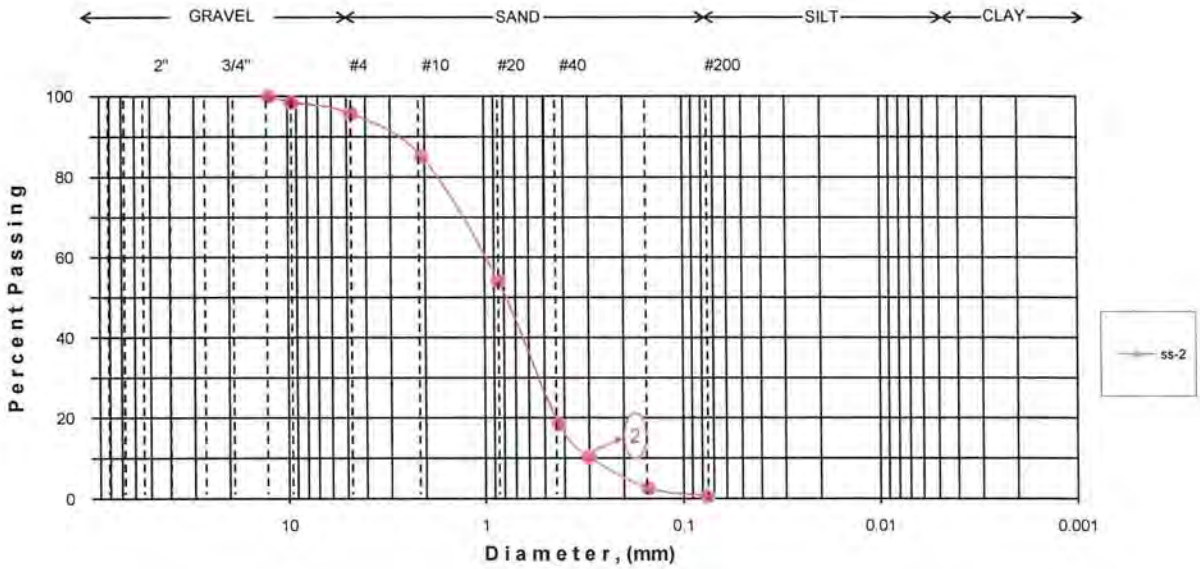


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-2	ss-1	0	1	14.19	NP	NP	NP	SM	Gray, coarse to medium SAND, with little amount of non-plastic silt
RS-2	ss-2	0.3	2	6.38	NP	NP	NP	SP	Gray, coarse to medium SAND, with little amount of fine gravel

GRAIN-SIZE DISTRIBUTION CURVES

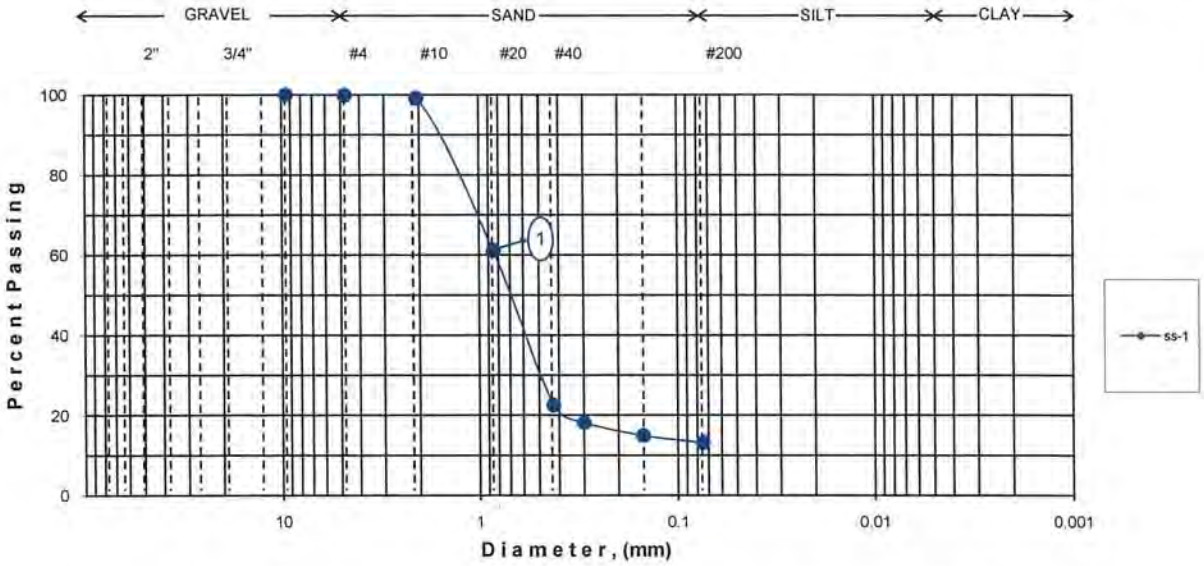


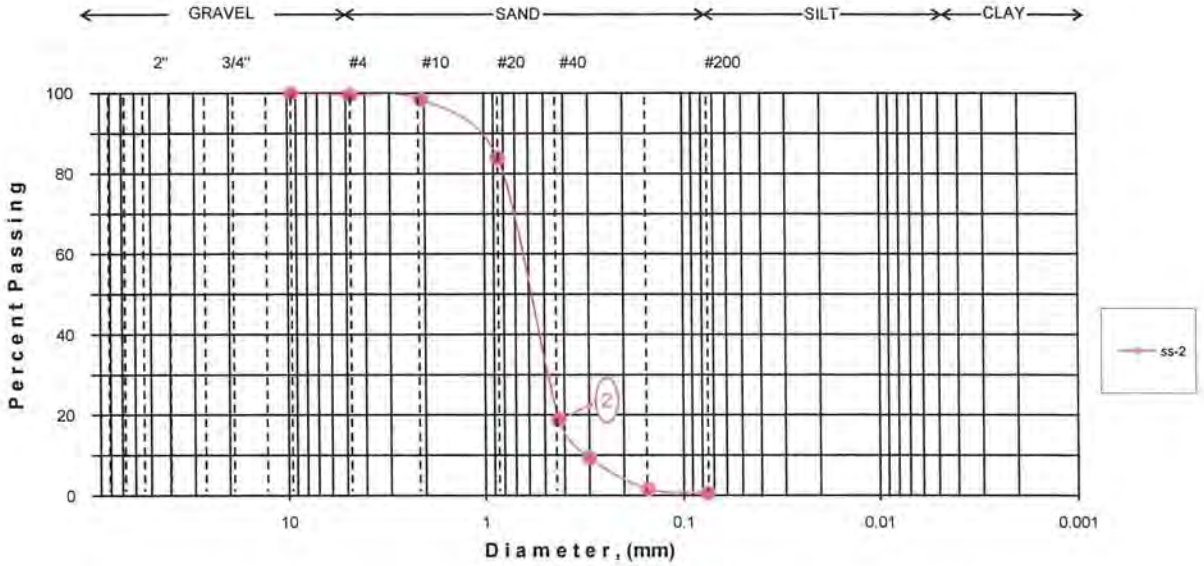


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), OSMEÑA BRIDGE, CARMEN, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-3	ss-1	0	1	27.04	NP	NP	NP	SW-SM	Gray, fine to medium SAND
RS-3	ss-2	0.3	2	19.34	NP	NP	NP	SP	Gray, fine to medium SAND

GRAIN-SIZE DISTRIBUTION CURVES

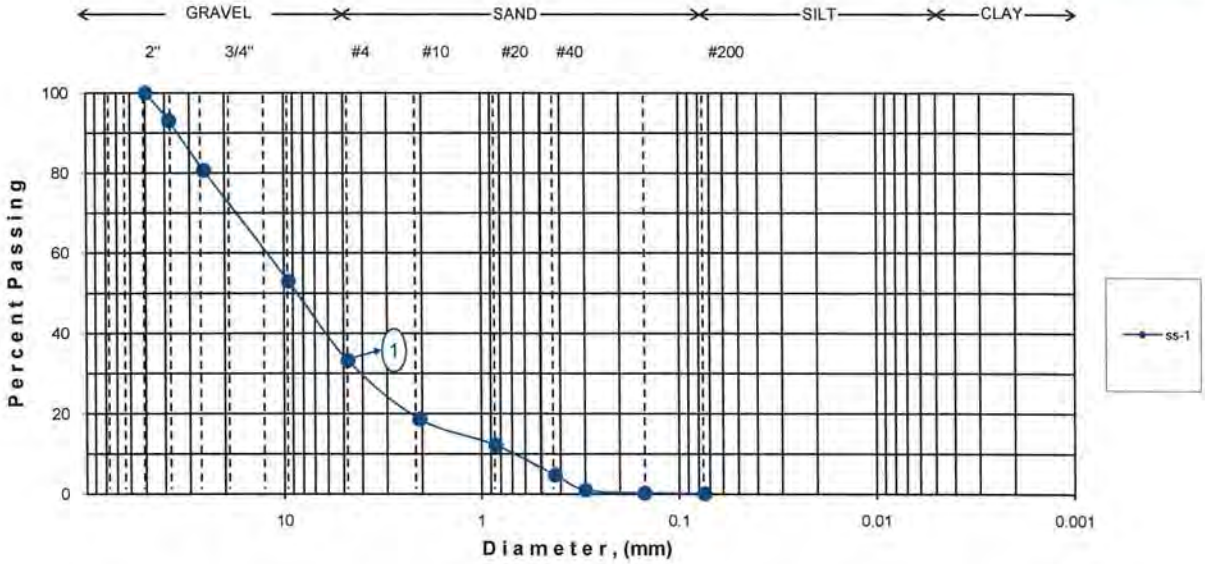


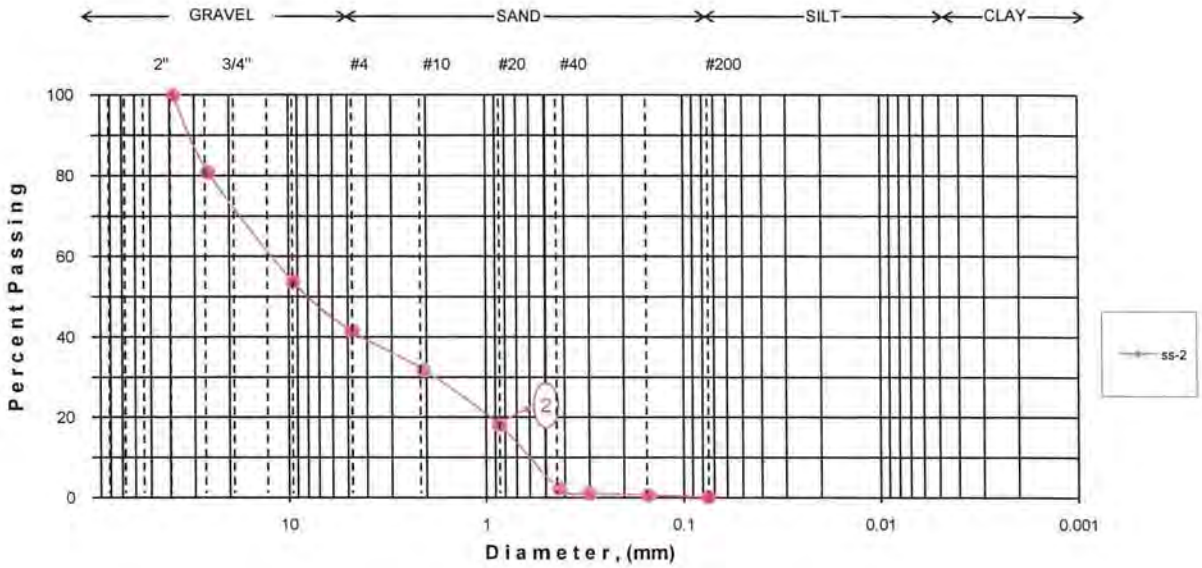


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CARMEN STEEL BRDIGE, CARMEN, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-4	ss-1	0	1	31.66	NP	NP	NP	SM	Gray, fine to medium SAND, with little amount of non-plastic silt
RS-4	ss-2	0.3	2	23.86	NP	NP	NP	SP	Gray, fine to medium SAND

GRAIN-SIZE DISTRIBUTION CURVES

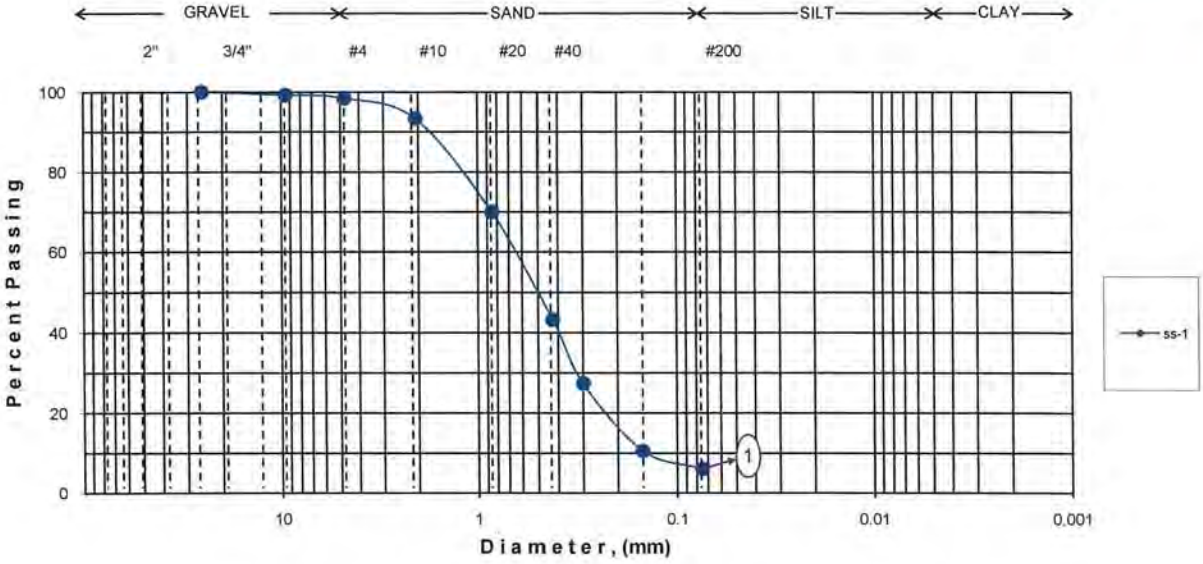


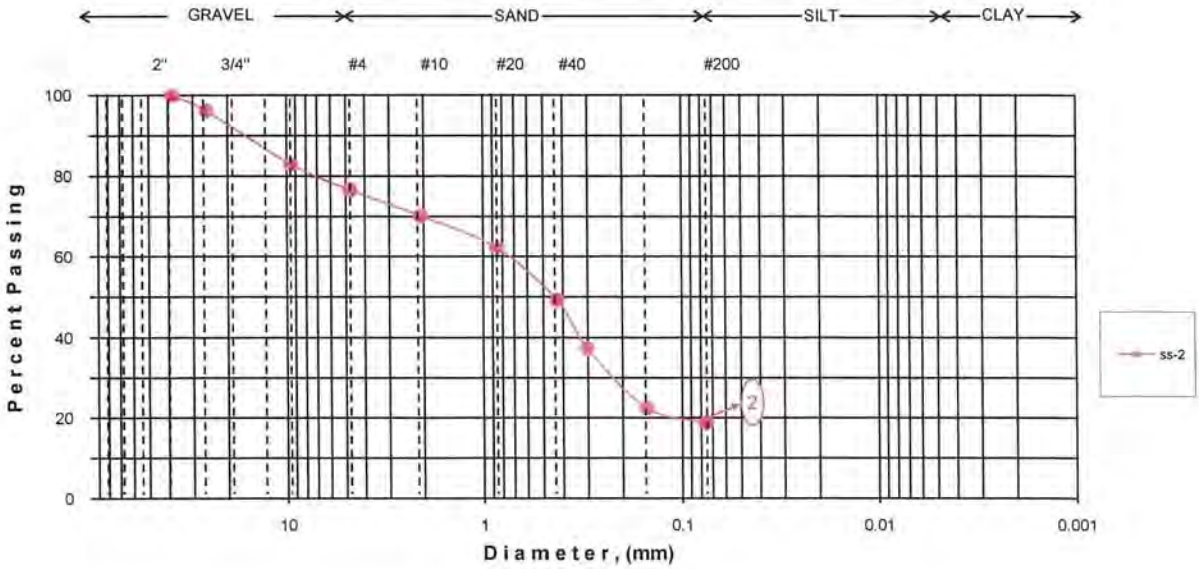


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), ROTONDA BRIDGE, CARMEN, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-5	ss-1	0	1	2.84	NP	NP	NP	GW	Gray, sandy GRAVEL
RS-5	ss-2	0.3	2	0.91	NP	NP	NP	GP	Gray, GRAVEL, with sand

GRAIN-SIZE DISTRIBUTION CURVES

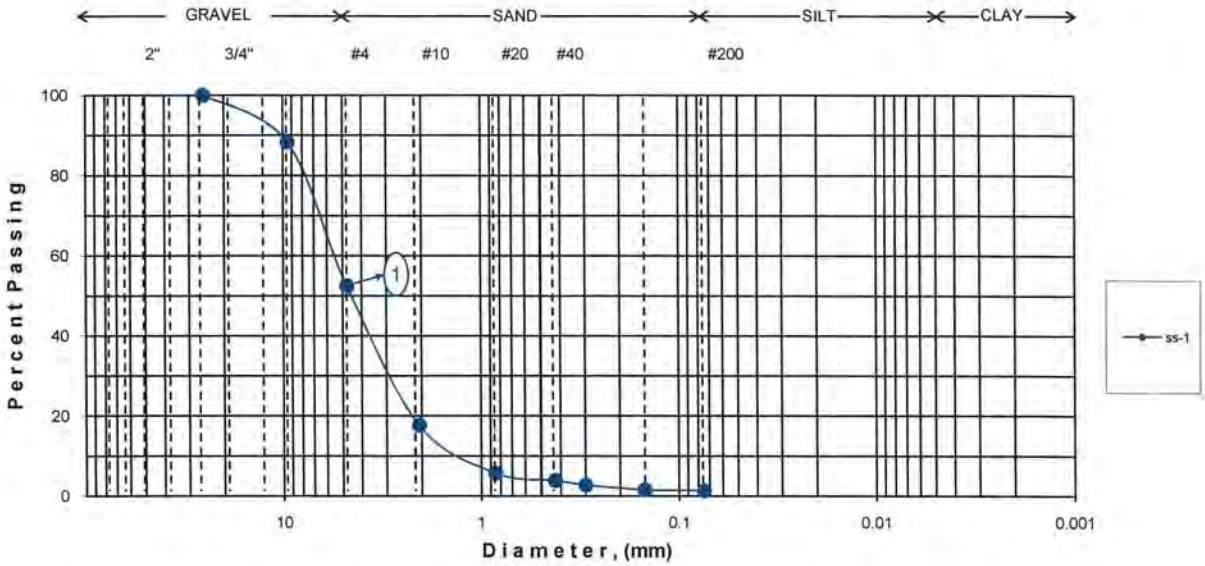


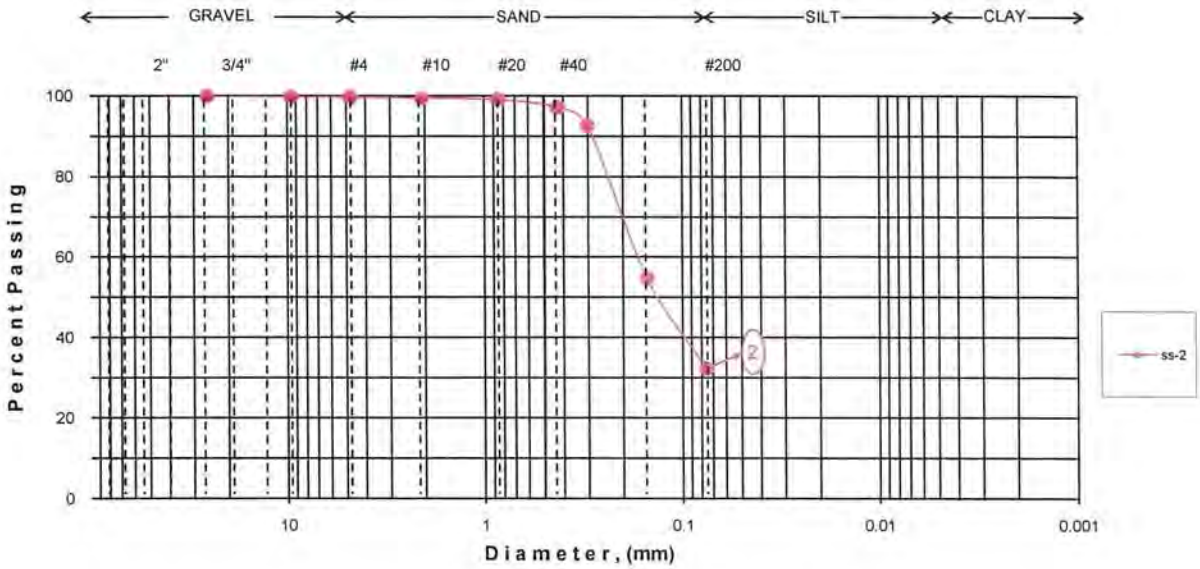


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), PELAEZ BRDIGE, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-6	ss-1	River	1	14.22	NP	NP	NP	SM	Gray, fine to medium SAND
RS-6	ss-2	Riverside	2	24.23	NP	NP	NP	SM	Gray, medium to fine SAND, with little amount of fine gravel

GRAIN-SIZE DISTRIBUTION CURVES

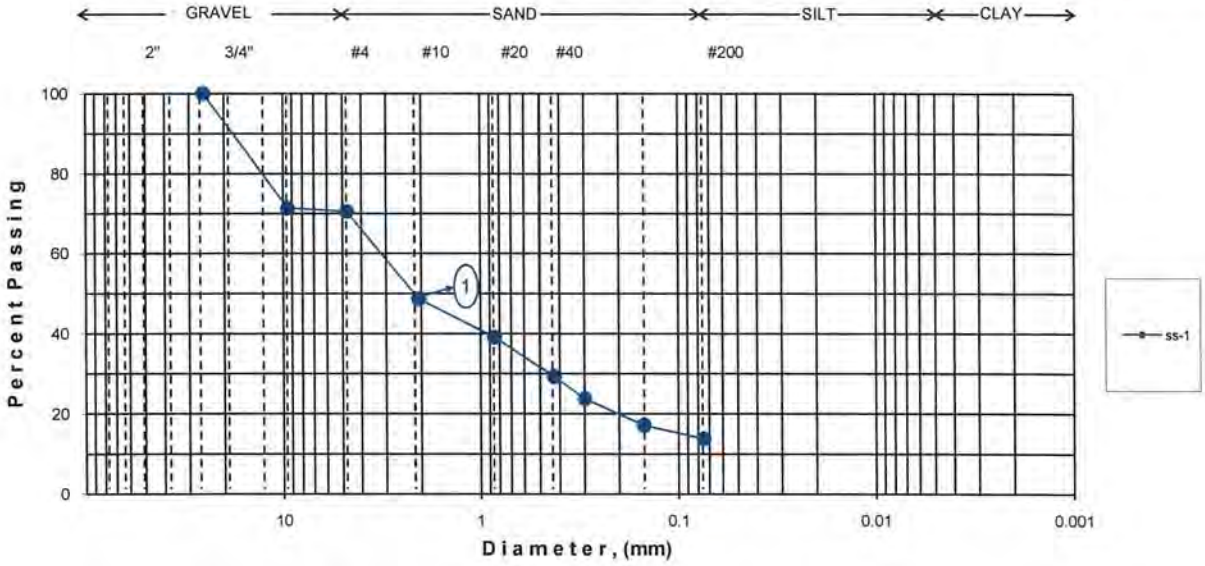


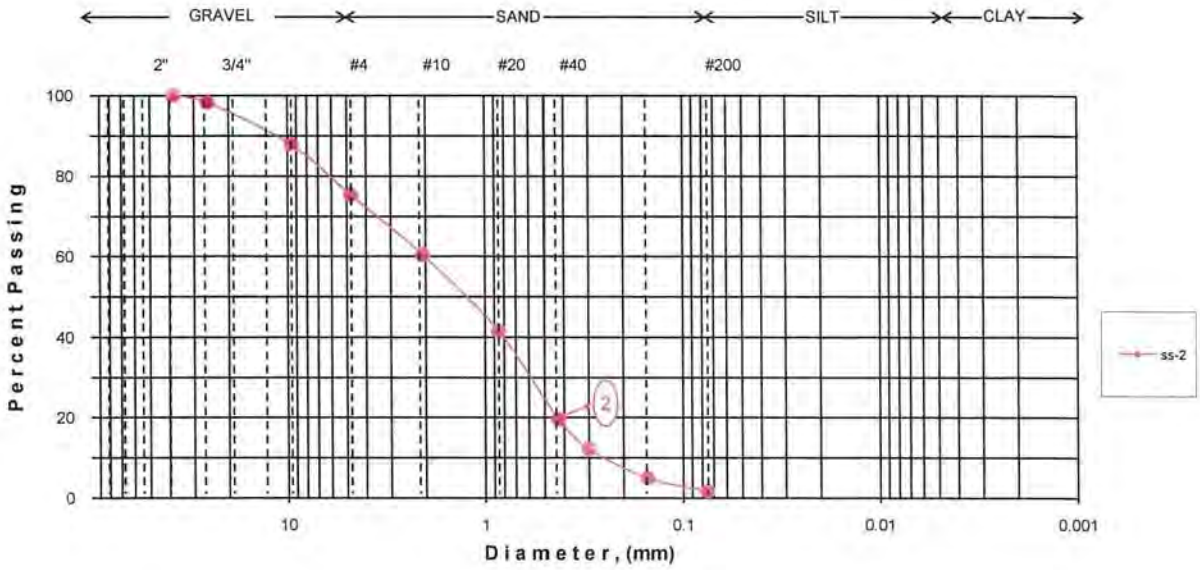


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), PELAEZ BRDIGE, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-7	ss-1	River	1	13.40	NP	NP	NP	GP-SP	Gray, SAND and GRAVEL mixture
RS-7	ss-2	Riverside	2	36.83	NP	NP	NP	SM	Gray, silty SAND, nopn-plastic

GRAIN-SIZE DISTRIBUTION CURVES

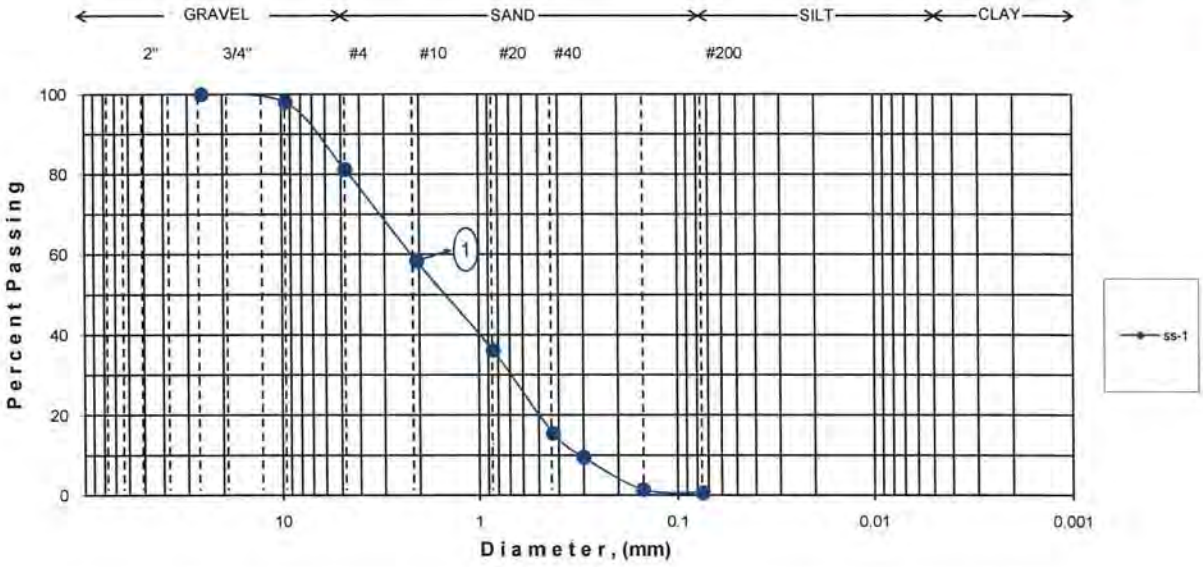


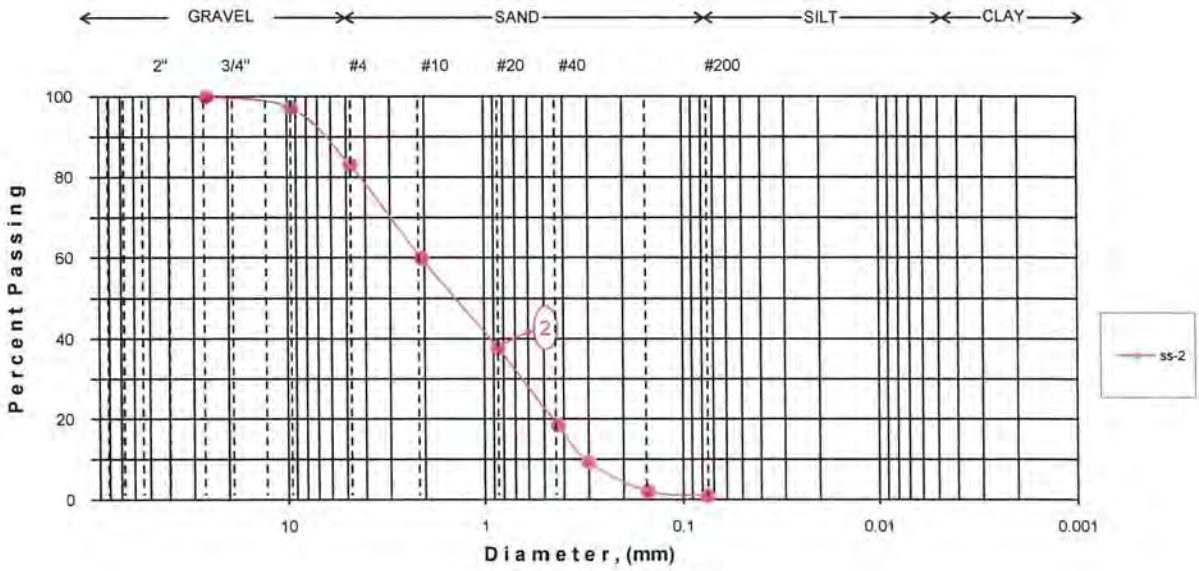


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), UGUIABAN BRIDGE, CAGAYAN DE ORO*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-8	ss-1	River	1	9.99	NP	NP	NP	SM	Gray, medium to coarse SAND, with some fine gravel
RS-8	ss-2	Riverside	2	51.99	NP	NP	NP	SP	Gray, fine to medium SAND, with some fine gravel

GRAIN-SIZE DISTRIBUTION CURVES

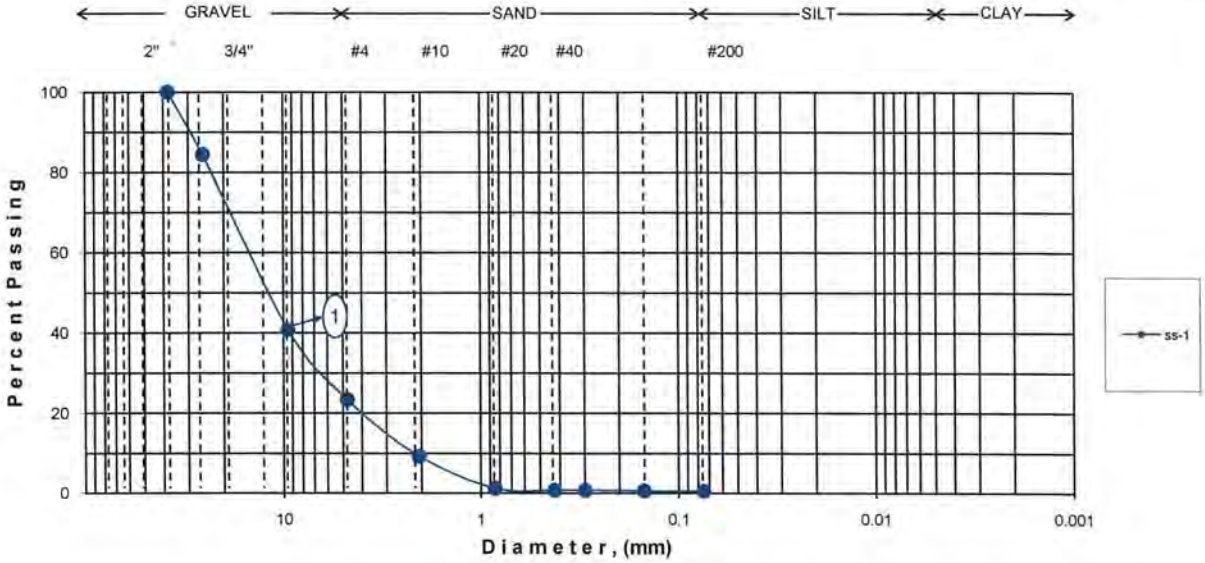


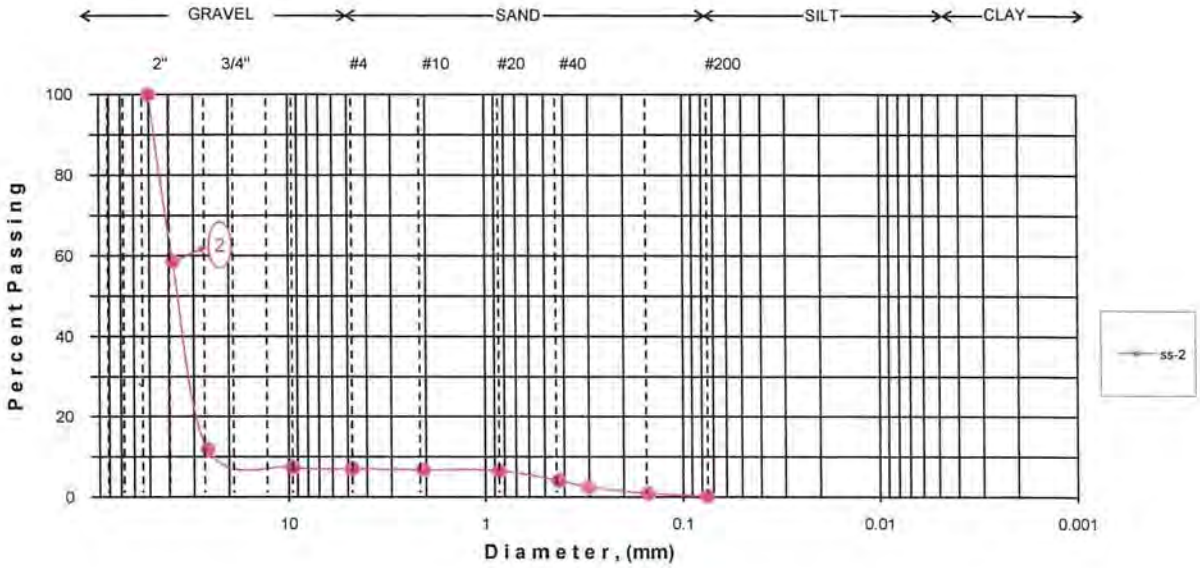


PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BAUNGON, MISAMIS ORIENTAL*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-9	ss-1	0	1	15.29	NP	NP	NP	SP	Gray, coarse to medium SAND, with little amount of fine gravel
RS-9	ss-2	0.3	2	15.07	NP	NP	NP	SP	Gray, coarse to medium SAND, with little amount of fine gravel

GRAIN-SIZE DISTRIBUTION CURVES





PROJECT SITE: *PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BAUNGON, MISAMIS ORIENTAL*

Riverbed No.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
RS-10	ss-1	0	1	0.94	NP	NP	NP	GP	Gray, GRAVEL, with some sand
RS-10	ss-2	0.3	2	1.07	NP	NP	NP	GP	Gray, GRAVEL, with traces of sand

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. BON BON, CAGAYAN DE ORO** RIVERBED.: **RS-1** DATE TESTED: **Nov. 11, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	181.50	180.29			181.98	181.59
Temperature, °C	30	30			29	29
Wt. of Flask + Water = Wbw	150.08	148.78			150.44	150.04
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.58	18.49			18.46	18.45
Specific Gravity, Gs = Ws / Ww	2.69	2.70			2.71	2.71
Viscosity Correction	0.9957	0.9957			0.9960	0.9960
Specific Gravity corrected for Temp.	**2.68**	**2.69**			**2.70**	**2.70**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	RIVERBED NO.: **RS-2** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	193.53	192.50			182.69	183.56
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	162.11	161.18			150.69	151.51
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.58	18.68			18	17.95
Specific Gravity, Gs = Ws / Ww	2.69	2.68			2.78	2.79
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.68**	**2.67**			**2.77**	**2.77**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **ORMEÑA BRIDGE, CARMEN, CAGAYAN DE ORO**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	RIVERBED NO.: **RS-3** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	180.47	181.37			181.95	181.62
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	148.35	149.21			150.27	149.91
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	17.88	17.84			18.32	18.29
Specific Gravity, Gs = Ws / Ww	2.80	2.80			2.73	2.73
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.78**	**2.79**			**2.72**	**2.72**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **CARMEN STEEL BRDIGE, CARMEN, CAGAYAN DE ORO**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	RIVERBED NO.: **RS-4** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	194.06	188.57			182.98	192.75
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	162.18	156.55			151.02	160.68
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.12	17.98			18.04	17.93
Specific Gravity, Gs = Ws / Ww	2.76	2.78			2.77	2.79
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.75**	**2.77**			**2.76**	**2.78**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **ROTONDA BRIDGE, CARMEN, CAGAYAN DE ORO**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	RIVERBED NO.: **RS-5** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	193.42	183.12			193.26	182.18
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	161.29	150.81			160.82	149.84
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	17.87	17.69			17.56	17.66
Specific Gravity, Gs = Ws / Ww	2.80	2.83			2.85	2.83
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.79**	**2.81**			**2.84**	**2.82**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **PELAEZ BRIDGE, CAGAYAN DE ORO** RIVERBED NO.: **RS-6** DATE TESTED: **Nov. 19, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-1				SS-2	
Depth (m)	River				Riverside	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	181.98	180.79			194.23	193.49
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	150.08	148.78			162.11	161.29
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.1	17.99			17.88	17.8
Specific Gravity, Gs = Ws / Ww	2.76	2.78			2.80	2.81
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.75**	**2.77**			**2.79**	**2.80**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **CABULA BRIDGE, CAGAYAN DE ORO** RIVERBED NO.: **RS-7** DATE TESTED: **Nov. 19, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-1				SS-2	
Depth (m)	River				Riverside	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	183.36	182.71			193.13	182.77
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	151.51	151.02			161.11	150.81
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.15	18.31			17.978	18.04
Specific Gravity, Gs = Ws / Ww	2.75	2.73			2.78	2.77
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.75**	**2.72**			**2.77**	**2.76**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **UQUIABAN BRIDGE, CAGAYAN DE ORO** RIVERBED NO.: **RS-8** DATE TESTED: **Nov. 19, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-1				SS-2	
Depth (m)	River				Riverside	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	192.52	193.37			181.93	182.47
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	160.82	161.68			149.84	150.37
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	18.3	18.31			17.91	17.9
Specific Gravity, Gs = Ws / Ww	2.73	2.73			2.79	2.79
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.72**	**2.72**			**2.78**	**2.78**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BAUNGON, MISAMIS ORIENTAL** RIVERBED NO.: **RS-9** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	194.35	194.06			182.10	182.53
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	161.86	161.46			149.50	149.93
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	17.51	17.4			17.4	17.4
Specific Gravity, Gs = Ws / Ww	2.86	2.87			2.87	2.87
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.84**	**2.86**			**2.86**	**2.86**

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **BAUNGON, MISAMIS ORIENTAL** RIVERBED NO.: **RS-10** DATE TESTED: **Nov. 14, 2012** TESTED BY: **BEC / APO** SHEET NO. **1 of 1**
PROJECT: PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR)	

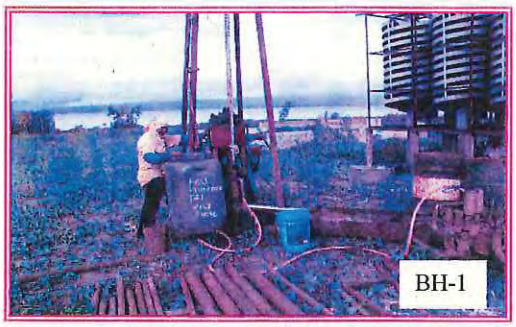
Sample Number	SS-1				SS-2	
Depth (m)	0				0.30	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	194.20	188.72			182.49	194.33
Temperature, °C	30	30			30	30
Wt. of Flask + Water = Wbw	162.18	156.55			150.37	162.18
Wt. of Dry Soil = Ws	50	50			50	50
Wt. of Water, Ww = Ws + Wbw - Wbws	17.98	17.83			17.88	17.85
Specific Gravity, Gs = Ws / Ww	2.78	2.80			2.80	2.80
Viscosity Correction	0.9957	0.9957			0.9957	0.9957
Specific Gravity corrected for Temp.	**2.77**	**2.79**			**2.78**	**2.79**

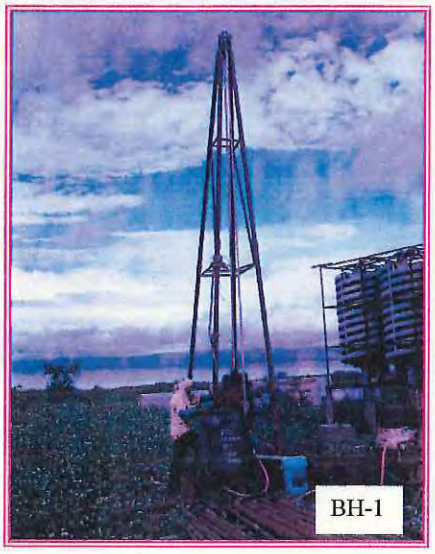
Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, °C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

O.1 Geological Investigation for Master Plan Study

(3) Site Photographs



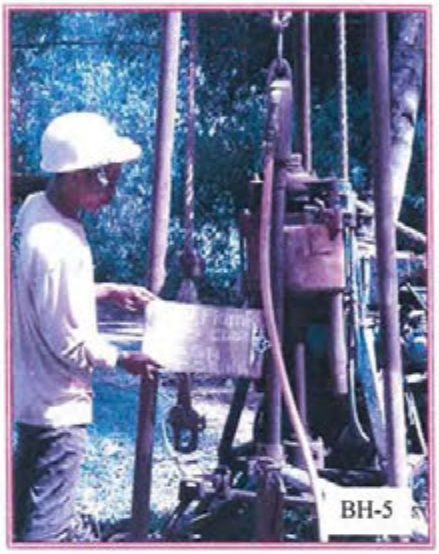


PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. BON BON, CAGAYAN DE ORO

PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. SAN ROQUE, BLOCK 4, MACABALAN, CAGAYAN DE ORO

PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO

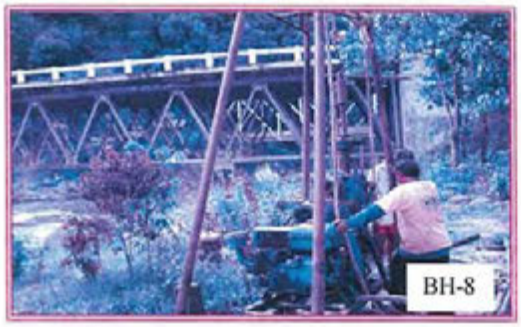
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), KAUSWAGAN, CAGAYAN DE ORO

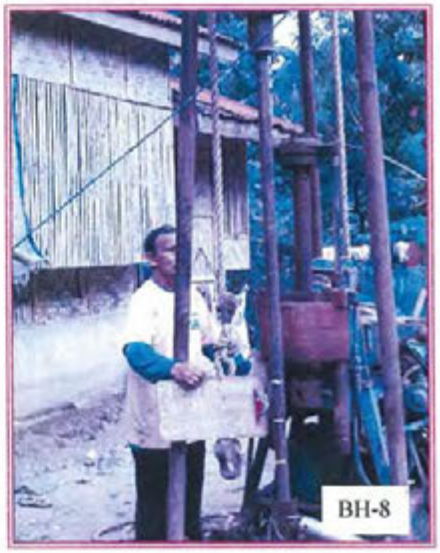


PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CARMEN, CAGAYAN DE ORO

PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. TIBASAK, CAGAYAN DE ORO

PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CARMEN, CAGAYAN DE ORO





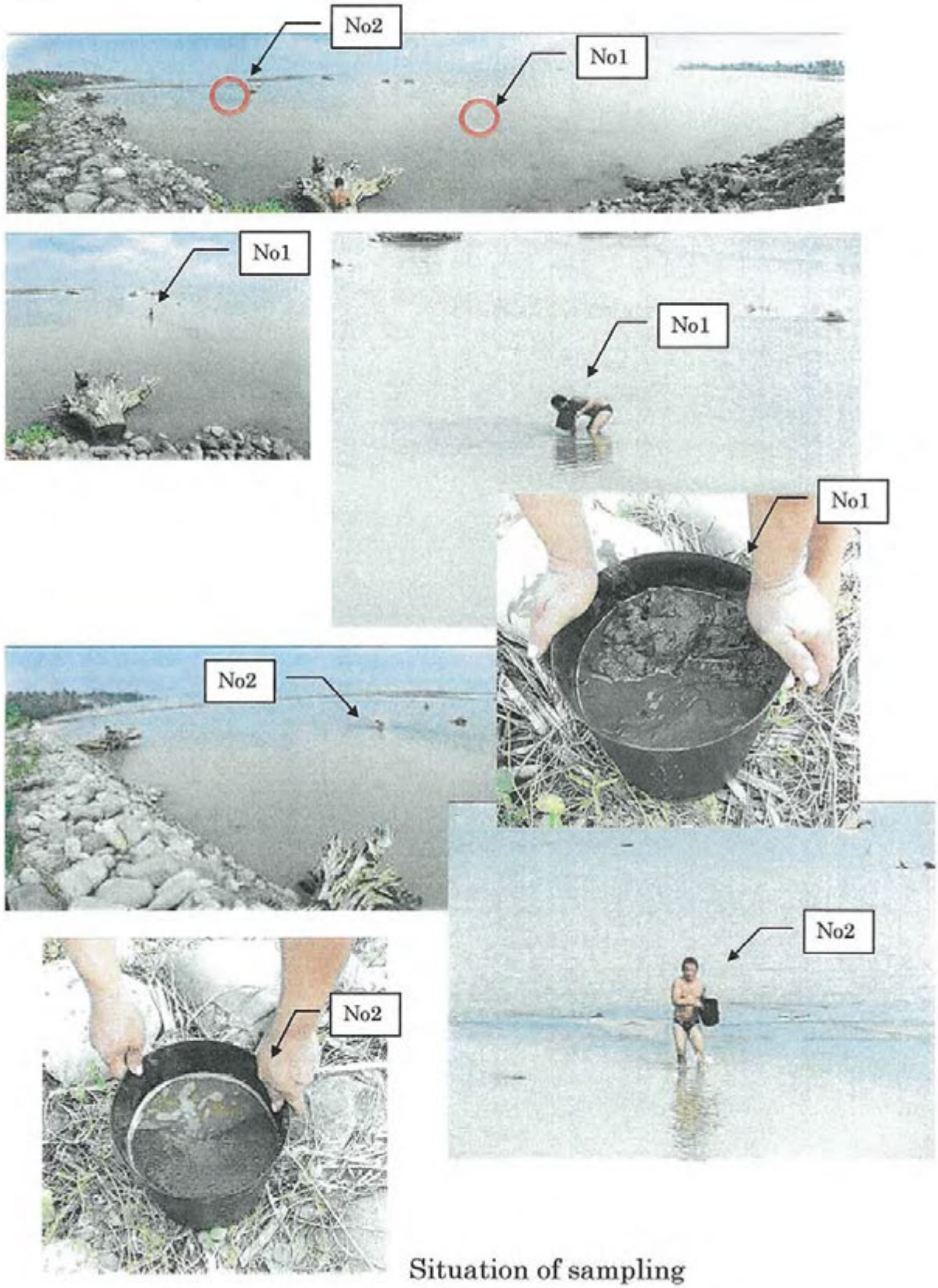
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), SITIO UGUIABAN, CAGAYAN DE ORO

TYPICAL SHOTS OF ROUTINARY TESTS SUCH AS GRAIN SIZE ANALYSIS, HYDROMETER, LIQUID AND PLASTIC LIMIT TESTS.

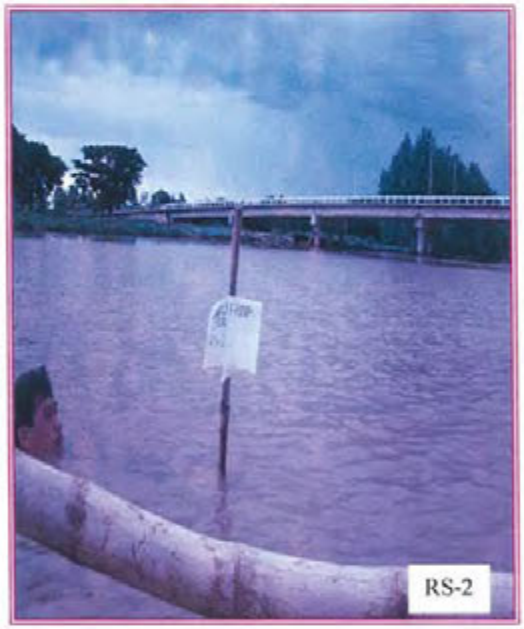
Core samples recovered from BH-8.

Various diamond bits (core drilling) and Chopping Bit (wash boring) used in advancing the boreholes.

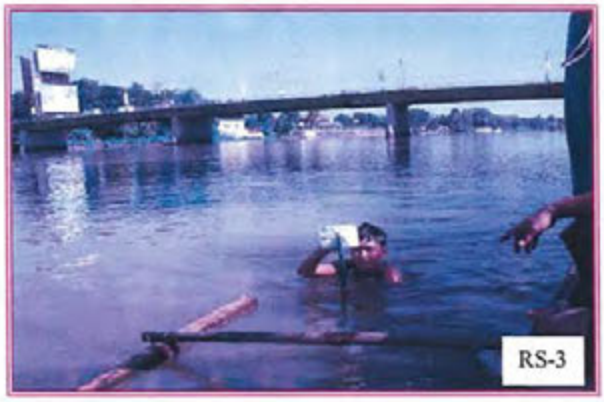
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. BON BON, CAGAYAN DE ORO



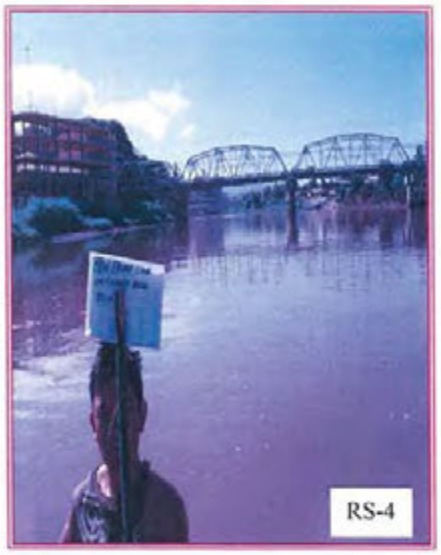
Situation of sampling



PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BRGY. PASIL, KAUSWAGAN, CAGAYAN DE ORO

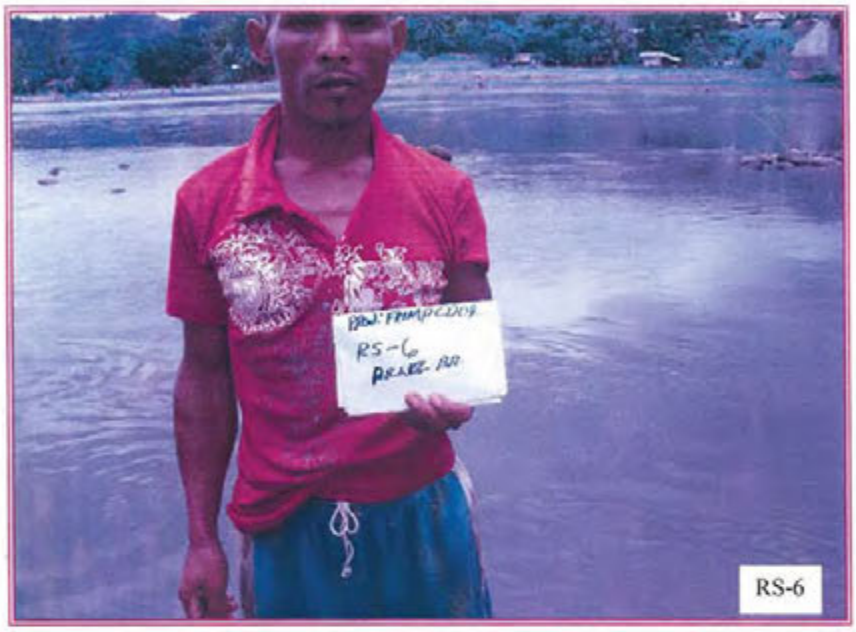


PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), OSMEÑA BRIDGE, CARMEN, CAGAYAN DE ORO



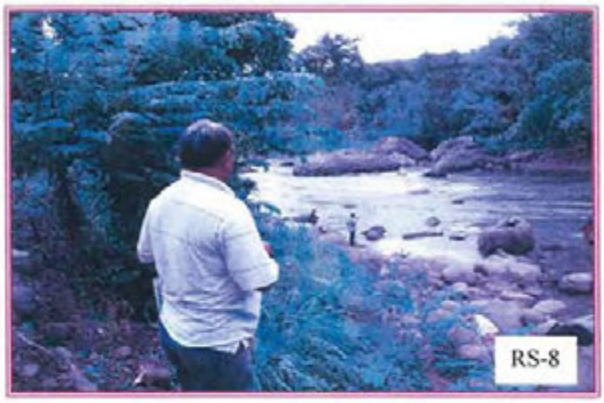
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CARMEN STEEL BRIDGE, CARMEN, CAGAYAN DE ORO

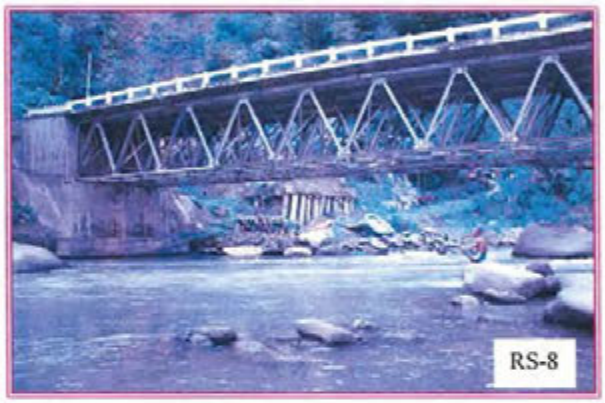
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), ROTONDA BRIDGE, CARMEN, CAGAYAN DE ORO



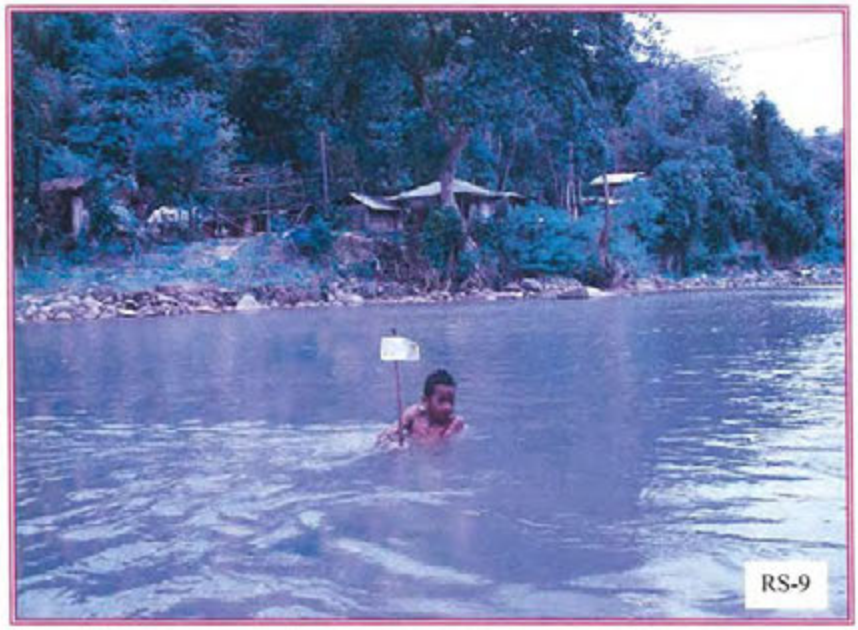
PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), PALAEZ BRIDGE, CAGAYAN DE ORO

PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), CABULA BRIDGE, CAGAYAN DE ORO

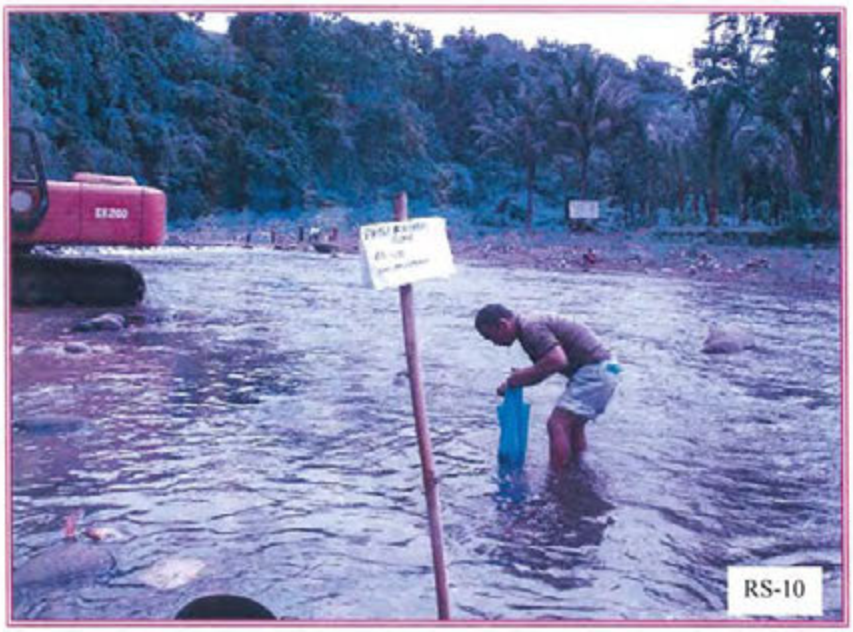




PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), UGUIABAN BRIDGE, CAGAYAN DE ORO

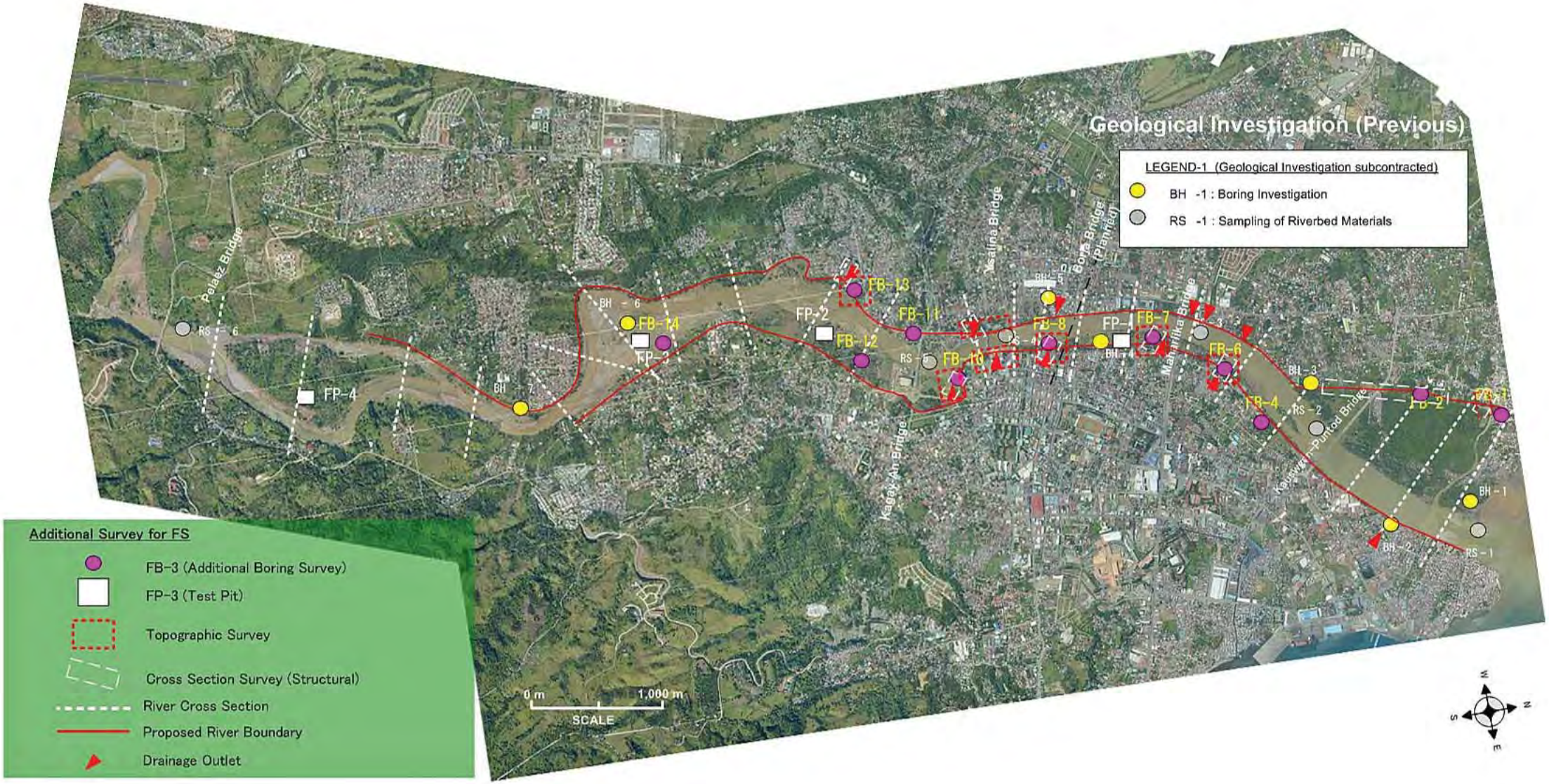


PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BAUNGON, MISAMIS ORIENTAL



PREPARATORY SURVEY FOR FLOOD RISK MANAGEMENT PROJECT FOR CAGAYAN DE ORO RIVER (FRIMP-CDOR), BAUNGON, MISAMIS ORIENTAL

O.2 Geological Investigation for Feasibility Study


Geological Investigation (Previous)
LEGEND-1 (Geological Investigation subcontracted)
BH -1 : Boring Investigation
RS -1 : Sampling of Riverbed Materials
Additional Survey for FS
FB-3 (Additional Boring Survey)
FP-3 (Test Pit)
Topographic Survey
Cross Section Survey (Structural)
River Cross Section
Proposed River Boundary
Drainage Outlet
0 m
1,000 m
SCALE
Pelaez Bridge
Kagay-An Bridge
Isalina Bridge
Boys Bridge (Planned)
Makabilika Bridge
Kauswagan-Puntod Bridge
FP-4
FP-2
FB-13
FB-14
FB-12
FB-11
FB-10
FB-8
FB-7
FB-6
FB-4
FB-2
FB-1
BH - 1
BH - 2
BH - 3
BH - 4
BH - 6
BH - 7
RS - 1
RS - 2
RS - 4
RS - 5
RS - 6

O.2 Geological Investigation for Feasibility Study

(1) Final Borehole Logs and Summary of Test Results

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 940747.508	Borehole No.: **FB-1**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 461160.932	Date Started: 12-Jul-13 1431H
CLIENT:	JICA Survey Team	Elev (m): 1.934	Date Finished: 14-Jul-13 1700H
STRUCTURE:	Proposed Culvert	Depth, (m): 40.0	

Drilling Rig: "TOHO w/ "535" Bean Royal Water Pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing NW	Drill Rods: AW		07/13/13	1134H	12.00	9.01	0.74	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		07/13/13	1310H	12.00	9.01	0.41	Fair
Core Bit: Not used	Corebarrel: Not used		07/14/13	1141H	21.00	13.37	1.01	Fair

Logged by:DC Checked by: JTF Edited by: GBP

N - VALUES / RQD: 10 20 30 40 50

Symbol

Surface condition: Fill materials, near pig pen

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N-Values	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
1.0	SPT-1	29		5	Brown **SILT**, slightly plastic		40									Dry drilling
2.0	SPT-2	78		2	Dark gray silty medium to fine **SAND** with shell fragments, very loose	SM	22			96	91	42	14	1.89	2.65	
3.0	SPT-3	36		12	-same as above but medium dense		23									
4.0	SPT-4	87		5	Dark gray silty **SAND** with decayed woods, non-plastic and loose	SM	58	NP		100	96	69	50	1.5	2.62	
5.0	SPT-5	84		11	Dark gray medium to fine **SAND** with some silt traces of gravel, medium dense		24									
6.0	SPT-6	89		13	Dark gray medium to fine **SAND** with traces of semi-rounded gravel, medium dense		18									
7.0	SPT-7	22		5	-same as above with some silt, loose	SM	22			82	63	21	13	1.55	2.66	
8.0	SPT-8	89		8	Dark gray medium to fine **SAND** with fine to medium gravel, semi-rounded, loose		14									
9.0	SPT-9	69		6	Dark gray silty fine **SAND** with traces of gravel, wet	SM	48			100	100	83	27	1.39	2.67	
10.0	SPT-10	89		7	Dark gray silty **SAND** with decayed woods		37									
11.0	SPT-11	89		11	Dark gray sandy **SILT**, slightly plastic and medium stiff		53									
12.0	SPT-12	89		3	Dark gray clayey sandy **SILT**, slightly-plastic	ML	52	51	15	100	100	100	77	1.96	2.69	
13.0																
14.0	SPT-13	89		12	Dark gray silty fine **SAND**, non-plastic and medium dense	ML	43			100	100	100	53	1.84	2.70	
15.0	SPT-14	82		14	(Top) same as above; (Bottom) gray silty **CLAY** with traces of shell fragments		49									
16.0	SPT-15	82		10	(Top) Gray fine **SAND** with trace of gravel; (Bottom) Dark gray sandy **SILT** with shell fragments and semi-rounded gravel	SM	37 34			89	81	79	32	1.48	2.65	
17.0	SPT-16	89		17	Dark gray silty **SAND** with shell fragments, non-plastic, medium dense		37									

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-1**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
18.0	SPT-17	60		28		Grayish brown fine **SAND** with traces of shell fragments and semi-rounded gravel, medium dense		30									
19.0	SPT-18	78		21		Dark gray silty fine **SAND** with shell fragment and semi-rounded gravel, medium dense	SM	35			100	99	96	29	1.84	2.66	
20.0	SPT-19	58		26		Dark gray fine **SAND** with traces of coral gravel, medium dense		28									
21.0	SPT-20	44		27		Dark gray fine **SAND** with piece of gravel		29									
22.0	SPT-21	87		16		Grayish brown sandy **SILT**, slightly plastic	ML	45	42	8	100	100	99	89	2.19	2.65	
23.0	SPT-22	89		17		Grayish brown silty **SAND**, non-plastic and medium dense		42									
24.0	SPT-23	89		14		-same as above with decayed wood, slightly plastic and medium dense		57									
25.0	SPT-24	87		15		Brownish gray silty **SAND** with decayed wood, medium dense		45									
26.0	SPT-25	87		11		Brownish gray sandy **SILT** with decayed wood, slightly plastic, stiff	ML	45			100	98	96	95	2.31	2.66	
27.0	SPT-26	87		9		Dark gray sandy **SILT** with traces of shell fragments and decayed wood, stiff	MH	49	63	28	100	100	98	88	2.14	2.66	
28.0	SPT-27	89		14		Dark gray sandy **SILT**, stiff		47									
29.0	SPT-28	87		11		Dark gray sandy **SILT** w/ traces of hardened silt particles, slightly plastic and stiff		41									
30.0	SPT-29	89		10		Dark gray **CLAY** w/ traces of shell fragments & a piece of semi-rounded gravel, stiff		51									
31.0	SPT-30	89		11		-same as above		49									
32.0	SPT-31	89		14		Dark gray sandy **SILT** w/ traces of shell fragments & decayed wood, stiff	(MH)	45			100	100	92	68	2.26	2.71	
33.0	SPT-32	87		37		Dark gray silty **SAND** w/ traces of shell fragments, non-plastic and dense	SM	28			100	98	78	34	2.46	2.68	
34.0	SPT-33	89		25		Dark gray silty **SAND** w/ traces of shell fragments, non-plastic		34									
35.0	SPT-34	89		33		-same as above	SM	25			97	96	60	26	1.78	2.68	

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-1**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
36.0	SPT-35	87		26		Dark gray silty **SAND** w/ traces of shell fragments, medium dense		36									
37.0	SPT-36	89		30		Dark gray silty fine **SAND** w/ traces of shell fragments, dense	SM	34			100	99	86	29	1.77	2.67	
38.0	SPT-37	87		45		-same as above		36									
39.0	SPT-38	87		41		-same as above w/ decayed woods		35									
40.0	SPT-39	87		29		-same as above	SM	17			93	90	51	19	1.75	2.63	
						End of FB-1											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
07/14/13	1310H	21.00	13.37	1.01	Fair
07/14/13	1640H	27.00	21.30	3.96	Fair

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

GEORGE B. PADILLA & Associates

PROJECT:	**FRIMP-CDOR**	Northing: 940375.814	Borehole No.: **FB-2**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460993.845	Date Started: 9-Jul-13 1340H
CLIENT:	JICA Survey Team	Elev (m): 1.139	Date Finished: 11-Jul-13 1508H
STRUCTURE:	Proposed Evacuation Road/Dike	Depth, (m): 30.0	

Drilling Rig: "TOHO w/ "535" Bean Royal Water Pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		07/09/13	1631H	6.00	6.02	0.60	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		07/10/13	0739H	6.00	6.02	0.45	Fair
Core Bit: BQ impreg	Corebarrel: Double tube		07/10/13	1128	14.00	8.96	0.38	Fair

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Surface condition: Top soil fill,near residential house											
1.0	SPT-1	33		1		Brown silty **SAND,** slightly-plastic, wet and very loose		38									Dry drilling
2.0	SPT-2	38		0		-same as above	SM	43			96	90	49	20	1.35	2.68	
3.0	SPT-3	71		4		Brown silty **SAND** with trace of semi-rounded gravel, very loose	SM	44			95	87	50	25	1.48	2.68	
4.0	SPT-4	38		5		Brown medium to fine **SAND**, loose		32									
5.0	SPT-5	73		16		Dark gray medium to coarse **SAND** with traces of gravel, medium dense	SW	15			75	53	21	9	1.6	2.68	
6.0	SPT-6	40		18		-same as above		21									
7.0	SPT-7	58		5		Grayish brown **SILT** with trace of semi-rounded gravel, medium stiff	MH	49	70	22	64	61	58	51	1.35	2.70	
8.0	UDS-1	58				Dark gray clayey **SILT**	MH	77	73	29	100	99	97	85	c = 16.3 kPa ø = 1.5° C_c= 0.449 C_r= 0.022 P_c= 90kPa		
9.0	SPT-8	89		4		Grayish brown clayey sandy **SILT**, medium stiff	MH	66	70	26	100	99	97	78	1.67 1.7	2.69 2.71	
10.0	UDS-2	100				-same as above	MH	72	77	36	100	99	97	90	C_c= 0.553 C_r= 0.021 P_c=110kPa		
11.0	SPT-9	89		6		Dark gray silty **SAND** with shell fragments with decayed wood, non-plastic and loose	SM	40			100	99	81	39	1.49 2.01	2.69 2.67	
12.0	SPT-10	84		9		Dark gray silty **SAND** with shell fragments, non-plastic, loose		26									
13.0	SPT-11	89		31		Dark gray silty fine **SAND** with traces of shell fragments	SM	27			98	95	83	28	1.73	2.67	
14.0	SPT-12	89		7		Grayish brown silty **SAND** with decayed woods and traces of shell fragments, loose	SM	56	55	13					1.81	2.65	
15.0	SPT-13	87		10		Brownish gray silty **SAND**, medium dense and non-plastic		46									
16.0	SPT-14	89		17		-same as above		39									
17.0	SPT-15	89		7		Dark gray fine sandy **SILT**, medium stiff	MH	50	54	19	100	100	98	84	1.8	2.69	

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-2**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
	SPT-16	89		18		-same as above but stiff		38									
18.0																	
	SPT-17	89		23		-same as above		37									
19.0																	
	SPT-18	89		10		(Top) Dark gray clayey **SILT** with traces of gravel: (Bottom) Dark gray sandy **SILT** with traces of shell and gravel, non-plastic	MH	45	55	19					1.86	2.70	
20.0																	
	SPT-19	84		10		Dark gray fine sandy **SILT** with traces of gravel, stiff	MH	49	54	18	100	100	99	76	1.89	2.69	
21.0																	
	SPT-20	78		25		Dark gray fine **SAND**, medium dense		49									
22.0																	
	SPT-21	82		14		(Top) same as above with traces of semi-rounded gravel: (Bottom) Dark gray sandy **SILT**, slightly plastic and medium dense		43							1.87		
23.0																	
	SPT-22	87		18		Dark gray silty fine **SAND**, medium dense	SM	36			95	94	92	37	2.03	2.68	
24.0																	
	SPT-23	84		10		Dark gray sandy **SILT** with decayed wood	MH	49	57	23					1.62	2.68	
25.0																	
	SPT-24	87		10		Dark gray clayey sandy **SILT**, slightly plastic and stiff	MH	50	60	23	97	97	94	91	1.65	2.70	
26.0																	
	SPT-25	87		8		-same as above but medium stiff	MH	47	55	24					2.04	2.70	
27.0																	
	SPT-26	84		34		Dark gray fine **SAND** with traces of shell fragments and some clay, dense	(SM)	34	43	12					2.15	2.70	
28.0																	
	SPT-27	82		29		Dark gray silty medium to fine **SAND** with trace of shell fragments and semi-rounded gravel	SM	23			91	88	67	22	2.2	2.65	
29.0																	
	SPT-28	89		31		Dark gray fine **SAND** with trace of shell fragments and traces of semi-rounded gravel		26									
30.0																	
						End of FB-2											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
07/10/13	1643H	20.00	14.25	0.61	Fair
07/11/13	0659H	20.00	14.25	0.59	Fair
07/11/13	1136H	27.00	14.25	0.31	Fair
07/11/13	1337H	27.00	14.25	0.20	Fair
07/11/13	1528H	30.00	14.25	0.53	Fair
07/11/13	1550H	30.00	0.00	0.92	Fair
07/11/13	1619H	30.00	0.00	0.24	Fair

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing:	939239.368	Borehole No.:	**FB-4**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting:	461054.818	Date Started:	4-Jul-13 1430H
CLIENT:	JICA Survey Team	Elev (m):	1.064	Date Finished:	6-Jul-13 1126H
STRUCTURE:	Proposed Dikes	Depth, (m):	30.0		

Drilling Rig: "TOHO w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		07/05/13	0742H	7.00	7.08	0.52	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		07/05/13	1300H	13.00	12.13	1.47	Fair
Core Bit: Not used	Corebarrel: Not used		07/05/13	1301H	13.00	12.13	0.70	Fair

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION Surface condition: fill materials, near residential buildings	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Encountered 7cm thick concrete slab at 0.30m											
1.0	SPT-1	51		54		**Fill:** Dark gray medium to coarse **SAND** with fine gravel		9									Dry drilling
2.0	SPT-2	60		15		-same as above with concrete debris	SM	20			84	74	33	17	2.16	2.65	
3.0	SPT-3	89		8		Dark gray medium to fine **SAND** with traces of semi-rounded gravel, loose		20									
4.0	SPT-4	76		5		-same as above	SM	17			98	82	42	26	1.52	2.65	
5.0	SPT-5	67		9		-same as above but medium to coarse sand, loose		12									
6.0	SPT-6	62		18		Dark gray medium to coarse **SAND** with traces of gravel, medium dense		22									
7.0	SPT-7	29		9		-same as above but loose	SM	16			60	48	32	22	1.31	2.66	
8.0	SPT-8	44		7		Dark gray medium to coarse **SAND**, loose		21									
9.0	SPT-9	100		28		Dark gray medium to fine **SAND**, medium dense	SW	26			99	98	46	10	2.33	2.65	
10.0	SPT-10	100		9		-same as above, brown sandy **SILT** at the bottom, loose		33									
11.0	SPT-11	96		8		Brownish gray silty **SAND**, loose and non-plastic	SM	35	NP		99	95	63	26	1.96	2.67	
12.0	SPT-12	100		20		Dark gray medium to fine **SAND**, medium dense		25									
13.0	SPT-13	100		7		-same as above with traces of semi-rounded gravel		26									
14.0	SPT-14	100		16		Brownish gray fine sandy **SILT**, medium dense	ML	50	NP		100	100	95	85	1.9	2.69	
15.0	SPT-15	100		7		-same as above but loose with traces of gravel		33									
16.0	SPT-16	100		16		Dark gray silty **SAND** with decayed wood, medium dense		45	NP								
17.0	SPT-17	100		16		Dark gray fine sandy **SILT**, medium dense	ML	41	NP		100	100	98	57	2.16	2.71	

PROJECT: **FRIMP-CDOR** | Borehole No: **FB-4**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
18.0	SPT-18	100		10		-same as above with traces of semi-rounded gravel and shell fragments		24									
19.0	SPT-19	100		18		Dark gray fine sandy **SILT**, stiff	MH	43	51	19	91	90	87	64	2.16	2.69	
20.0	SPT-20	100		15		Dark gray fine sandy **SILT**, medium dense		31	NP								
21.0	SPT-21	100		17		-same as above, non-plastic		35									
22.0	SPT-22	100		14		-same as above	(ML)	37	NP		100	100	99	61	2.11	2.69	
23.0	SPT-23	100		19		Dark gray silty **SAND** with traces of shell fragments, medium dense		37									
24.0	SPT-24	100		21		-same as above with traces of semi-rounded gravel	SM	28			97	96	85	30	2.14	2.70	
25.0	SPT-25	100		15		Dark gray silty fine **SAND** with traces of shell fragments		39									
26.0	SPT-26	100		13		Dark gray fine sandy **SILT** w/ traces of shell fragments, stiff	ML	32	46	14	95	94	92	61	2.13	2.69	
27.0	SPT-27	100		28		-same as above		29									
28.0	SPT-28	100		17		-same as above		32									
29.0	SPT-29	100		14		-same as above, moderate plastic	ML	34	47	13	100	99	98	76	2.16	2.69	
30.0	SPT-30	100		28		Dark gray fine sandy **SILT** with lenses of medium sand and decayed woods, stiff	ML	33	41	13					1.99		
						End of FB-4											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
07/06/13	0805H	2.00	13.06	0.50	Fair
07/06/13	1131H	30.00	13.06	1.50	Fair
07/06/13	1341H	30.00	13.06	0.70	Fair
07/06/13	1406H	30.00	0.00	0.90	Fair

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 938838.373	Borehole No.: **FB-6**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460531.716	Date Started: 3-Jul-13 1223H
CLIENT:	JICA Survey Team	Elev (m): 1.168	Date Finished: 3-Jul-13 1450H
STRUCTURE:	Proposed Dikes	Depth, (m): 10.0	

Drilling Rig: "TOHO w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		07/03/13	1456H	10.00	7.13	4.01	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		07/03/13	1506H	10.00	None	0.69	Fair
Core Bit: Not used	Corebarrel: Not used							

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION Surface condition: open lot, grassy and near residential building	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
1.0	SPT-1	22		2		Brown sandy **SILT**, slightly-plastic and very soft		51									Dry drilling
2.0	SPT-2	49		7		Brownish gray silty **SAND** and a piece of cloth, loose		36									
3.0	SPT-3	100		6		Dark gray medium to fine **SAND** with some silt, loose	SM	31			100	98	42	24	2.06	2.67	
4.0	SPT-4	29		9		Dark gray medium to fine **SAND**, loose		16									
5.0	SPT-5	58		10		-same as above and a piece of semi-rounded gravel, medium dense		19									
6.0	SPT-6	100		13		-same as above and a 5 cm thick layer of dark brown **SILT** with decayed wood, non-plastic and medium dense	SM	26			84	65	19	13	2.33	2.64	
7.0	SPT-7	22		3		Brown sandy **SILT** with decayed wood and traces of gravel, soft		32									
8.0	SPT-8	100		5		Brown clayey **SILT** with decayed wood and lenses of sand, medium stiff	MH	60	76	29					1.81	2.66	
9.0	UDS-1	100				-same as above, but dark gray to medium sand at the bottom	MH	47	71	25					c =23.6kPa ϕ = 2.5^o C_c= 0.334; C_r= 0.046; P_c= 61kPa		
10.0	SPT-9	100		9		Dark gray silty **SAND** with traces of shell fragments, non-plastic and loose	SM	39			100	99	74	35	2.18	2.67	

End ofFB-6

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 938409.154	Borehole No.: **FB-7**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460469.377	Date Started: 8-Jul-13 0920H
CLIENT:	JICA Survey Team	Elev (m): 2.825	Date Finished: 9-Jul-13 1800H
STRUCTURE:	Proposed Dikes	Depth, (m): 30.0	

Drilling Rig: "TOHO" w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		07/08/13	1635H	9.00	9.06	2.23	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		07/09/13	0705H	19.00	9.06	1.79	Fair
Core Bit: Not used	Corebarrel: Not used		07/09/13	1400H	19.00	12.06	2.15	Fair

Logged by: DC Checked by: KAPE Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Surface conditions: Open lot, grassy											
1.0	SPT-1	100		3		Brown fine sandy SILT, very loose and non-plastic		26									Dry drilling
2.0	SPT-2	33		2		-same as above		21									
3.0	SPT-3	100		3		Brown fine sandy **SILT**	ML	42			100	98	92	60	2.01	2.65	
4.0	SPT-4	100		4		Gray silty medium **SAND**, non-plastic and very loose		35									
5.0	SPT-5	44		6		Dark gray medium to coarse **SAND**, non-plastic and loose		75									
6.0	SPT-6	89		10		-same as above but medium dense	SW	19			86	61	20	9	2.44	2.66	
7.0	SPT-7	40		7		-same as above with traces of pea size to medium gravels, loose		21									
8.0	SPT-8	89		4		-same as above but vey loose		56									
9.0	SPT-9	89		3		Dark gray clayey **SILT** with trace of medium gravel, soft	MH	56	84	24					1.71	2.71	
10.0	SPT-10	44		5		Dark gray clayey **SILT** with traces of medium gravel, wet	(MH)	117			93	92	83	72	1.67	2.72	
11.0	SPT-11	22		3		-same as above but soft		124									
12.0	SPT-12	33		2		-same as above but very soft		90									
13.0	SPT-13	89		5		Dark gray silty fine **SAND**, slightly plastic and loose	SM	58			97	90	54	31	1.97	2.68	
14.0	SPT-14	40		7		Dark gray silty medium **SAND** with traces of shell fragments, loose		59									
15.0	SPT-15	31		11		Dark gray silty medium **SAND** and piece of 7.0cm gravel, medium dense		42									
16.0	SPT-16	100		7		Dark brown 31.0cm thick decayed wood with dark gray silty fine **SAND** at the bottom, loose	SM	118			86	80	45	38	1.41	2.62	
17.0	SPT-17	100		6		Dark gray silty fine **SAND** with traces of shell fragments and decayed wood, loose		35									

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-7**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
18.0	SPT-18	100		12		Dark gray silty medium **SAND** with traces of decayed wood, medium dense	SM	27			100	99	79	32	2.23	2.63	
19.0	SPT-19	100		11		-same as above with traces of decayed wood		35									
20.0	SPT-20	100		22		Dark gray fine **SAND** with traces of shell fragments, medium dense		34									
21.0	SPT-21	100		17		-same as above with traces of decayed wood	SM	34			100	100	97	27	1.95	2.61	
22.0	SPT-22	100		17		-same as above		34									
23.0	SPT-23	100		17		-same as above		36									
24.0	SPT-24	91		9		Dark gray fine sandy **SILT**, stiff	(MH)	36			99	98	92	60	1.98	2.72	
25.0	SPT-25	100		10		Dark gray fine sandy **SILT** with traces of shell fragments and decayed wood, stiff	MH	49	64	21					1.99	2.64	
26.0	SPT-26	89		5		Dark gray fine sandy clayey **SILT** with traces of shell fragments, moderate plasticity and medium stiff	MH	56	65	27					2.21	2.68	
27.0	SPT-27	89		6		-same as above	MH	53	72	39	100	100	97	91	2.16	2.68	
28.0	SPT-28	93		7		-same as above	MH	53	62	28					1.84	2.67	
29.0	SPT-29	100		5		Dark gray clayey **SILT** with traces of shell fragment, moderate plasticity and medium stiff	MH	69	78	33					1.86	2.68	
30.0	UDS-1	100				-same as above but very soft	MH	77	66	14	100	99	90	80	C_c= 0.410 C_r= 0.039 P_c=95kPa		
						End of FB-7									1.55	2.68	

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 937673.089	Borehole No.: **FB-8**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460308.640	Date Started: 2-Jul-13 1257H
CLIENT:	JICA Survey Team	Elev (m): 2.482	Date Finished: 2-Jul-13 1811H
STRUCTURE:	Proposed Drainage Sluice Gates	Depth, (m): 10.0	

Drilling Rig: "TOHO" w/ Quadroplex pump

Casing BW Drill Rods: AW

SPT: ASTM D1576 Hammer: 63.5 kg donut type

Core Bit: BQ impreg Corebarrel: Double tube

Logged by: DC Checked by: JTF Edited by: GBP

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Groundwater is practically at ground surface.					

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Surface condition: open lot and grassy & water logged											
	SPT-1	100		10		Brown silty medium **SAND** with concrete debris and pieces of plastic materials											
1.0																	
	SPT-2	71		5		Brown clayey sandy **SILT**, medium stiff	ML	42	47	17	92	90	85	62	1.47	2.72	Dry drilling
2.0																	
	SPT-3	100		8		-same as above with lenses of sand and trace of gravel to brown medium to coarse **SAND** with traces of semi rounded gravel, loose											
3.0																	
	SPT-4	100		9		Gray medium to coarse **SAND** with traces of semi-rounded gravel, loose	SW	13	NP		85	67	17	6	2.1	2.67	
4.0																	
	SPT-5	22		14		Gray medium to fine **SAND** with traces of semi-rounded gravel, medium dense											
5.0																	
	SPT-6	74		ref.		Dark gray medium to coarse **SAND** with semi-rounded gravel											
6.0	CS-1	21	21	RQD=20		Gray **COBBLES**											
	SPT-7	78		5		Dark gray clayey **SILT** with lenses of sand and decayed wood, medium stiff	MH	66	107	54	98	94	79	60	1.55	2.75	
7.0																	
	UDS-1	100				Dark gray fine sandy silty **CLAY**, very soft		61							c= 24 **kPa** ; ø=3^0; C_c= 0.416 C_r=0.049 P_c=65kPa		
8.0															1.64	2.71	
	SPT-8	100		4		-same as above but soft											
9.0																	
	SPT-8	100		5		-same as above but medium stiff											
10.0																	
						End of FB-8											

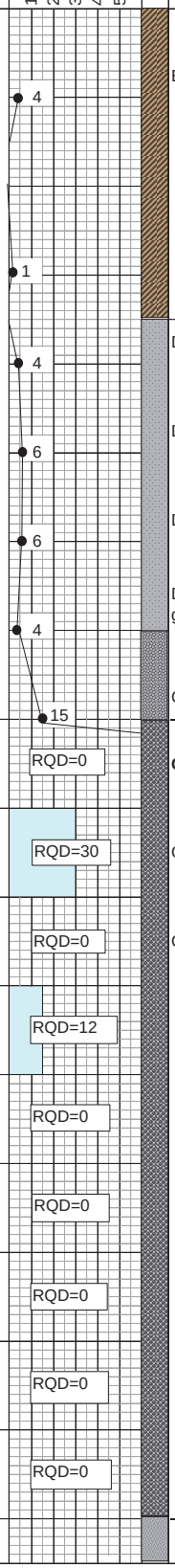
FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

GEORGE B. PADILLA & Associates

PROJECT:	**FRIMP-CDOR**	Northing: 937078.745	Borehole No.: **FB-10**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460431.085	Date Started: 11-Jul-13 1300H
CLIENT:	JICA Survey Team	Elev (m): 1.673	Date Finished: 15-Jul-13 1715H
STRUCTURE:	Proposed Drainage Sluice Gates	Depth, (m): 20.0	

Drilling Rig: "TOHO" w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing	BW	Drill Rods: AW	07/11/13	1801H	9.00	8.25	1.46	Fair
SPT:	ASTM D1576	Hammer: 63.5 kg donut type	07/12/13	0630H	9.00	8.25	1.23	Fair
Core Bit:	BQ, Impreg	Corebarrel: Double tube	07/12/13	1805H	11.00	9.00	1.38	Light rain

Logged by: DC Checked by: JTF Edited by: GBP



Depth, m	Sample Type-No.	Recovery, %	Solid core rec, %	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
					Surface condition: open lot, grassy and near a creak											
1.0	SPT-1	78			Brown clayey **SILT**, medium stiff	MH	49	91	37	100	100	99	93	1.84	2.71	Dry drilling
2.0	UDS-1	100			-same as above, but dark gray	MH	72	69	17	100	100	99	94	C_c= 0.466; C_r= 0.078;		P_c= 65 kPa
3.0	SPT-2	78			-same as above but very soft	MH	87	61	27	100	99	94	85	1.85	2.71	
	UDS-2	100			-same as above to medium **SAND**									Cc=0.60, Cr=0.010, pc=42 kPa		
4.0	SPT-3	80			Dark gray medium **SAND**, very loose	SW	24	NP		100	99	39	10	2.1	2.66	
5.0	SPT-4	87			Dark gray medium to fine **SAND**, loose	SW	23	NP		99	95	37	4	0.78	2.65	
6.0	SPT-5	82			Dark gray fine **SAND, loose**	SW	38	NP		100	100	95	10	1.03	2.66	
7.0	SPT-6	44			Dark gray silty medium **SAND** with pea size gravel and traces of decayed wood	SM	34			94	88	73	27	1.55	2.65	
8.0	SPT-7	18			Gray sub-rounded **GRAVEL**											
9.0	CS-1	4	0		**C.F. @ 8.0m.:** Gray **COBBLES**											
10.0	CS-2	60	45		Gray boulders, **BASALT**											
11.0	CS-3	31	7		Gray **COBBLES**											
12.0	CS-4	23	19		-same as above											
13.0	CS-5	29	20		-same as above											
14.0	CS-6	16	0		-same as above											
15.0	CS-7	19	10		-same as above											
16.0	CS-8	15	8		-same as above											
17.0	CS-9	16	7		-same as above											

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-10**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
18.0	SPT-8	82		67		Dark gray medium **SAND**, very dense	SW	23			95	89	35	3	1.99	2.67	
19.0	SPT-9	78		35		-same as above to coarse **SAND**, dense	SW	10			73	42	10	2	1.52	2.65	
20.0	SPT-10	49		52		Dark gray silty medium **SAND**	SM	22			90	73	51	19	1.98	2.66	
						End of FB-10											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
07/14/13	0805H	12.50	11.10	1.24	Fair
07/14/13	1740H	17.00	16.01	1.38	Light rain
07/15/13	0805H	20.00	17.81	1.01	Fair
07/15/13	1650H	20.00	17.81	1.06	
05/15/13	1625H	20.00	None	1.07	

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 936822.326	Borehole No.: **FB-11**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460187.256	Date Started: 28-Jun-13 1531H
CLIENT:	JICA Survey Team	Elev (m): 1.661	Date Finished: 1-Jul-13 1449H
STRUCTURE:	Proposed Bridge	Depth, (m): 30.0	

Drilling Rig: "TOHO w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		06/28/13	1656H	4.00	3.15	1.25	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		06/29/13	0759H	4.00	3.15	1.40	Fair
Core Bit: not used	Corebarrel: not used		06/29/13	118H	13.00	7.09	2.03	Fair

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Surface condition: open lot, grassy and near Pelaez bridge											
1.0	SPT-1	100		3		Brown fine sandy **SILT**											
2.0	SPT-2	100		3		Grayish brown fine sandy **SILT**, moderately plastic	MH	49	58	25	100	100	96	74	1.4	2.71	Dry drilling
3.0	SPT-3	100		11		Dark gray medium to coarse **SAND**											
4.0	SPT-4	80		9		-same as above											
5.0	SPT-5	29		11		Dark gray medium to coarse **SAND** with trace of semi-rounded gravel											
6.0	SPT-6	0				No recovery (sludge sample)											
7.0	SPT-7	100		6		Brownish gray sandy **SILT** with lenses of sand and decayed wood highly plastic	MH	53	73	24	89	88	83	71	1.64	2.68	
8.0	SPT-8	100		2		-same as above											
9.0	UDS-1	100				Brownish gray clayey **SILT**, very soft	MH	85	126	21	72	68	61	50	c= 22**kPa**; ø= 2⁰		
10.0	SPT-9	100		3		Grayish brown clayey **SAND** with decayed wood, slightly plastic									1.69	2.65	
11.0	SPT-10	100		6		-same as above											
12.0	SPT-11	33		6		Grayish brown sandy **SILT**, medium stiff	MH	35	75	31	100	99	96	85	2.21	2.71	
13.0	SPT-12	73		24		Brownish gray sandy **SILT** with lenses of sand, non-plastic											
14.0	SPT-13	100		46		Dark gray medium to fine **SAND**											
15.0	SPT-14	100		44		-same as above											
16.0	SPT-15	100		40		-same as above	SP	18			100	96	28	8	2.34	2.65	
17.0	SPT-16	100		38		-same as above											

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No: **FB-11**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
18.0	SPT-17	89		40		-same as above											
19.0	SPT-18	100		32		-same as above with traces of gravel											
20.0	SPT-19	73		38		-same as above											
21.0	SPT-20	91		35		Dark gray medium to coarse **SAND** with traces of gravel											
22.0	SPT-21	100		14		Brownish gray silty **SAND** with decayed wood and lenses of sand, non-plastic											
23.0	SPT-22	100		8		Grayish brown sandy **SILT** with lenses of sand, highly plastic	MH	22	80	35	100	100	97	87	1.71	2.71	
24.0	SPT-23	89		13		-same as above											
25.0	SPT-24	100		13		-same as above											
26.0	SPT-25	89		7		Gray sandy **SILT,** slightly plastic											
27.0	SPT-26	93		13		Gray silty fine **SAND**	SM	27	NP		100	99	96	44	2.4	2.69	
28.0	SPT-27	100		16		-same as above											
29.0	SPT-28	100		14		-same as above w/ wood											
30.0	SPT-29	100		21		-same as above											
						End of FB-11											

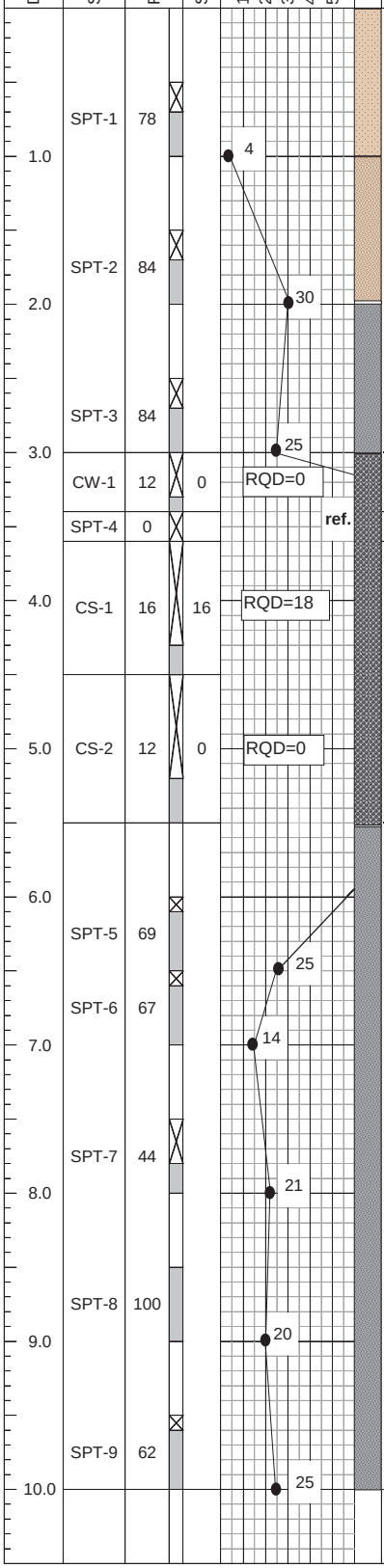
Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
06/29/13	1312H	13.00	7.09	1.30	Fair
06/29/13	1518H	15.00	13.09	1.45	Heavy Rain
06/30/13	0822H	15.00	13.19	1.51	Fair
06/30/13	1207H	18.00	16.19	3.60	Fair
06/30/13	1305H	18.00	16.19	1.44	Fair
06/30/13	1721H	22.00	19.12	4.41	Fair
07/01/13	0741H	22.00	19.12	1.36	Fair
07/01/13	1156H	27.00	22.12	2.87	Fair
07/01/13	1336H	27.00	22.12	1.40	Fair
07/01/13	1454H	30.00	22.12	3.89	Fair
07/01/13	1550H	30.00	0.00	1.39	Fair

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

GEORGE B. PADILLA & Associates

PROJECT:	**FRIMP-CDOR**	Northing: 936336.072	Borehole No.: **FB-12**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 460251.993	Date Started: 20-Jun-13 1030H
CLIENT:	JICA Survey Team	Elev (m): 3.986	Date Finished: 21-Jun-13 1545H
STRUCTURE:	Proposed Dikes	Depth, (m): 10.0	
Drilling Rig:	"TOHO" w/ Quadroplex pump		
Casing	BW	Drill Rods: AW	
SPT:	ASTM D1576	Hammer: 63.5 kg donut type	
Core Bit:	BQ impreg	Corebarrel: Double tube	
Logged by: KAPE	Checked by: JTF	Edited by: GBP	

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
06/21/13	0705H	4.50	4.00	1.60	Fair
06/21/13	1302H	8.00	6.00	1.68	Fair
06/21/13	1536H	10.00	7.00	1.72	Fair



Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	DESCRIPTION (Surface condition: open lot, grassy and near coconut trees)	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm^3	G_s	Remarks
	SPT-1	78		Brown silty fine **SAND** and a piece of sub angular gravel, very loose			NP								Dry drilling
1.0															
	SPT-2	84		Brown silty fine **SAND** and sub- angular gravels, dense	SM	18	NP		84	82	67	29	1.27	2.65	
2.0															
	SPT-3	84		Dark gray silty medium to coarse **SAND** and semi-rounded gravels, medium dense											
3.0	CW-1	12	0	Gray sub-angular **GRAVEL**											
	SPT-4	0		No recovery											
4.0	CS-1	16	16	Dark gray and gray sub-angular **GRAVELS** and **COBBLES**											
5.0	CS-2	12	0	Gray sub-angular **GRAVELS**											
6.0	SPT-5	69		Dark gray fine to coarse **SAND** with traces of fine gravel, medium dense	SM	10	NP		72	63	34	17	2.43	2.65	
	SPT-6	67		Dark gray fine to coarse **SAND** with traces of fine gravel, medium dense											
7.0															
	SPT-7	44		-same as above and a piece of semi-rounded gravel											
8.0															
	SPT-8	100		-same as above	SM	13			96	85	32	8	1.87	2.66	
9.0															
	SPT-9	62		-same as above with traces of decayed wood											
10.0				**End of FB-12**											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
06/21/13	1634H	10.00	None	1.58	Fair

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 936397.263	Borehole No.: **FB 13**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 459686.560	Date Started: 26-Jun-13 1613H
CLIENT:	JICA Survey Team	Elev (m): 3.155	Date Finished: 27-Jun-13 1740H
STRUCTURE:	Proposed Drainage Sluice Gates	Depth, (m): 20.0	

Drilling Rig: "TOHO" w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing BW	Drill Rods: AW		06/26/13	1729H	6.00	0.00	3.55	Light rain
SPT: ASTM D1576	Hammer: 63.5 kg donut type		06/27/13	0739H	6.00	0.00	3.31	Fair
Core Bit: BQ impreg	Corebarrel: Double tube		06/27/13	150H	10.00	9.00	3.05	Fair

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	DESCRIPTION (Surface condition: open lot and grassy)	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
1.0	SPT-1	100		5	Brown sandy **SILT**, slightly-plastic											
2.0	SPT-2	44		4	-same as above but highly-plastic, medium stiff	MH	31	53	22	100	100	99	71	1.54	2.71	Dry drilling
3.0	SPT-3	71		4	Brown silty medium **SAND**, very loose											
4.0	SPT-4	93		7	Grayish brown silty medium **SAND** w/ lenses of black clay, loose											
5.0	SPT-5	82		6	Brownish gray silty medium to fine **SAND** with some angular gravel, loose	SM	29	NP		86	72	44	31	2.02	2.68	
6.0	SPT-6	100		21	Brownish gray medium to coarse **SAND** with traces of sub-angular gravel, medium dense											
7.0	SPT-7	56		19	Dark gray medium to coarse **SAND**, medium dense											
8.0	CS-1	26		RQD=0	Gray **COBBLES**											
9.0	SPT-8	100		11	Dark gray medium to coarse **SAND**, medium dense											
10.0	SPT-9	78		22	-same as above with fine to medium semi-rounded gravel, medium dense	SM	21			78	66	39	15	1.9	2.67	
11.0	SPT-10	100		28	-same as above											
12.0	SPT-11	100		26	Dark gray medium to coarse **SAND** with semi rounded gravel, medium dense											
13.0	SPT-12	22		3	Brown silty **SAND**, slightly plastic and very loose	SM	30			79	71	62	46	1.49	2.71	
14.0	SPT-13	0		0	No recovery											
15.0	SPT-14	100		0	Brown fine sandy clayey **SILT** with decayed wood at the bottom	ML	43	44	9	100	98	86	61	1.93	2.67	
	UDS-1	100												C_c=0.39, C_r=0.173, p_c=51 kPa		
	SPT-15	100												c=21kPa; Ø=2°		
16.0				10												
17.0	SPT-16	78		18	Dark grayish brown sandy **SILT** with decayed wood at the top, stiff	MH	69	109	50	10	97	87	68	1.65	2.65	

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No.: **FB 13**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Limits LL	Limits PI	% Passing 4	% Passing 10	% Passing 40	% Passing 200	Other tests γ, gm/cm³	Other tests G_s	Remarks
18.0	SPT-17	100		9		Brownish gray fine sandy **SILT** with decayed wood, slightly-plastic and stiff											
19.0	SPT-18	100		23		-same as above to dark gray medium to fine **SAND**, medium dense											
20.0	SPT-19	100		15		Gray silty fine **SAND** to dark brownish silty fine **SAND** with traces decayed wood, non-plastic											
						End of FB-13											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
06/27/13	1336H	10.00	9.00	2.13	Fair
06/27/13	1749H	17.00	12.90	5.20	

GEORGE B. PADILLA & Associates

FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS

PROJECT:	**FRIMP-CDOR**	Northing: 934817.630	Borehole No.: **FB-14**
LOCATION:	Cagayan de Oro River, Cagayan de Oro City	Easting: 459825.010	Date Started: 23-Jun-13 0750H
CLIENT:	JICA Survey Team	Elev (m): 5.11	Date Finished: 26-Jun-13 0732H
STRUCTURE:	Proposed Dikes	Depth, (m): 20.0	

Drilling Rig: "TOHO" w/ Quadroplex pump			Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
Casing NW	Drill Rods: AW		06/23/13	1740H	5.00	3.10	3.05	Fair
SPT: ASTM D1576	Hammer: 63.5 kg donut type		06/25/13	0720H	9.00	7.00	3.43	Fair
Core Bit: BQ impreg	Corebarrel: Double tube		06/25/13	1820H	19.00	16.00	4.51	Fair

Logged by: DC Checked by: JTF Edited by: GBP

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD	Symbol	DESCRIPTION	USC	NMC	Atterberg Limits LL	Atterberg Limits PI	Sieve Analysis % Passing 4	10	40	200	Other tests γ, gm/cm³	G_s	Remarks
						Surface condition: open lot, gravels and cobbles											
	SPT-1	100		10		Brown silty medium **SAND** with gravels, medium dense											
1.0	CS-1	38	5	RQD=0		Gray sub-angular **GRAVEL** and **COBBLES**											
2.0	CS-2	21	0	RQD=0		-same as above											
3.0	CS-3	31	25	RQD=13		-same as above											
4.0	CS-4	33	14	RQD=0		-same as above											
	CS-5	100	13	RQD=0		-same as above											
5.0	CS-6	12		RQD=0		Gray sub-angular **GRAVEL**											
6.0	CS-7	16		RQD=0		-same as above											
7.0	SPT-2	100		32		Dark gray coarse **SAND** with pea size gravel to dark gray silty fine sand, dense											
8.0	SPT-3	100		26		Dark gray silty fine to medium **SAND** with traces of decayed wood, non-plastic and medium dense	SM	21	NP		100	99	77	25	1.78	2.68	
9.0	SPT-4	100		27		Dark gray medium **SAND** with traces of pea size gravels, non-plastic and medium dense											
10.0	SPT-5	67		31		Dark gray medium to coarse **SAND** with fine to medium semi- rounded gravel, dense	SW	12	NP		73	65	35	9	2.17	2.65	
11.0	SPT-6	100		34		Dark gray medium to fine **SAND** with traces of gravel, dense											
12.0	SPT-7	71		27		Dark gray medium to coarse **SAND** w/ semi-rounded gravel, medium dense											
13.0	SPT-8	78		20		Dark gray coarse **SAND**, gravelly and medium dense											
14.0	SPT-9	89		37		Dark gray silty medium to fine **SAND** with traces of semi-rounded gravel, dense	SM	24			94	94	63	23	1.97	2.67	
15.0	SPT-10	100		32		Dark gray medium to fine **SAND** with fine to medium gravel, dense											
16.0	SPT-11	84		24		Dark gray medium to coarse **SAND** with fine to medium gravel, medium dense											
17.0	SPT-12	89		31		Dark gray medium to coarse **SAND** with fine to medium gravel, dense	SW	13			82	68	35	9	2.48	2.65	

PROJECT: **FRIMP-CDOR**

LOCATION: Cagayan de Oro River, Cagayan de Oro City

Borehole No.: **FB-14**

Depth, m	Sample Type-No.	Recovery, %	Solid core rec. %	N - VALUES / RQD (10 20 30 40 50)	Symbol	DESCRIPTION	USC	NMC	Limits LL	Limits PI	% Passing 4	% Passing 10	% Passing 40	% Passing 200	Other tests γ, gm/cm³	Other tests G_s	Remarks
	SPT-13	96		35		-same as above, dense											
18.0																	
	SPT-14	0		37		-no recovery (sandy sludge)											
19.0																	
	SPT-15	0		36		-no recovery (sandy sludge)											
20.0						**End of FB-14**											

Date	Time	BH-Depth, m	Casing Depth, m	GWL, m	Weather
06/26/13	0620H	19.00	16.00	3.55	Fair
06/26/13	0741H	20.00	16.00	3.61	Fair

O.2 Geological Investigation for Feasibility Study

(2) Results of Laboratory Tests on SPT Samples

Project:	**CDOR-FRIMP**	Borehole No.	**FB-1**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/27/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	G21
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	115.39

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	4.61	110.78	96
No. 10	5.7	105.08	91
No. 20	16.2	88.88	77
No. 40	40.38	48.50	42
No. 80	26.74	21.76	19
No. 200	5.53	16.23	14
		Remarks:	
		8mm gravel	

Tare No.	S2
Sample No.	SPT-4
Depth	3.55-4.00
Dry soil, gm	61.84

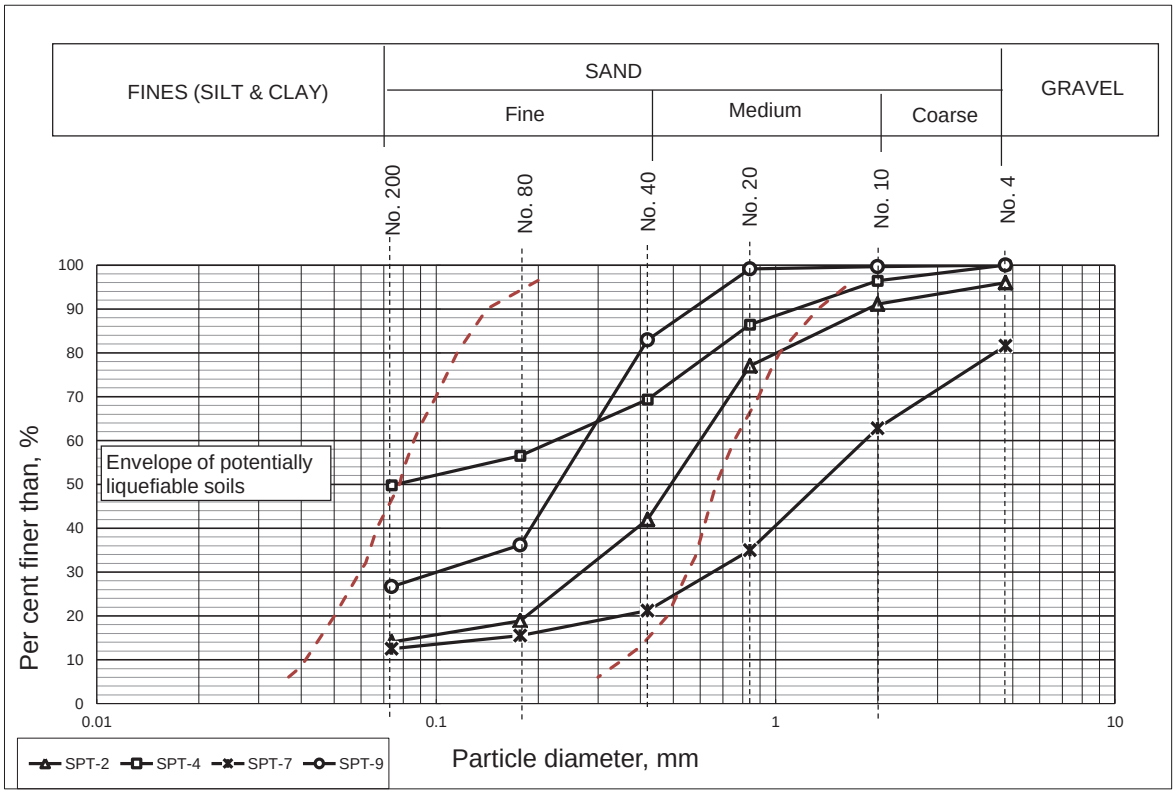
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		61.84	100
No. 10	2.19	59.65	96
No.20	6.20	53.45	86
No. 40	10.54	42.91	69
No. 80	7.97	34.94	57
No. 200	4.15	30.79	50
		Remarks:	

Tare No.	A4
Sample No.	SPT-7
Depth	6.55-7.00
Dry soil, gm	134.56

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	24.74	109.82	82
No. 10	25.29	84.53	63
No. 20	37.47	47.06	35
No. 40	18.51	28.55	21
No. 80	7.65	20.90	16
No. 200	4.05	16.85	13
		Remarks:	
		9 mm gravel	

Tare No.	L18
Sample No.	SPT-9
Depth	8.55-9.00
Dry soil, gm	85.83

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		85.83	100
No. 10	0.32	85.51	100
No. 20	0.41	85.10	99
No. 40	13.94	71.16	83
No. 80	40.10	31.06	36
No. 200	8.14	22.92	27
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-1**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/27/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	E3
Sample No.	SPT-12
Depth	11.55-12.00
Dry soil, gm	76.85

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	76.85	100
No. 10	0	76.85	100
No. 20	0.11	76.74	100
No. 40	0.22	76.52	100
No. 80	4.41	72.11	94
No. 200	12.68	59.43	77
		Remarks:	

Tare No.	F10
Sample No.	SPT-13
Depth	13.55-14.00
Dry soil, gm	80.01

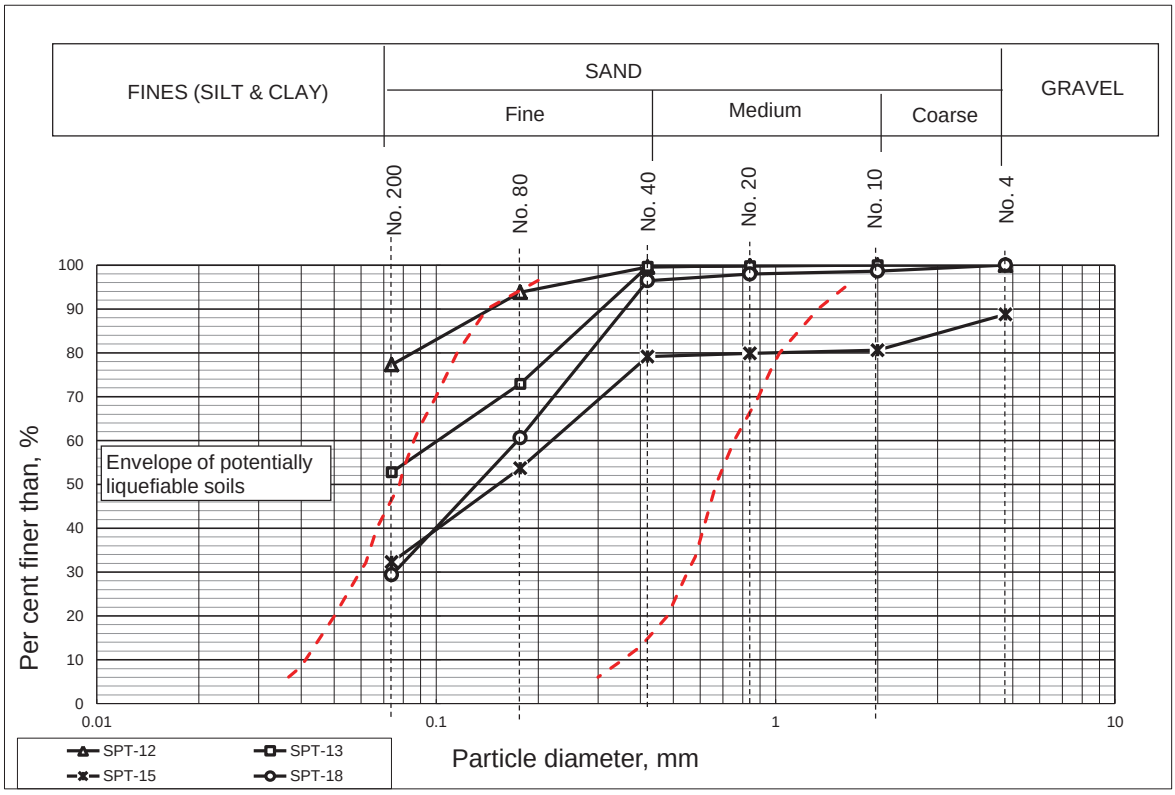
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	80.01	100
No. 10	0.00	80.01	100
No.20	0.18	79.83	100
No. 40	0.10	79.73	100
No. 80	21.38	58.35	73
No. 200	16.10	42.25	53
		Remarks:	

Tare No.	N30A
Sample No.	SPT-15
Depth	15.55-16.00
Dry soil, gm	77.92

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	8.76	69.16	89
No. 10	6.34	62.82	81
No. 20	0.59	62.23	80
No. 40	0.56	61.67	79
No. 80	19.84	41.83	54
No. 200	16.64	25.19	32
		Remarks:	
		14 mm siltstones	

Tare No.	AT
Sample No.	SPT-18
Depth	18.55-19.00
Dry soil, gm	86.88

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		86.88	100
No. 10	1.23	85.65	99
No. 20	0.54	85.11	98
No. 40	1.34	83.77	96
No. 80	31.12	52.65	61
No. 200	27.15	25.50	29
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-1**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/27/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	L3
Sample No.	SPT-21
Depth	21.55-22.0
Dry soil, gm	80.24

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	80.24	100
No. 10	0	80.24	100
No. 20	0.27	79.97	100
No. 40	0.81	79.16	99
No. 80	1.49	77.67	97
No. 200	6.17	71.50	89
		Remarks:	

Tare No.	G14
Sample No.	SPT-25
Depth	25.55-26.0
Dry soil, gm	85.68

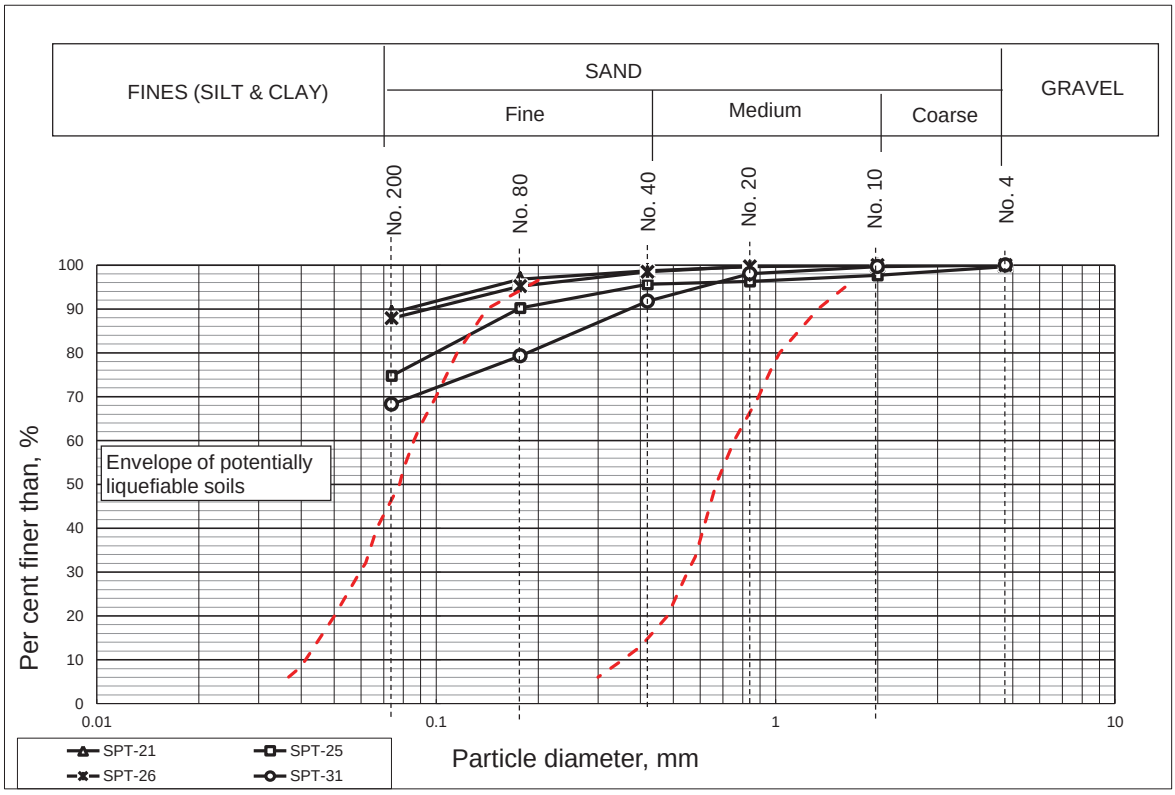
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.33	85.35	100
No. 10	1.65	83.70	98
No.20	1.23	82.47	96
No. 40	0.57	81.90	96
No. 80	4.59	77.31	90
No. 200	13.24	64.07	75
		Remarks:	
		5mm siltstone	

Tare No.	P7
Sample No.	SPT-26
Depth	26.55-27.0
Dry soil, gm	75.91

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	75.91	100
No. 10	0.00	75.91	100
No. 20	0.24	75.67	100
No. 40	0.92	74.75	98
No. 80	2.48	72.27	95
No. 200	5.57	66.70	88
		Remarks:	
		14 mm siltstones	

Tare No.	T16
Sample No.	SPT-31
Depth	31.55-32.0
Dry soil, gm	72

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	72.00	100
No. 10	0.24	71.76	100
No. 20	1.20	70.56	98
No. 40	4.50	66.06	92
No. 80	9.00	57.06	79
No. 200	7.92	49.14	68
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-1**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/27/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	F11
Sample No.	SPT-32
Depth	32.55-33.0
Dry soil, gm	93.19

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	93.19	100
No. 10	1.56	91.63	98
No. 20	4.87	86.76	93
No. 40	13.8	72.96	78
No. 80	25.03	47.93	51
No. 200	15.94	31.99	34
		Remarks:	

Tare No.	C13
Sample No.	SPT-34
Depth	34.55-35.0
Dry soil, gm	105.83

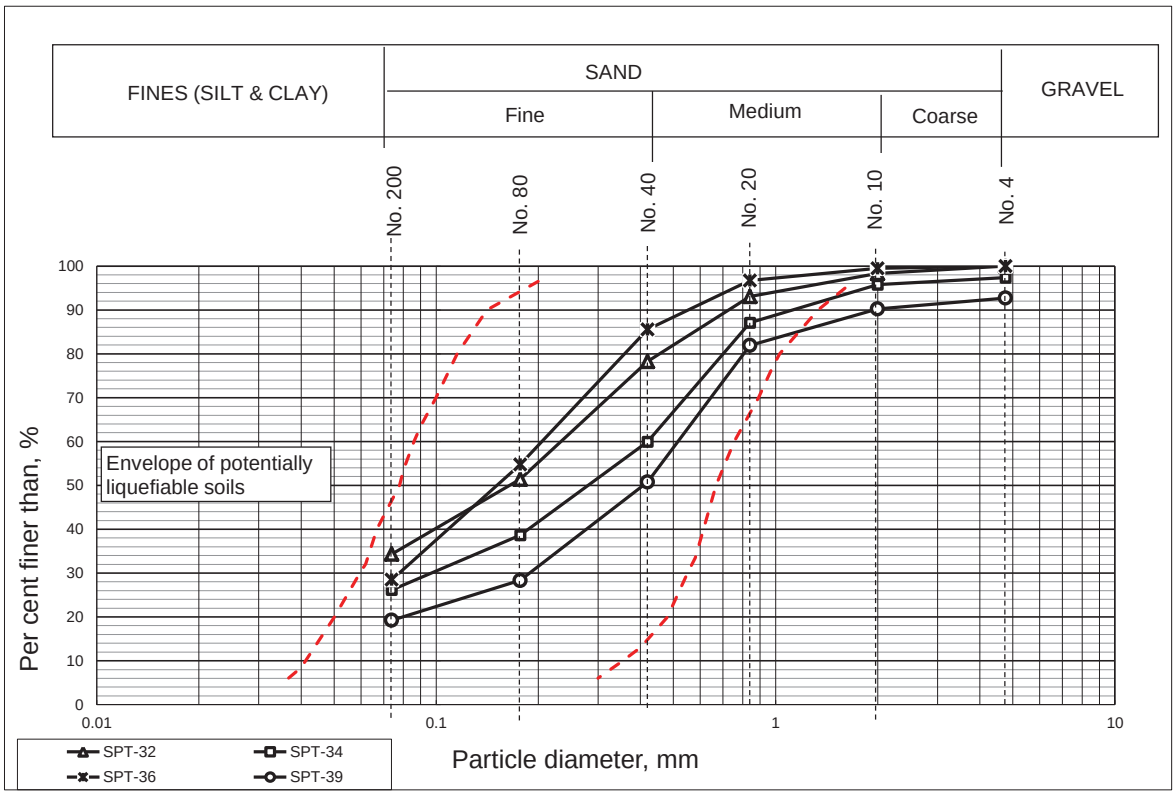
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	2.81	103.02	97
No. 10	1.70	101.32	96
No.20	9.19	92.13	87
No. 40	28.67	63.46	60
No. 80	22.56	40.90	39
No. 200	13.20	27.70	26
		Remarks:	
		shells	

Tare No.	T9
Sample No.	SPT-36
Depth	36.55-37.0
Dry soil, gm	102.76

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	102.76	100
No. 10	0.52	102.24	99
No. 20	2.87	99.37	97
No. 40	11.46	87.91	86
No. 80	31.62	56.29	55
No. 200	27.00	29.29	29
		Remarks:	
		14 mm siltstones	

Tare No.	T137
Sample No.	SPT-39
Depth	39.55-40.0
Dry soil, gm	109.95

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	8.03	101.92	93
No. 10	2.75	99.17	90
No. 20	9.10	90.07	82
No. 40	34.23	55.84	51
No. 80	24.70	31.14	28
No. 200	9.99	21.15	19
		Remarks:	
		16mm siltstones	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	N-1
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	98.72

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	3.73	94.99	96
No. 10	6.02	88.97	90
No. 20	15.56	73.41	74
No. 40	24.89	48.52	49
No. 80	18.21	30.31	31
No. 200	10.76	19.55	20
		Remarks:	
		w/ decayed woods	

Tare No.	G-3
Sample No.	SPT-3
Depth	2.55-3.00
Dry soil, gm	113.44

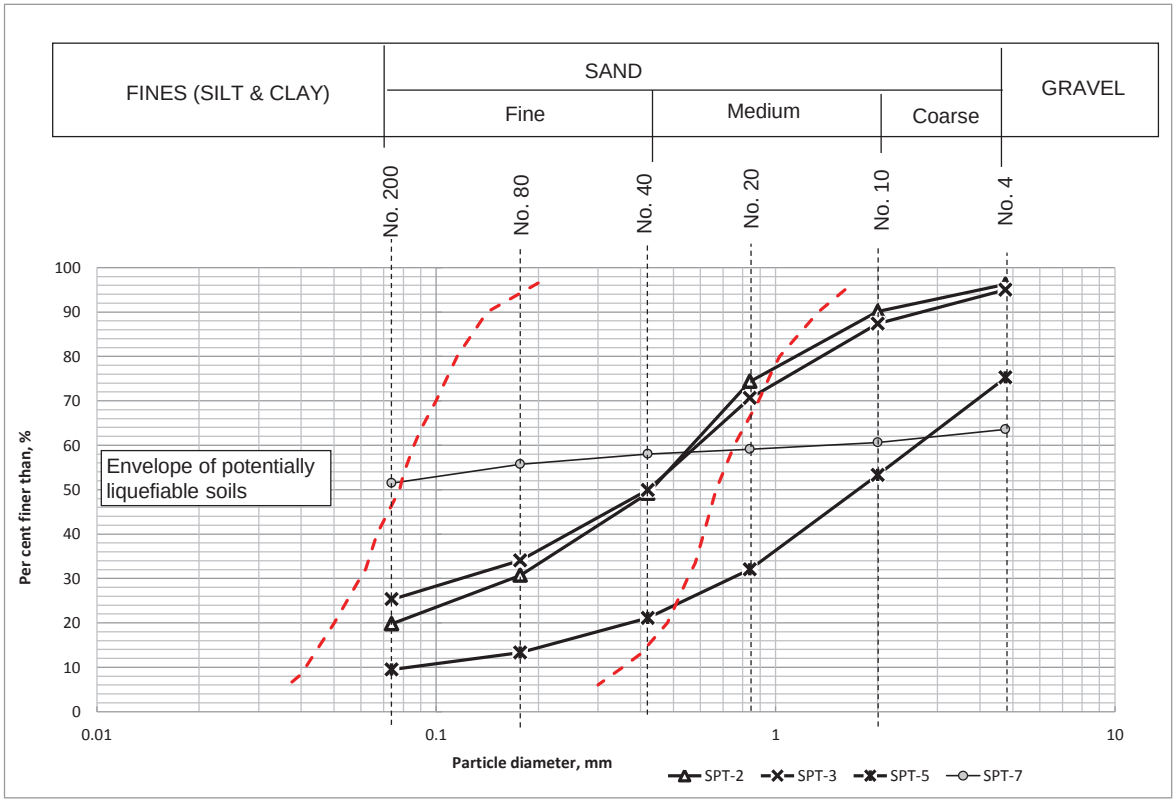
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.68	107.76	95
No. 10	8.66	99.10	87
No.20	18.99	80.11	71
No. 40	23.53	56.58	50
No. 80	17.94	38.64	34
No. 200	9.94	28.70	25
		Remarks:	

Tare No.	E-4
Sample No.	SPT-5
Depth	4.50-5.00
Dry soil, gm	158.11

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	39.17	118.94	75
No. 10	34.64	84.30	53
No. 20	33.62	50.68	32
No. 40	17.37	33.31	21
No. 80	12.28	21.03	13
No. 200	6.04	14.99	9
D60	D50	D30	D10
2.606	1.747	0.739	0.1
Cu	Cc	Remarks:	
31.3	2.5	**SW**	

Tare No.	L-7
Sample No.	SPT-7
Depth	6.55-7.00
Dry soil, gm	81.53

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	29.68	51.85	64
No. 10	2.42	49.43	61
No. 20	1.24	48.19	59
No. 40	0.88	47.31	58
No. 80	1.86	45.45	56
No. 200	3.48	41.97	51
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	F-11
Sample No.	UDS-1
Depth	7.50-8.0
Dry soil, gm	59.50

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		59.50	100
No. 10	0.51	58.99	99
No. 20	0.56	58.43	98
No. 40	0.61	57.82	97
No. 80	1.13	56.69	95
No. 200	6.18	50.51	85
		Remarks:	
		Organic Material	

Tare No.	N-10
Sample No.	SPT-8
Depth	8.55-9.00
Dry soil, gm	71.87

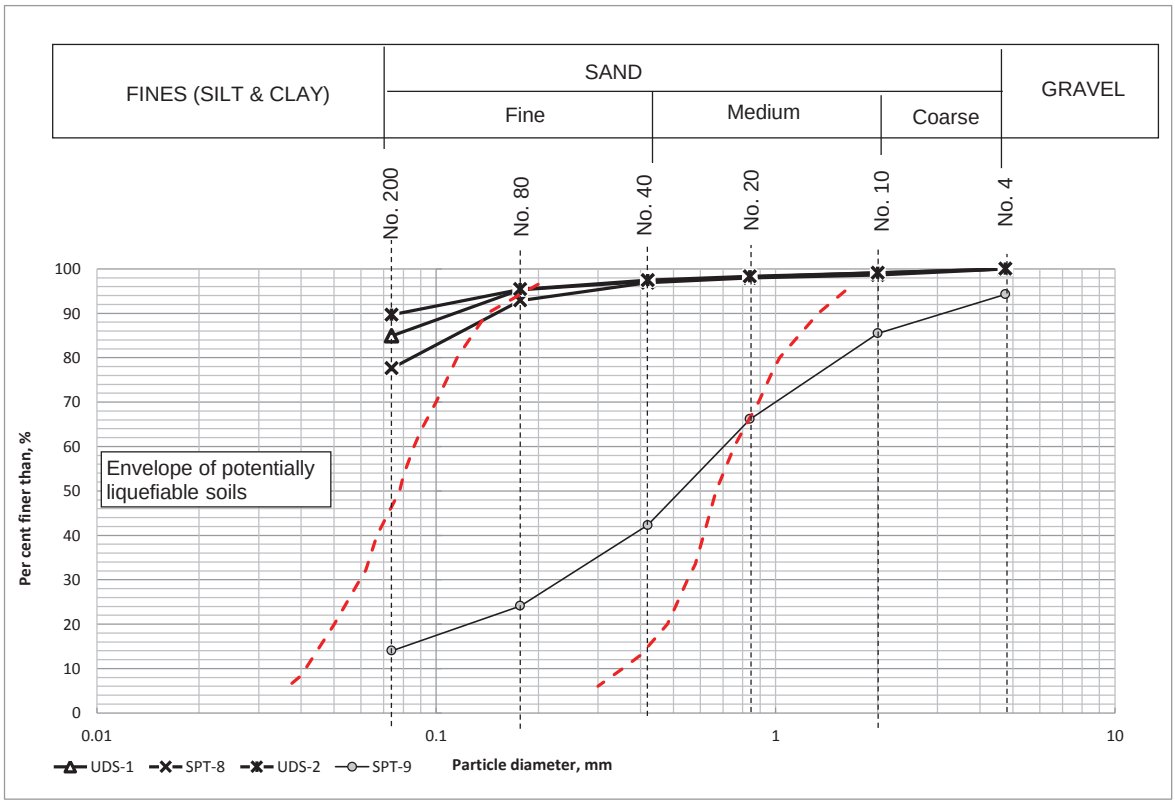
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	71.87	100
No. 10	0.99	70.88	99
No.20	0.49	70.39	98
No. 40	0.78	69.61	97
No. 80	2.87	66.74	93
No. 200	10.93	55.81	78
		Remarks:	
		Organic Material	

Tare No.	A-2
Sample No.	UDS-2
Depth	9.50-10.0
Dry soil, gm	59.21

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		59.21	100
No. 10	0.54	58.67	99
No. 20	0.46	58.21	98
No. 40	0.52	57.69	97
No. 80	1.21	56.48	95
No. 200	3.40	53.08	90
		Remarks:	
		Organic Material	

Tare No.	N-24
Sample No.	SPT-9
Depth	10.55-11.00
Dry soil, gm	98.53

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.68	92.85	94
No. 10	8.66	84.19	85
No. 20	18.99	65.20	66
No. 40	23.53	41.67	42
No. 80	17.94	23.73	24
No. 200	9.94	13.79	14
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	N3
Sample No.	SPT-15
Depth	16.55-17.0
Dry soil, gm	74.1

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.83	72.27	98
No. 10	1.55	70.72	95
No. 20	1.45	69.27	93
No. 40	0.67	68.60	93
No. 80	4.68	63.92	86
No. 200	17.38	46.54	63
		Remarks:	
		12 mm Sandstone	

Tare No.	F-7
Sample No.	SPT-18
Depth	19.55-20.0
Dry soil, gm	98.50

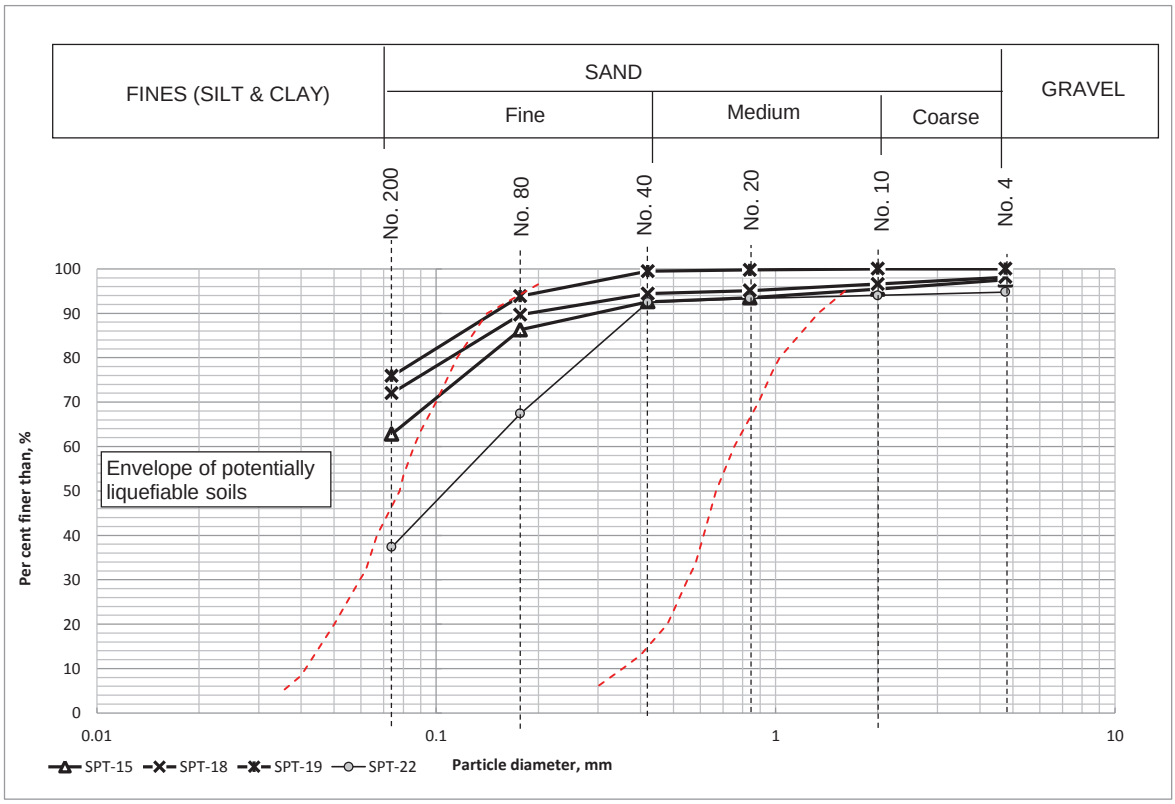
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.83	96.67	98
No. 10	1.55	95.12	97
No.20	1.45	93.67	95
No. 40	0.67	93.00	94
No. 80	4.68	88.32	90
No. 200	17.38	70.94	72
		Remarks:	
		12 mm Sandstone	

Tare No.	T-15
Sample No.	SPT-19
Depth	20.55-21.0
Dry soil, gm	69.53

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	69.53	100
No. 10	0	69.53	100
No. 20	0.18	69.35	100
No. 40	0.2	69.15	99
No. 80	3.9	65.25	94
No. 200	12.5	52.75	76
		Remarks:	

Tare No.	G15
Sample No.	SPT-22
Depth	23.55-24.0
Dry soil, gm	87.16

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	4.54	82.62	95
No. 10	0.68	81.94	94
No. 20	0.62	81.32	93
No. 40	0.71	80.61	92
No. 80	21.87	58.74	67
No. 200	26.19	32.55	37
		Remarks:	
		5mm siltstones	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/27/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	B2b
Sample No.	SPT-24
Depth	25.55-26.0
Dry soil, gm	65.23

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.73	63.50	97
No. 10	0.27	63.23	97
No. 20	0.91	62.32	96
No. 40	0.79	61.53	94
No. 80	1.14	60.39	93
No. 200	0.88	59.51	91
		Remarks:	
		5mm siltstones	

Tare No.	N-4
Sample No.	SPT-25
Depth	26.55-27.0
Dry soil, gm	92.17

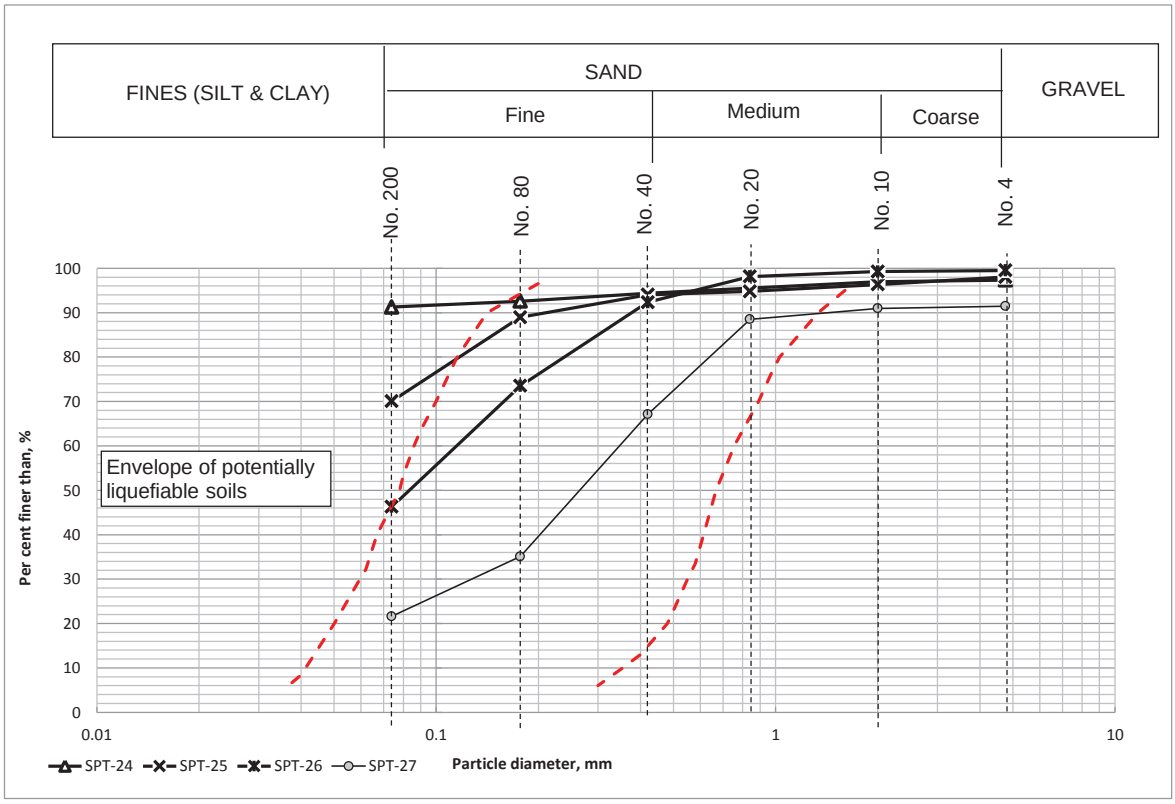
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.83	90.34	98
No. 10	1.55	88.79	96
No.20	1.45	87.34	95
No. 40	0.67	86.67	94
No. 80	4.68	81.99	89
No. 200	17.38	64.61	70
		Remarks:	
		Decayed wood	

Tare No.	B-4
Sample No.	SPT-26
Depth	27.55-28.0
Dry soil, gm	133.08

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.65	132.43	100
No. 10	0.32	132.11	99
No. 20	1.53	130.58	98
No. 40	7.72	122.86	92
No. 80	25.04	97.82	74
No. 200	36.18	61.64	46
		Remarks:	
		Decayed wood	

Tare No.	G13
Sample No.	SPT-27
Depth	28.55-29.0
Dry soil, gm	117.67

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	10.03	107.64	91
No. 10	0.64	107.00	91
No. 20	2.90	104.10	88
No. 40	25.14	78.96	67
No. 80	37.67	41.29	35
No. 200	15.85	25.44	22
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	N-6
Sample No.	SPT-11
Depth	12.56-13.00
Dry soil, gm	106.14

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	2.37	103.77	98
No. 10	2.51	101.26	95
No. 20	2.14	99.12	93
No. 40	10.80	88.32	83
No. 80	40.79	47.53	45
No. 200	18.18	29.35	28
D60	D50	D30	D10
			.
Cu	Cc	Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

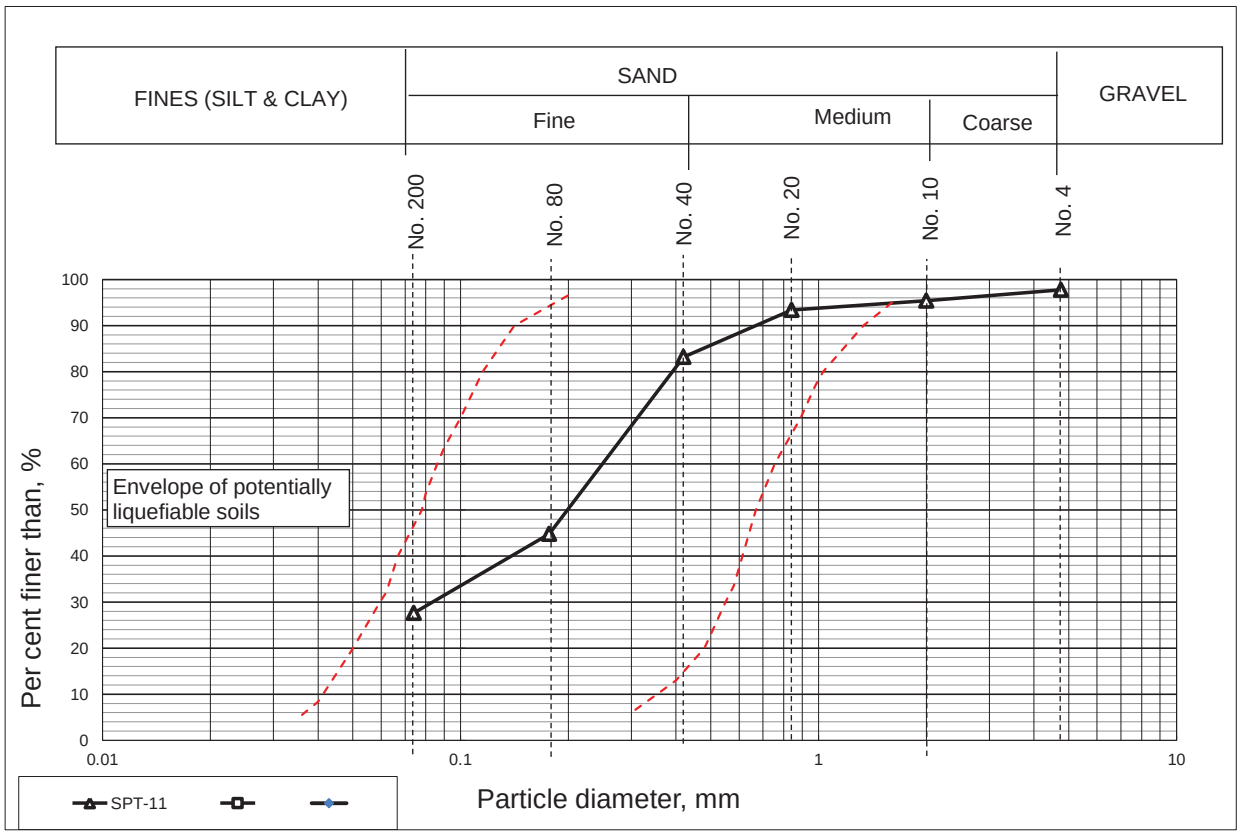
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	



Project:	**CDOR-FRIMP**	Borehole No.	**FB-4**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/22/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	O-4
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	134.80

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	21.38	113.42	84
No. 10	13.91	99.51	74
No. 20	24.56	74.95	56
No. 40	30.59	44.36	33
No. 80	16.1	28.26	21
No. 200	5.51	22.75	17
		Remarks:	
		Concrete debris	

Tare No.	EP-1
Sample No.	SPT-4
Depth	3.55-4.00
Dry soil, gm	143.67

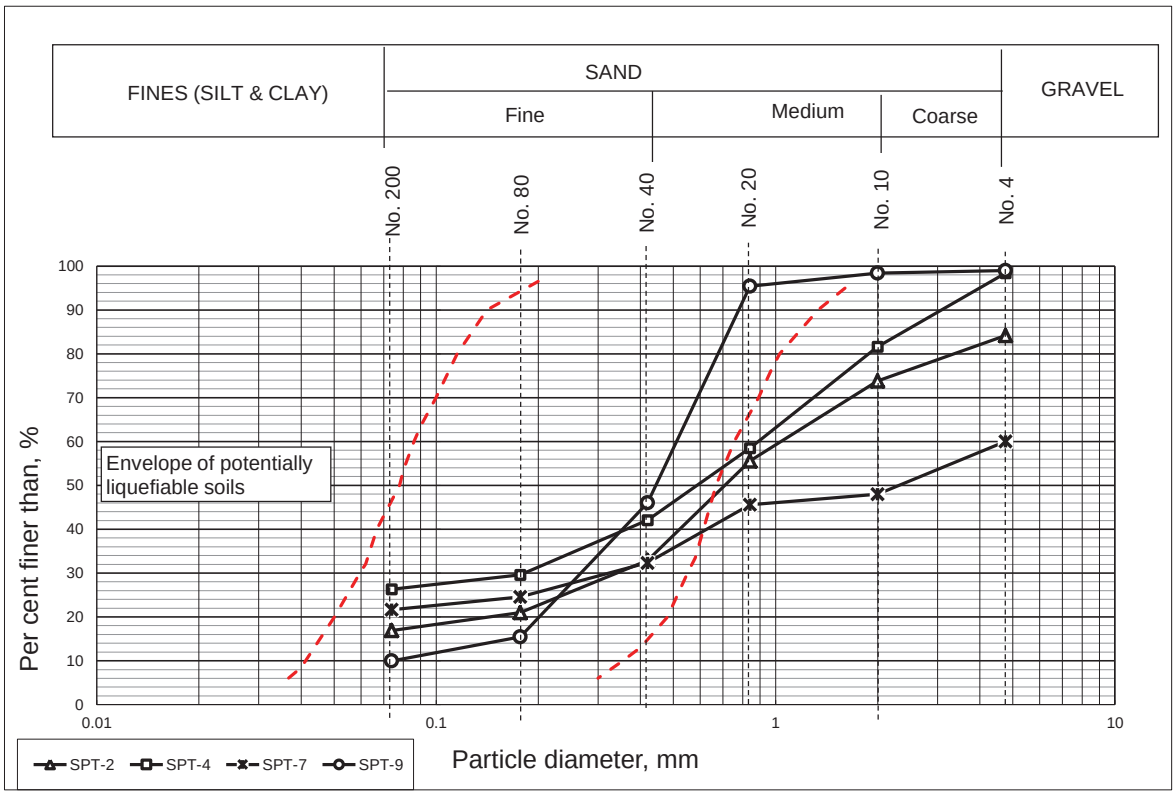
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	2.29	141.38	98
No. 10	24.10	117.28	82
No.20	33.24	84.04	58
No. 40	23.61	60.43	42
No. 80	17.87	42.56	30
No. 200	4.78	37.78	26
		Remarks:	
		22m rounded gravel	

Tare No.	0-3
Sample No.	SPT-7
Depth	6.55-7.00
Dry soil, gm	118.2

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	47.25	70.95	60
No. 10	14.21	56.74	48
No. 20	2.86	53.88	46
No. 40	15.66	38.22	32
No. 80	9.16	29.06	25
No. 200	3.50	25.56	22
		Remarks:	
		24mm rounded gravel	

Tare No.	N-3
Sample No.	SPT-9
Depth	8.55-9.00
Dry soil, gm	117.72

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.17	116.55	99
No. 10	0.69	115.86	98
No. 20	3.57	112.29	95
No. 40	58.10	54.19	46
No. 80	36.02	18.17	15
No. 200	6.44	11.73	10
D60	D50	D30	D10
0.511	0.444	0.267	0.07
Cu	Cc	Remarks:	**SW**
6.908	1.885	6mm gravel	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-4**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	2/22/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	N-19
Sample No.	SPT-11
Depth	10.05-10.50
Dry soil, gm	113.82

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.43	112.39	99
No. 10	4.02	108.37	95
No. 20	14.4	93.97	83
No. 40	21.84	72.13	63
No. 80	29.42	42.71	38
No. 200	12.78	29.93	26

Remarks:
7mm gravel

Tare No.	G-15
Sample No.	SPT-14
Depth	13.55-14.00
Dry soil, gm	74.27

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	74.27	100
No. 10	0.00	74.27	100
No.20	2.17	72.10	97
No. 40	1.41	70.69	95
No. 80	3.48	67.21	90
No. 200	4.40	62.81	85

Remarks:

Tare No.	L-2
Sample No.	SPT-17
Depth	16.55-17.00
Dry soil, gm	88.05

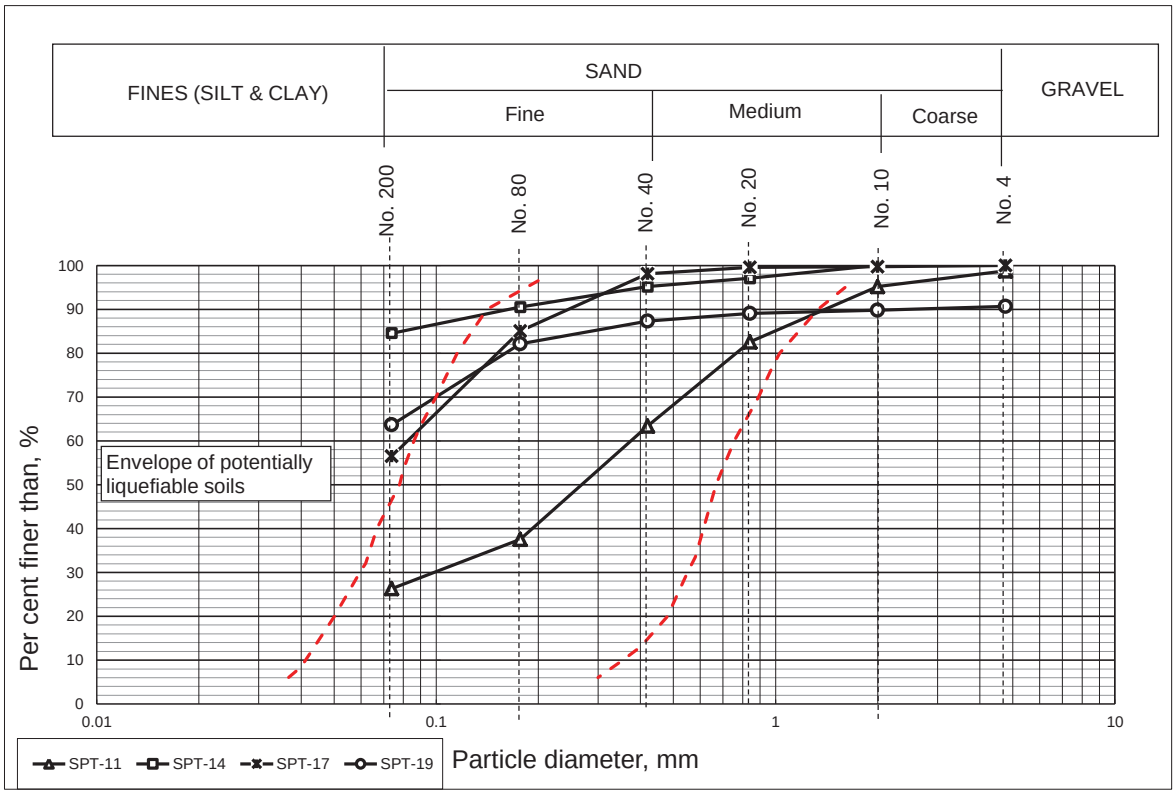
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	88.05	100
No. 10	0.28	87.77	100
No. 20	0.11	87.66	100
No. 40	1.26	86.40	98
No. 80	11.49	74.91	85
No. 200	25.16	49.75	57

Remarks:

Tare No.	L-19
Sample No.	SPT-19
Depth	18.55-19.00
Dry soil, gm	100.12

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	9.33	90.79	91
No. 10	0.92	89.87	90
No. 20	0.69	89.18	89
No. 40	1.76	87.42	87
No. 80	5.18	82.24	82
No. 200	18.53	63.71	64

Remarks:
15mm siltstone & shell frag.



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-4**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/22/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	T-50
Sample No.	SPT-22
Depth	21.55-22.00
Dry soil, gm	91.04

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	91.04	100
No. 10	0.00	91.04	100
No. 20	0.09	90.95	100
No. 40	0.64	90.31	99
No. 80	6.88	83.43	92
No. 200	28.02	55.41	61
		Remarks:	

Tare No.	F-4
Sample No.	SPT-24
Depth	23.55-24.00
Dry soil, gm	120.38

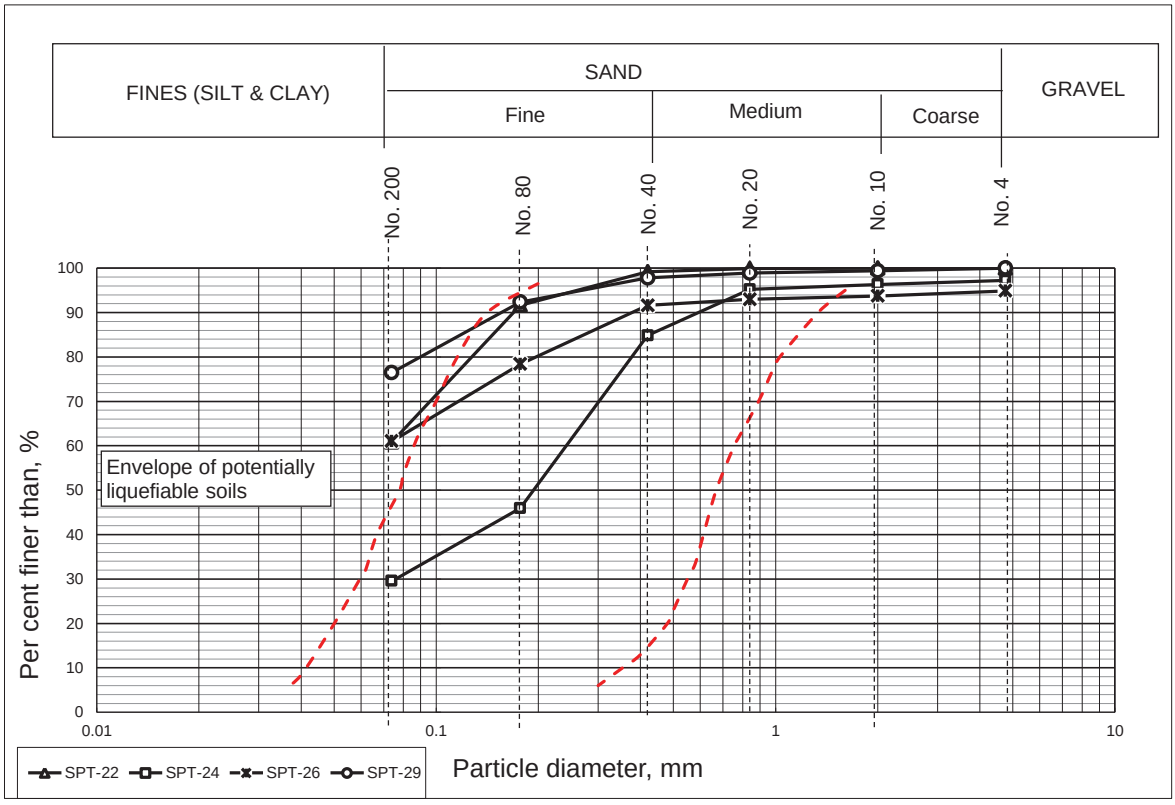
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	3.30	117.08	97
No. 10	1.13	115.95	96
No.20	1.33	114.62	95
No. 40	12.51	102.11	85
No. 80	46.77	55.34	46
No. 200	19.76	35.58	30
		Remarks:	
		12 mm siltstone fragment	

Tare No.	B-2
Sample No.	SPT-26
Depth	25.55-26.00
Dry soil, gm	101.98

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.22	96.76	95
No. 10	1.17	95.59	94
No. 20	0.78	94.81	93
No. 40	1.40	93.41	92
No. 80	13.46	79.95	78
No. 200	17.71	62.24	61
		Remarks:	
		13 mm siltstone	

Tare No.	F-5
Sample No.	SPT-29
Depth	28.55-9.00
Dry soil, gm	98.38

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	98.38	100
No. 10	0.61	97.77	99
No. 20	0.48	97.29	99
No. 40	1.06	96.23	98
No. 80	5.36	90.87	92
No. 200	15.63	75.24	76
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-6**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	T-8
Sample No.	SPT-3
Depth	2.55-3.00
Dry soil, gm	109.58

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	109.58	100
No. 10	2.06	107.52	98
No. 20	24.5	83.02	76
No. 40	36.46	46.56	42
No. 80	13.8	32.76	30
No. 200	6.88	25.88	24
		Remarks:	

Tare No.	C-1
Sample No.	SPT-6
Depth	5.55-6.00
Dry soil, gm	127.78

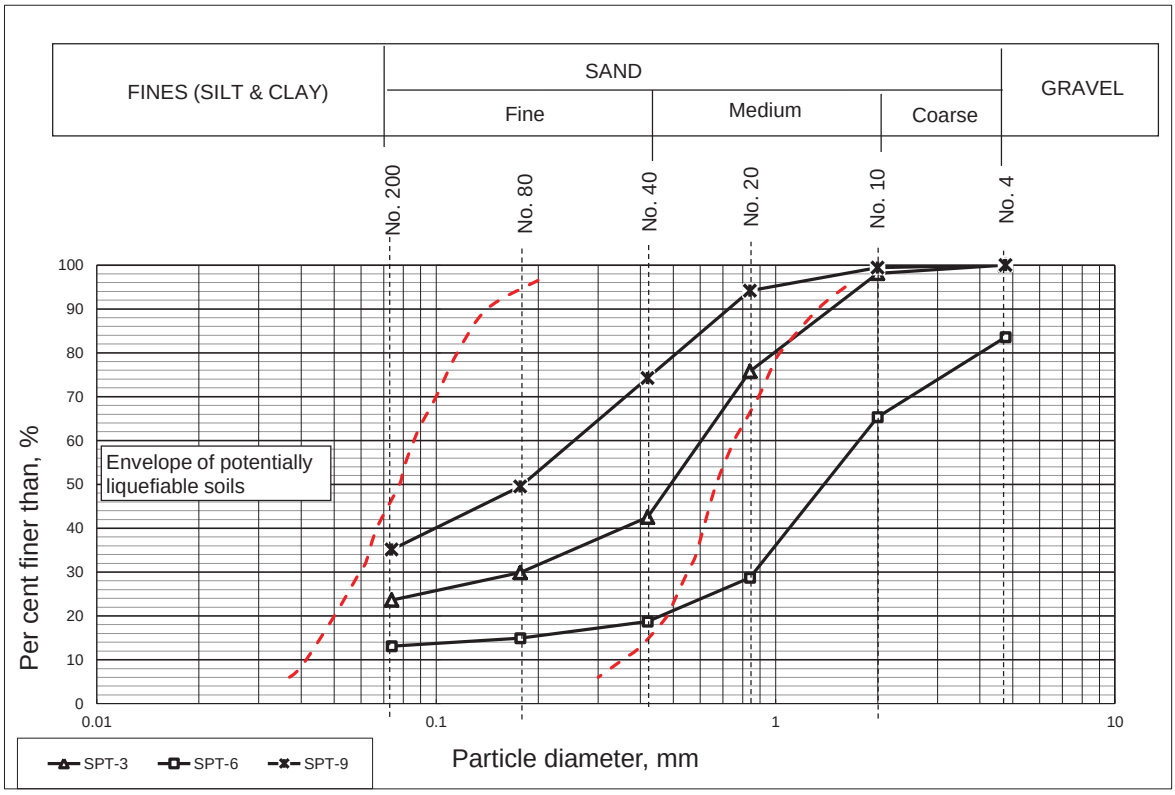
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	20.93	106.85	84
No. 10	23.32	83.53	65
No.20	46.86	36.67	29
No. 40	12.70	23.97	19
No. 80	4.87	19.10	15
No. 200	2.38	16.72	13
		Remarks:	
		17mm gravel	

Tare No.	A-2
Sample No.	SPT-9
Depth	9.55-10.00
Dry soil, gm	108.55

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	108.55	100
No. 10	0.67	107.88	99
No. 20	5.65	102.23	94
No. 40	21.60	80.63	74
No. 80	26.90	53.73	49
No. 200	15.55	38.18	35
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-7**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	L-11
Sample No.	SPT-3
Depth	2.55-3.00
Dry soil, gm	92.68

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	92.68	100
No. 10	1.57	91.11	98
No. 20	1.22	89.89	97
No. 40	4.37	85.52	92
No. 80	12.89	72.63	78
No. 200	16.91	55.72	60
			.
		Remarks:	

Tare No.	S-4
Sample No.	SPT-6
Depth	5.55-6.00
Dry soil, gm	138.98

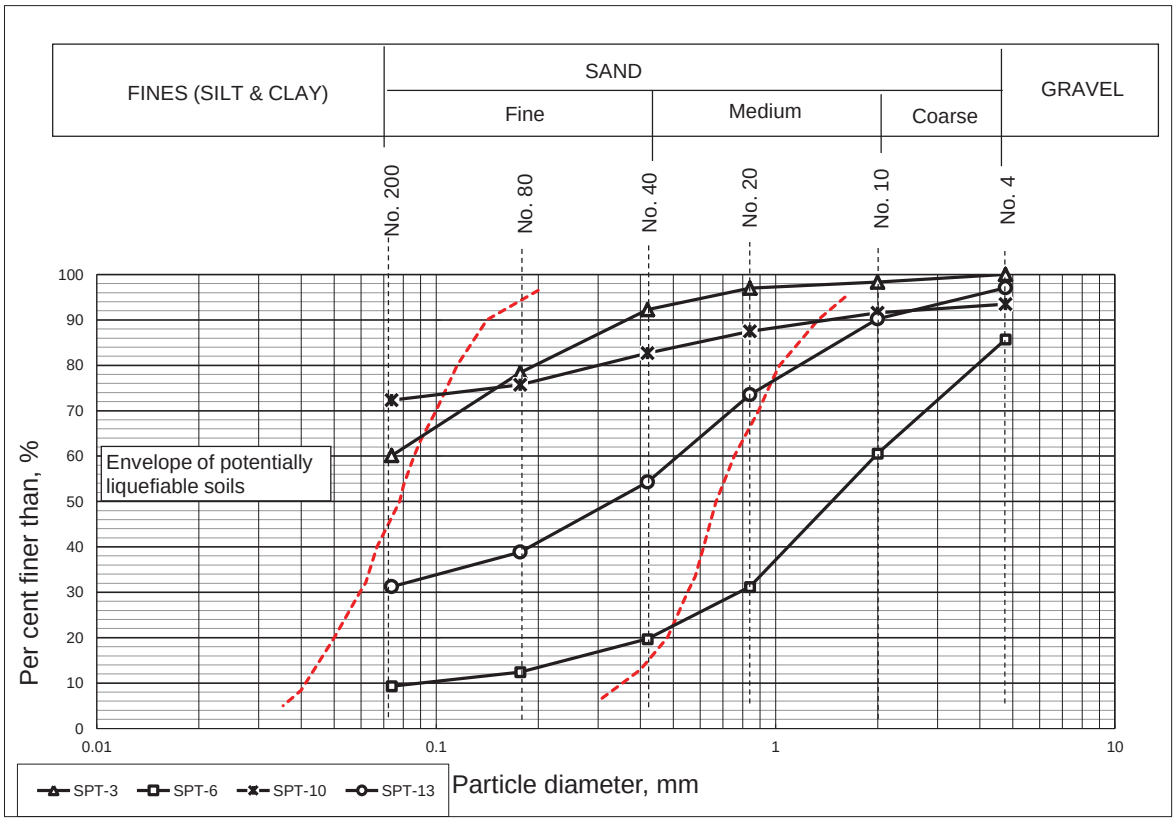
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	19.82	119.16	86
No. 10	35.04	84.12	61
No.20	40.76	43.36	31
No. 40	15.97	27.39	20
No. 80	10.17	17.22	12
No. 200	4.32	12.90	9
D60	D50	D30	D10
1.969	1.466	0.782	0.1
Cu	Cc	Remarks:	**SW**
21.754	3.433	8mm gravel	

Tare No.	T-152
Sample No.	SPT-10
Depth	9.55-10.00
Dry soil, gm	57.44

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	3.74	53.70	93
No. 10	1.10	52.60	92
No. 20	2.35	50.25	87
No. 40	2.77	47.48	83
No. 80	4.01	43.47	76
No. 200	1.91	41.56	72
		Remarks:	
		gravel & shells	

Tare No.	O-1
Sample No.	SPT-13
Depth	12.55-13.00
Dry soil, gm	86.76

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	2.53	84.23	97
No. 10	5.92	78.31	90
No. 20	14.53	63.78	74
No. 40	16.68	47.10	54
No. 80	13.38	33.72	39
No. 200	6.63	27.09	31
		Remarks:	
		decayed wood	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-7**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	E-2
Sample No.	SPT-16
Depth	15.55-16.00
Dry soil, gm	43.71

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	6.06	37.65	86
No. 10	2.78	34.87	80
No. 20	7.2	27.67	63
No. 40	7.86	19.81	45
No. 80	2.83	16.98	39
No. 200	0.58	16.40	38
		Remarks:	

Tare No.	L-12
Sample No.	SPT-18
Depth	17.55-18.00
Dry soil, gm	107.15

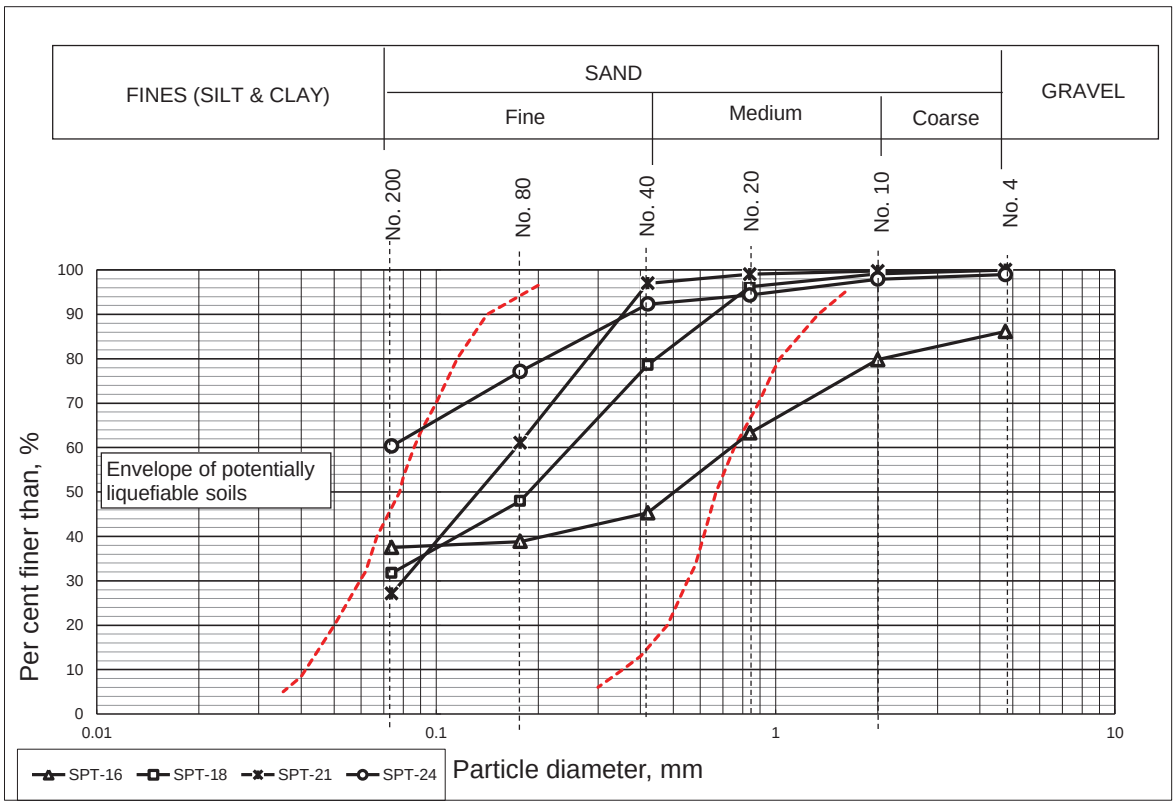
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	107.15	100
No. 10	0.97	106.18	99
No.20	3.07	103.11	96
No. 40	18.94	84.17	79
No. 80	32.81	51.36	48
No. 200	17.34	34.02	32
		Remarks:	

Tare No.	AC
Sample No.	SPT-21
Depth	20.55-21.00
Dry soil, gm	95.06

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	95.06	100
No. 10	0.25	94.81	100
No. 20	0.67	94.14	99
No. 40	1.95	92.19	97
No. 80	34.13	58.06	61
No. 200	32.25	25.81	27
		Remarks:	

Tare No.	T-23
Sample No.	SPT-24
Depth	23.55-24.00
Dry soil, gm	98.04

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.02	97.02	99
No. 10	1.01	96.01	98
No. 20	3.53	92.48	94
No. 40	2.00	90.48	92
No. 80	14.85	75.63	77
No. 200	16.45	59.18	60
		Remarks:	
		Shell fragments	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-7**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	AC
Sample No.	SPT-25
Depth	24.55-25.0
Dry soil, gm	139.27

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		139.27	100
No. 10	0.2	139.07	100
No. 20	0.59	138.48	99
No. 40	2.18	136.30	98
No. 80	5.41	130.89	94
No. 200	12.61	118.28	85
		Remarks:	
		Shell	

Tare No.	G-7
Sample No.	SPT-26
Depth	25.55-26.0
Dry soil, gm	84.82

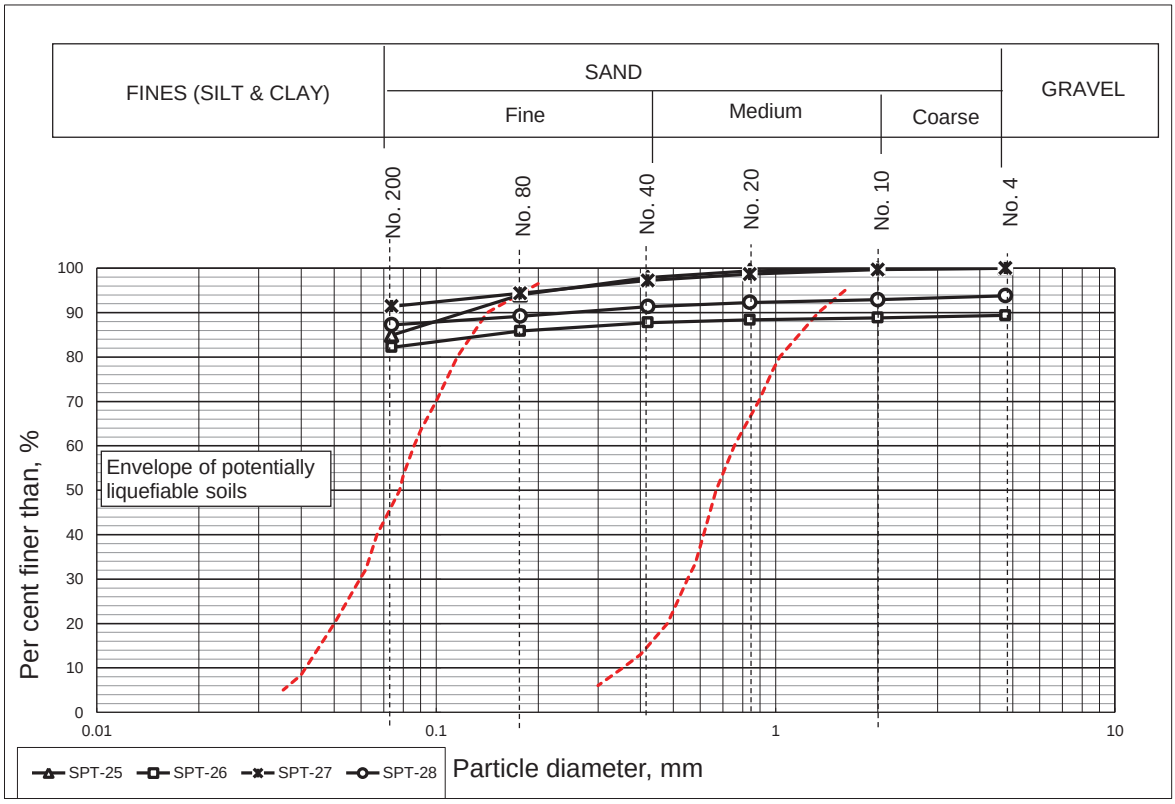
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	8.99	75.83	89
No. 10	0.48	75.35	89
No.20	0.39	74.96	88
No. 40	0.52	74.44	88
No. 80	1.61	72.83	86
No. 200	3.09	69.74	82
		Remarks:	
		25 mm gravel	

Tare No.	T-2
Sample No.	SPT-27
Depth	26.55-27.00
Dry soil, gm	76.48

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	76.48	100
No. 10	0.24	76.24	100
No. 20	0.78	75.46	99
No. 40	1.11	74.35	97
No. 80	2.18	72.17	94
No. 200	2.24	69.93	91
		Remarks:	

Tare No.	O-3
Sample No.	SPT-28
Depth	27.55-28.0
Dry soil, gm	121.69

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	7.52	114.17	94
No. 10	1.08	113.09	93
No. 20	0.76	112.33	92
No. 40	1.14	111.19	91
No. 80	2.63	108.56	89
No. 200	2.39	106.17	87
		Remarks:	
		20 mm Siltstone	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-7**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	8/21/2013
Client:	JICA Survey Team	Tested by:	Jflores

SIEVE ANALYSIS

Tare No.	A-1
Sample No.	UDS-1
Depth	29.50-30.0
Dry soil, gm	51.00

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	51.00	100
No. 10	0.66	50.34	99
No. 20	2.03	48.31	95
No. 40	2.33	45.98	90
No. 80	3.3	42.68	84
No. 200	2	40.68	80
D60	D50	D30	D10
			.
Cu	Cc	Remarks:	
		Organic Material	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

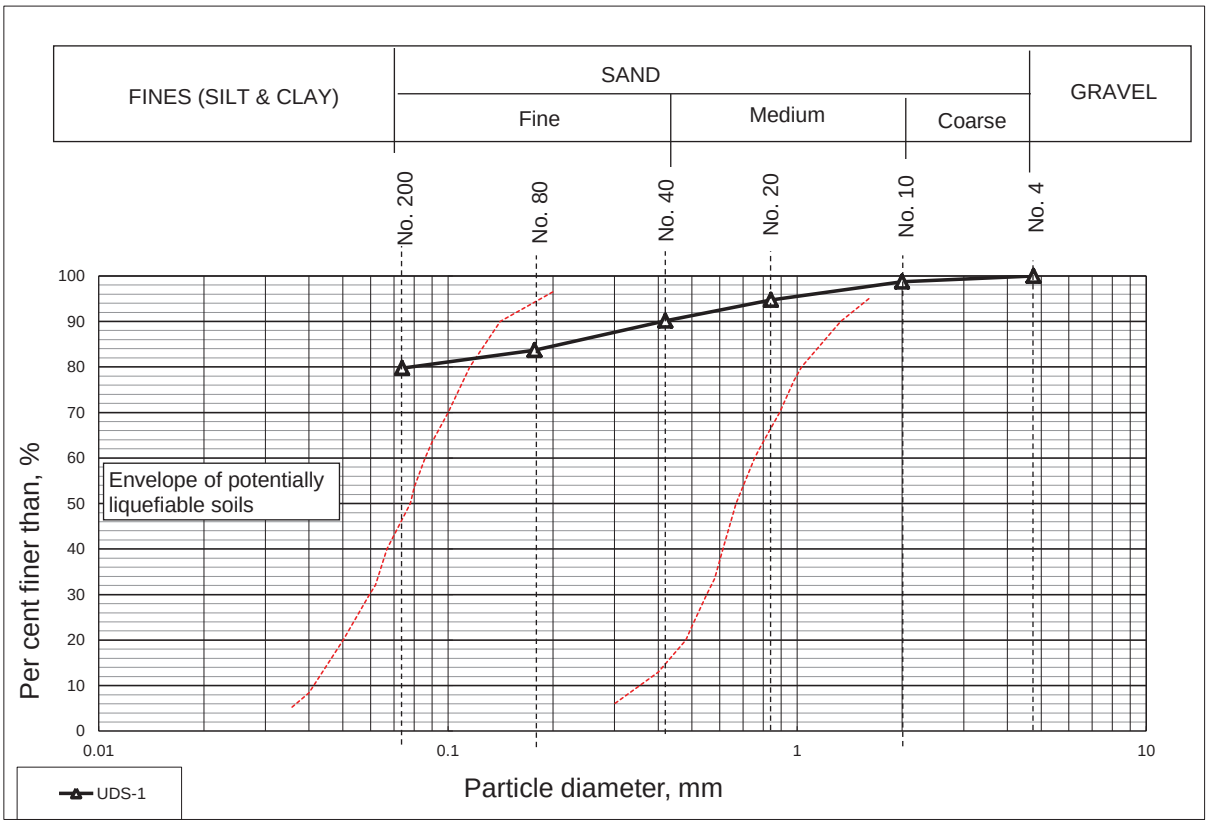
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
D60	D50	D30	D10
Cu	Cc	Remarks:	



Project:	**CDOR-FRIMP**	Borehole No.	**FB-8**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/12/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	A-7
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	71.41

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.94	65.47	92
No. 10	0.97	64.50	90
No. 20	1.13	63.37	89
No. 40	2.73	60.64	85
No. 80	8.86	51.78	73
No. 200	7.85	43.93	62
			.
		Remarks:	
		21 mm sub-angular gravel	

Tare No.	N-29
Sample No.	SPT-4
Depth	3.55-4.00
Dry soil, gm	143.43

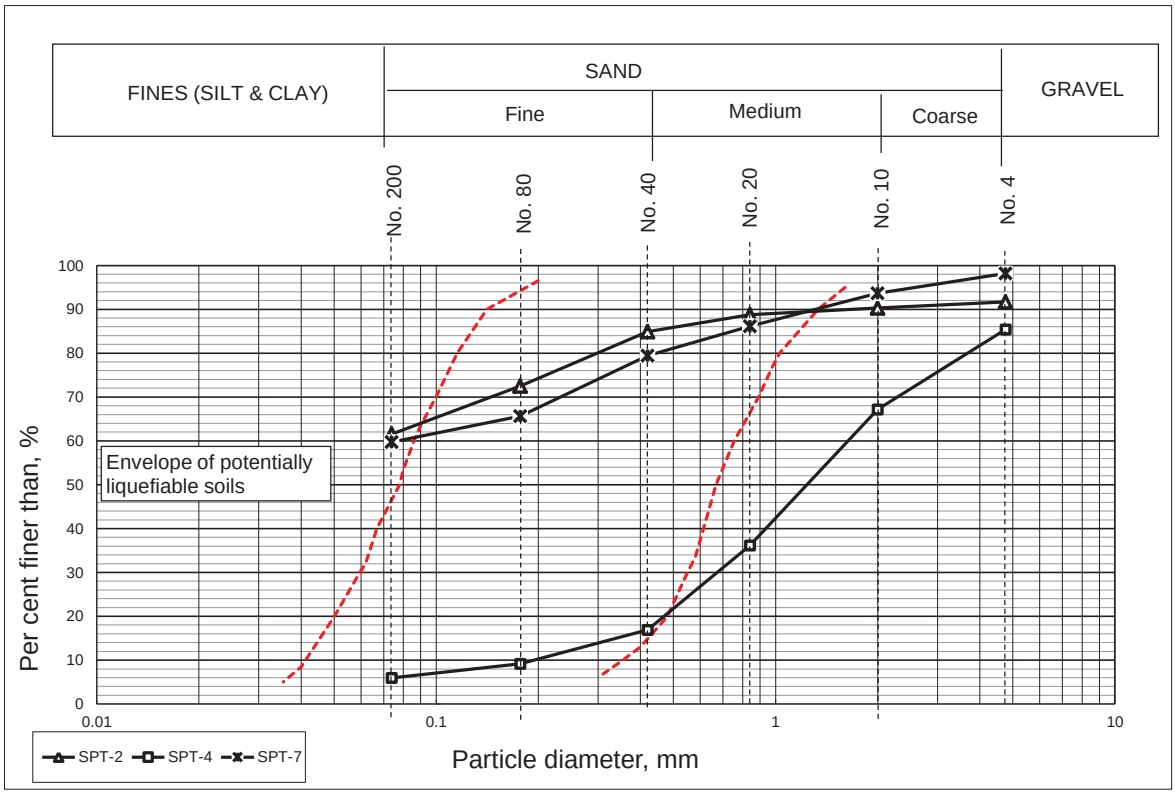
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	20.94	122.49	85
No. 10	26.13	96.36	67
No.20	44.50	51.86	36
No. 40	27.60	24.26	17
No. 80	11.14	13.12	9
No. 200	4.60	8.52	6
D60	D50	D30	D10
1.637	1.238	0.673	0.19
Cu	Cc	Remarks:	SW
8.409	1.424	**19 mm semi-rounded gravel**	

Tare No.	AT
Sample No.	SPT-7
Depth	6.55-7.00
Dry soil, gm	63.62

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.14	62.48	98
No. 10	2.89	59.59	94
No. 20	4.78	54.81	86
No. 40	4.29	50.52	79
No. 80	8.76	41.76	66
No. 200	3.77	37.99	60
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-10**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/30/2013
Client:	JICA Survey Team	Tested by:	JTF

SIEVE ANALYSIS

Tare No.	T145
Sample No.	SPT-1
Depth	0.55-1.00
Dry soil, gm	74.60

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	74.60	100
No. 10	0.13	74.47	100
No. 20	0.14	74.33	100
No. 40	0.18	74.15	99
No. 80	0.61	73.54	99
No. 200	4.3	69.24	93
		Remarks:	

Tare No.	N-25
Sample No.	SPT-2
Depth	2.55-3.00
Dry soil, gm	61.14

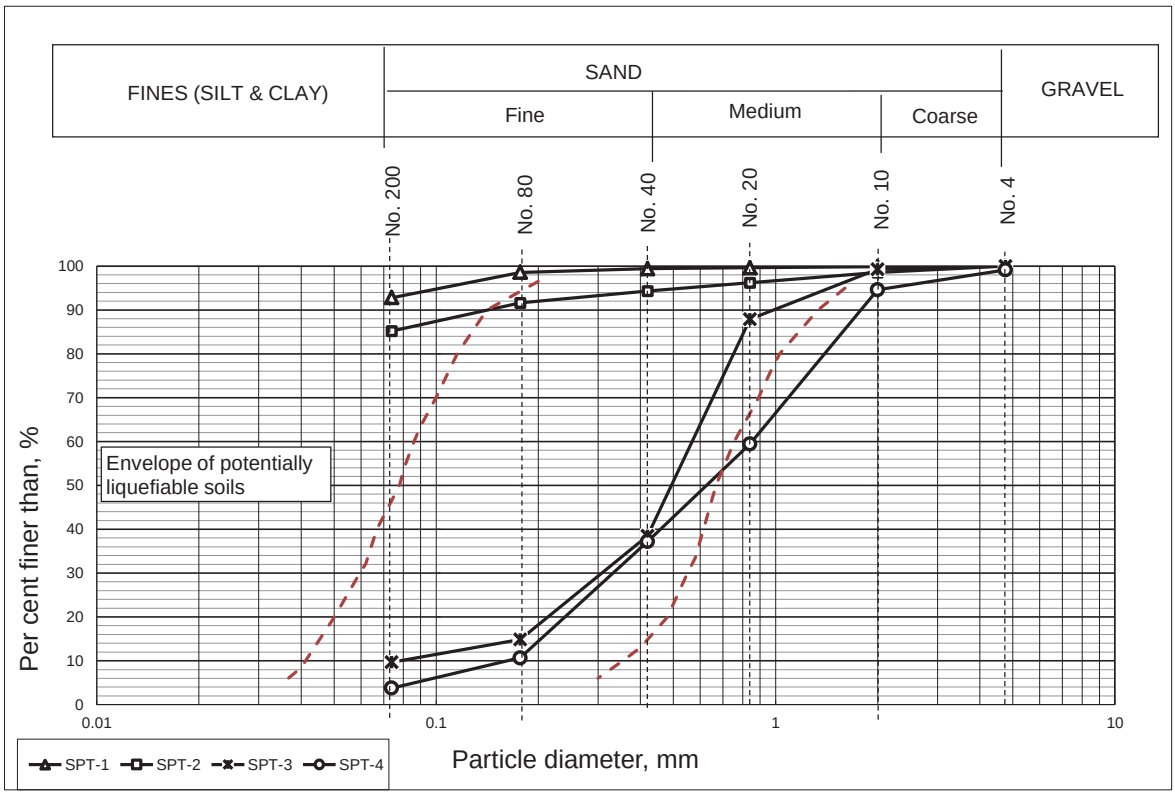
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	61.14	100
No. 10	0.90	60.24	99
No.20	1.40	58.84	96
No. 40	1.20	57.64	94
No. 80	1.62	56.02	92
No. 200	3.93	52.09	85
		Remarks:	

Tare No.	O-5
Sample No.	SPT-3
Depth	3.55-4.00
Dry soil, gm	140.62

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	140.62	100
No. 10	1.06	139.56	99
No. 20	15.93	123.63	88
No. 40	69.45	54.18	39
No. 80	33.26	20.92	15
No. 200	7.28	13.64	10
		Remarks:	

Tare No.	M-12
Sample No.	SPT-4
Depth	4.55-5.00
Dry soil, gm	142.24

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	1.26	140.98	99
No. 10	6.40	134.58	95
No. 20	50.07	84.51	59
No. 40	31.64	52.87	37
No. 80	37.70	15.17	11
No. 200	9.84	5.33	4
		Remarks:	
		7mm gravel	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-10**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/30/2013
Client:	JICA Survey Team	Tested by:	JTF

SIEVE ANALYSIS

Tare No.	L-5
Sample No.	SPT-5
Depth	5.55-6.00
Dry soil, gm	114.50

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	114.50	100
No. 10	0	114.50	100
No. 20	0.19	114.31	100
No. 40	5.94	108.37	95
No. 80	71.77	36.60	32
No. 200	24.84	11.76	10
		Remarks:	

Tare No.	G-8
Sample No.	SPT-6
Depth	6.55-7.00
Dry soil, gm	108.53

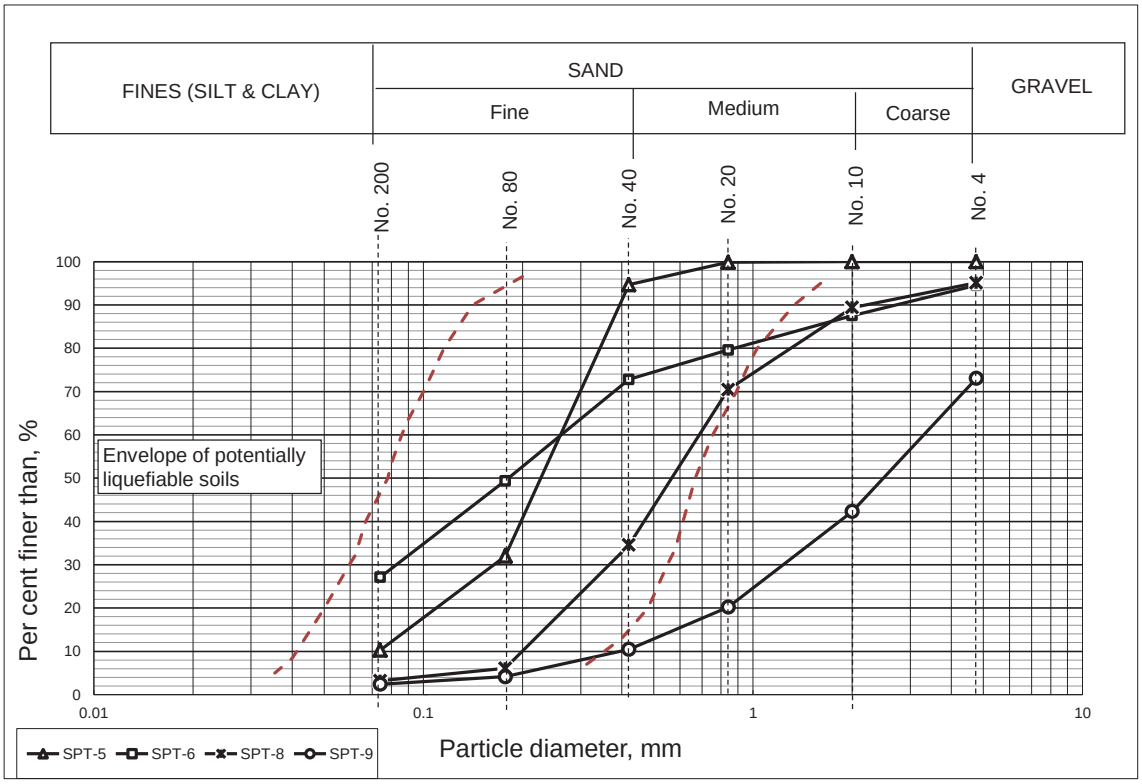
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.97	102.56	94
No. 10	7.57	94.99	88
No.20	8.63	86.36	80
No. 40	7.35	79.01	73
No. 80	25.41	53.60	49
No. 200	24.16	29.44	27
		Remarks:	
		6mm gravel	

Tare No.	N-5
Sample No.	SPT-8
Depth	17.55-18.00
Dry soil, gm	128.63

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	6.31	122.32	95
No. 10	7.33	114.99	89
No. 20	24.40	90.59	70
No. 40	46.15	44.44	35
No. 80	36.64	7.80	6
No. 200	3.72	4.08	3
		Remarks:	
		6mm gravel	

Tare No.	S-3
Sample No.	SPT-9
Depth	18.55-19.00
Dry soil, gm	150.72

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	40.61	110.11	73
No. 10	46.34	63.77	42
No. 20	33.29	30.48	20
No. 40	14.69	15.79	10
No. 80	9.57	6.22	4
No. 200	2.57	3.65	2
		Remarks:	
		27mm sub-rounded gravel	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-10**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/30/2013
Client:	JICA Survey Team	Tested by:	JTF

SIEVE ANALYSIS

Tare No.	T-18
Sample No.	SPT-10
Depth	19.55-20.00
Dry soil, gm	123.63

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	12.67	110.96	90
No. 10	20.86	90.10	73
No. 20	12.44	77.66	63
No. 40	14.69	62.97	51
No. 80	23.17	39.80	32
No. 200	16.01	23.79	19

Remarks: 7mm gravel

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			

Remarks:

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

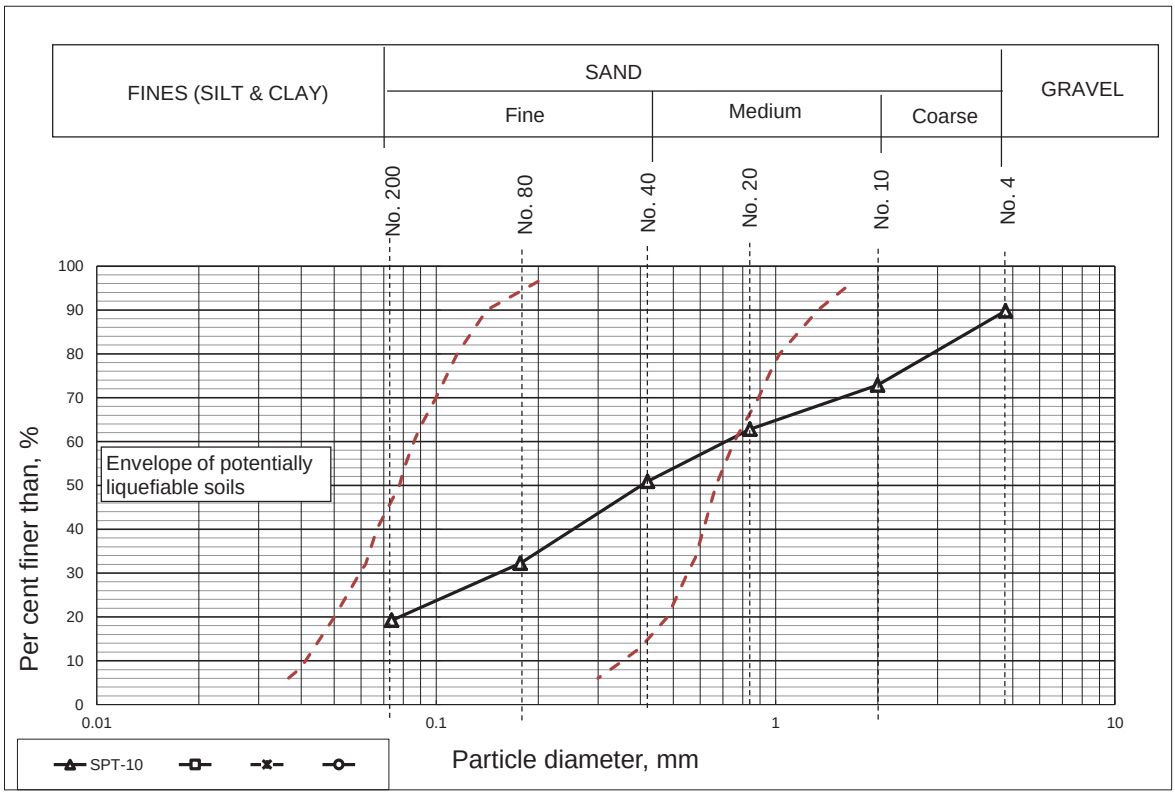
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			

Remarks:

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			

Remarks:



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-11**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	ST
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	85.11

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		85.11	100
No. 10	0.05	85.06	100
No. 20	0.9	84.16	99
No. 40	2.25	81.91	96
No. 80	5.87	76.04	89
No. 200	13.35	62.69	74
		Remarks:	

Tare No.	S-1
Sample No.	SPT-7
Depth	6.55-7.00
Dry soil, gm	71.67

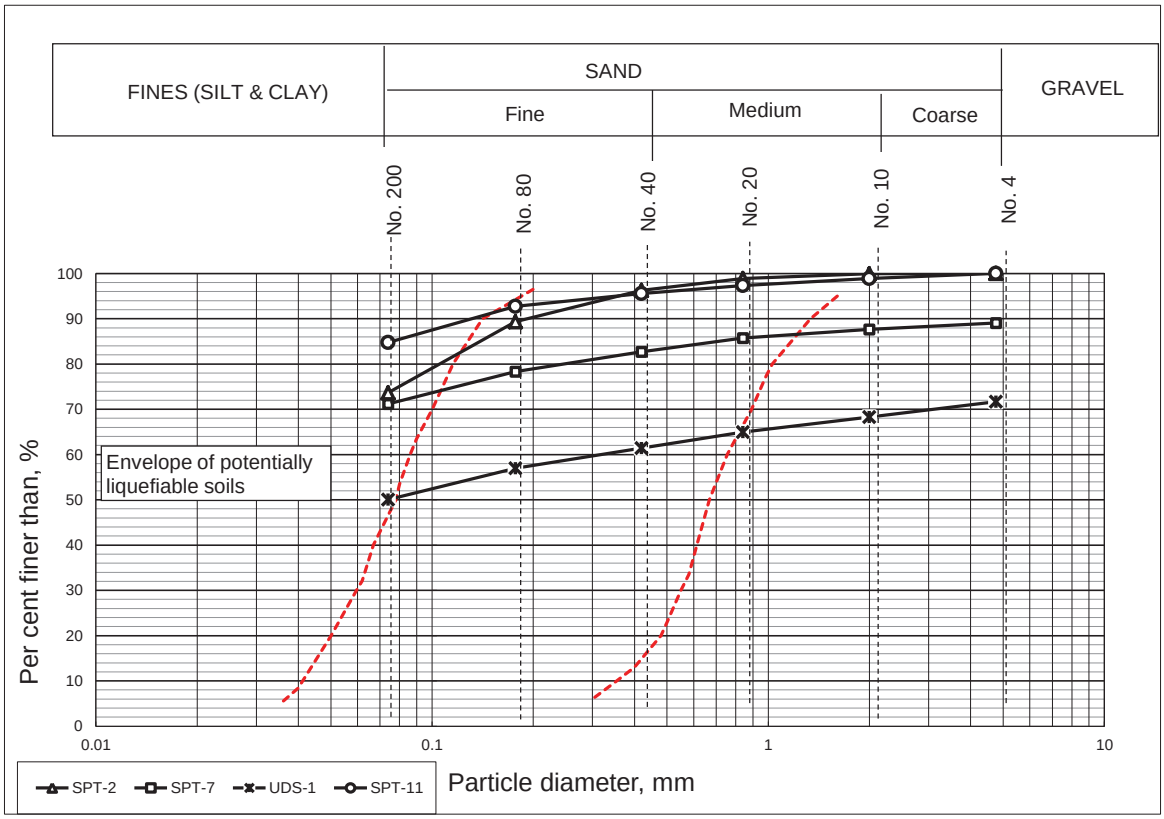
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	7.85	63.82	89
No. 10	1.00	62.82	88
No.20	1.35	61.47	86
No. 40	2.20	59.27	83
No. 80	3.12	56.15	78
No. 200	5.12	51.03	71
		Remarks:	

Tare No.	B-7
Sample No.	UDS-1
Depth	8.50-9.0
Dry soil, gm	41.89

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	11.87	30.02	72
No. 10	1.42	28.60	68
No. 20	1.4	27.20	65
No. 40	1.46	25.74	61
No. 80	1.88	23.86	57
No. 200	2.9	20.96	50
		Remarks: 18 mm Gravel	
		& Organic Material	

Tare No.	N-6
Sample No.	SPT-11
Depth	11.55-12.00
Dry soil, gm	73.72

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		73.72	100
No. 10	0.82	72.90	99
No. 20	1.16	71.74	97
No. 40	1.31	70.43	96
No. 80	2.08	68.35	93
No. 200	5.86	62.49	85
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-11**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	E-2
Sample No.	SPT-15
Depth	15.55-16.00
Dry soil, gm	132.54

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	132.54	121
No. 10	5.69	126.85	115
No. 20	36.17	90.68	83
No. 40	53.23	37.45	34
No. 80	22.60	14.85	14
No. 200	4.62	10.23	9
D60	D50	D30	D10
0.727	0.612	0.433	0.1
Cu	Cc	Remarks:	**SP**
5.552	1.968		

Tare No.	M-12
Sample No.	SPT-22
Depth	22.55-23.00
Dry soil, gm	94.45

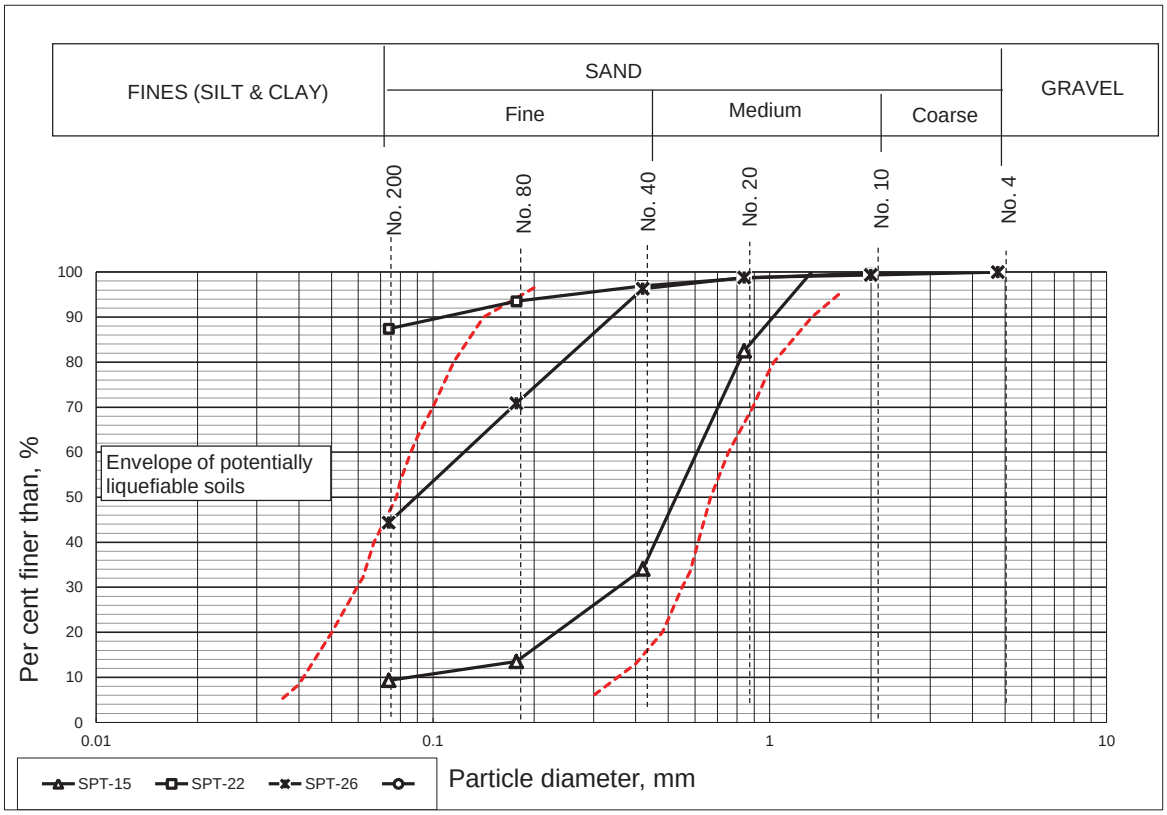
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		94.45	100
No. 10	0.2	94.25	100
No.20	1.06	93.19	99
No. 40	1.66	91.53	97
No. 80	3.18	88.35	94
No. 200	5.8	82.55	87
		Remarks:	

Tare No.	o-6
Sample No.	SPT-26
Depth	26.55-27.00
Dry soil, gm	109.9

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		109.90	100
No. 10	0.69	109.21	99
No. 20	0.69	108.52	99
No. 40	2.71	105.81	96
No. 80	27.93	77.88	71
No. 200	29.13	48.75	44
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-12**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	AC
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	119.04

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	18.59	100.45	84
No. 10	3.28	97.17	82
No. 20	5.34	91.83	77
No. 40	12.61	79.22	67
No. 80	28.81	50.41	42
No. 200	15.58	34.83	29
			.
		Remarks:	

Tare No.	O-1
Sample No.	SPT-5
Depth	6.05-6.50
Dry soil, gm	160.93

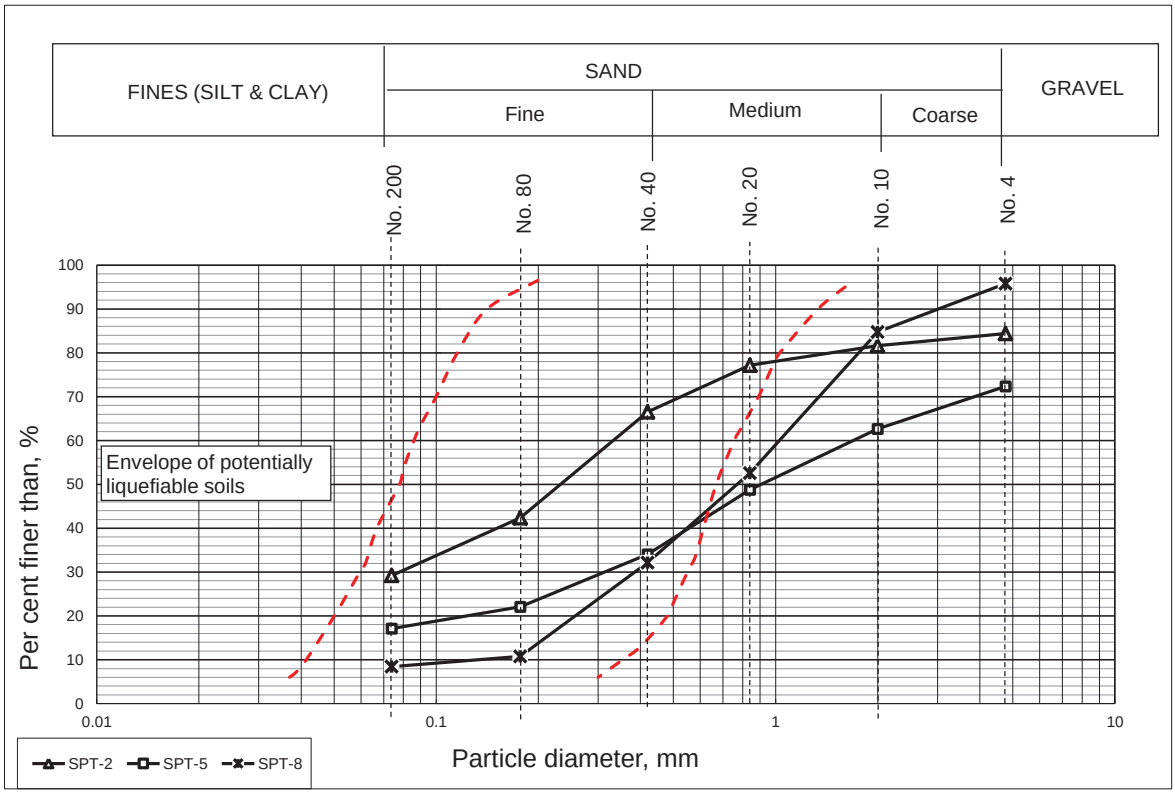
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	44.52	116.41	72
No. 10	15.58	100.83	63
No.20	22.34	78.49	49
No. 40	23.71	54.78	34
No. 80	19.21	35.57	22
No. 200	7.97	27.60	17
		Remarks:	
		25 mm gravel	

Tare No.	L-10
Sample No.	SPT-8
Depth	7.55-8.00
Dry soil, gm	131.27

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	5.59	125.68	96
No. 10	14.41	111.27	85
No. 20	42.25	69.02	53
No. 40	26.85	42.17	32
No. 80	28.00	14.17	11
No. 200	3.10	11.07	8
D60	D50	D30	D10
1.027	0.420	0.385	0.1
Cu	Cc	Remarks:	
7.780	1.096		

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-13**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	G-6
Sample No.	SPT-2
Depth	1.55-2.00
Dry soil, gm	87.62

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		87.62	100
No. 10		87.62	100
No. 20	0.31	87.31	100
No. 40	0.61	86.70	99
No. 80	7.81	78.89	90
No. 200	16.66	62.23	71
		Remarks:	

Tare No.	G-20
Sample No.	SPT-5
Depth	4.55-5.00
Dry soil, gm	111.42

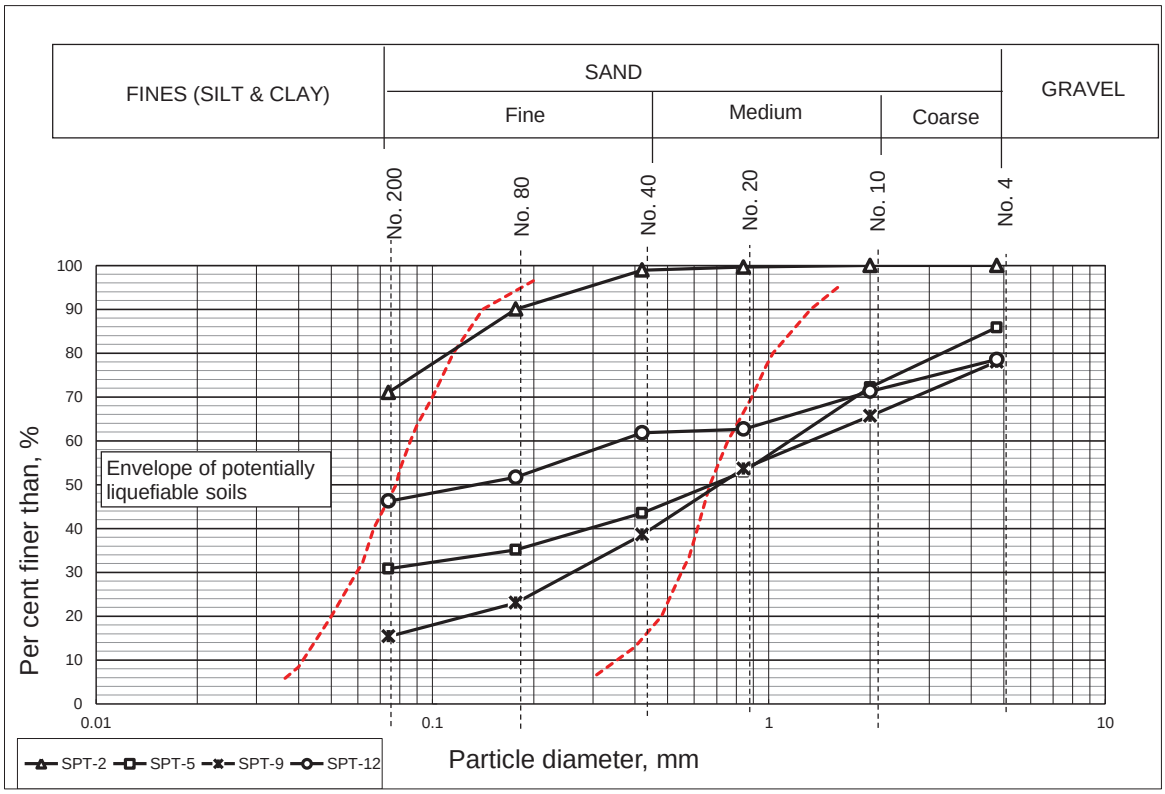
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	15.78	95.64	86
No. 10	15.20	80.44	72
No.20	21.47	58.97	53
No. 40	10.46	48.51	44
No. 80	9.38	39.13	35
No. 200	4.78	34.35	31
		Remarks:	
		8 mm gravel	

Tare No.	E-1
Sample No.	SPT-9
Depth	9.55-10.00
Dry soil, gm	129.02

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	28.32	100.70	78
No. 10	15.99	84.71	66
No. 20	15.48	69.23	54
No. 40	19.45	49.78	39
No. 80	20.05	29.73	23
No. 200	9.89	19.84	15
		Remarks:	
		24 mm semi-rounded gravel	

Tare No.	C-17A
Sample No.	SPT-12
Depth	12.55-13.00
Dry soil, gm	81.21

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	17.44	63.77	79
No. 10	5.89	57.88	71
No. 20	6.98	50.90	63
No. 40	0.67	50.23	62
No. 80	8.25	41.98	52
No. 200	4.42	37.56	46
		Remarks:	
		17 mm semi-rounded gravel	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-13**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	N-18
Sample No.	SPT-14
Depth	14.55-15.00
Dry soil, gm	82.06

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		82.06	100
No. 10	1.25	80.81	98
No. 20	3.93	76.88	94
No. 40	6.32	70.56	86
No. 80	11.31	59.25	72
No. 200	9.27	49.98	61
		Remarks:	

Tare No.	O-3
Sample No.	SPT-16
Depth	16.55-17.00
Dry soil, gm	66.41

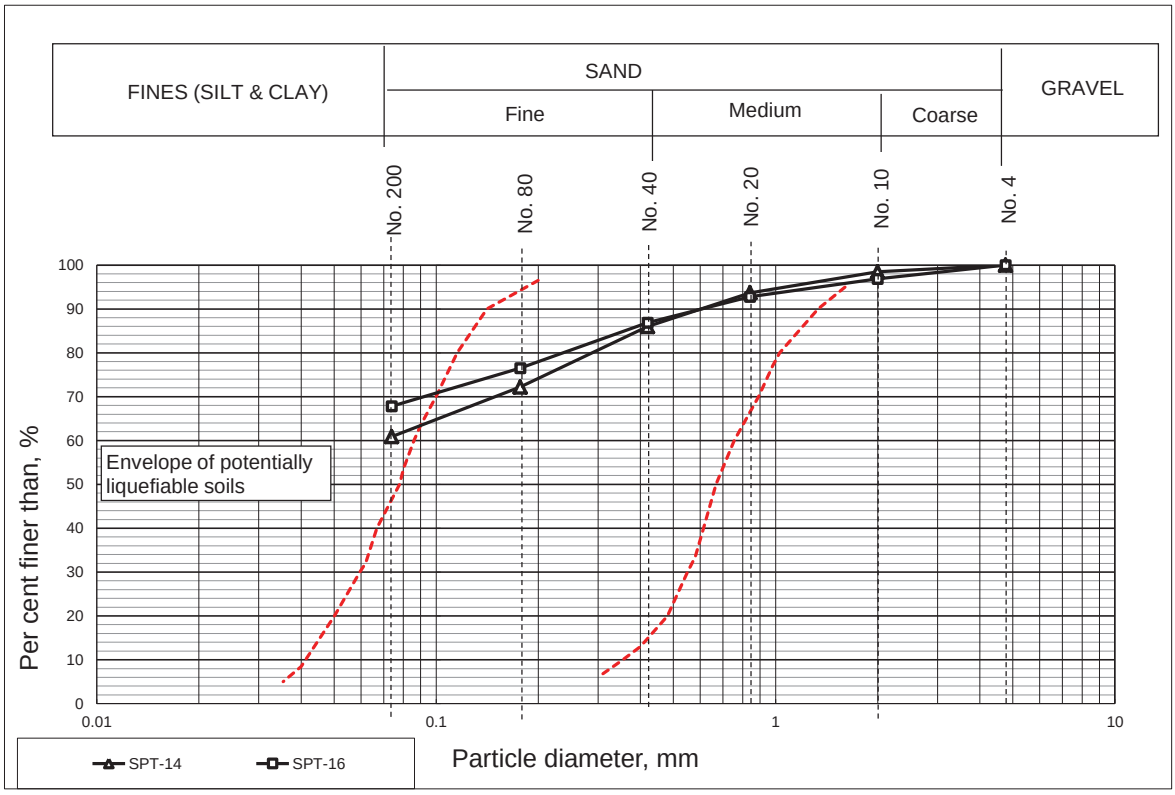
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		66.41	100
No. 10	2.07	64.34	97
No.20	2.74	61.60	93
No. 40	3.91	57.69	87
No. 80	6.87	50.82	77
No. 200	5.80	45.02	68
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-14**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2023
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	G-1
Sample No.	SPT-3
Depth	7.55-8.00
Dry soil, gm	107.96

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		107.96	100
No. 10	0.81	107.15	99
No. 20	3.78	103.37	96
No. 40	20.15	83.22	77
No. 80	35.22	48.00	44
No. 200	20.74	27.26	25
		Remarks:	

Tare No.	L-19
Sample No.	SPT-5
Depth	9.55-10.00
Dry soil, gm	150.73

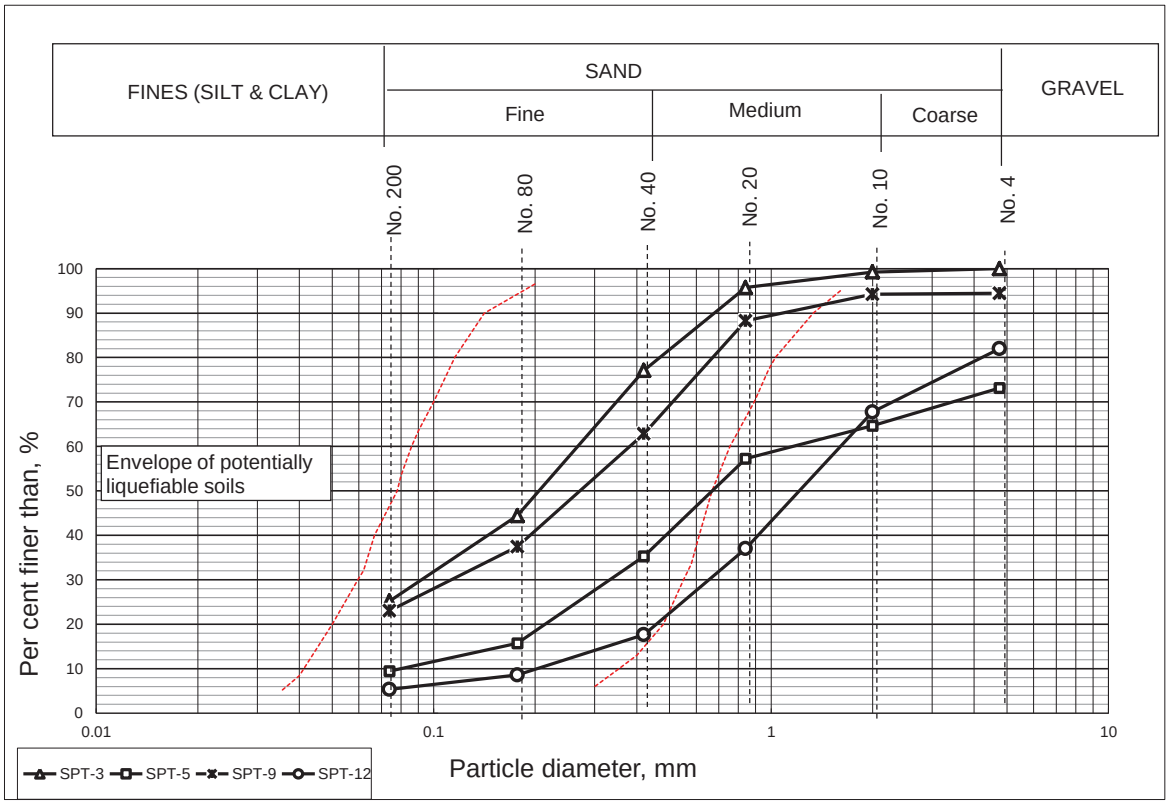
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	40.44	110.29	73
No. 10	12.84	97.45	65
No.20	11.15	86.30	57
No. 40	33.06	53.24	35
No. 80	29.53	23.71	16
No. 200	9.48	14.23	9
D60	D50	D30	D10
1.246	0.450	0.355	0.1
Cu	Cc	Remarks:	**SW**
15.576	1.264	35 mm sub-angular gravel	

Tare No.	G-7
Sample No.	SPT-9
Depth	13.55-14.00
Dry soil, gm	121.91

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	6.77	115.14	94
No. 10	0.25	114.89	94
No. 20	7.29	107.60	88
No. 40	31.00	76.60	63
No. 80	30.95	45.65	37
No. 200	17.51	28.14	23
		Remarks:	
		10 mm gravel	

Tare No.	L-7
Sample No.	SPT-12
Depth	16.55-17.00
Dry soil, gm	148.68

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	26.77	121.91	82
No. 10	21.15	100.76	68
No. 20	45.71	55.05	37
No. 40	28.80	26.25	18
No. 80	13.45	12.80	9
No. 200	4.79	8.01	5
D60	D50	D30	D10
1.607	1.212	0.654	0.1
Cu	Cc	Remarks:	**SW**
16.626	2.753	15mm rounded gravel	



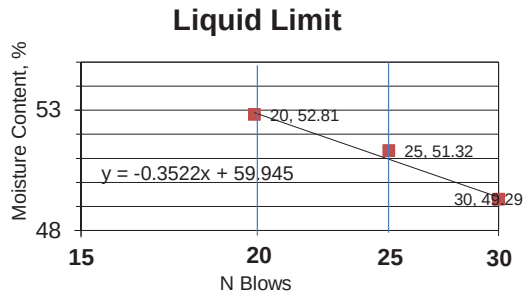
GEORGE B. PADILLA Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

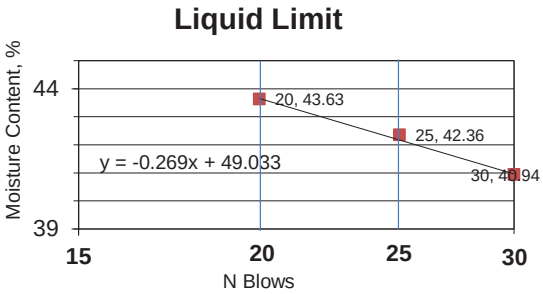
Date: 7/28/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

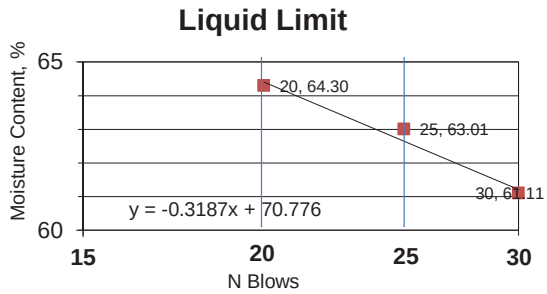
Borehole No. **FB-1**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-12					
Depth: 12.0					
Tare No.	B2	N39	M3	B6A	B7
Tare + Wet Soil	49.47	45.29	53.53	34.3	30.45
Tare + Dry Soil	36.27	32.81	38.04	27.95	24.69
Tare wt.	9.49	8.49	8.71	9.54	9.37
Water, gm	13.2	12.5	15.49	6.35	5.76
Soil, gm	26.78	24.3	29.33	18.41	15.32
Moisture Content, %	49.29	51.32	52.81	34.492	37.598
N Blows	30	25	20	PL	PI
Liquid Limit, %	51			36	15



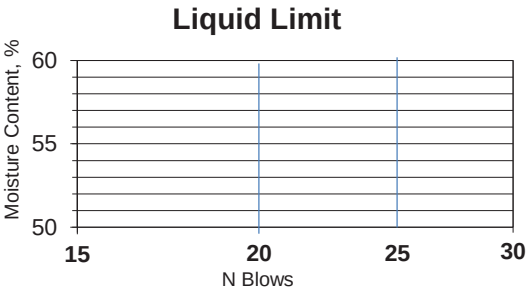
Borehole No. **FB-1**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-21					
Depth: 22.0					
Tare No.	T120	N52	P-1	T121	EL4
Tare + Wet Soil	45.33	48.17	47.64	32.77	30.97
Tare + Dry Soil	34.96	36.34	36.10	26.78	25.39
Tare wt.	9.63	8.41	9.65	9.56	9.01
Water, gm	10.37	11.8	11.54	5.99	5.58
Soil, gm	25.33	27.9	26.45	17.22	16.38
Moisture Content, %	40.94	42.36	43.63	34.785	34.066
N Blows	30	25	20	PL	PI
Liquid Limit, %	42			34	8



Borehole No. **FB-1**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-26					
Depth: 27.0					
Tare No.	M1	N33	N9	N42	EL1
Tare + Wet Soil	47.34	50.88	46.37	31.87	30.85
Tare + Dry Soil	32.82	34.90	31.98	26.17	25.22
Tare wt.	9.06	9.54	9.60	9.62	8.96
Water, gm	14.52	16	14.39	5.7	5.63
Soil, gm	23.76	25.4	22.38	16.55	16.26
Moisture Content, %	61.11	63.01	64.30	34.441	34.625
N Blows	30	25	20	PL	PI
Liquid Limit, %	63			35	28



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

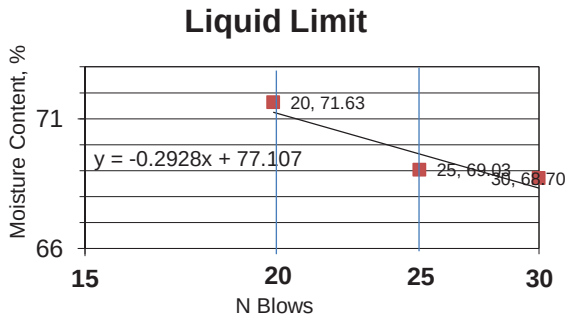
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

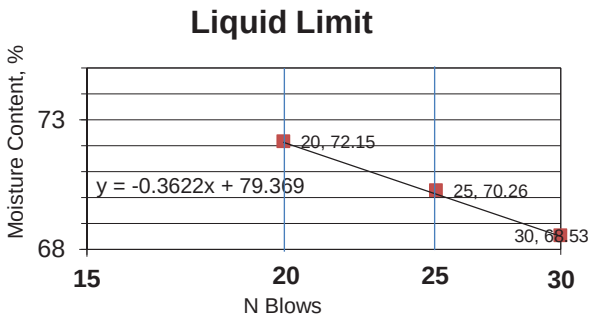
Date: 7/22/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

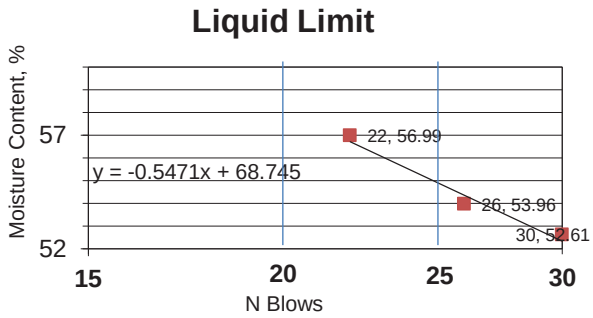
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-7					
Depth: 7.0					
Tare No.	T-76	D-2	12-D	N-40	M-6
Tare + Wet Soil	36.26	38.88	45.01	32.35	30.4
Tare + Dry Soil	25.46	27.00	30.29	24.67	23.68
Tare wt.	9.74	9.79	9.74	8.34	9.75
Water, gm	10.8	11.9	14.72	7.68	6.72
Soil, gm	15.72	17.2	20.55	16.33	13.93
Moisture Content, %	68.70	69.03	71.63	47.03	48.241
N Blows	30	25	20	PL	PI
Liquid Limit, %	70			48	22



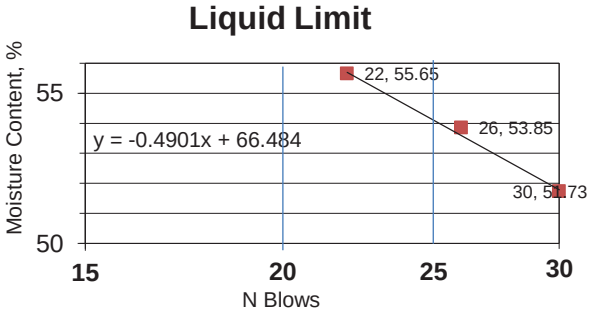
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-8					
Depth: 9.0					
Tare No.	T-98	T-113	T-59	T-79	9A
Tare + Wet Soil	44.74	49.94	58.10	29.35	32.95
Tare + Dry Soil	30.37	33.47	37.92	23.21	25.88
Tare wt.	9.40	10.03	9.95	9.98	9.28
Water, gm	14.37	16.5	20.18	6.14	7.07
Soil, gm	20.97	23.4	27.97	13.23	16.6
Moisture Content, %	68.53	70.26	72.15	46.41	42.59
N Blows	30	25	20	PL	PI
Liquid Limit, %	70			45	26



Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-12					
Depth: 14.0					
Tare No.	N-27	C-2	N51A	T164	4A
Tare + Wet Soil	50.53	51.29	55.82	27.72	29.22
Tare + Dry Soil	36.63	37.20	39.51	22.7	23.47
Tare wt.	10.21	11.09	10.89	11.01	9.17
Water, gm	13.9	14.1	16.31	5.02	5.75
Soil, gm	26.42	26.1	28.62	11.69	14.3
Moisture Content, %	52.61	53.96	56.99	42.943	40.21
N Blows	30	26	22	PL	PI
Liquid Limit, %	55			42	13



Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-15					
Depth: 17.0					
Tare No.	M10	7-A	EL-1	B7	3A
Tare + Wet Soil	46.09	48.12	50.78	28.73	31.5
Tare + Dry Soil	33.35	34.48	35.85	23.69	25.77
Tare wt.	8.72	9.15	9.02	9.37	8.56
Water, gm	12.74	13.6	14.93	5.04	5.73
Soil, gm	24.63	25.3	26.83	14.32	17.21
Moisture Content, %	51.73	53.85	55.65	35.196	33.295
N Blows	30	25	20	PL	PI
Liquid Limit, %	54			34	20



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

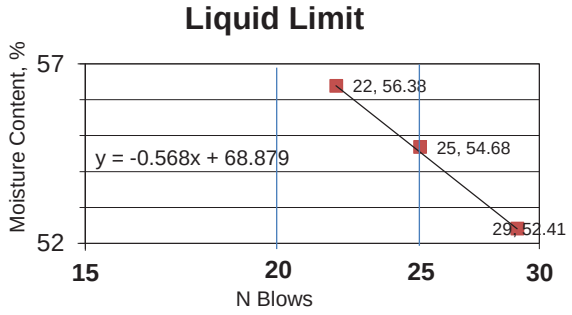
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

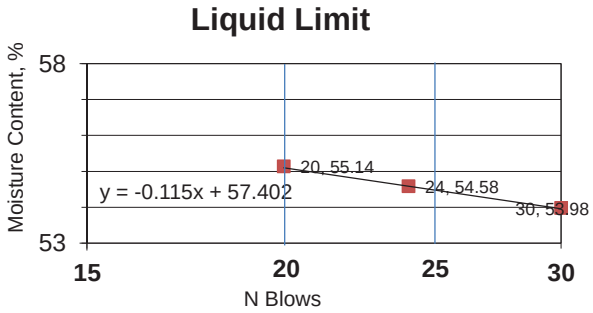
Date: 7/22/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

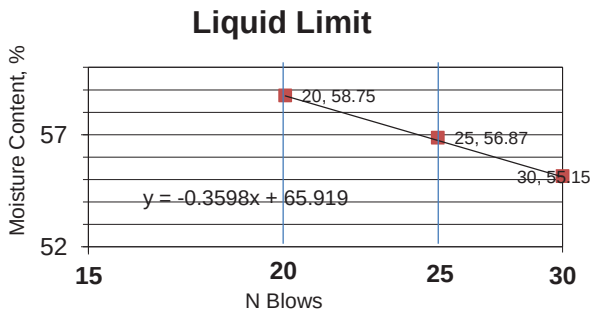
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-18					
Depth: 20.0					
Tare No.	T81	25A	T167	N-42	T128
Tare + Wet Soil	49.94	50.23	63.24	32.41	28.04
Tare + Dry Soil	36.23	35.51	44.03	26.34	23.22
Tare wt.	10.07	8.59	9.96	9.68	9.39
Water, gm	13.71	14.7	19.21	6.07	4.82
Soil, gm	26.16	26.9	34.07	16.66	13.83
Moisture Content, %	52.41	54.68	56.38	36.435	34.852
N Blows	29	25	22	PL	PI
Liquid Limit, %	55			36	19



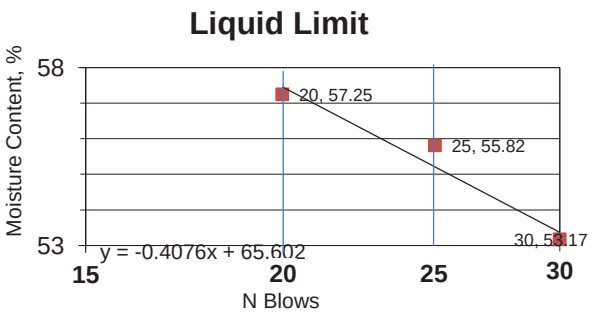
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-19					
Depth: 21.0					
Tare No.	B-8	12A	EL10	14A	EL-4
Tare + Wet Soil	50.43	53.75	54.26	29.83	31.4
Tare + Dry Soil	36.04	38.21	37.84	24.47	25.3
Tare wt.	9.38	9.74	8.06	9.71	9.03
Water, gm	14.39	15.5	16.42	5.36	6.1
Soil, gm	26.66	28.5	29.78	14.76	16.27
Moisture Content, %	53.98	54.58	55.14	36.314	37.492
N Blows	30	24	20	PL	PI
Liquid Limit, %	55			37	18



Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-23					
Depth: 25.0					
Tare No.	1A	M1	P1	N-40	M-6
Tare + Wet Soil	58.09	54.09	52.38	31.4	30.51
Tare + Dry Soil	40.70	37.78	36.57	25.56	25.19
Tare wt.	9.17	9.10	9.66	8.34	9.75
Water, gm	17.39	16.3	15.81	5.84	5.32
Soil, gm	31.53	28.7	26.91	17.22	15.44
Moisture Content, %	55.15	56.87	58.75	33.914	34.456
N Blows	30	25	20	PL	PI
Liquid Limit, %	57			34	23



Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-25					
Depth: 27.0					
Tare No.	G18	T164	N-27	N-9	N33
Tare + Wet Soil	59.36	65.63	68.49	29.59	34.77
Tare + Dry Soil	42.76	46.06	47.28	24.86	28.78
Tare wt.	11.54	11.00	10.23	9.63	9.61
Water, gm	16.6	19.6	21.21	4.73	5.99
Soil, gm	31.22	35.1	37.05	15.23	19.17
Moisture Content, %	53.17	55.82	57.25	31.057	31.247
N Blows	29	25	22	PL	PI
Liquid Limit, %	55			31	24



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

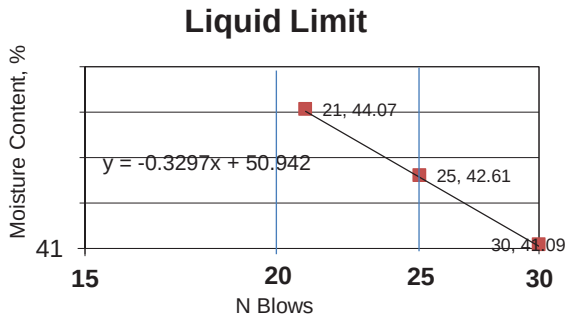
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

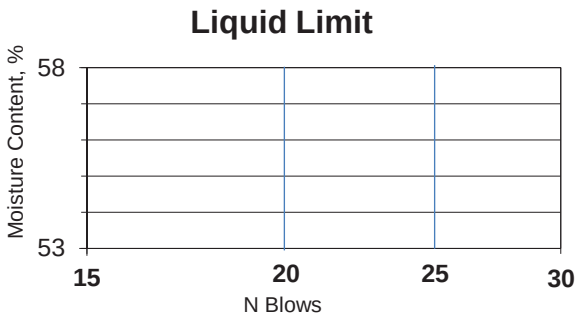
Date: 7/22/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

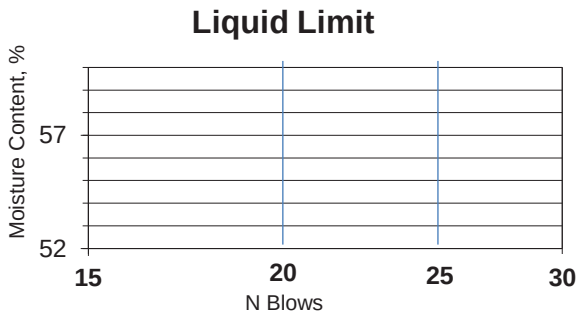
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-26					
Depth: 28.0					
Tare No.	C-2	L8	G20	TR1	T95
Tare + Wet Soil	57.63	50.53	62.84	32.74	33.22
Tare + Dry Soil	44.02	38.80	47.01	27.41	27.9
Tare wt.	10.90	11.27	11.09	9.77	10.35
Water, gm	13.61	11.7	15.83	5.33	5.32
Soil, gm	33.12	27.5	35.92	17.64	17.55
Moisture Content, %	41.09	42.61	44.07	30.215	30.313
N Blows	30	25	21	PL	PI
Liquid Limit, %	43			30	12



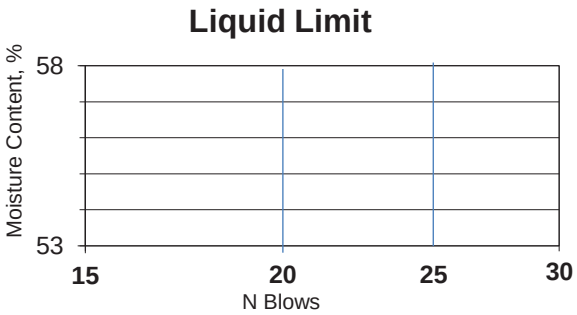
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

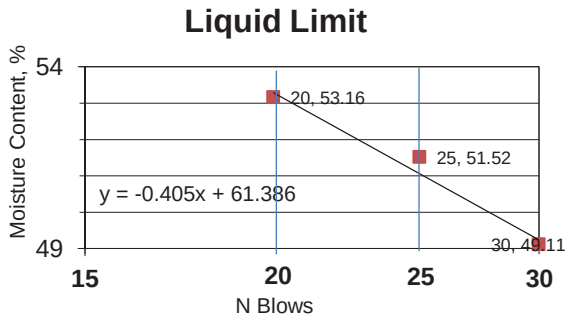
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

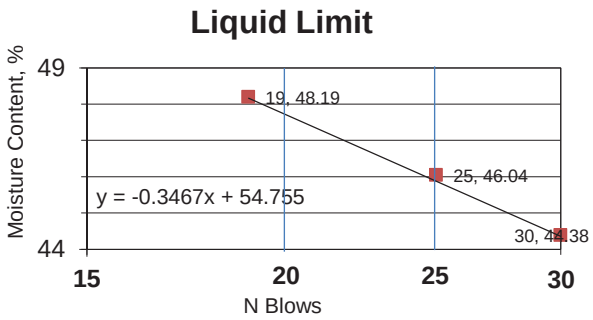
Date: 7/18/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

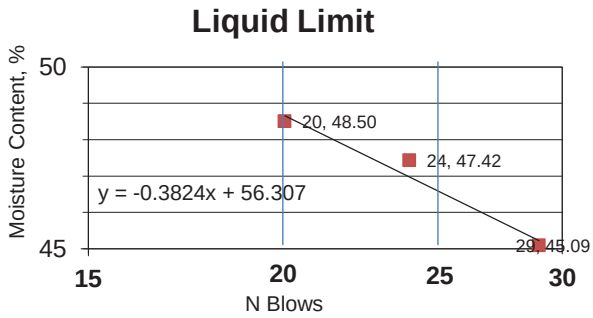
Borehole No. **FB-4**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-19					
Depth: 19.0					
Tare No.	9A	N-49	M3	T-70	3A
Tare + Wet Soil	42.61	51.10	54.26	30.46	30.11
Tare + Dry Soil	31.56	36.65	38.45	25.29	24.99
Tare wt.	9.06	8.60	8.71	9.62	8.31
Water, gm	11.05	14.5	15.81	5.17	5.12
Soil, gm	22.5	28.1	29.74	15.67	16.68
Moisture Content, %	49.11	51.52	53.16	32.993	30.695
N Blows	30	25	20	PL	PI
Liquid Limit, %	51			32	19



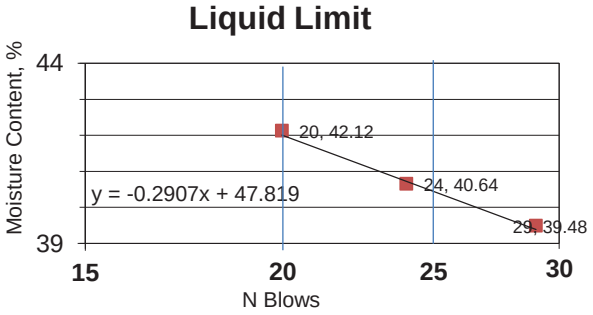
Borehole No. **FB-4**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-26					
Depth: 26.0					
Tare No.	9A	T76	B-6	25A	T81
Tare + Wet Soil	48.48	51.77	59.29	30.29	30.68
Tare + Dry Soil	36.40	38.52	43.06	24.98	25.59
Tare wt.	9.18	9.74	9.38	8.55	9.93
Water, gm	12.08	13.3	16.23	5.31	5.09
Soil, gm	27.22	28.8	33.68	16.43	15.66
Moisture Content, %	44.38	46.04	48.19	32.319	32.503
N Blows	30	25	19	PL	PI
Liquid Limit, %	46			32	14



Borehole No. **FB-4**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-29					
Depth: 29.0					
Tare No.	28B	H31	10A	N-32	N-46
Tare + Wet Soil	55.68	55.96	55.19	28.45	31.25
Tare + Dry Soil	41.36	40.68	40.35	23.65	25.45
Tare wt.	9.60	8.46	9.75	9.45	8.34
Water, gm	14.32	15.3	14.84	4.8	5.8
Soil, gm	31.76	32.2	30.60	14.2	17.11
Moisture Content, %	45.09	47.42	48.50	33.803	33.898
N Blows	29	24	20	PL	PI
Liquid Limit, %	47			34	13



Borehole No. **FB-4**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-30					
Depth: 30.0					
Tare No.	N-47	M9	EL-6	B2	EL-14
Tare + Wet Soil	56.09	61.10	52.58	30.56	30.38
Tare + Dry Soil	42.51	46.18	39.44	26.03	25.58
Tare wt.	8.11	9.47	8.24	9.49	8.31
Water, gm	13.58	14.9	13.14	4.53	4.8
Soil, gm	34.4	36.7	31.20	16.54	17.27
Moisture Content, %	39.48	40.64	42.12	27.388	27.794
N Blows	30	24	20	PL	PI
Liquid Limit, %	41			28	13



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

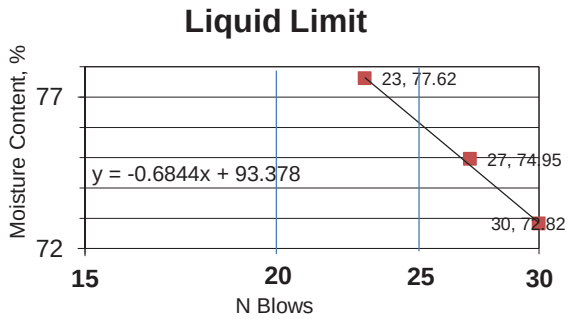
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

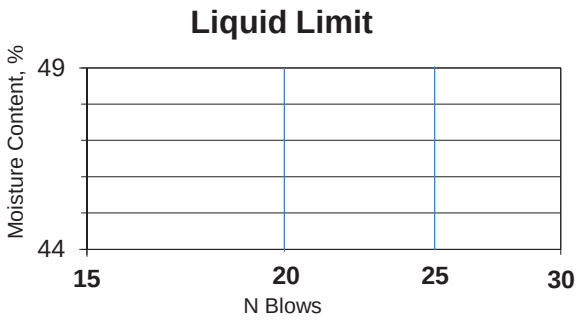
Date: 7/19/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

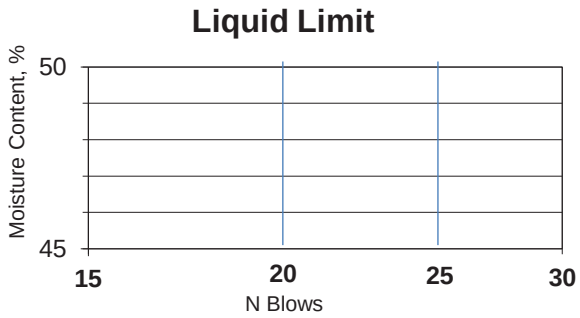
Borehole No. **FB-6**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-8					
Depth: 8.0					
Tare No.	M1	EL10	6A	T128	7A
Tare + Wet Soil	49.24	53.32	65.31	28.59	26.47
Tare + Dry Soil	32.31	33.93	40.90	22.38	20.99
Tare wt.	9.06	8.06	9.45	9.33	9.13
Water, gm	16.93	19.4	24.41	6.21	5.48
Soil, gm	23.25	25.9	31.45	13.05	11.86
Moisture Content, %	72.82	74.95	77.62	47.586	46.206
N Blows	30	27	23	PL	PI
Liquid Limit, %	76			47	29



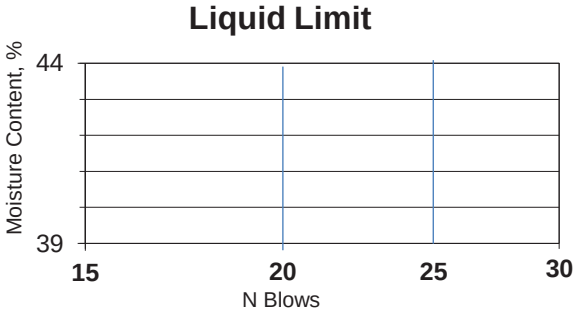
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

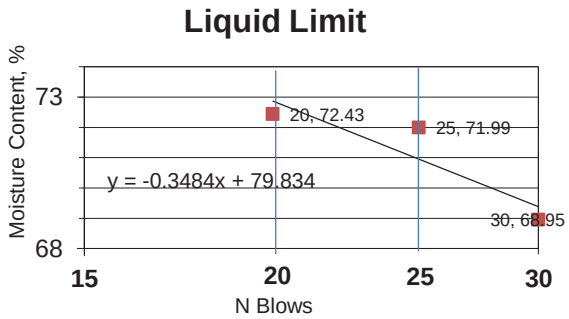
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

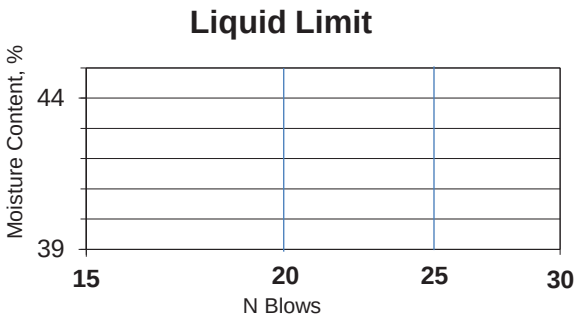
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

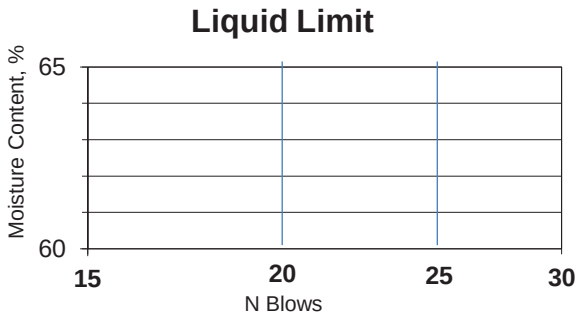
Borehole No. **FB-6**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 9.0					
Tare No.	EL-13	N-49	3-A	28-C	T-128
Tare + Wet Soil	47.92	49.86	50.28	30.61	30.83
Tare + Dry Soil	31.80	32.59	32.65	24	24.03
Tare wt.	8.42	8.60	8.31	9.52	9.37
Water, gm	16.12	17.3	17.63	6.61	6.8
Soil, gm	23.38	24	24.34	14.48	14.66
Moisture Content, %	68.95	71.99	72.43	45.649	46.385
N Blows	30	25	20	PL	PI
Liquid Limit, %	71			46	25



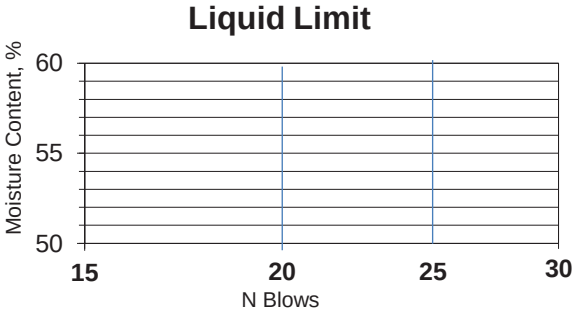
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

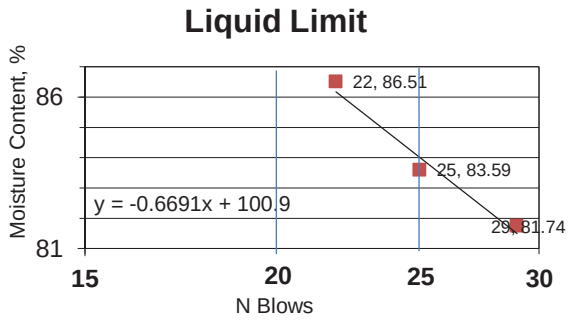
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

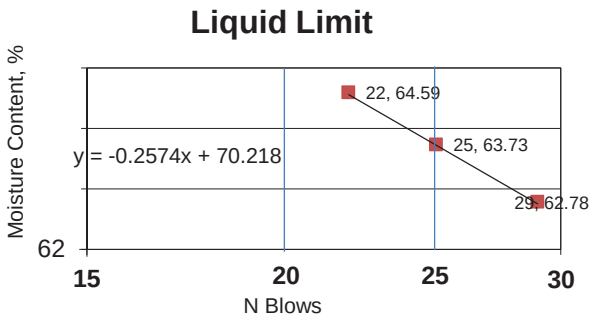
Date: 7/19/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

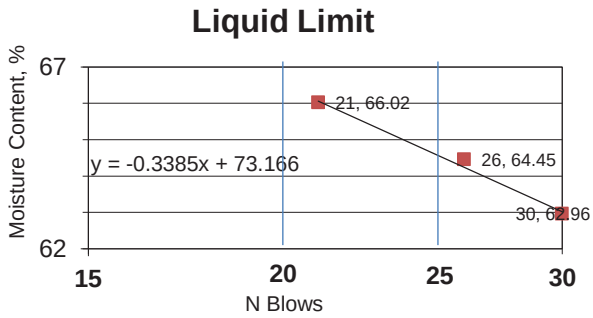
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-9					
Depth: 9.0					
Tare No.	T120	D-2	TR14	M-10	T122
Tare + Wet Soil	47.36	48.11	50.80	26.01	27.32
Tare + Dry Soil	30.39	30.48	31.69	19.65	20.63
Tare wt.	9.63	9.39	9.60	8.75	9.67
Water, gm	16.97	17.6	19.11	6.36	6.69
Soil, gm	20.76	21.1	22.09	10.9	10.96
Moisture Content, %	81.74	83.59	86.51	58.349	61.04
N Blows	29	25	22	PL	PI
Liquid Limit, %	84			60	24



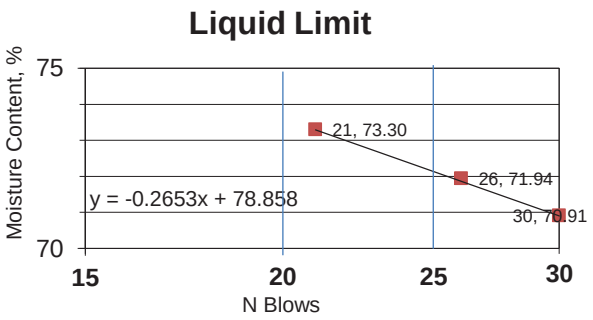
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-25					
Depth: 25.0					
Tare No.	N128	L10	T50	M-0	9A
Tare + Wet Soil	52.52	54.86	55.71	30.06	37.52
Tare + Dry Soil	36.70	37.89	37.69	24.24	29.33
Tare wt.	11.50	11.26	9.79	9.75	9.79
Water, gm	15.82	17	18.02	5.82	8.19
Soil, gm	25.2	26.6	27.90	14.49	19.54
Moisture Content, %	62.78	63.73	64.59	40.166	41.914
N Blows	29	25	22	PL	PI
Liquid Limit, %	64			41	23



Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-26					
Depth: 26.0					
Tare No.	N-39	AC2	B1	12A	TR8
Tare + Wet Soil	47.29	49.13	42.62	30.75	32.27
Tare + Dry Soil	32.28	32.92	29.39	25.05	26.17
Tare wt.	8.44	7.77	9.35	9.74	9.83
Water, gm	15.01	16.2	13.23	5.7	6.1
Soil, gm	23.84	25.2	20.04	15.31	16.34
Moisture Content, %	62.96	64.45	66.02	37.231	37.332
N Blows	30	26	21	PL	PI
Liquid Limit, %	65			37	27



Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-27					
Depth: 27.0					
Tare No.	A-2	T154	T86	C9	M7
Tare + Wet Soil	51.26	50.18	43.73	38.18	32.39
Tare + Dry Soil	34.27	33.95	29.54	31	26.54
Tare wt.	10.31	11.39	10.18	9.58	9.23
Water, gm	16.99	16.2	14.19	7.18	5.85
Soil, gm	23.96	22.6	19.36	21.42	17.31
Moisture Content, %	70.91	71.94	73.30	33.52	33.795
N Blows	30	24	21	PL	PI
Liquid Limit, %	72			34	39



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

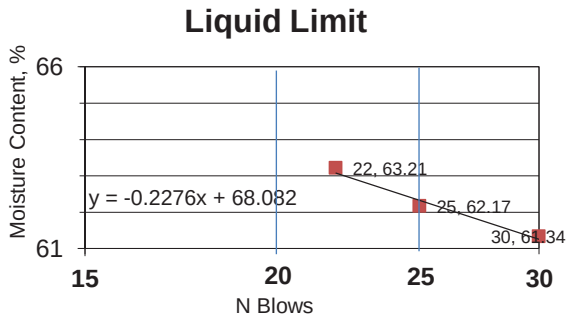
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

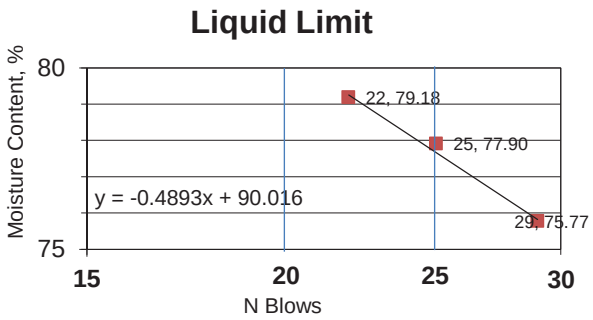
Date: 7/19/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

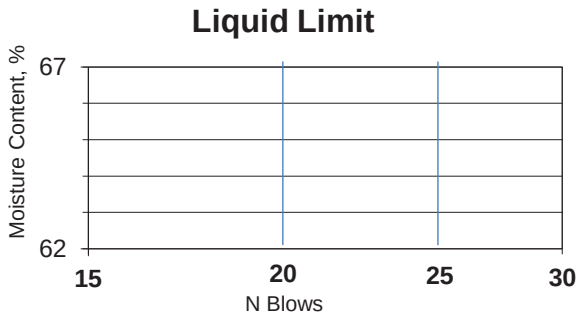
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-28					
Depth: 28.0					
Tare No.	N51	N-52	EL14	EL3	EL12
Tare + Wet Soil	49.57	49.39	49.03	30.9	30.41
Tare + Dry Soil	33.88	33.68	33.53	25.23	24.81
Tare wt.	8.30	8.41	9.01	8.68	8.6
Water, gm	15.69	15.7	15.50	5.67	5.6
Soil, gm	25.58	25.3	24.52	16.55	16.21
Moisture Content, %	61.34	62.17	63.21	34.26	34.547
N Blows	30	25	22	PL	PI
Liquid Limit, %	62			34	28



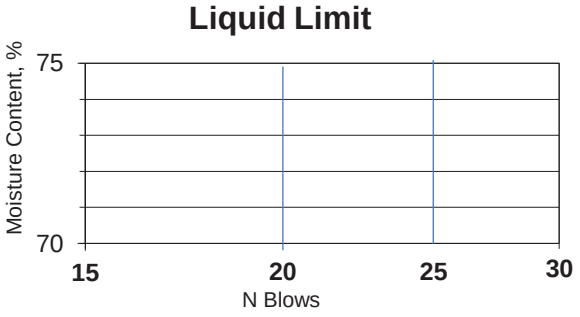
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-29					
Depth: 29.0					
Tare No.	13A	T74	N-7	N-40	EL-1
Tare + Wet Soil	46.43	49.01	40.12	26.29	27.42
Tare + Dry Soil	30.51	31.98	26.58	20.61	21.9
Tare wt.	9.50	10.12	9.48	8.34	8.96
Water, gm	15.92	17	13.54	5.68	5.52
Soil, gm	21.01	21.9	17.10	12.27	12.94
Moisture Content, %	75.77	77.90	79.18	46.292	42.658
N Blows	29	25	22	PL	PI
Liquid Limit, %	78			44	33



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

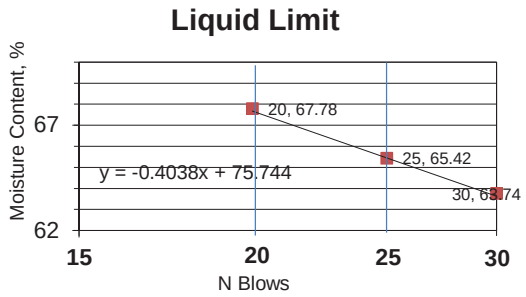
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

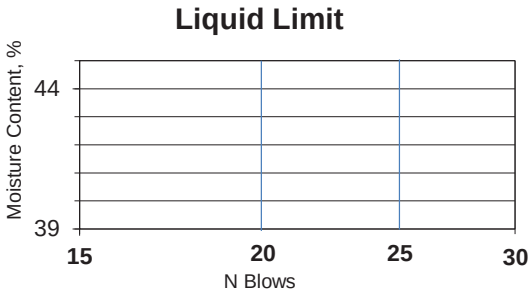
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

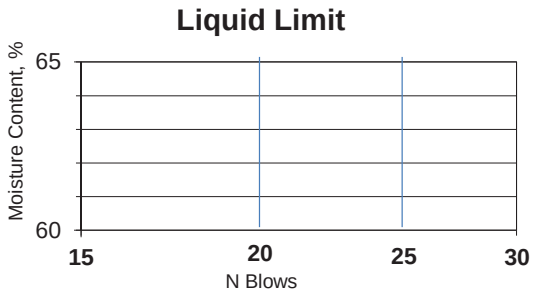
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 30.0					
Tare No.	T-109	25-A	N-52	N-39	1-A
Tare + Wet Soil	51.36	46.68	51.62	30.75	30.02
Tare + Dry Soil	35.22	31.62	34.20	23.14	22.86
Tare wt.	9.90	8.60	8.50	8.44	9.14
Water, gm	16.14	15.1	17.42	7.61	7.16
Soil, gm	25.32	23	25.70	14.7	13.72
Moisture Content, %	63.74	65.42	67.78	51.769	52.187
N Blows	30	25	20	PL	PI
Liquid Limit, %	66			52	14



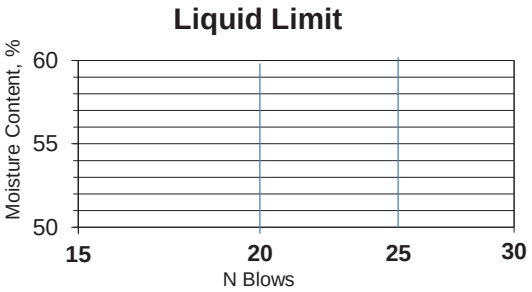
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

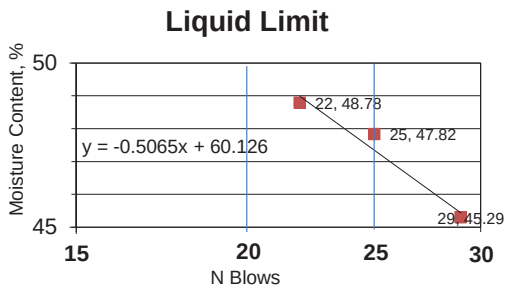
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

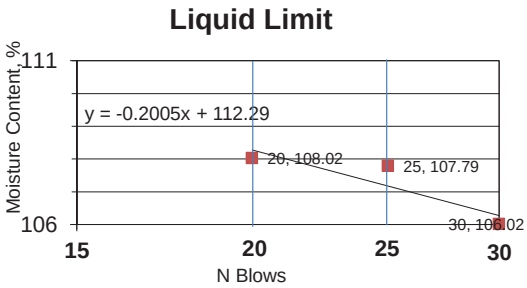
Date: 7/13/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

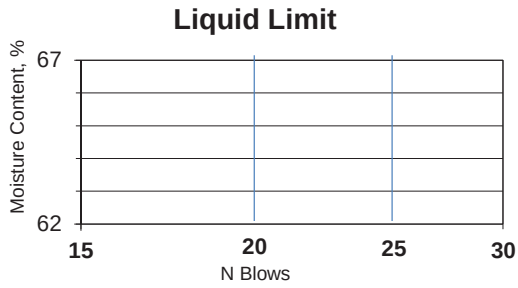
Borehole No. **FB-8**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-2					
Depth: 2.0					
Tare No.	3-A	M-7	M-9	TP-1	9-A
Tare + Wet Soil	48.22	58.75	52.69	32.17	31.08
Tare + Dry Soil	35.78	42.73	40.10	26.78	26.09
Tare wt.	8.31	9.23	9.47	9.64	9.18
Water, gm	12.44	16.02	12.59	5.39	4.99
Soil, gm	27.47	33.5	30.63	17.14	16.91
Moisture Content, %	45.29	47.82	48.78	31.447	29.509
N Blows	29	25	22	PL	PI
Liquid Limit, %	47			30	17



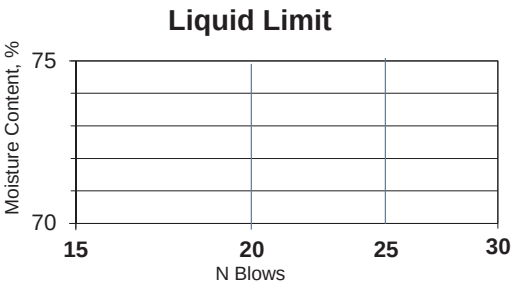
Borehole No. **FB-8**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-7					
Depth: 7.0					
Tare No.	T-70	N-31	B-2	N-9	9A
Tare + Wet Soil	45.52	52.49	46.06	30.12	30.3
Tare + Dry Soil	27.19	29.65	27.07	23.53	22.66
Tare wt.	9.90	8.46	9.49	9.6	9.83
Water, gm	18.33	22.84	18.99	6.59	7.64
Soil, gm	17.29	21.19	17.58	13.93	12.83
Moisture Content, %	106.02	107.79	108.02	47.308	59.548
N Blows	30	25	20	PL	PI
Liquid Limit, %	107			53	54



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

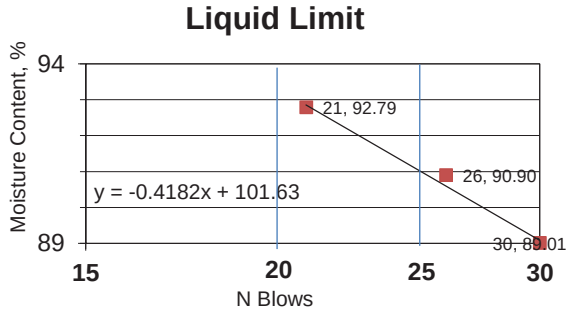
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

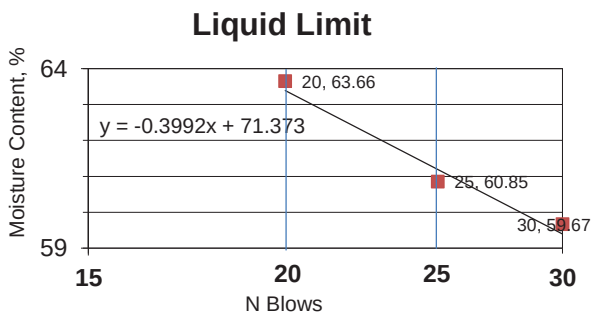
Date: 7/29/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

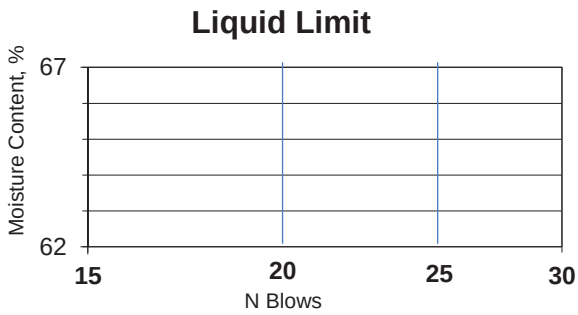
Borehole No. **FB-10**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-1					
Depth: 1.0					
Tare No.	25-A	1-A	T-32	21-A	TR-8
Tare + Wet Soil	49.83	51.10	50.19	25.32	26.55
Tare + Dry Soil	30.39	31.12	30.11	19.7	20.74
Tare wt.	8.55	9.14	8.47	9.34	9.83
Water, gm	19.44	19.98	20.08	5.62	5.81
Soil, gm	21.84	21.98	21.64	10.36	10.91
Moisture Content, %	89.01	90.90	92.79	54.247	53.254
N Blows	30	26	21	PL	PI
Liquid Limit, %	91			54	37



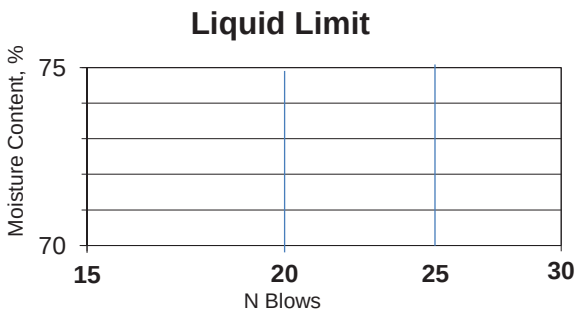
Borehole No. **FB-10**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-2					
Depth: 3.0					
Tare No.	EL-13	EL-33	M10	EL-12	T-79
Tare + Wet Soil	45.91	54.62	53.71	31.29	32.98
Tare + Dry Soil	31.90	37.24	36.21	25.44	27.14
Tare wt.	8.42	8.68	8.72	8.62	9.92
Water, gm	14.01	17.38	17.50	5.85	5.84
Soil, gm	23.48	28.56	27.49	16.82	17.22
Moisture Content, %	59.67	60.85	63.66	34.78	33.914
N Blows	30	25	20	PL	PI
Liquid Limit, %	61			34	27



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

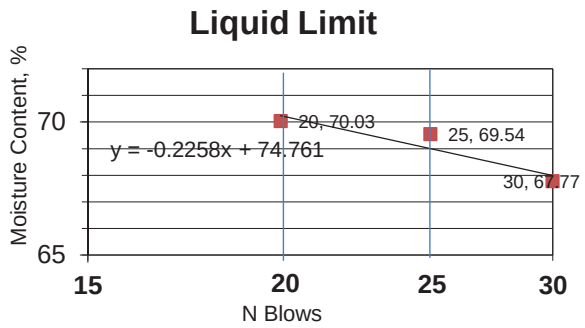
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

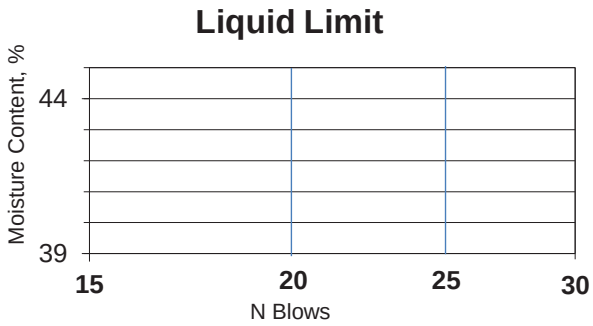
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

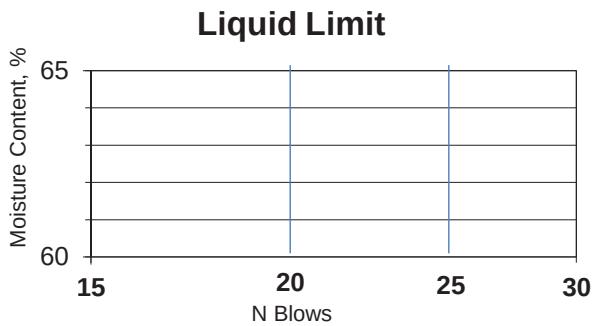
Borehole No. **FB-10**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 2.0					
Tare No.	M-1	B-2	B-6A	N-39	1-A
Tare + Wet Soil	50.45	51.40	51.13	30.75	30.02
Tare + Dry Soil	33.73	34.21	34.00	23.14	22.86
Tare wt.	9.06	9.49	9.54	8.44	9.14
Water, gm	16.72	17.2	17.13	7.61	7.16
Soil, gm	24.67	24.7	24.46	14.7	13.72
Moisture Content, %	67.77	69.54	70.03	51.769	52.187
N Blows	30	25	20	PL	PI
Liquid Limit, %	69			52	17



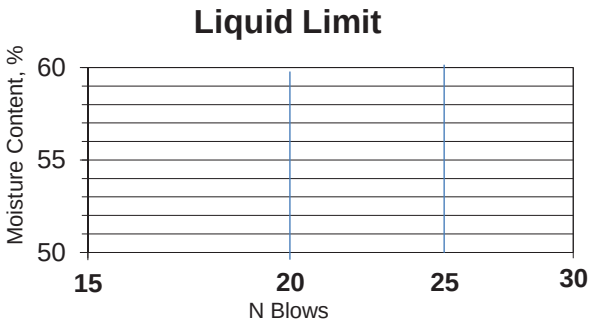
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

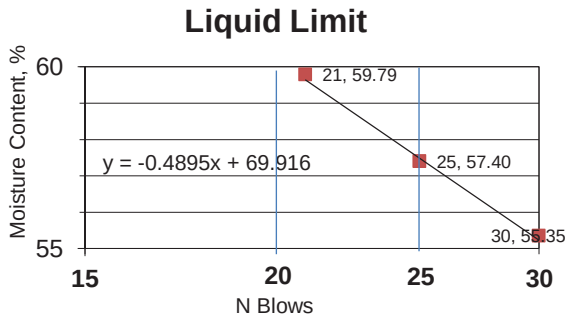
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

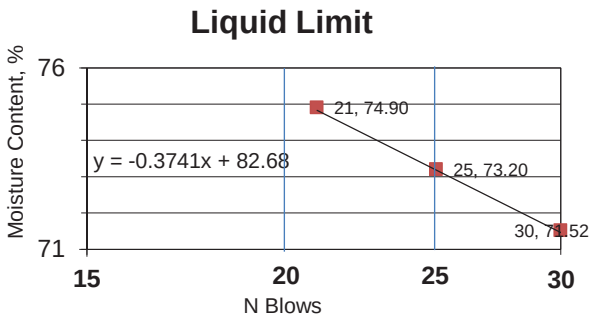
Date: 7/22/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

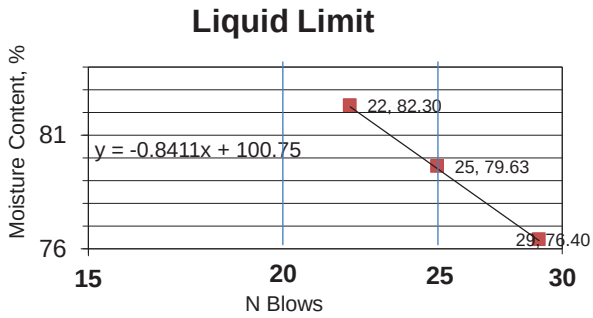
Borehole No. **FB-11**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-2					
Depth: 2.0					
Tare No.	P3B	N-33	P-1	10-A	B-4
Tare + Wet Soil	52.17	59.50	53.48	31.16	30.53
Tare + Dry Soil	37.02	41.28	37.08	25.94	25.09
Tare wt.	9.65	9.54	9.65	9.75	8.9
Water, gm	15.15	18.2	16.40	5.22	5.44
Soil, gm	27.37	31.7	27.43	16.19	16.19
Moisture Content, %	55.35	57.40	59.79	32.242	33.601
N Blows	30	25	21	PL	PI
Liquid Limit, %	58			33	25



Borehole No. **FB-11**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-7					
Depth: 7.0					
Tare No.	M3	28-B	21-A	N46	N32
Tare + Wet Soil	50.68	54.51	56.23	31.17	31.24
Tare + Dry Soil	33.18	35.53	36.15	23.62	24.12
Tare wt.	8.71	9.60	9.34	8.34	9.45
Water, gm	17.5	19	20.08	7.55	7.12
Soil, gm	24.47	25.9	26.81	15.28	14.67
Moisture Content, %	71.52	73.20	74.90	49.411	48.534
N Blows	30	25	21	PL	PI
Liquid Limit, %	73			49	24



Borehole No. **FB-11**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-22					
Depth: 23.0					
Tare No.	EL-14	EL-6	N-47	12-A	TR-2
Tare + Wet Soil	51.37	46.07	41.54	28.55	26.07
Tare + Dry Soil	32.72	29.30	26.47	22.75	20.96
Tare wt.	8.31	8.24	8.16	9.74	9.63
Water, gm	18.65	16.8	15.07	5.8	5.11
Soil, gm	24.41	21.1	18.31	13.01	11.33
Moisture Content, %	76.40	79.63	82.30	44.581	45.102
N Blows	29	25	22	PL	PI
Liquid Limit, %	80			45	35



Borehole No. **FB-11**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-11					
Depth: 12.0					
Tare No.	N-40	M10		B-1	EL-1
Tare + Wet Soil	50.82	47.77		30.14	31.2
Tare + Dry Soil	33.02	31.06		23.78	24.49
Tare wt.	8.34	8.75		9.35	8.96
Water, gm	17.8	16.7		6.36	6.71
Soil, gm	24.68	22.3		14.43	15.53
Moisture Content, %	72.12	74.90		44.075	43.207
N Blows	30	25		PL	PI
Liquid Limit, %	75			44	31

Only two points due to inadequate sample quantity

Tested by: JTF
Inputted by: KAPE
Checked by: GBP

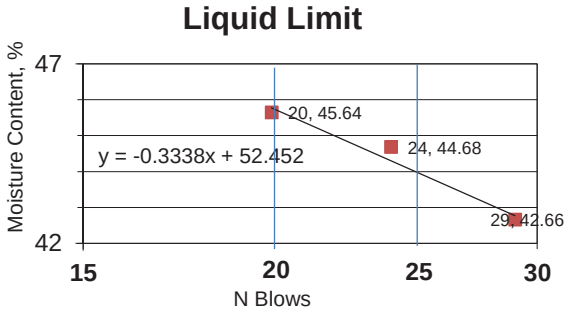
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

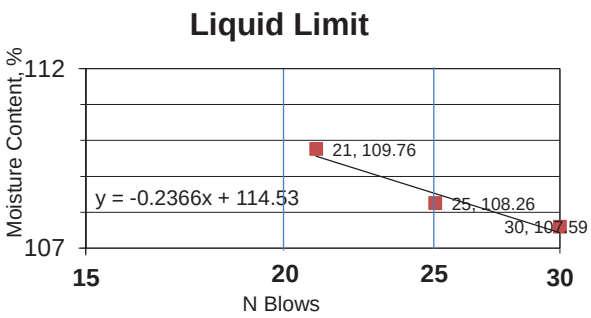
Date: 7/13/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

Borehole No. **FB-13**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-14					
Depth: 13.5					
Tare No.	P-1	13-A	B-4	T101	A-55
Tare + Wet Soil	53.39	64.58	60.03	31.1	30.3
Tare + Dry Soil	40.13	47.57	43.85	25.53	24.92
Tare wt.	9.05	9.50	8.40	9.54	9.54
Water, gm	13.26	17.01	16.18	5.57	5.38
Soil, gm	31.08	38.07	35.45	15.99	15.38
Moisture Content, %	42.66	44.68	45.64	34.834	34.98
N Blows	29	24	20	PL	PI
Liquid Limit, %	44			35	9



Borehole No. **FB-13**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-16					
Depth: 17.0					
Tare No.	B-6A	4-A	N-35	M-1	28-C
Tare + Wet Soil	48.36	50.17	55.60	30.15	30.24
Tare + Dry Soil	28.24	28.80	31.54	22.27	22.75
Tare wt.	9.54	9.06	9.62	9.06	9.52
Water, gm	20.12	21.37	24.06	7.88	7.49
Soil, gm	18.7	19.74	21.92	13.21	13.23
Moisture Content, %	107.59	108.26	109.76	59.652	56.614
N Blows	30	25	21	PL	PI
Liquid Limit, %	109			58	50



Borehole No. **FB-13**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. SPT-2					
Depth: 2.0					
Tare No.	N-9			M-7	
Tare + Wet Soil	67.10			31.34	
Tare + Dry Soil	47.10			26.03	
Tare wt.	9.60			9.23	
Water, gm	20			5.31	
Soil, gm	37.5			16.8	
Moisture Content, %	53.33			31.607	
N Blows	25			PL	PI
Liquid Limit, %	53			16	37

Only one point due to inadequate sample quantity

Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					

Tested by: JTF
Inputted by: KAPE
Checked by: GBP

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 02-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-1	FB-1	FB-1	FB-1	FB-1	FB-1
Sample No.	SPT-2	SPT-4	SPT-7	SPT-9	SPT-12	SPT-13
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	694.72	710.48	714.16	714.74	726.51	724.55
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	T-1	T-2	T-3	T-4	T-5	T-6
Wt. Tare + Dry Soil, gm	134.91	128.42	131.46	134.61	128.90	130.62
Wt. Tare	39.02	38.50	38.90	39.55	38.67	39.31
W_s = Wt Dry Soil, gm	95.89	89.92	92.56	95.06	90.23	91.31
$W_w = W_s+W_{fw}-W_{fws}$, gm	36.13	34.75	34.75	35.55	33.50	33.77
$G_s=\alpha W_s/W_w$ (α=.9986)	2.65	2.58	2.66	2.67	2.69	2.70

Borehole No.	FB-1	FB-1	FB-1			
Sample No.	SPT-15	SPT-21	SPT-26			
Flask No.	1	2	3			
Vol. of flask at 20°C, cm^3	500	500	500			
W_{fws} = Wt. Flask + Water +Soil, gm	692.71	712.01	714.58			
Temperature, °C	26	26	26			
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35			
Tare No.	T-7	T-8	T-9			
Wt. Tare + Dry Soil, gm	132.01	129.78	132.01			
Wt. Tare	39.34	39.00	38.57			
W_s = Wt Dry Soil, gm	92.67	90.78	93.44			
$W_w = W_s+W_{fw}-W_{fws}$, gm	34.92	34.08	35.21			
$G_s=\alpha W_s/W_w$ (α=.9986)	2.65	2.66	2.65			

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 02-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-2	FB-2	FB-2	FB-2	FB-2	FB-2
Sample No.	SPT-2	SPT-3	SPT-5	SPT-7	SPT-8	UDS-2
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	707.30	727.60	730.57	730.85	738.72	737.78
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	B-4	A-1	N-23	T-161	T-103	T-G-18
Wt. Tare + Dry Soil, gm	128.36	127.80	128.20	131.34	116.76	124.06
Wt. Tare	13.06	12.57	9.90	11.34	7.59	11.50
W_s = Wt Dry Soil, gm	115.30	115.23	118.30	120.00	109.17	112.56
$W_w = W_s+W_{fw}-W_{fws}$, gm	42.96	42.94	44.08	44.38	40.23	41.79
$G_s=\alpha W_s/W_w$ (α=.9986)	2.68	2.68	2.68	2.70	2.71	2.69

Borehole No.	FB-2	FB-2	FB-2	FB-2	FB-2	FB-2
Sample No.	SPT-9	SPT-11	SPT-12	SPT-15	SPT-18	SPT-19
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	697.69	718.68	712.78	715.52	732.22	730.03
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	W-32B	W-33A	W-30	TS-5	B-23	B-20
Wt. Tare + Dry Soil, gm	110.75	111.46	102.34	105.34	108.97	111.66
Wt. Tare	10.54	10.23	11.78	9.46	9.88	11.43
W_s = Wt Dry Soil, gm	100.21	101.23	90.56	95.88	99.09	100.23
$W_w = W_s+W_{fw}-W_{fws}$, gm	37.48	37.86	34.13	35.59	36.65	37.21
$G_s=\alpha W_s/W_w$ (α=.9986)	2.67	2.67	2.65	2.69	2.70	2.69

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 02-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-4	FB-4	FB-4	FB-4	FB-4	FB-4
Sample No.	SPT-2	SPT-4	SPT-7	SPT-9	SPT-11	SPT-14
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	705.02	723.87	725.77	721.44	743.97	739.05
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	F-12	L-8	B-70	N-21	C-12	N-25
Wt. Tare + Dry Soil, gm	123.90	121.21	121.28	116.22	128.65	125.68
Wt. Tare	11.47	11.19	10.13	9.97	10.13	11.10
W_s = Wt Dry Soil, gm	112.43	110.02	111.15	106.25	118.52	114.58
$W_w = W_s+W_{fw}-W_{fws}$, gm	42.37	41.46	41.73	40.04	44.33	42.54
$G_s=\alpha W_s/W_w$ (α=.9986)	2.65	2.65	2.66	2.65	2.67	2.69

Borehole No.	FB-4	FB-4	FB-4	FB-4	FB-4	FB-4
Sample No.	SPT-17	SPT-19	SPT-22	SPT-24	SPT-26	SPT-29
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	705.19	720.00	720.42	724.36	743.06	741.60
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	L-4	T-13	T-141	N-12	G-20	C-35
Wt. Tare + Dry Soil, gm	122.17	113.23	113.02	120.10	127.48	129.63
Wt. Tare	10.96	10.34	11.12	10.40	10.94	11.00
W_s = Wt Dry Soil, gm	111.21	102.89	101.90	109.70	116.54	118.63
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.98	38.20	37.83	40.57	43.26	44.04
$G_s=\alpha W_s/W_w$ (α=.9986)	2.71	2.69	2.69	2.70	2.69	2.69

Test by: _____

Approved for Release: _____

Checked by: _____

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 03-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-6	FB-6	FB-6	FB-6	FB-6	FB-6
Sample No.	SPT-3	SPT-6	SPT-8	SPT-9		
Flask No.	1	2	3	4		
Vol. of flask at 20°C, cm^3	500	500	500	500		
W_{fws} = Wt. Flask + Water +Soil, gm	703.10	729.76	726.05	725.98		
Temperature, °C	26	26	26	26		
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23		
Tare No.	G-5	L-15	L-16	T-408		
Wt. Tare + Dry Soil, gm	120.17	13.37	122.83	121.30		
Wt. Tare	11.32	10.62	11.23	8.28		
W_s = Wt Dry Soil, gm	108.85	2.75	111.60	113.02		
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.71	-71.70	41.90	42.27		
$G_s=\alpha W_s/W_w$ (α=.9986)	2.67	-0.04	2.66	2.67		

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +Soil, gm						
Temperature, °C		``				
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 5-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-7	FB-7	FB-7	FB-7	FB-7	FB-7
Sample No.	SPT-3	SPT-6	SPT-9	SPT-10	SPT-13	SPT-16
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	709.38	723.03	730.74	724.45	743.02	730.07
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	152T	A-8	N-4	G-12	T-7	C-5
Wt. Tare + Dry Soil, gm	130.33	118.38	128.98	120.47	127.37	113.24
Wt. Tare	10.90	9.95	11.18	11.10	10.64	11.34
W_s = Wt Dry Soil, gm	119.43	108.43	117.80	109.37	116.73	101.90
$W_w = W_s+W_{fw}-W_{fws}$, gm	45.01	40.71	43.41	40.15	43.49	38.84
$G_s=\alpha W_s/W_w$ (α=.9986)	2.65	2.66	2.71	2.72	2.68	2.62

Borehole No.	FB-7	FB-7	FB-7	FB-7	FB-7	FB-7
Sample No.	SPT-18	SPT-21	SPT-24	SPT-25	SPT-26	SPT-27
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	708.48	724.66	726.43	729.47	742.11	739.08
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	M-12	G5	AT	T-138	T-7	F-10
Wt. Tare + Dry Soil, gm	129.28	123.65	121.34	130.70	125.93	126.12
Wt. Tare	10.86	11.32	10.61	11.29	10.64	11.25
W_s = Wt Dry Soil, gm	118.42	112.33	110.73	119.41	115.29	114.87
$W_w = W_s+W_{fw}-W_{fws}$, gm	44.90	42.98	40.65	45.17	42.96	42.80
$G_s=\alpha W_s/W_w$ (α=.9986)	2.63	2.61	2.72	2.64	2.68	2.68

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 6-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-7	FB-7				
Sample No.	SPT-28	SPT-29				
Flask No.	1	2				
Vol. of flask at 20°C, cm^3	500	500				
W_{fws} = Wt. Flask + Water +Soil, gm	701.88	730.19				
Temperature, °C	26	26				
W_{fw} = Wt. flask + water, gm	634.96	655.31				
Tare No.	AT	T-138				
Wt. Tare + Dry Soil, gm	117.51	130.64				
Wt. Tare	10.61	11.29				
W_s = Wt Dry Soil, gm	106.90	119.35				
$W_w = W_s+W_{fw}-W_{fws}$, gm	39.98	44.47				
$G_s=\alpha W_s/W_w$ (α=.9986)	2.67	2.68				

Borehole No.	FB-7					
Sample No.	UDS-1					
Flask No.	1					
Vol. of flask at 20°C, cm^3	500					
W_{fws} = Wt. Flask + Water +Soil	708.57					
Temperature, °C	26					
W_{fw} = Wt. flask + water, gm	634.96					
Tare No.	N-27					
Wt. Tare + Dry Soil, gm	127.96					
Wt. Tare, gm	10.15					
W_s = Wt Dry Soil, gm	117.81					
$W_w = W_s+W_{fw}-W_{fws}$, gm	44.20					
$G_s=\alpha W_s/W_w$ (α=.9986)	2.66					

Test by: _____

Checked by: _____

Approved for Release: _____

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 7-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-8	FB-8	FB-8	FB-8		
Sample No.	SPT-2	SPT-4	SPT-7	SPT-8		
Flask No.	1	2	3	4		
Vol. of flask at 20°C, cm^3	500	500	500	500		
W_{fws} = Wt. Flask + Water +Soil, gm	700.59	729.57	731.21	723.78		
Temperature, °C	26	26	26	26		
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23		
Tare No.	F-11	G-3	0-1	T-9		
Wt. Tare + Dry Soil, gm	114.13	129.85	128.28	118.82		
Wt. Tare	10.43	11.22	10.74	10.27		
W_s = Wt Dry Soil, gm	103.70	118.63	117.54	108.55		
$W_w = W_s+W_{fw}-W_{fws}$, gm	38.07	44.37	42.68	40.00		
$G_s=\alpha W_s/W_w$ (α=.9986)	2.72	2.67	2.75	2.71		

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +Soil						
Temperature, °C						
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare, gm						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 8-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-10	FB-10	FB-10	FB-10	FB-10	FB-10
Sample No.	SPT-1	SPT-2	SPT-3	SPT-4	SPT-5	SPT-6
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	704.87	722.72	724.88	725.42	737.11	737.88
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	L-18	0-6	G-21	L-3	L-8	L-15
Wt. Tare + Dry Soil, gm	121.79	118.00	120.72	123.88	118.99	124.34
Wt. Tare	11.09	11.26	11.00	11.24	11.19	10.62
W_s = Wt Dry Soil, gm	110.70	106.74	109.72	112.64	107.80	113.72
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.79	39.33	41.19	42.45	40.47	42.85
$G_s=\alpha W_s/W_w$ (α=.9986)	2.71	2.71	2.66	2.65	2.66	2.65

Borehole No.	FB-10	FB-10	FB-10			
Sample No.	SPT-8	SPT-9	SPT-10			
Flask No.	1	2	3			
Vol. of flask at 20°C, cm^3	500	500	500			
W_{fws} = Wt. Flask + Water +Soil	709.12	726.77	726.78			
Temperature, °C	26	26	26			
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35			
Tare No.	L3	L8	L-15			
Wt. Tare + Dry Soil, gm	129.71	125.86	123.38			
Wt. Tare,gm	11.24	11.19	10.62			
W_s = Wt Dry Soil, gm	118.47	114.67	112.76			
$W_w = W_s+W_{fw}-W_{fws}$, gm	44.31	43.21	42.33			
$G_s=\alpha W_s/W_w$ (α=.9986)	2.67	2.65	2.66			

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 9-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-11	FB-11	FB-11	FB-11	FB-11	FB-11
Sample No.	SPT-2	SPT-7	SPT-9	SPT-11	SPT-15	SPT-22
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	706.21	730.31	723.99	721.96	742.37	736.41
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	1-Q	A-8	L-19	F-4	N-22	G-13
Wt. Tare + Dry Soil, gm	128.92	129.89	119.70	116.86	127.91	120.95
Wt. Tare	16.10	10.34	11.16	11.20	11.43	11.06
W_s = Wt Dry Soil, gm	112.82	119.55	108.54	105.66	116.48	109.89
$W_w = W_s+W_{fw}-W_{fws}$, gm	41.57	44.55	40.90	38.93	43.89	40.49
$G_s=\alpha W_s/W_w$ (α=.9986)	2.71	2.68	2.65	2.71	2.65	2.71

Borehole No.	FB-11					
Sample No.	SPT-26					
Flask No.	1					
Vol. of flask at 20°C, cm^3	500					
W_{fws} = Wt. Flask + Water +Soil	703.99					
Temperature, °C	26					
W_{fw} = Wt. flask + water, gm	634.96					
Tare No.	T-161					
Wt. Tare + Dry Soil, gm	121.13					
Wt. Tare,gm	11.34					
W_s = Wt Dry Soil, gm	109.79					
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.76					
$G_s=\alpha W_s/W_w$ (α=.9986)	2.69					

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 25-Jul-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-12	FB-12	FB-12			
Sample No.	SPT-2	SPT-5	SPT-8			
Flask No.	1	2	3			
Vol. of flask at 20°C, cm^3	500	500	500			
W_{fws} = Wt. Flask + Water +Soil, gm	709.55	731.10	726.86			
Temperature, ^{o}C	26	26	26			
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35			
Tare No.	N-30A	A1	L11			
Wt. Tare + Dry Soil, gm	130.10	134.19	124.11			
Wt. Tare	10.40	12.57	11.22			
W_s = Wt Dry Soil, gm	119.70	121.62	112.89			
$W_w = W_s+W_{fw}-W_{fws}$, gm	45.11	45.83	42.38			
$G_s=\alpha W_s/W_w$ (α=.9986)	2.65	2.65	2.66			

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +Soil						
Temperature, ^{o}C						
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare,gm						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by: _____

Checked by: _____

Approved for Release: _____

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 27-Jul

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-13	FB-13	FB-13	FB-13	FB-13	FB-13
Sample No.	SPT-2	SPT-5	SPT-9	SPT-12	SPT-14	SPT-16
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +Soil, gm	704.30	722.31	731.85	728.35	740.88	741.62
Temperature, °C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	L-12	N-18	L-4	T-13	T141	N-12
Wt. Tare + Dry Soil, gm	121.10	117.85	131.57	126.12	124.70	130.12
Wt. Tare	11.30	11.06	10.96	10.34	11.12	10.40
W_s = Wt Dry Soil, gm	109.80	106.79	120.61	115.78	113.58	119.72
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.46	39.79	45.11	42.66	42.48	45.11
$G_s=\alpha W_s/W_w$ (α=.9986)	2.71	2.68	2.67	2.71	2.67	2.65

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +Soil, gm						
Temperature, °C						
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 26-Jul-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-14	FB-14	FB-14	FB-14		
Sample No.	SPT-3	SPT-5	SPT-9	SPT-12		
Flask No.	1	2	3	4		
Vol. of flask at 20°C, cm^3	500	500	500	500		
W_{fws} = Wt. Flask + Water +Soil, gm	703.77	719.44	720.19	724.91		
Temperature, °C	26	26	26	26		
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23		
Tare No.	G-20	C-35	T-2	F-2		
Wt. Tare + Dry Soil, gm	120.62	113.91	111.40	122.27		
Wt. Tare	10.94	11.00	9.41	10.46		
W_s = Wt Dry Soil, gm	109.68	102.91	101.99	111.81		
$W_w = W_s+W_{fw}-W_{fws}$, gm	40.87	38.78	38.15	42.13		
$G_s=\alpha W_s/W_w$ (α=.9986)	2.68	2.65	2.67	2.65		

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +Soil, gm						
Temperature, °C						
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by:

Checked by:

Approved for Release:

GEORGE B. PADILLA & Associates

Project: FRIMP-CDOR
Location: Cagayan de Oro City
Client: JICA SURVEY TEAM

Date: 02-Aug-13

SPECIFIC GRAVITY OF SOIL SOLIDS
(ASTM D854)

Borehole No.	FB-2	FB-2	FB-2	FB-2	FB-2	FB-2
Sample No.	SPT-22	SPT-23	SPT-24	SPT-25	SPT-26	SPT-27
Flask No.	1	2	3	4	5	6
Vol. of flask at 20°C, cm^3	500	500	500	500	500	500
W_{fws} = Wt. Flask + Water +S	694.97	718.17	718.40	711.65	728.64	728.91
Temperature, ^{o}C	26	26	26	26	26	26
W_{fw} = Wt. flask + water, gm	634.96	655.31	656.35	655.23	669.78	667.01
Tare No.	T-1	T-2	T-3	T-4	T-5	T-6
Wt. Tare + Dry Soil, gm	134.67	138.70	137.80	129.09	131.88	137.76
Wt. Tare, gm	39.02	38.50	38.90	39.55	38.67	39.31
W_s = Wt Dry Soil, gm	95.65	100.20	98.90	89.54	93.21	98.45
$W_w = W_s+W_{fw}-W_{fws}$, gm	35.64	37.34	36.85	33.12	34.35	36.55
$G_s=\alpha W_s/W_w$ (α=.9986)	2.68	2.68	2.68	2.70	2.71	2.69

Borehole No.						
Sample No.						
Flask No.						
Vol. of flask at 20°C, cm^3						
W_{fws} = Wt. Flask + Water +S						
Temperature, ^{o}C						
W_{fw} = Wt. flask + water, gm						
Tare No.						
Wt. Tare + Dry Soil, gm						
Wt. Tare, gm						
W_s = Wt Dry Soil, gm						
$W_w = W_s+W_{fw}-W_{fws}$, gm						
$G_s=\alpha W_s/W_w$ (α=.9986)						

Test by: _____

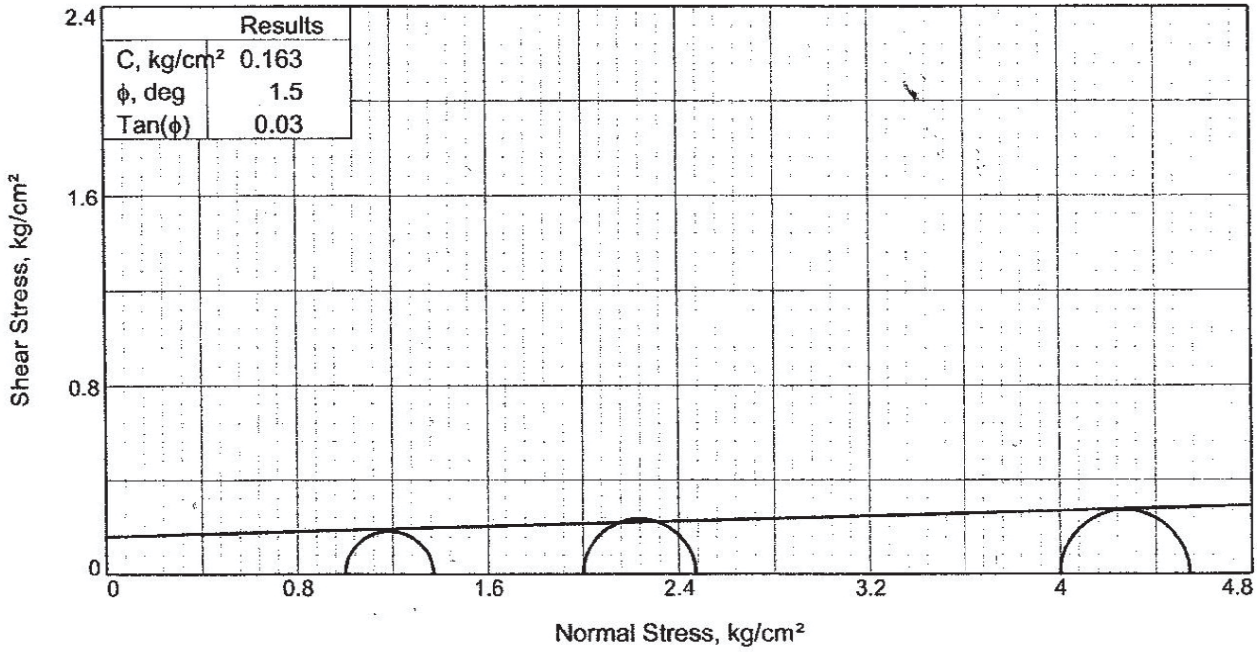
Checked by: _____

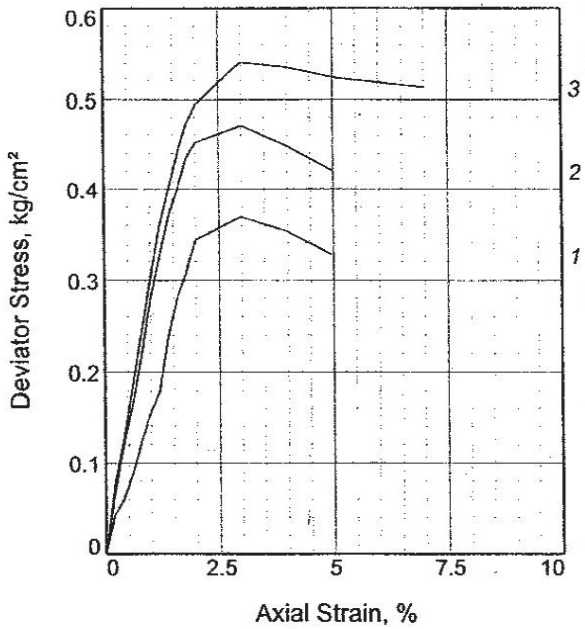
Approved for Release: _____

GEORGE B. PADILLA & Associates

O.2 Geological Investigation for Feasibility Study

(3) Results of Laboratory Tests on Undisturbed Soil Samples





Sample No.		1	2	3
Initial	Water Content, %	69.3	69.3	69.3
	Dry Density, kN/m3	8.95	8.91	8.83
	Saturation, %	97.3	96.9	95.5
	Void Ratio	1.8503	1.8606	1.8881
	Diameter, mm.	38.4	38.5	38.9
	Height, mm.	76.6	76.2	76.5
At Test	Water Content, %	71.4	70.4	71.4
	Dry Density, kN/m3	8.95	8.91	8.83
	Saturation, %	100.4	98.4	98.3
	Void Ratio	1.8503	1.8606	1.8881
	Diameter, mm.	38.4	38.5	38.9
	Height, mm.	76.6	76.2	76.5
Strain rate, mm./min.		0.5	0.5	0.5
Back Pressure, kg/cm²		0.00	0.00	0.00
Cell Pressure, kg/cm²		1.00	2.00	4.00
Fail. Stress, kg/cm²		0.37	0.47	0.54
Ult. Stress, kg/cm²				
σ_1 Failure, kg/cm²		1.37	2.47	4.54
σ_3 Failure, kg/cm²		1.00	2.00	4.00

Type of Test:
Unconsolidated Undrained
Sample Type: TRIAXIAL (UU)
Description: BOREHOLE No. FB-2 SAMPLE No. UDS-1
DEPTH : 7.50 - 8.00 M
Assumed Specific Gravity= 2.6
Remarks:

Client: GEORGE B. PADILLA AND ASSOCIATES

Project: FRIM-CDOR

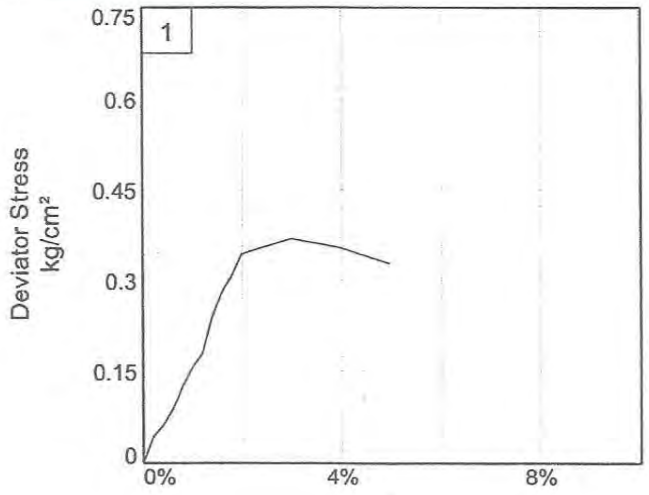
Proj. No.: **Date Sampled:** 9/12/2013

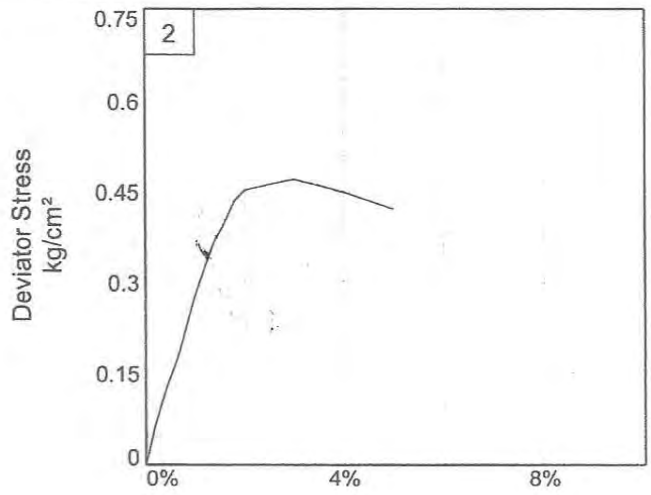
GIBO ANALYTICS, INC.
CIVIL ENGINEERING LABORATORY

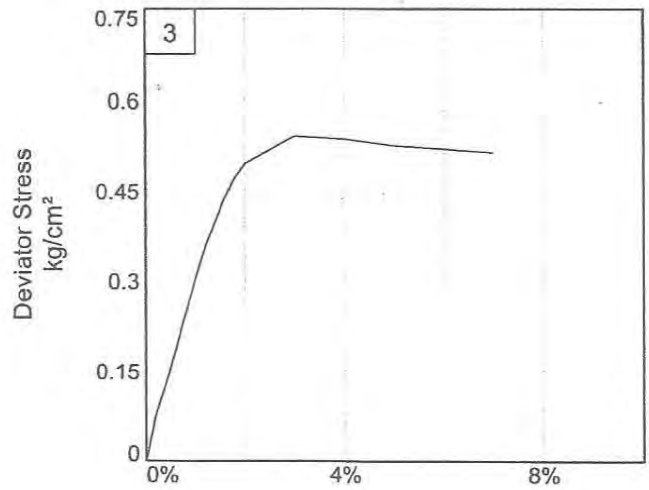
Figure ____

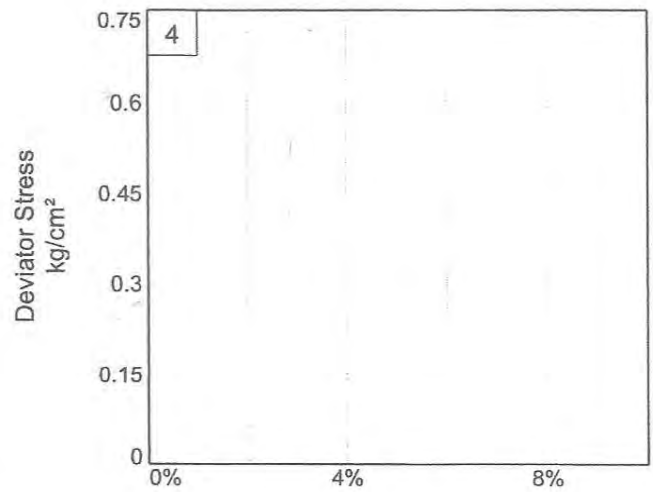
Tested By: G.D.ABARRA **Checked By:** E.M. MORALES

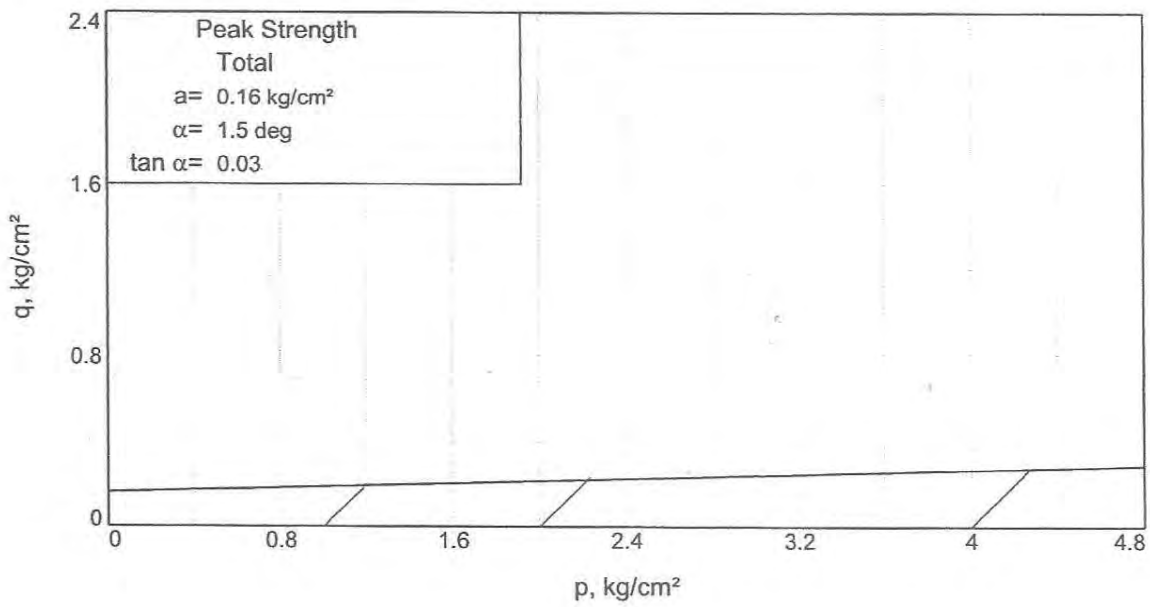
SEP 19 2013







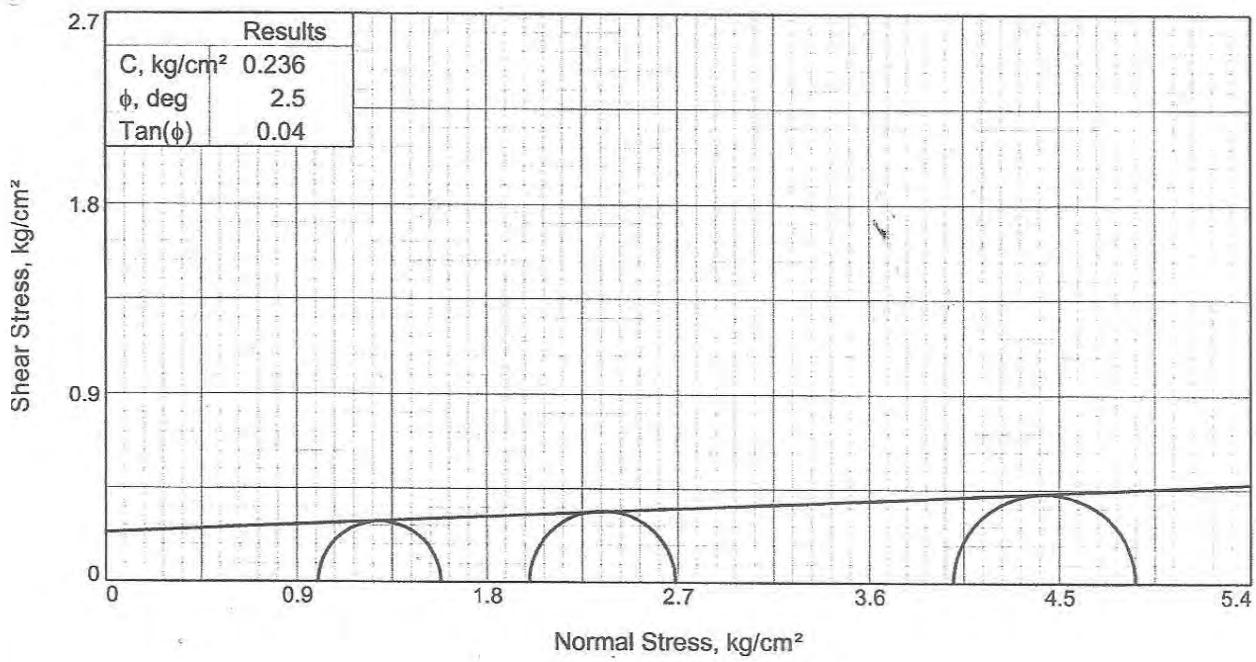


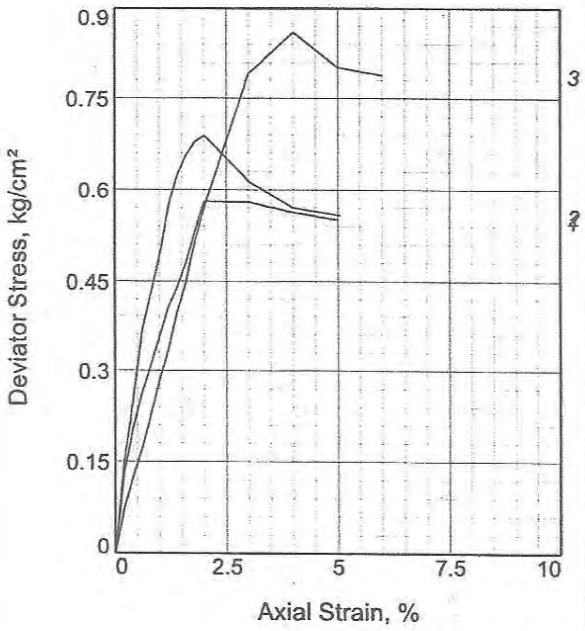


Client: GEORGE B. PADILLA AND ASSOCIATES
Project: FRIM-CDOR

Project No.: **Figure** _____ **Philippine GEOANALYTICS, Inc.**

Tested By: G.D.ABARRA **Checked By:** E.M. MORALES SEP 1 9 2010





Sample No.		1	2	3
Initial	Water Content, %	133.6	133.6	133.6
	Dry Density, kN/m3	5.36	5.26	5.04
	Saturation, %	92.6	90.3	85.6
	Void Ratio	3.7532	3.8478	4.0592
	Diameter, mm.	39.4	39.3	39.5
	Height, mm.	76.5	76.3	76.5
At Test	Water Content, %	134.9	135.8	135.8
	Dry Density, kN/m3	5.36	5.26	5.04
	Saturation, %	93.4	91.8	87.0
	Void Ratio	3.7532	3.8478	4.0592
	Diameter, mm.	39.4	39.3	39.5
	Height, mm.	76.5	76.3	76.5
Strain rate, mm./min.		0.5	0.5	0.5
Back Pressure, kg/cm²		0.00	0.00	0.00
Cell Pressure, kg/cm²		1.00	2.00	4.00
Fail. Stress, kg/cm²		0.58	0.69	0.86
Ult. Stress, kg/cm²				
σ_1 Failure, kg/cm²		1.58	2.69	4.86
σ_3 Failure, kg/cm²		1.00	2.00	4.00

Type of Test:
Unconsolidated Undrained

Sample Type: TRIAXIAL (UU)

Description: BH No. FB-6 SAMPLE No. UDS-1
DEPTH: 8.50-10.00 M

Assumed Specific Gravity= 2.60

Remarks:

Client: GEORGE B. PADILLA AND ASSOCIATES

Project: FRIM-CDOR

Proj. No.:

Date Sampled: 9/12/2013

PHILKONSTRUC
GIB ANALYTICS, INC.
CIVIL ENGINEERING LABORATORY
PCA TECHNICAL CENTER,
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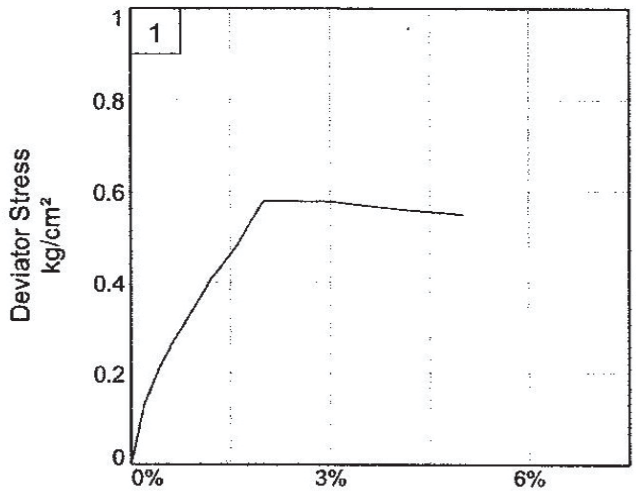
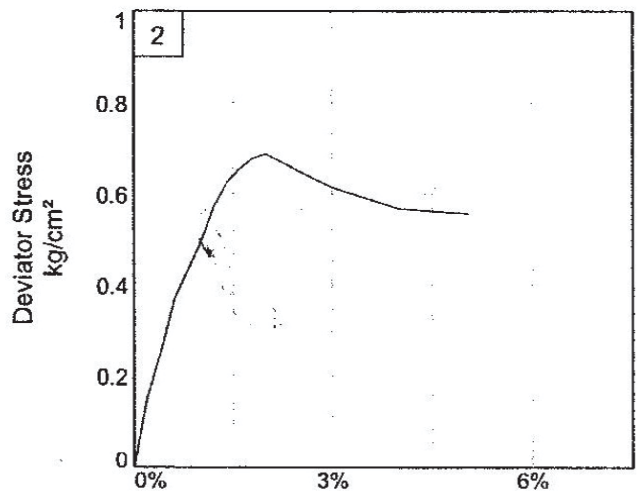
Email: pgeotest.laboratory@gmail.com Website: www.philgeotech.com.ph

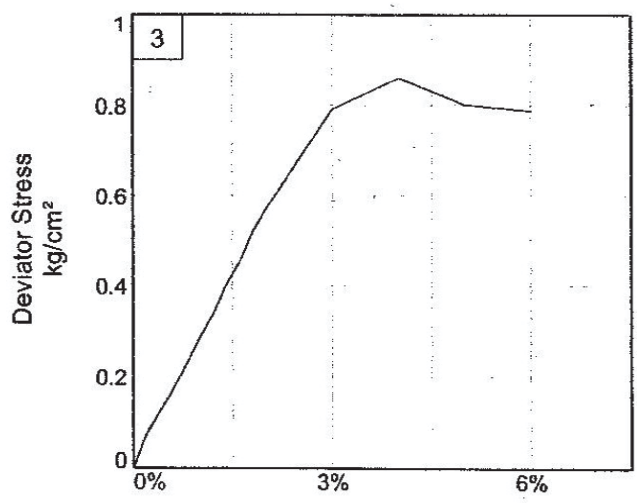
Figure

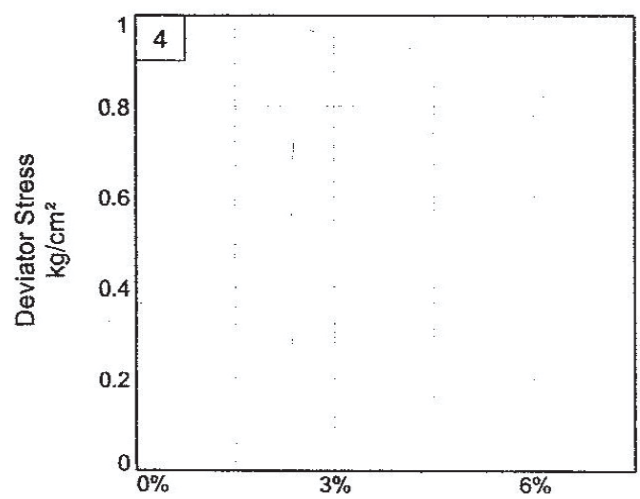
Tested By: G.D. ABARRA **Checked By:** E.M. MORALES

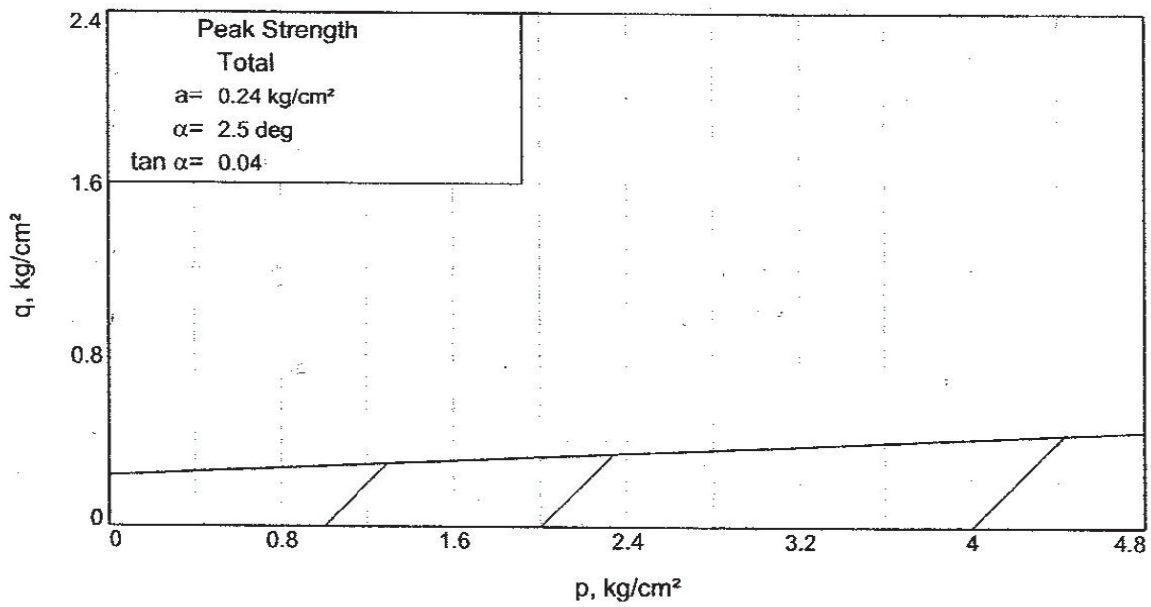
SEP 19 2013











Client: GEORGE B. PADILLA AND ASSOCIATES
Project: FRIM-CDOR

Project No.: _____ **Figure** _____ **Philippine GEOANALYTICS, Inc.**

Tested By: G.D. ABARRA **Checked By:** E.M. MORALES SEP 1 9 2013

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Quezon City, Philippines
Tel. Nos. 426-1078; 426-3350
Fax (63-2) 426-6641
E-Mail: rockengg@mozcom.co

Unconsolidated-Undrained Triaxial Compression Test

Client : **GEORGE B. PADILLA & Associates**
Project : **CDOR-FRIM**
Location : **Cagayan de Oro City**
Borhole # : **FB-8,UDS-1**

Tested by: **RAAcero**
Checked by: **MLBalbin**
Approved by: **DR. ARTHUR SALDIVAR-SALI**

Laboratory Information

Test date	:	July 18, 2013			
Sample type	:	UDS			
Method of preparation	:	Direct extrusion from tube, hand trimming			
Test method used	:	ASTM-D - 2850			
Room temperature range	:	28	°C Max.	24	°C Min.
Particle density	:	2.65	Mg/m³	Assumed	
Visual description	:	fine sandy, Silty Clay			

Specimen Preparation

		Stage 1		Stage 2		Stage 3	
Initial diameter	:	37.0	mm	36.8	mm	37.0	mm
Initial length	:	70.0	mm	70.0	mm	70.0	mm
Initial moisture content	:	77.6	%	64.6	%	79.7	%
Initial bulk density	:	1.73	Mg/m³	1.86	Mg/m³	1.79	Mg/m³
Initial dry density	:	0.98	Mg/m³	1.13	Mg/m³	1.00	Mg/m³
Cell pressure kPa	:	100		200		400	

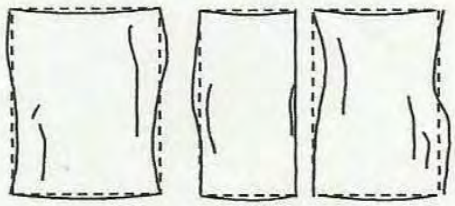
Shearing Stage

Rate of strain	:	0.90	mm/min
Failure criterion	:	Maximum deviator stress	
Corrections applied	:	Membrane	

Test Results

Cohesion intercept c : **24** kPa
Angle of shear resistance ϕ : **3** °

Failure mode : Shear



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The Rock Engineers

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nconsolidated-Undrained Triaxial Compression Test

lient : GEORGE B. PADILLA & Associates

roject : CDOR-FRIM

ocation : Cagayan de Oro City

orehole # : FB-8,UDS-1

Tested by: RAAcero

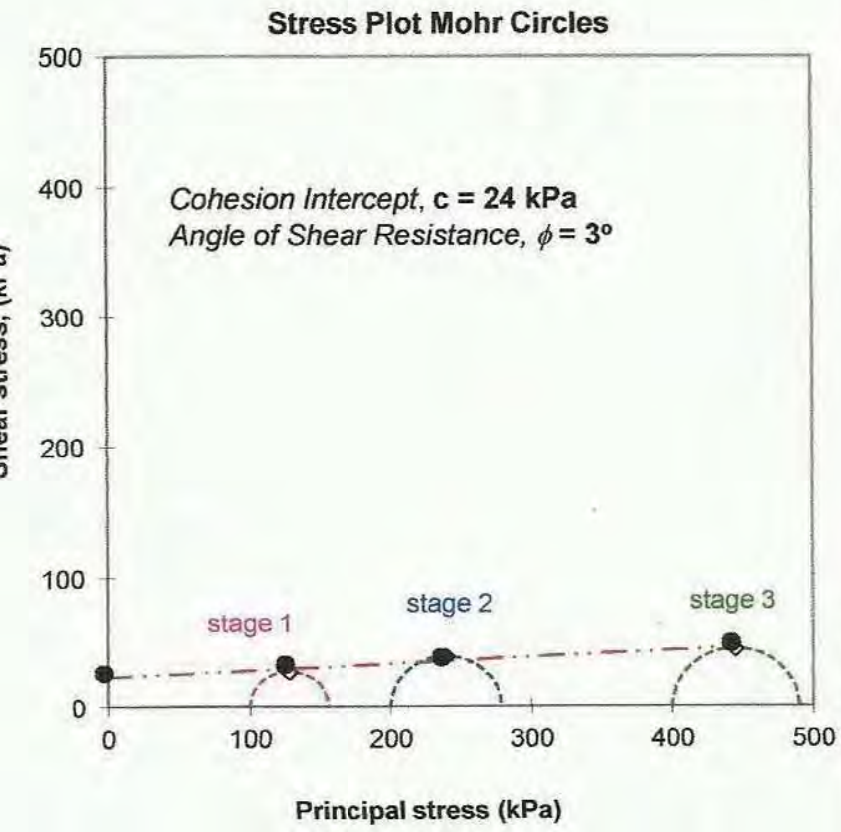
Checked by: MLBalb

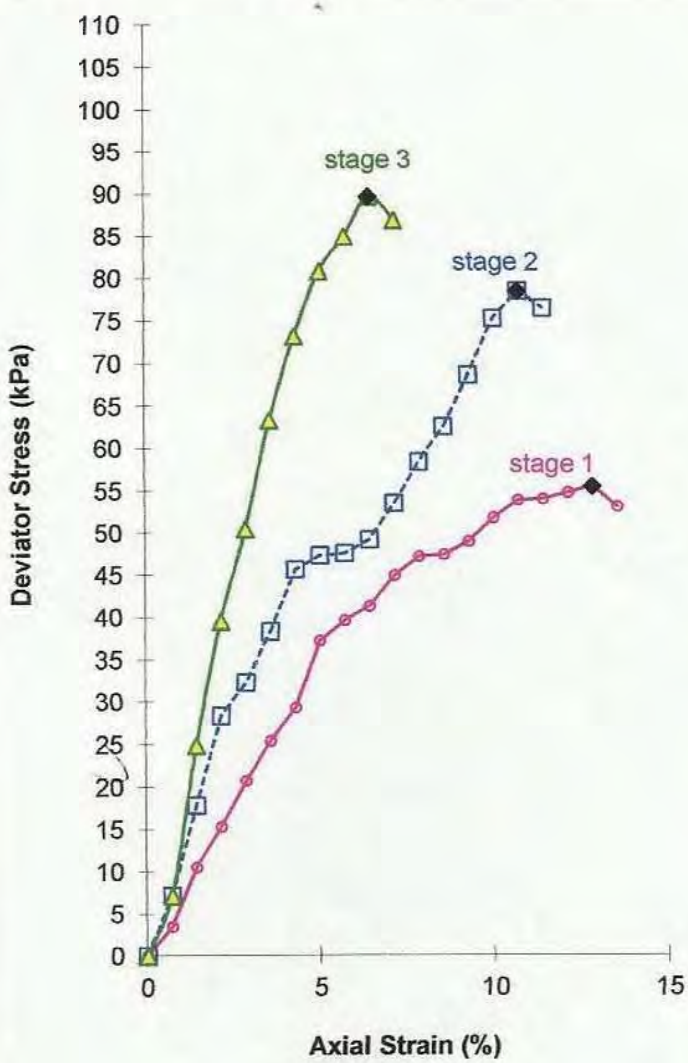
Approved by: DR. ARTHUR SALDIVAR-SALI

hearing Stage		**Stage 1**	**Stage 2**	**Stage 3**
ell pressure	kPa :	100	200	400
t Failure				
xial strain (%)	kPa :	12.86	10.71	6.43
eviator stress $(\sigma_1 - \sigma_3)$	kPa :	56	79	90
lajor principal stress σ_1	kPa :	156	279	490
linor principal stress σ_3	kPa :	100	200	400

LABORATORY INFORMATION

Visual Description : Silty Clay





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Unconsolidated-Undrained Triaxial Compression Test

Client : **GEORGE B. PADILLA & Associates**

Project : **CDOR-FRIM**

Location : **Cagayan de Oro City**

Borhole # : **FB-11,UDS-1**

Tested by: **RAAcero**

Checked by: **MLBalbin**

Approved by: **DR. ARTHUR SALDIVAR-SALI**

Laboratory Information

Test date	:	July 18, 2013			
Sample type	:	UDS			
Method of preparation	:	Direct extrusion from tube, hand trimming			
Test method used	:	ASTM-D - 2850			
Room temperature range	:	28	°C Max.	24	°C Min.
Particle density	:	2.65	Mg/m³	Assumed	
Visual description	:	fine sandy, Silty Clay			

Specimen Preparation

		Stage 1		Stage 2		Stage 3	
Initial diameter	:	36.6	mm	36.8	mm	36.4	mm
Initial length	:	70.0	mm	70.0	mm	70.0	mm
Initial moisture content	:	33.3	%	32.7	%	29.2	%
Initial bulk density	:	1.69	Mg/m³	1.32	Mg/m³	1.61	Mg/m³
Initial dry density	:	1.26	Mg/m³	0.99	Mg/m³	1.24	Mg/m³
Cell pressure kPa	:	100		200		400	

Shearing Stage

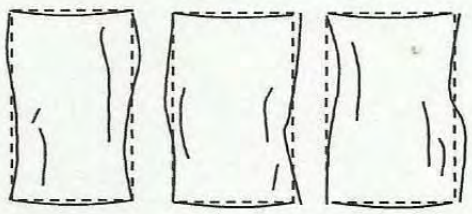
Rate of strain	:	0.90	mm/min
Failure criterion	:	Maximum deviator stress	
Corrections applied	:	Membrane	

Test Results

Cohesion intercept c : **22** kPa

Angle of shear resistance ϕ : **2** °

Failure mode : Shear



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Unconsolidated-Undrained Triaxial Compression Test

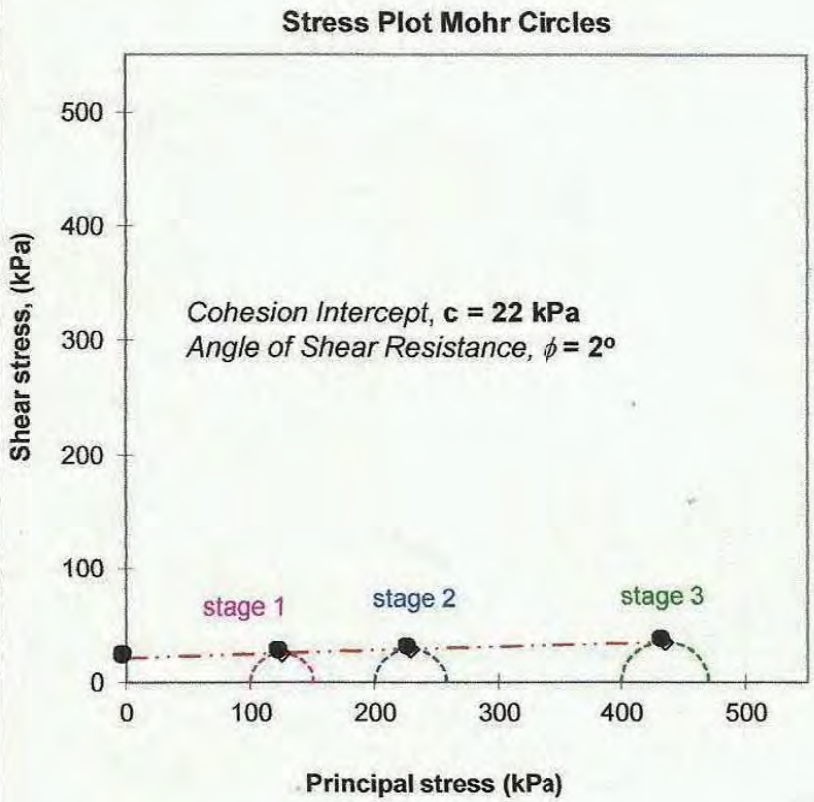
Client : **GEORGE B. PADILLA & Associates**
Project : **CDOR-FRIM**
Location : **Cagayan de Oro City**
Borehole # : **FB-11,UDS-1**

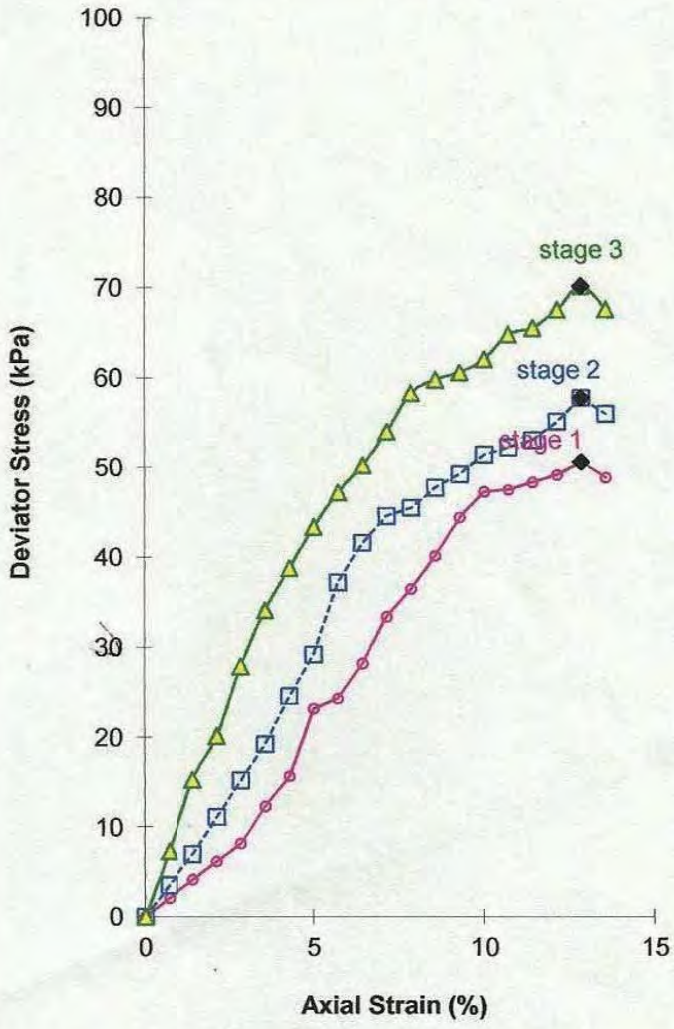
Tested by: **RAAcero**
Checked by: **MLBalbin**
Approved by: **DR. ARTHUR SALDIVAR-SALI**

Shearing Stage		**Stage 1**	**Stage 2**	**Stage 3**
Cell pressure	kPa :	100	200	400
At Failure				
Axial strain (%)	kPa :	12.86	12.86	12.86
Deviator stress $(\sigma_1 - \sigma_3)$	kPa :	51	58	70
Major principal stress σ_1	kPa :	151	258	470
Minor principal stress σ_3	kPa :	100	200	400

LABORATORY INFORMATION

Visual Description : Silty Clay





Note : printout of graph may not show a 1:1 axis ratio

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Unconsolidated-Undrained Triaxial Compression Test

Client : **GEORGE B. PADILLA & Associates**
Project : **CDOR-FRIM**
Location : **Cagayan de Oro City**
Borhole # : **FB-13,UDS-2**

Tested by: **RAAcero**
Checked by: **MLBalbin**
Approved by: **DR. ARTHUR SALDIVAR-SALI**

Laboratory Information

Test date	:	July 18, 2013			
Sample type	:	UDS			
Method of preparation	:	Direct extrusion from tube, hand trimming			
Test method used	:	ASTM-D - 2850			
Room temperature range	:	28	°C Max.	24	°C Min.
Particle density	:	2.65	Mg/m³	Assumed	
Visual description	:	fine sandy SILT/CLAY			

Specimen Preparation

		Stage 1		Stage 2		Stage 3	
Initial diameter	:	37.0	mm	36.8	mm	37.0	mm
Initial length	:	70.0	mm	70.0	mm	70.0	mm
Initial moisture content	:	50.1	%	45.6	%	49.4	%
Initial bulk density	:	2.06	Mg/m³	2.08	Mg/m³	2.08	Mg/m³
Initial dry density	:	1.37	Mg/m³	1.43	Mg/m³	1.39	Mg/m³
Cell pressure kPa	:	100		200		400	

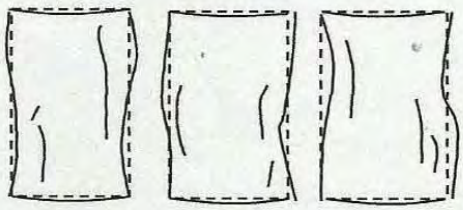
Shearing Stage

Rate of strain	:	0.90	mm/min
Failure criterion	:	Maximum deviator stress	
Corrections applied	:	Membrane	

Test Results

Cohesion intercept c : **21** kPa
Angle of shear resistance ϕ : **2** °

Failure mode : Shear



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nconsolidated-Undrained Triaxial Compression Test

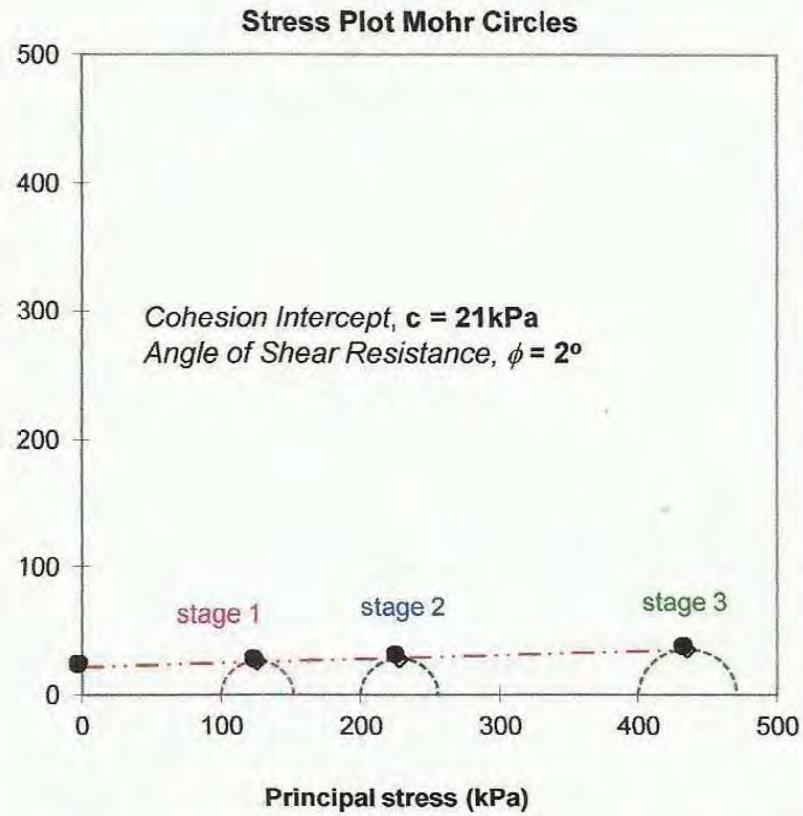
ent	:	GEORGE B. PADILLA & Associates
oject	:	CDOR-FRIM
cation	:	Cagayan de Oro City
rehole #	:	FB-13,UDS-2

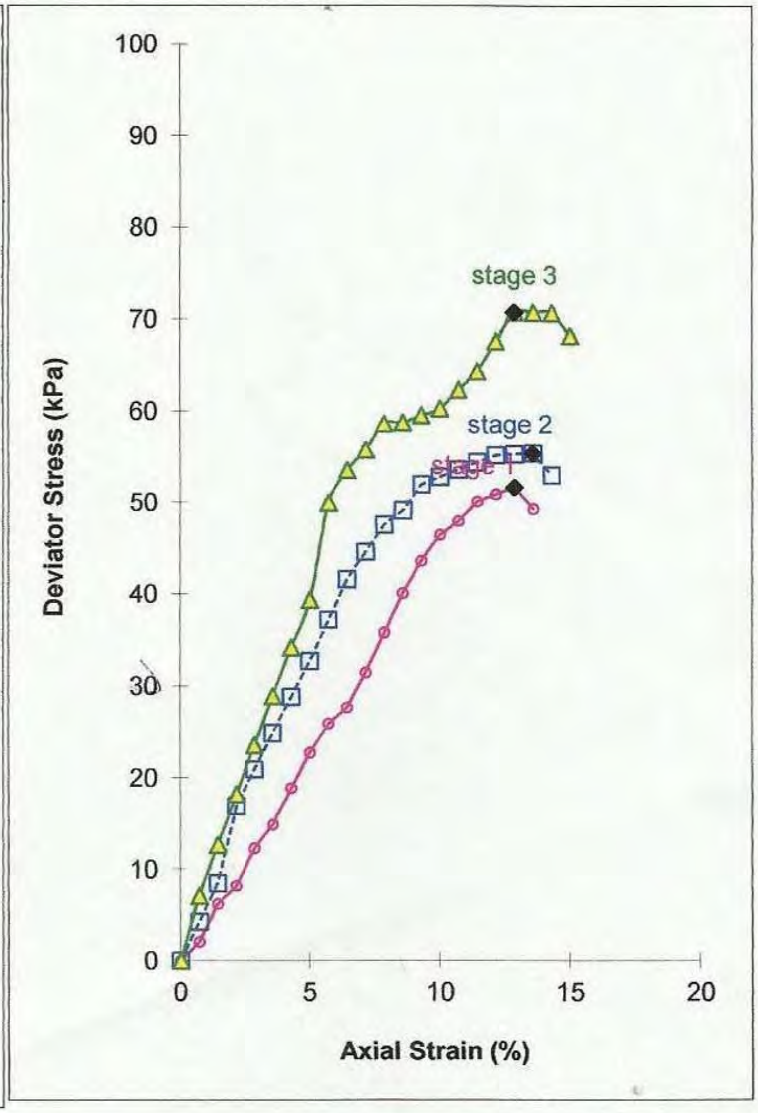
Tested by: RAAcero
Checked by: MLBalbin
Approved by: DR. ARTHUR SALDIVAR-SALI

earing Stage		Stage 1	Stage 2	Stage 3
l pressure	kPa :	100	200	400
Failure				
al strain (%)	kPa :	12.86	13.57	12.86
viator stress ($\sigma_1 - \sigma_3$)	kPa :	52	55	71
jor principal stress σ_1	kPa :	152	255	471
nor principal stress σ_3	kPa :	100	200	400

ABORATORY INFORMATION

sual Description : Fine sandy SILT/CLAY





e : printout of graph may not show a 1:1 axis ratio

Project:	FRIMP-CDOR	Borehole	FB-2
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-1
		Depth:	7.50-8.0m.
Client:	JICA Survey Team	Date of test:	19-Jul-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Dark gray clayey SILT

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 4 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.69
Wt. of ring and soil at beginning of test, gm	136.63
Wt. of ring	42.00
Weight of wet soil	94.63
Computed dry wt. of soil	53.46
Oven dry weight of soil	
Computed height of solids, H_s=	0.71
Initial height of voids, H_v= H_i-H_s=	1.29
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	1.84

Note: Sample was saturated prior to testing

Moisture Content of Raw Sample	
Tare No.	T-112
Wt. of tare + wet soil, gm	70.45
Wt. of tare +dry soil, gm	42.89
Wt. of tare, gm	7.11
Wt. of water, gm	27.56
Wt. of dry soil, gm	35.78
Initial moisture content, w_i	77.03

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	938
Final dial reading	704
Change in sample h_t, cm	0.234
Final h_t of voids,cm	0.59
Final void ratio, cm	0.84

Final Water ContentDetermination	
Tare No.	T-15
Final Wet soil + Tare	99.21
Final Dry soil + Tare	66.87
Wt. of tare, gm	11.15
Wt. of Water	32.34
Wt. of dry soil, gm	55.72
Final Water Content, w_f	58.04

Tested by: JTF

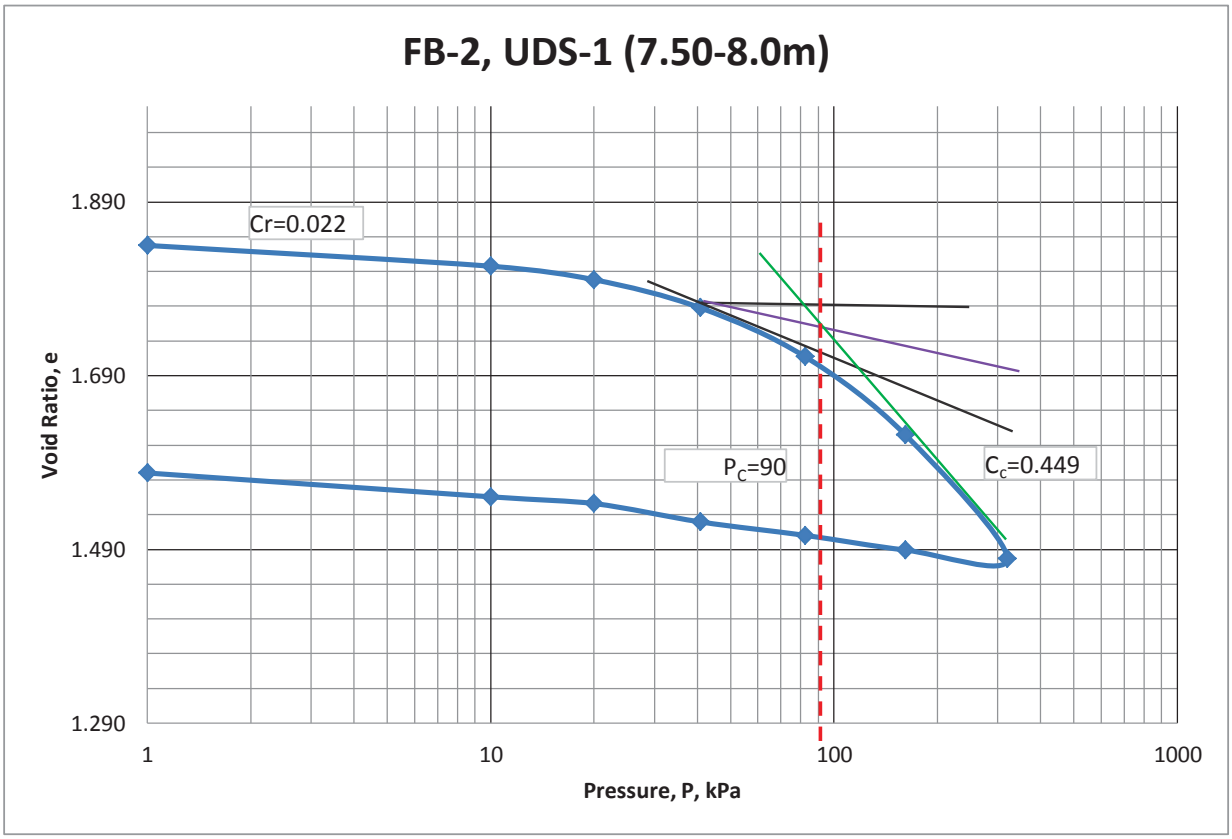
Inputted by: KAPE

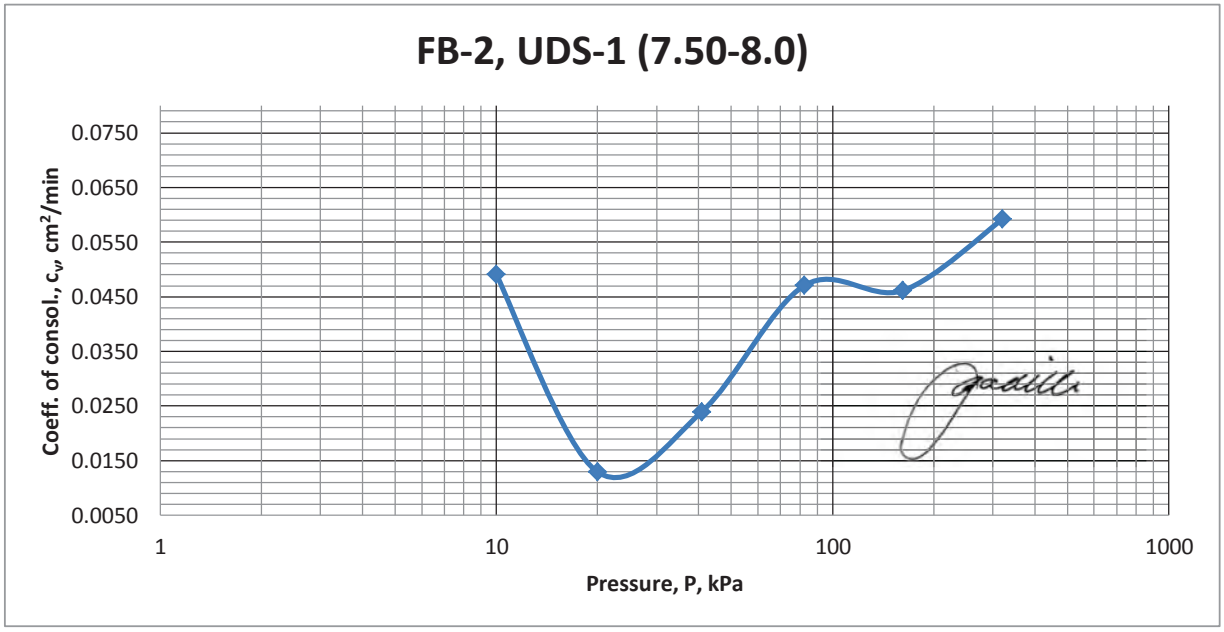
Checked by: GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	19-Jul-13
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Tested by:	JTF
		Inputted by:	KAPE
Client:	JICA Survey Team	Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	FRIMP-CDOR	Borehole	FB-2
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-2
		Depth:	9.50-10.0m.
Client:	JICA Survey Team	Date of test:	19-Jul-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Grayish brown clayey SILT

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 6 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.69
Wt. of ring and soil at beginning of test, gm	140.66
Wt. of ring	42.33
Weight of wet soil	98.33
Computed dry wt. of soil	57.17
Oven dry weight of soil	
Computed height of solids, H_s=	0.75
Initial height of voids, H_v= H_i-H_s=	1.25
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	1.65

Note: Sample was saturated prior to testing

Moisture Content of Raw Sample	
Tare No.	N-42
Wt. of tare + wet soil, gm	71.32
Wt. of tare +dry soil, gm	45.49
Wt. of tare, gm	9.62
Wt. of water, gm	25.83
Wt. of dry soil, gm	35.87
Initial moisture content, w_i	72.01

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	938
Final dial reading	681.5
Change in sample h_t, cm	0.2565
Final h_t of voids,cm	0.49
Final void ratio, cm	0.65

Final Water ContentDetermination	
Tare No.	E-3
Final Wet soil + Tare	104.37
Final Dry soil + Tare	70.35
Wt. of tare, gm	10.41
Wt. of Water	34.02
Wt. of dry soil, gm	59.94
Final Water Content, w_f	56.76

Tested by: JTF

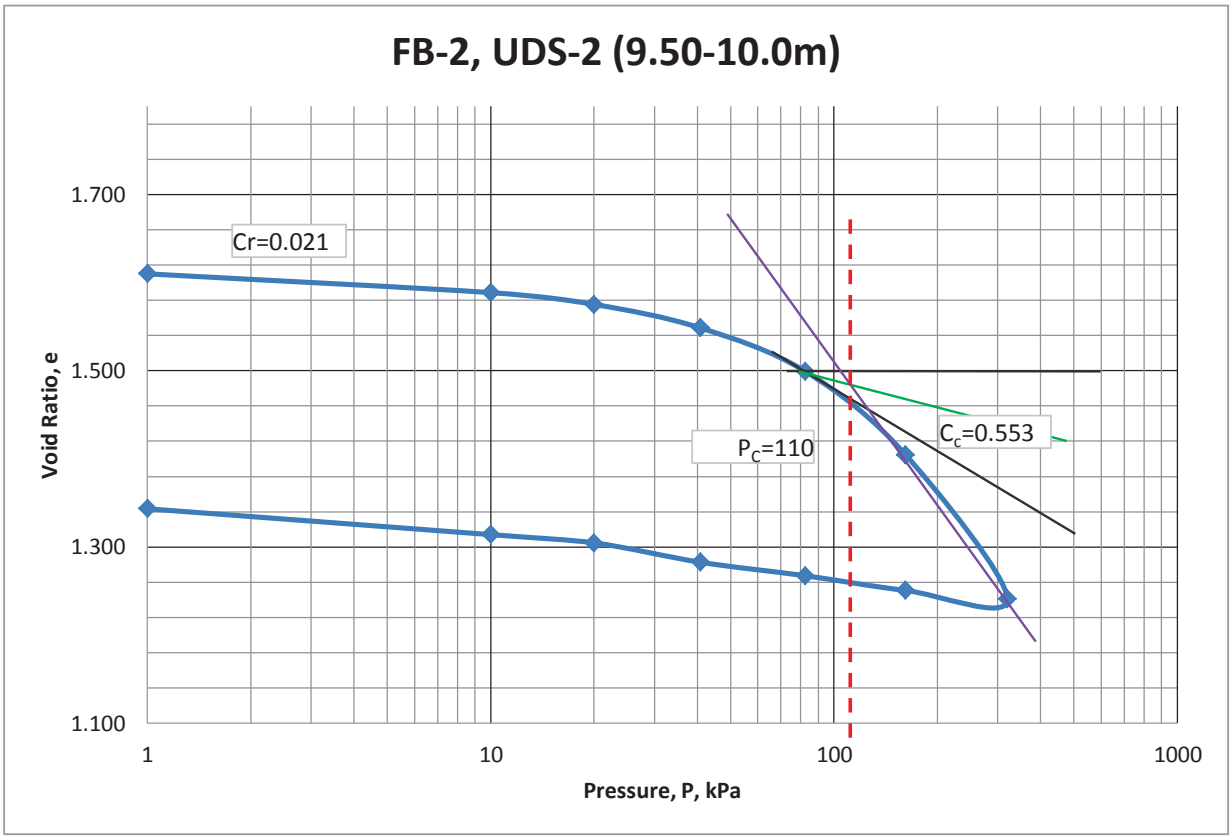
Inputted by: KAPE

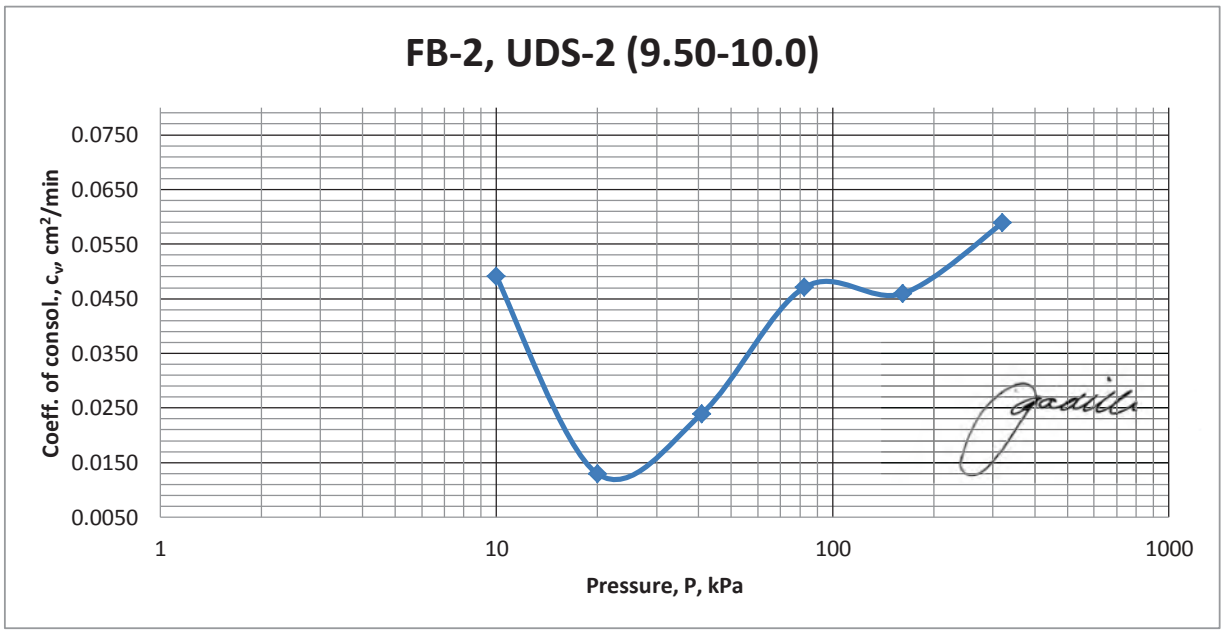
Checked by: GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	19-Jul-13
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Tested by:	JTF
		Inputted by:	KAPE
Client:	JICA Survey Team	Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	FRIMP-CDOR	Borehole	FB-6
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-1
		Depth:	8.50-9.0
Client:	JICA Survey Team	Date of test:	1-Aug-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Dark gray clayey SILT

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 4 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.71
Wt. of ring and soil at beginning of test, gm	139.61
Wt. of ring	42.00
Weight of wet soil	97.61
Computed dry wt. of soil	66.22
Oven dry weight of soil	
Computed height of solids, H_s=	0.87
Initial height of voids, H_v= H_i-H_s=	1.13
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	1.31

Note: Sample was saturated prior to testing

Tare No.	T-145
Wt. of tare + wet soil, gm	113.44
Wt. of tare +dry soil, gm	80.48
Wt. of tare, gm	10.96
Wt. of water, gm	32.96
Wt. of dry soil, gm	69.52
Initial moisture content, w_i	47.41

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	925
Final dial reading	598
Change in sample h_t, cm	0.327
Final h_t of voids,cm	0.27
Final void ratio, cm	0.31

Final Water ContentDetermination	
Tare No.	L-16
Final Wet soil + Tare	107.97
Final Dry soil + Tare	73.10
Wt. of tare, gm	11.23
Wt. of Water	34.87
Wt. of dry soil, gm	61.87
Final Water Content, w_f	56.36

Tested by: JTF

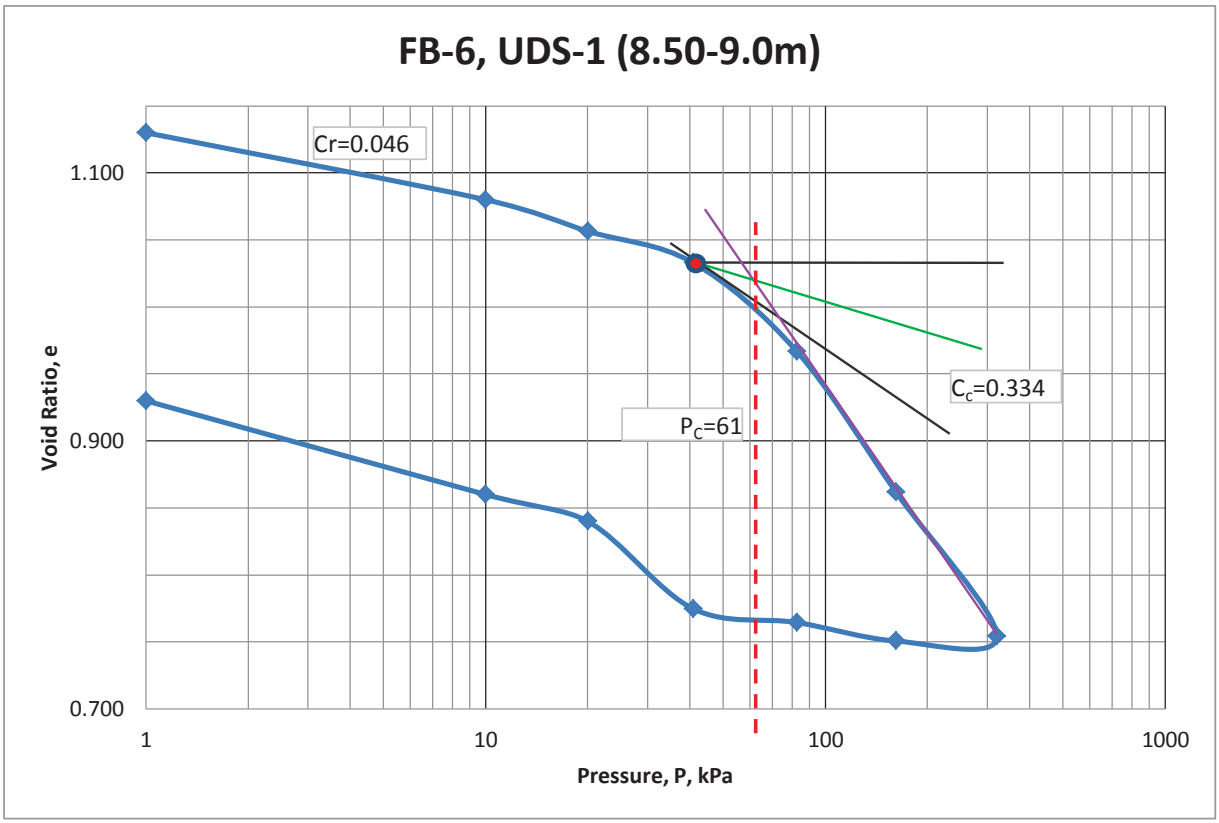
Inputted by: KAPE

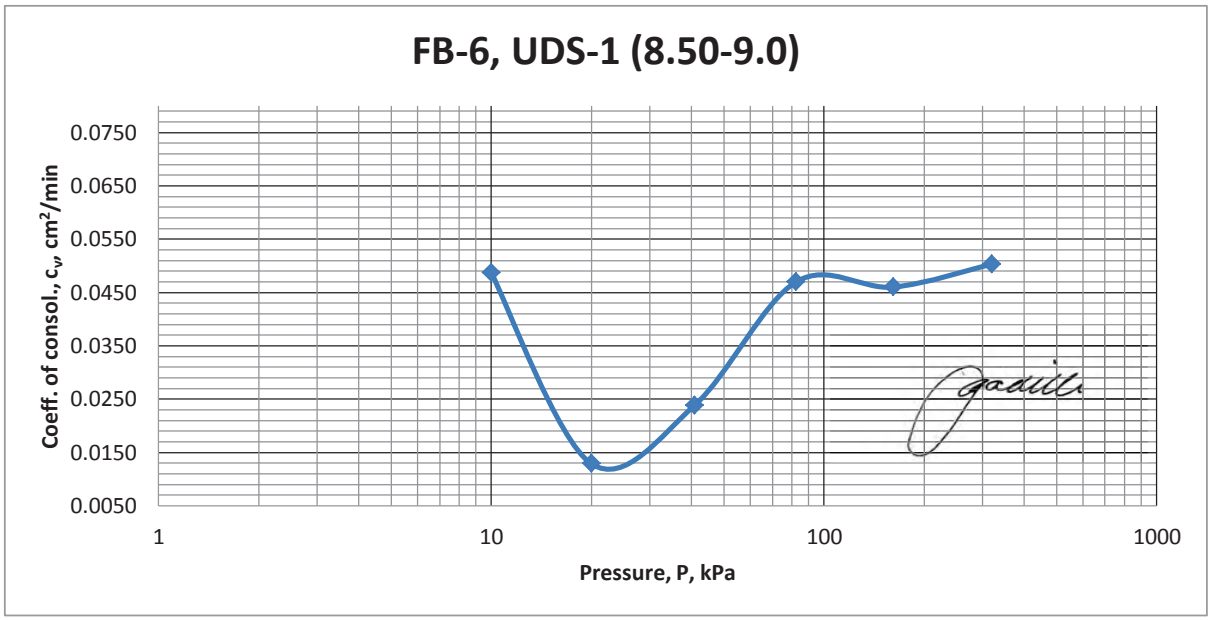
Checked by: GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	1-Aug-13
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Tested by:	JTF
		Inputted by:	KAPE
Client:	JICA Survey Team	Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	FRIMP-CDOR	Borehole	FB-7
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-1
		Depth:	29.50-30.0m.
Client:	JICA Survey Team	Date of test:	2-Aug-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Dark gray clayey SILT

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 6 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.68
Wt. of ring and soil at beginning of test, gm	130.15
Wt. of ring	42.22
Weight of wet soil	87.93
Computed dry wt. of soil	49.65
Oven dry weight of soil	
Computed height of solids, H_s=	0.66
Initial height of voids, H_v= H_i-H_s=	1.34
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	2.04

Tare No.	G-12
Wt. of tare + wet soil, gm	74.13
Wt. of tare +dry soil, gm	46.69
Wt. of tare, gm	11.10
Wt. of water, gm	27.44
Wt. of dry soil, gm	35.59
Initial moisture content, w_i	77.10

Note: Sample was saturated prior to testing

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	915
Final dial reading	785
Change in sample h_t, cm	0.13
Final h_t of voids,cm	0.69
Final void ratio, cm	1.04

Final Water ContentDetermination	
Tare No.	G-9
Final Wet soil + Tare	74.13
Final Dry soil + Tare	58.95
Wt. of tare, gm	11.08
Wt. of Water	15.18
Wt. of dry soil, gm	47.87
Final Water Content, w_f	31.71

Tested by: JTF

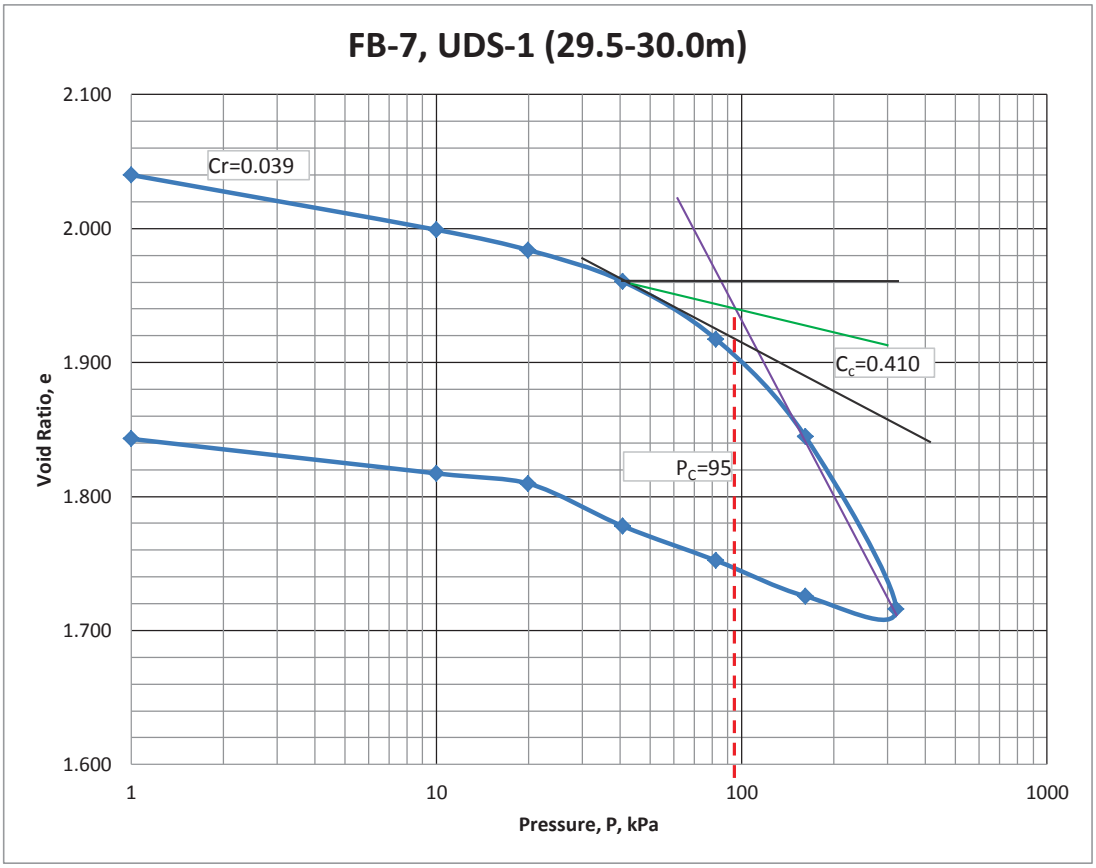
Inputted by: KAPE

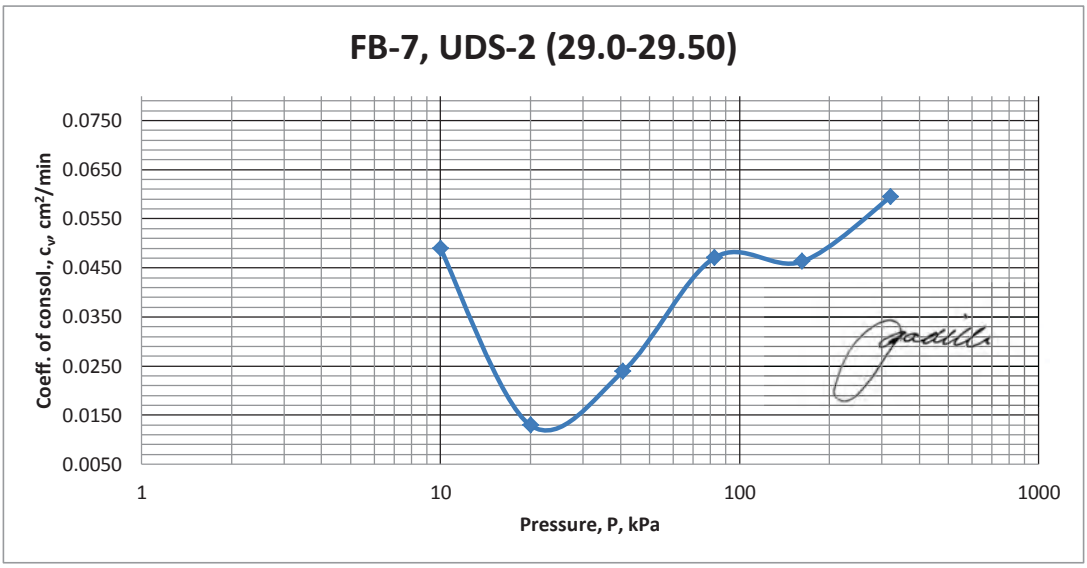
Checked by: GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	1-Aug-13
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Tested by:	JTF
		Inputted by:	KAPE
Client:	JICA Survey Team	Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	FRIMP-CDOR	Borehole	FB-8
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-1
		Depth:	7.50-8.0m.
Client:	JICA Survey Team	Date of test:	29-Jul-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Dark gray clayey SILT (Re-mold Samples)

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 3 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.76
Wt. of ring and soil at beginning of test, gm	136.1
Wt. of ring	42.46
Weight of wet soil	93.64
Computed dry wt. of soil	58.08
Oven dry weight of soil	
Computed height of solids, H_s=	0.75
Initial height of voids, H_v= H_i-H_s=	1.25
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	1.68

Tare No.	G-5
Wt. of tare + wet soil, gm	60.78
Wt. of tare +dry soil, gm	42.00
Wt. of tare, gm	11.32
Wt. of water, gm	18.78
Wt. of dry soil, gm	30.68
Initial moisture content, w_i	61.21

Note: Sample was saturated prior to testing

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	890
Final dial reading	643.5
Change in sample h_t, cm	0.2465
Final h_t of voids,cm	0.51
Final void ratio, cm	0.68

Final Water ContentDetermination	
Tare No.	G-12
Final Wet soil + Tare	99.36
Final Dry soil + Tare	68.21
Wt. of tare, gm	11.10
Wt. of Water	31.15
Wt. of dry soil, gm	57.11
Final Water Content, w_f	54.54

Tested by: JTF

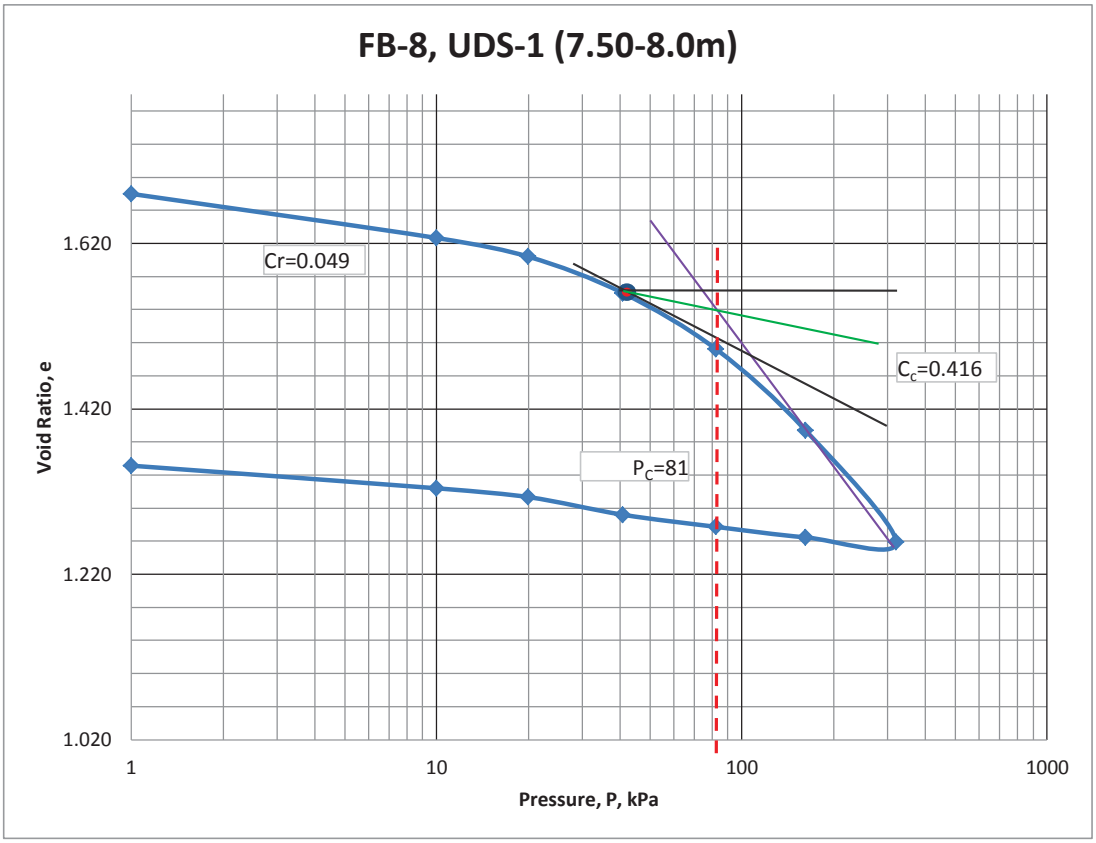
Inputted by: KAPE

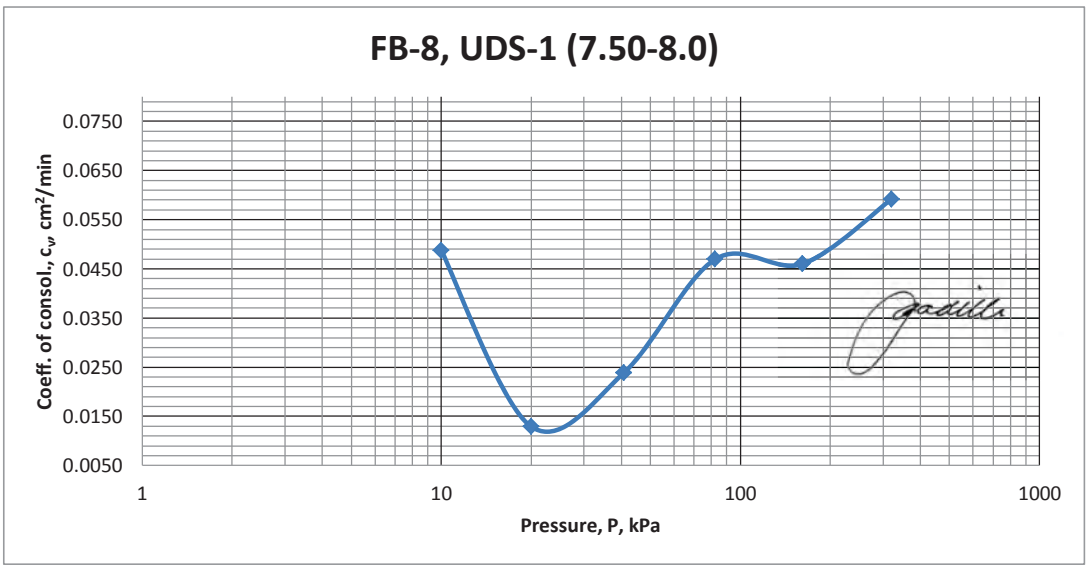
Checked by GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	29-Jul-13
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Tested by:	JTF
		Inputted by:	KAPE
Client:	JICA Survey Team	Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	FRIMP-CDOR	Borehole	FB-10
Location:	Cagayan de Oro River, Cagayan de Oro City, Philippines	Sample No.	UDS-1
		Depth:	1.50-2.0m.
Client:	JICA Survey Team	Date of test:	29-Jul-13

CONSOLIDATION TEST

(Preliminary Data)

Sample description: Brown clayey **SILT**

Consolidometer type: Bench type — Mechanical advantage: 12

Ring No.: 2 — Dia., cm 6.00 — Area, cm^2 28.18 — Ht., cm 2.00

Vol, cm^3 56.37

Initial ht of soil, H_i, cm	2.00
Sp.Gr. of soil, G_s	2.71
Wt. of ring and soil at beginning of test, gm	133.14
Wt. of ring	40.55
Weight of wet soil	92.59
Computed dry wt. of soil	53.82
Oven dry weight of soil	
Computed height of solids, H_s=	0.70
Initial height of voids, H_v= H_i-H_s=	1.30
Initial degree of saturation, S_i	100
S_i=(W_f-W_s)/(H_v.A)=	
Initial void ratio, e_i= H_v/H_s =	1.84

Tare No.	L-18
Wt. of tare + wet soil, gm	70.65
Wt. of tare +dry soil, gm	45.71
Wt. of tare, gm	11.09
Wt. of water, gm	24.94
Wt. of dry soil, gm	34.62
Initial moisture content, w_i	72.04

Note: Sample was saturated prior to testing

Final Test Data (at end of load testing) x .01mm

Initial dial reading,	910
Final dial reading	580.5
Change in sample h_t, cm	0.3295
Final h_t of voids,cm	0.59
Final void ratio, cm	0.84

Final Water ContentDetermination	
Tare No.	F-11
Final Wet soil + Tare	89.79
Final Dry soil + Tare	63.58
Wt. of tare, gm	11.64
Wt. of Water	26.21
Wt. of dry soil, gm	51.94
Final Water Content, w_f	50.46

Tested by: JTF

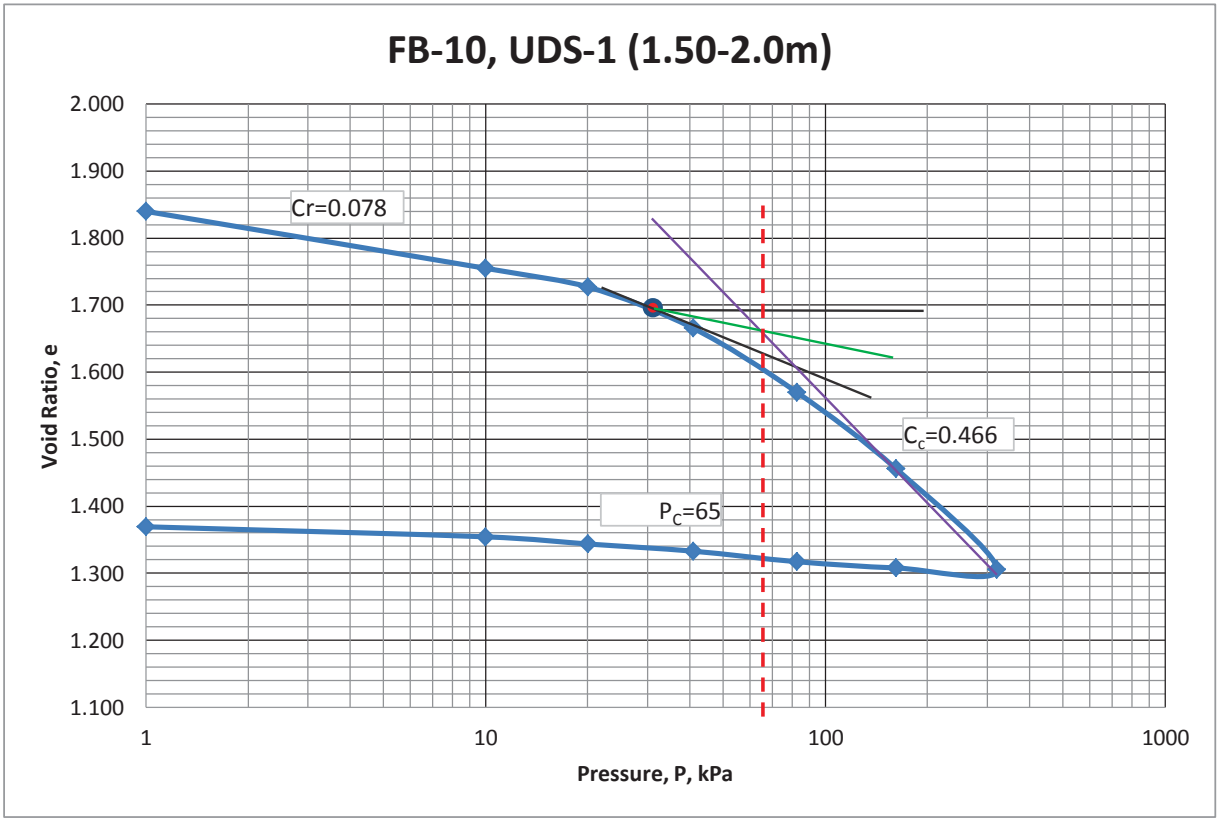
Inputted by: KAPE

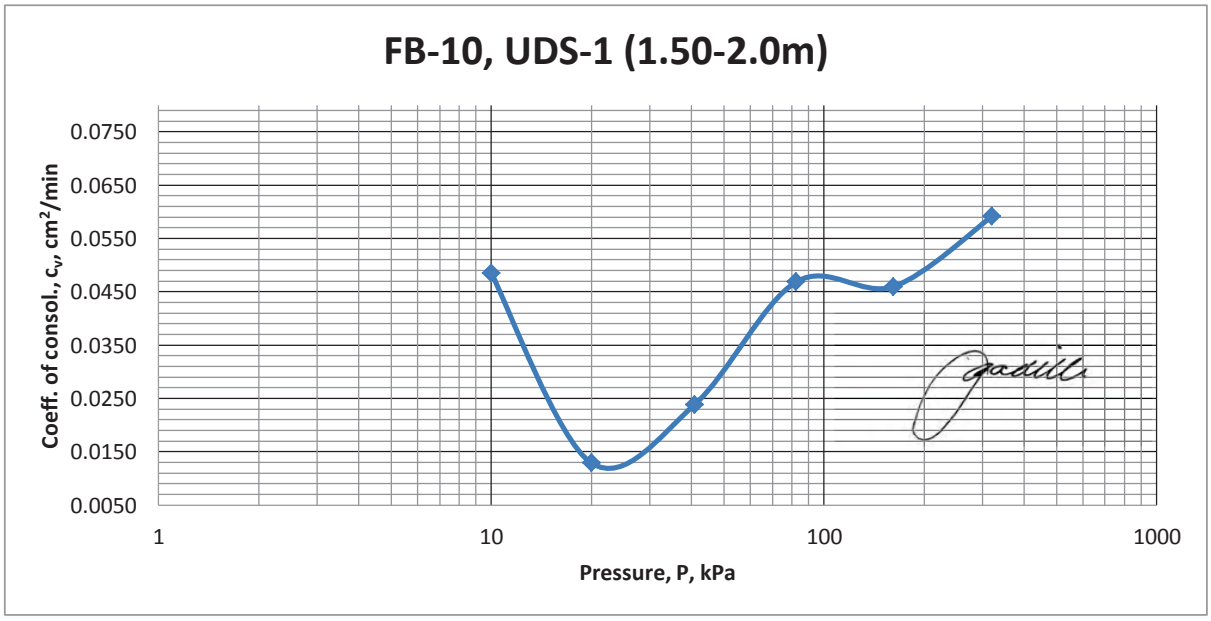
Checked by: GBP

GEORGE B. PADILA & Associates

Project:	FRIMP-CDOR	Date:	5-Aug-13
Location:	Cagayan de Oro City	Tested by:	JTF
Client:	JICA Survey Team	Inputted by:	KAPE
		Checked by:	GBP

CONSOLIDATION TEST





GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-2**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/23/2013
Client:	JICA Survey Team	Tested by:	EE

SIEVE ANALYSIS

Tare No.	F-11
Sample No.	UDS-1
Depth	7.50-8.0
Dry soil, gm	59.50

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		59.50	100
No. 10	0.51	58.99	99
No. 20	0.56	58.43	98
No. 40	0.61	57.82	97
No. 80	1.13	56.69	95
No. 200	6.18	50.51	85
		Remarks:	
		Organic Material	

Tare No.	A-2
Sample No.	UDS-2
Depth	9.50-10.0
Dry soil, gm	59.21

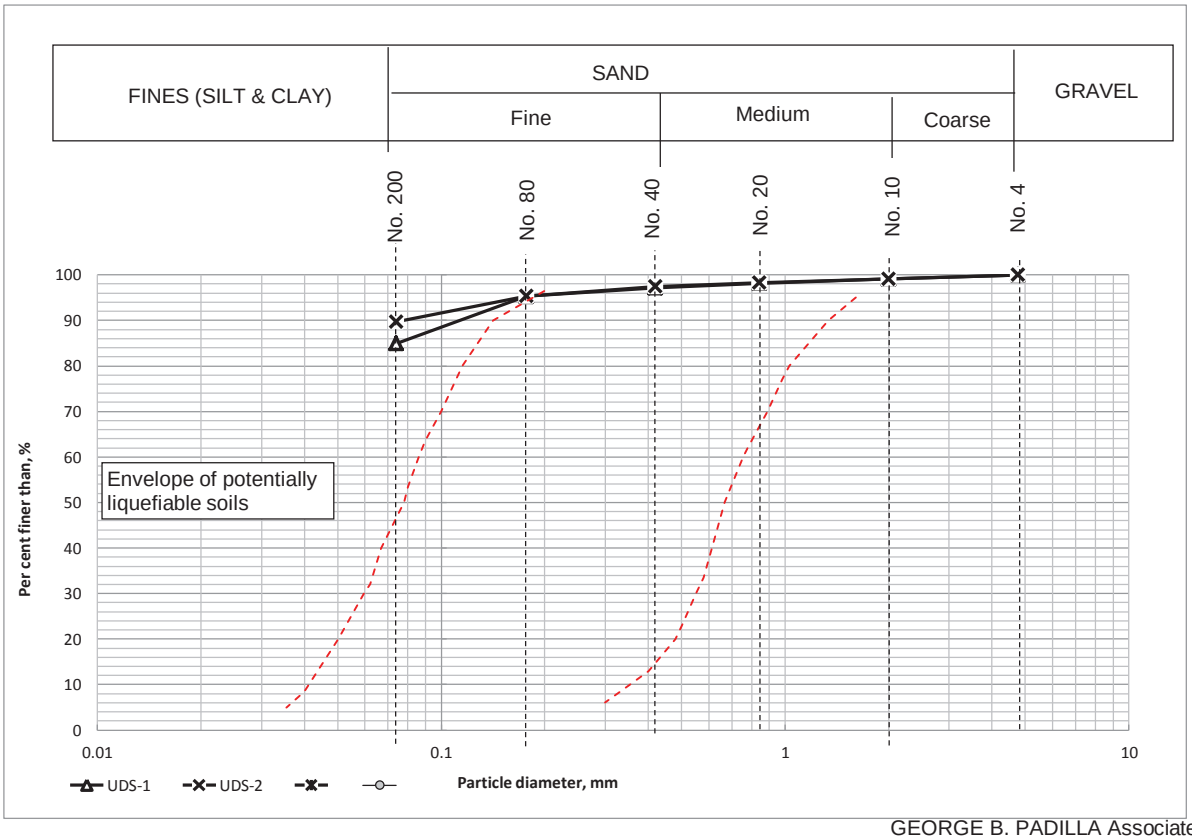
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	0.00	59.21	100
No. 10	0.54	58.67	99
No.20	0.46	58.21	98
No. 40	0.52	57.69	97
No. 80	1.21	56.48	95
No. 200	3.4	53.08	90
		Remarks:	
		Organic Material	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-7**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	8/21/2013
Client:	JICA Survey Team	Tested by:	Jflores

SIEVE ANALYSIS

Tare No.	A-1
Sample No.	UDS-1
Depth	29.50-30.0
Dry soil, gm	51.00

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4		51.00	100
No. 10	0.66	50.34	99
No. 20	2.03	48.31	95
No. 40	2.33	45.98	90
No. 80	3.3	42.68	84
No. 200	2	40.68	80
		Remarks:	
		Organic Material	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

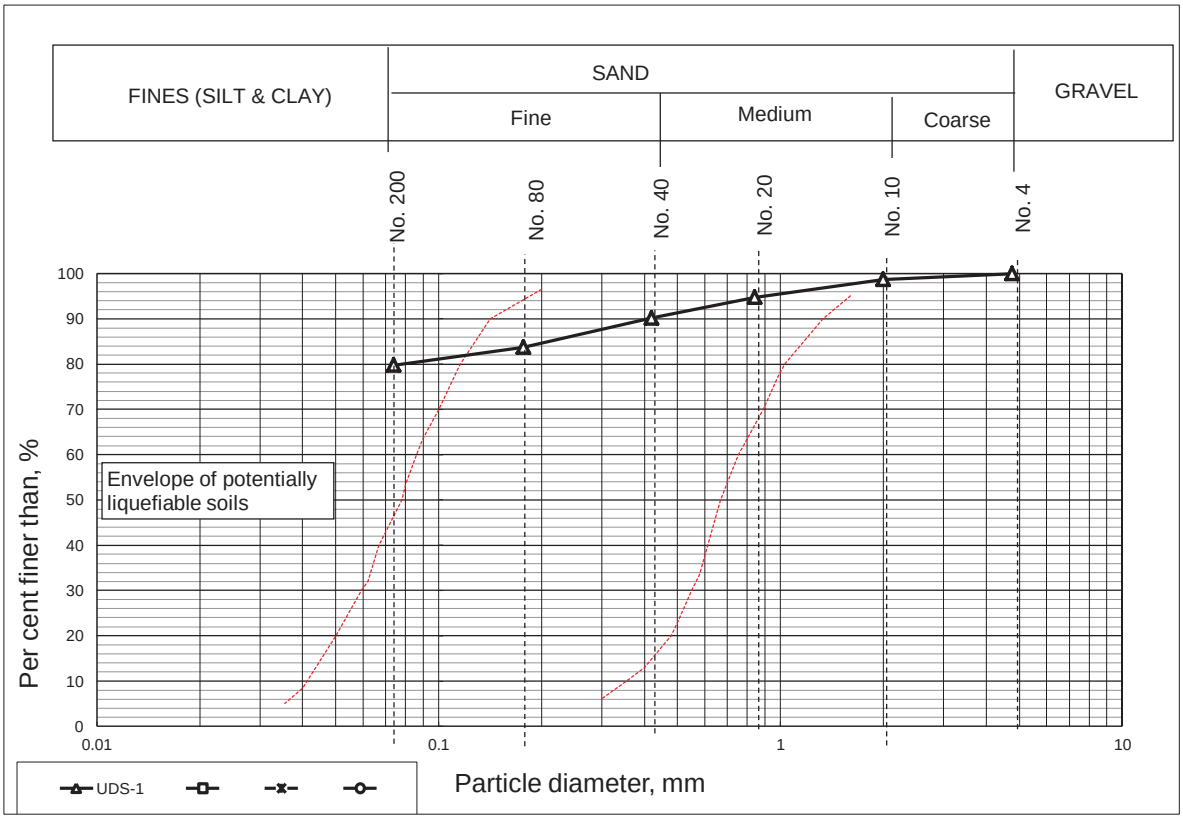
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-10**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/30/2013
Client:	JICA Survey Team	Tested by:	JTF

SIEVE ANALYSIS

Tare No.	T-18
Sample No.	SPT-10
Depth	19.55-20.0
Dry soil, gm	123.63

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	12.67	110.96	90
No. 10	20.86	90.10	73
No. 20	12.44	77.66	63
No. 40	14.69	62.97	51
No. 80	23.17	39.80	32
No. 200	16.01	23.79	19
		Remarks:	
		7mm gravel	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

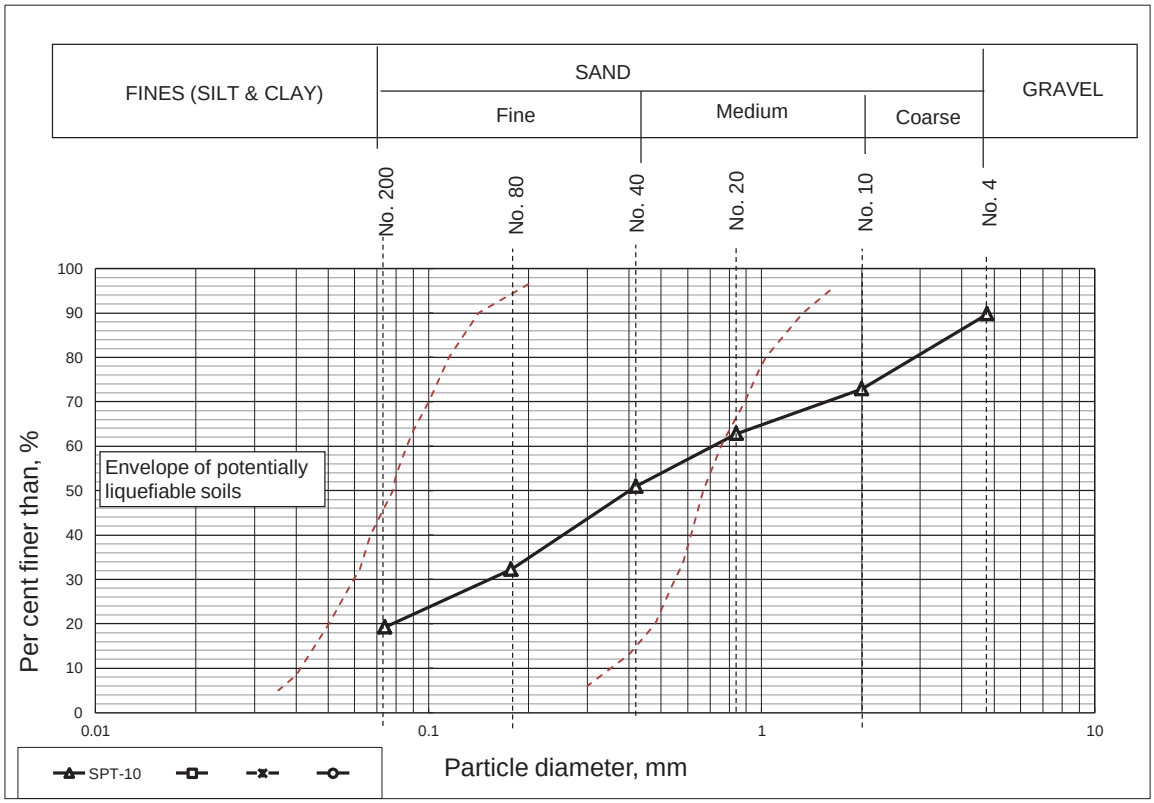
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



GEORGE B. PADILLA Associates

Project:	**CDOR-FRIMP**	Borehole No.	**FB-11**
Location:	Cagayan de Oro River, Cagayan de Oro City	Date:	7/11/2013
Client:	JICA Survey Team	Tested by:	JFLORES

SIEVE ANALYSIS

Tare No.	B-7
Sample No.	UDS-1
Depth	8.50-9.0
Dry soil, gm	41.89

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4	11.87	30.02	72
No. 10	1.42	28.60	68
No. 20	1.4	27.20	65
No. 40	1.46	25.74	61
No. 80	1.88	23.86	57
No. 200	2.9	20.96	50
			.
		Remarks:	18 mm Gravel
		& Organic Material	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

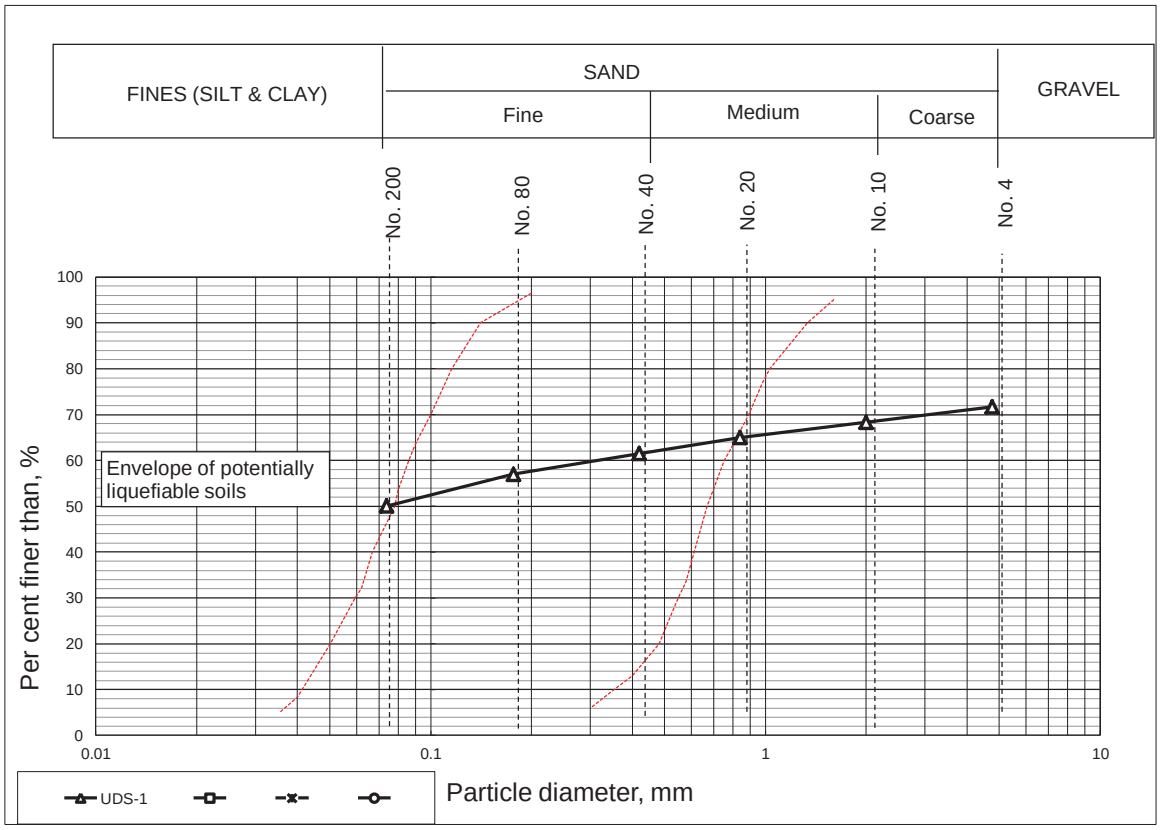
Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No.20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	

Tare No.	
Sample No.	
Depth	
Dry soil, gm	

Sieve No.	Wt. Ret.	Wt. Passg.	% Passing
No. 4			
No. 10			
No. 20			
No. 40			
No. 80			
No. 200			
		Remarks:	



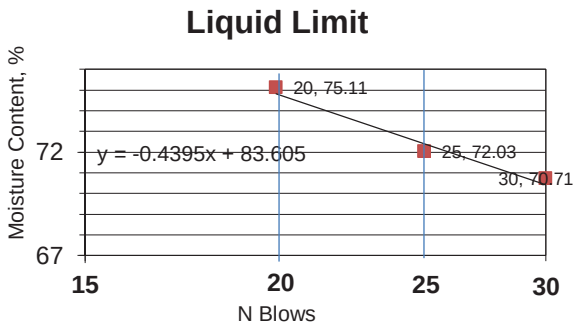
GEORGE B. PADILLA Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

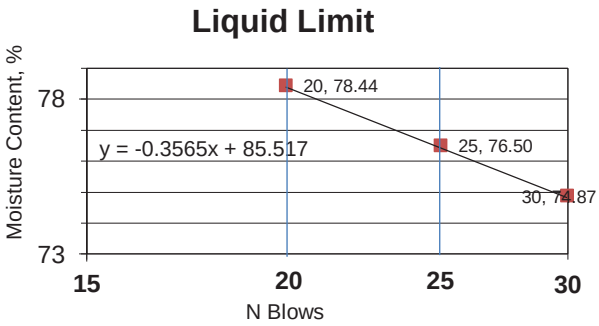
Date: 7/29/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

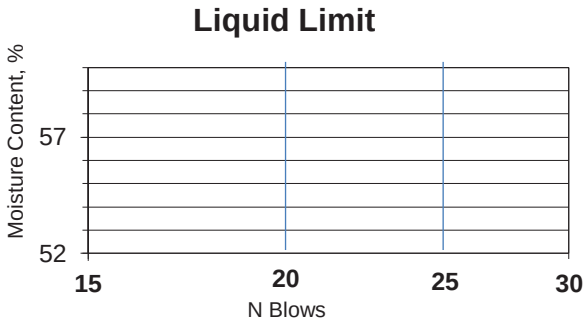
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 8.0					
Tare No.	P-3B	T-109	N-46	EL-10	B-4
Tare + Wet Soil	52.96	54.64	52.80	30.3	27.4
Tare + Dry Soil	35.02	35.84	33.73	23.57	21.63
Tare wt.	9.65	9.74	8.34	8.1	8.5
Water, gm	17.94	18.8	19.07	6.73	5.77
Soil, gm	25.37	26.1	25.39	15.47	13.13
Moisture Content, %	70.71	72.03	75.11	43.5	43.945
N Blows	30	25	20	PL	PI
Liquid Limit, %	73			44	29



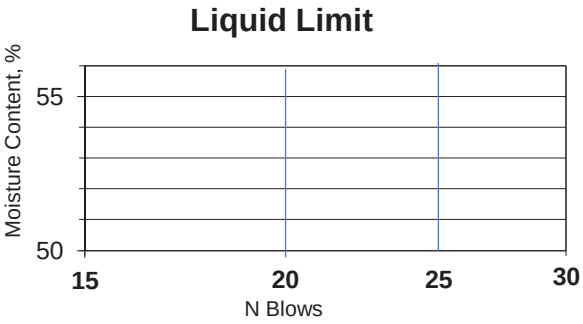
Borehole No. **FB-2**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-2					
Depth: 10.0					
Tare No.	10A	N-52	N-51	EL-10	B-4
Tare + Wet Soil	51.09	53.86	53.37	26.93	30.9
Tare + Dry Soil	33.42	34.20	33.58	22.19	24.48
Tare wt.	9.82	8.50	8.35	9.59	9.88
Water, gm	17.67	19.7	19.79	4.74	6.42
Soil, gm	23.6	25.7	25.23	12.6	14.6
Moisture Content, %	74.87	76.50	78.44	37.62	43.973
N Blows	30	25	20	PL	PI
Liquid Limit, %	77			41	36



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.	M10	7-A	EL-1	B7	3A
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

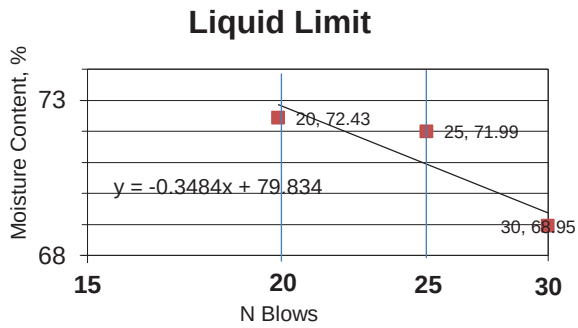
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

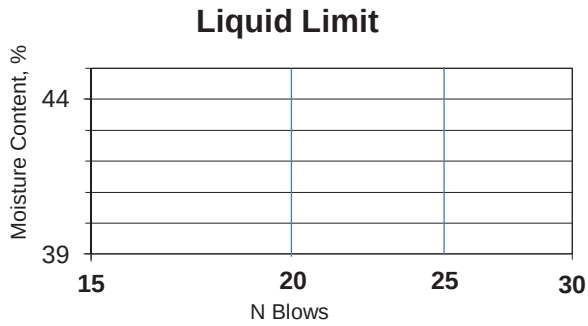
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

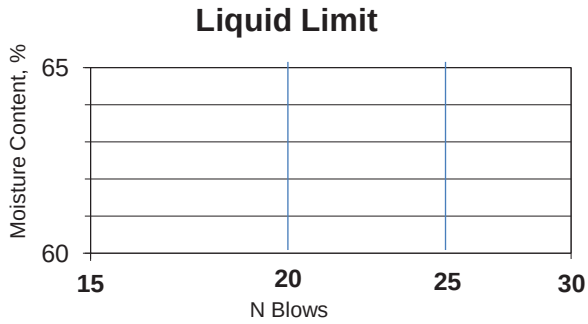
Borehole No. **FB-6**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 9.0					
Tare No.	EL-13	N-49	3-A	28-C	T-128
Tare + Wet Soil	47.92	49.86	50.28	30.61	30.83
Tare + Dry Soil	31.80	32.59	32.65	24	24.03
Tare wt.	8.42	8.60	8.31	9.52	9.37
Water, gm	16.12	17.3	17.63	6.61	6.8
Soil, gm	23.38	24	24.34	14.48	14.66
Moisture Content, %	68.95	71.99	72.43	45.65	46.385
N Blows	30	25	20	PL	PI
Liquid Limit, %	71			46	25



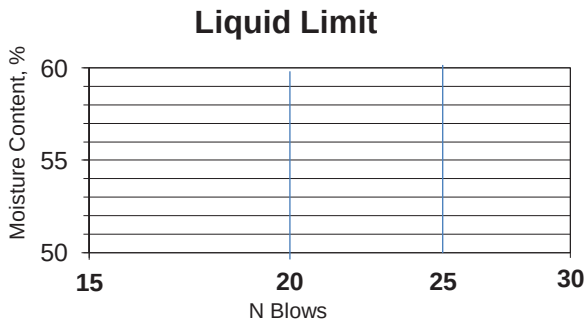
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows				PL	PI
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

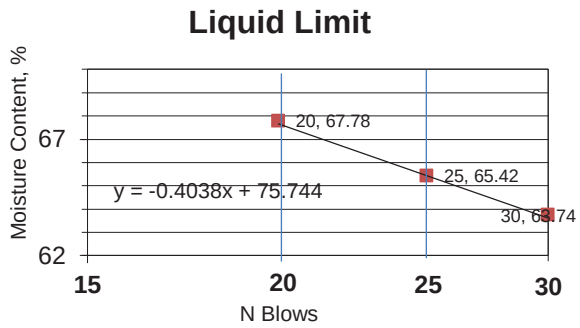
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

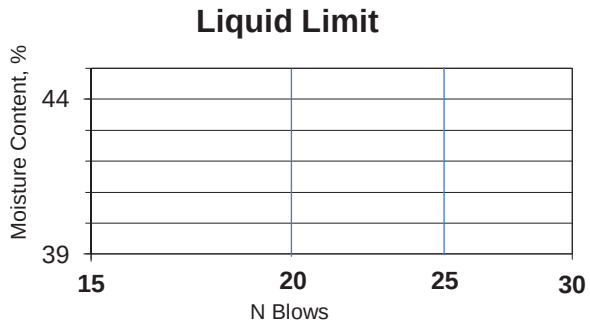
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

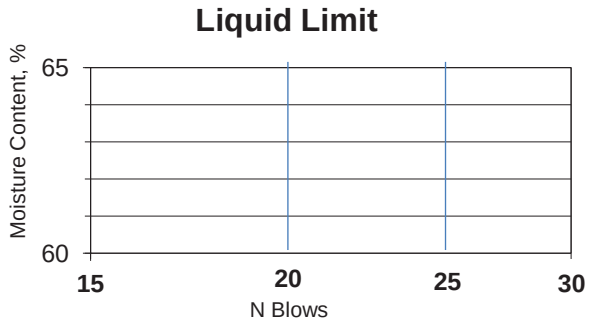
Borehole No. **FB-7**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 30.0					
Tare No.	T-109	25-A	N-52	N-39	1-A
Tare + Wet Soil	51.36	46.68	51.62	30.75	30.02
Tare + Dry Soil	35.22	31.62	34.20	23.14	22.86
Tare wt.	9.90	8.60	8.50	8.44	9.14
Water, gm	16.14	15.1	17.42	7.61	7.16
Soil, gm	25.32	23	25.70	14.7	13.72
Moisture Content, %	63.74	65.42	67.78	51.77	52.187
N Blows	30	25	20	PL	PI
Liquid Limit, %	66			52	14



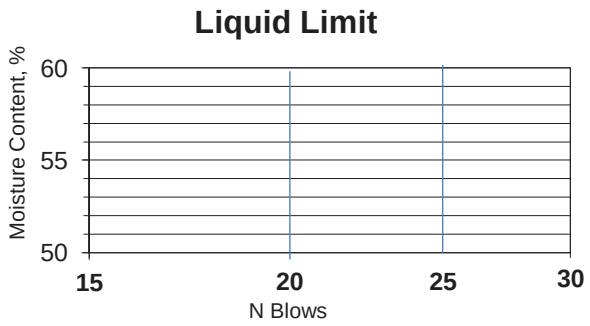
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

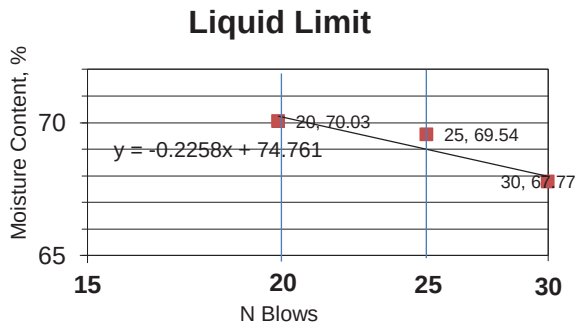
GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

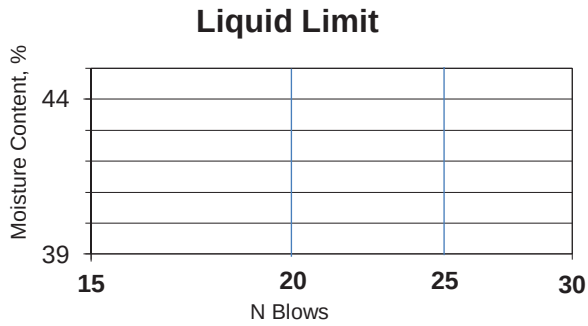
Date: 8/5/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

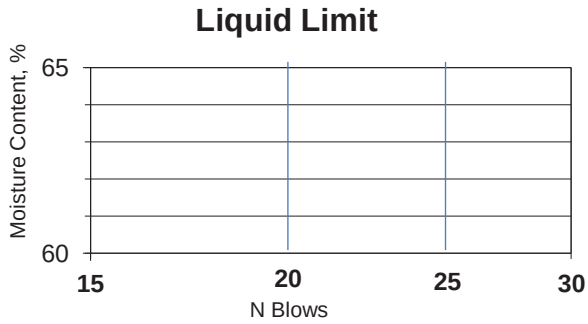
Borehole No. **FB-10**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 2.0					
Tare No.	M-1	B-2	B-6A	N-39	1-A
Tare + Wet Soil	50.45	51.40	51.13	30.75	30.02
Tare + Dry Soil	33.73	34.21	34.00	23.14	22.86
Tare wt.	9.06	9.49	9.54	8.44	9.14
Water, gm	16.72	17.2	17.13	7.61	7.16
Soil, gm	24.67	24.7	24.46	14.7	13.72
Moisture Content, %	67.77	69.54	70.03	51.77	52.187
N Blows	30	25	20	PL	PI
Liquid Limit, %	69			52	17



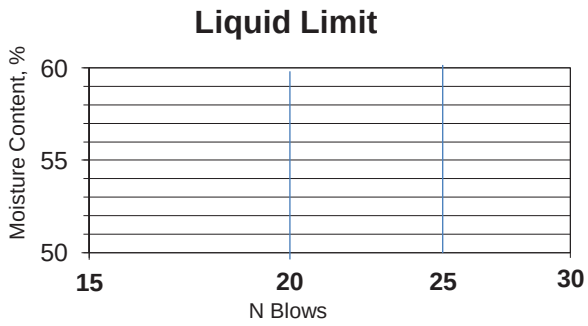
Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					



Tested by: JTF
Inputted by: KAPE
Checked by: GBP

GEORGE B. PADILLA & Associates

Project: **CDOR - FRIMP**
Location: Cagayan de Oro River, Cagayan de Oro City
Client: Japan Survey Team

Date: 8/20/2013

ATTERBERG LIMITS
(ASTM D 4318 - 05)

Borehole No. **FB-11**	LIQUID LIMIT			PLASTIC LIMIT	
Sample No. UDS-1					
Depth: 9.0					
Tare No.	M47			N45	
Tare + Wet Soil	44.24			31.07	
Tare + Dry Soil	23.84			19.46	
Tare wt.	8.11			8.41	
Water, gm	20.4			11.61	
Soil, gm	15.73			11.05	
Moisture Content, %	129.69			105.1	
N Blows	20			PL	
Liquid Limit, %	126				21

Only one point due to inadequate sample quantity

Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					

Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					

Borehole No.	LIQUID LIMIT			PLASTIC LIMIT	
Sample No.					
Depth:					
Tare No.					
Tare + Wet Soil					
Tare + Dry Soil					
Tare wt.					
Water, gm					
Soil, gm					
Moisture Content, %					
N Blows					
Liquid Limit, %					

Tested by: JTF
Inputted by: KAPE
Checked by: GBP

GEORGE B. PADILLA & Associates