VOLUME 3

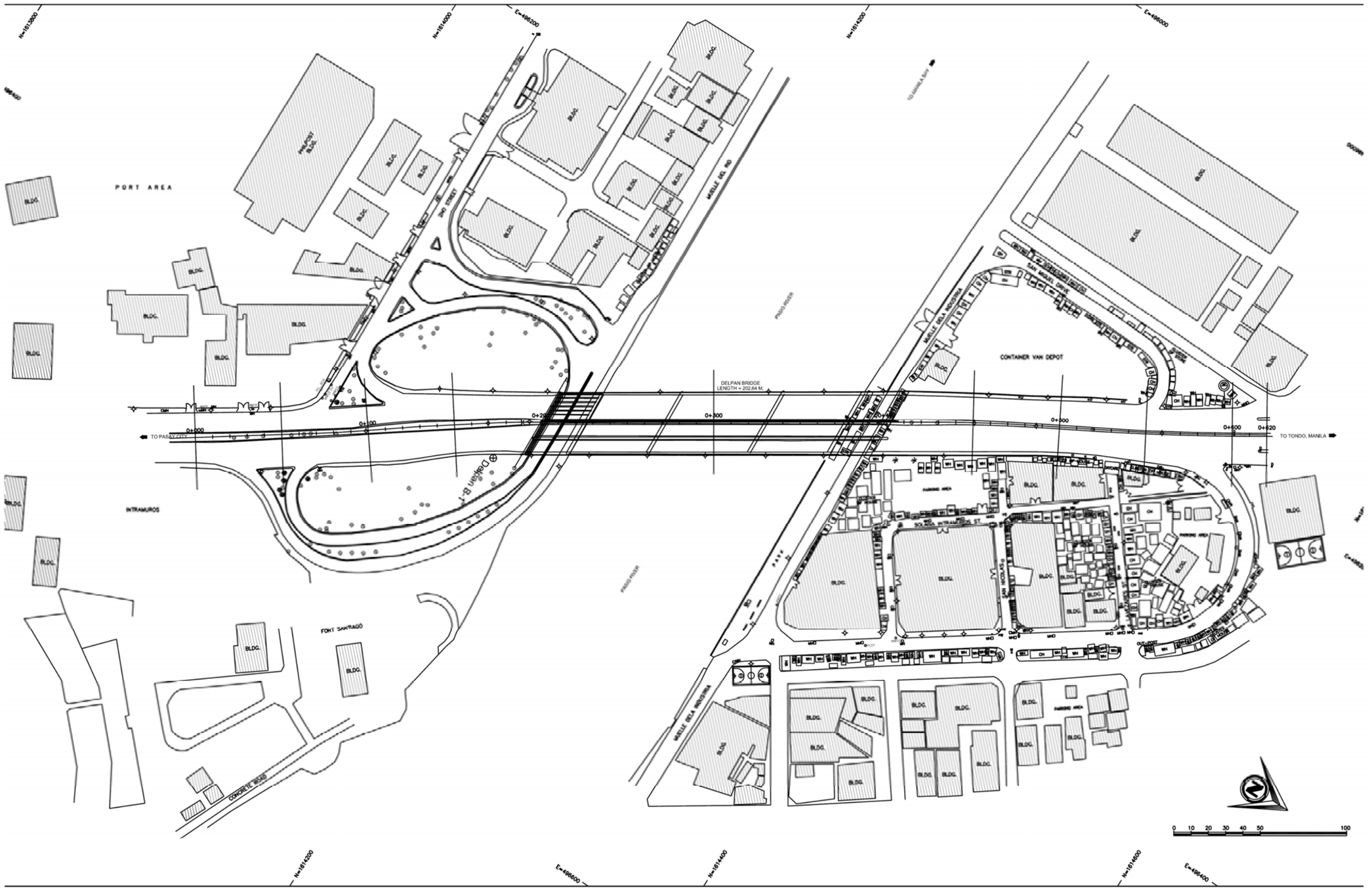
RESULTS OF EXISTING CONDITION SURVEY

APPENDIX 3-A

GEOLOGICAL DATA (LOCATION OF BOREHOLES, BORING LOGS, AND GEOLOGICAL PROFILES)

(1) Package B

1) Delpan Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/05
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Delpan Bridge (B-1)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N ((blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Specific density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	Cu,r (remoulded)	qu Strength (kPa)	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Mainly fine sand sometime including broken shell fragments relatively low water content blackish-gray colored		1	9 5 6	11	24.8	74.2	1.0						14.3																					1
2	N2					2	7 6 5	11	0.0	92.4	7.6						28.2																					2
3	N3					3	8 6 6	12	0.0	98.1	1.9						20.1																					3
4	N4	3.00 1.00				4	9 7 5	12	0.0	95.4	4.6						33.3																					4
5	N5					5	6 8 9	17	0.0	96.3	3.7						27.3																					5
6	N6					6	7 9 5	14	0.9	95.1	4.0						27.6																					6
7	N7					7	5 6 7	13	0.0	92.8	7.2						29.5																					7
8	N8					8	5 6 7	13	0.0	91.6	8.4						26.6																					8
9	N9			Sandy silt relatively high water content blackish-gray colored relatively soft		9	9 6 4	10	0.0	43.2	56.9					7.0	52.2																					9
10	N10					10	2 2 2	4	0.0	4.9	95.1					28.0	58.1																					10
11	N11					11	2 2 2	4	0.0	4.4	95.6					7.0	57.4																					11
12	N12					12	2 2 2	4	0.0	96.5	3.5						47.0																					12
13	N13					13	3 2 2	4	0.0	9.4	90.6					21.0	48.9																					13
14	N14					14	2 2 2	4	0.0	7.7	92.3					13.0	42.2																					14
15	N15			Sandy silt relatively high water content including brocken shell fragments gray / dark-gray colored		15	4 5 4	9	0.0	96.1	3.9						42.4																					15
16	N16					16	2 3 4	7	0.0	98.7	1.3						45.2																					16
17	N17					17	8 15 35	50	0.0	97.0	3.0						33.5																					17
18	N18			Silt with clay and fine sand including broken shell fragments mostly dark-gray/blackish -gray colored		18	2 3 3	6	0.0	15.2	84.9					11.0	68.2																					18
19	N19					19	3 3 5	8	0.0	7.5	92.5					31.0	76.4																					19
20	N20					20	3 3 3	6	0.0	4.1	95.9					23.0	43.5																					20
21	N21					21	3 2 3	5	0.0	11.3	88.7					30.0	42.2																					21
22	N22			Clayey silt with fine sand including broken shell fragments mostly dark-gray/blackish -gray colored interbedded with white colored volcanic ash abuot -30.5 m		22	5 6 5	11	0.0	31.4	68.6					13.0	63.4																					22
23	N23					23	5 6 5	11	0.0	22.4	77.6					11.0	37.3																					23
24	N24					24	5 5 6	11	0.0	5.7	94.3					18.0	76.6																					24
25	N25					25	3 4 5	9	0.0	33.7	66.3					24.0	79.8																					25
26	N26					26	6 5 5	10	0.0	12.0	88.0					12.0	71.9																					26
27	N27					27	5 6 5	11	0.0	4.1	95.9					9.0	60.2																					27
28	N28					28	6 5 5	10	0.0	6.0	94.0					7.0	67.7																					28
29	N29					29	5 6 6	12	0.0	26.5	73.5					2.0	41.2																					29
30	N30					30	6 5 6	11	0.0	21.1	78.9					8.0	77.0																					30
31	N31					31	6 6 7	13	0.0	20.2	79.8					2.0																					31
32	N32					32	6 6 6	12	0.0	92.1	7.9																											32
33	N33			Very fine sand silty relatively low water content yellowish-gray colored		33	12 20 30	50	0.0	18.2	81.8					3.0																					33
34	N34					34	20 30 20	50	0.3	86.6	13.1																											34
35	N35					35	28 50 0	50																													35
36	N36					36	19 40 10	50	34.3	62.1	3.7																											36
37	N37					37	25 35 15	50	0.0	87.1	12.9																											37
38	N38					38	35 50 0	50	0.0	88.1	11.9																											38

38.00 m : End of borehole.

Drawing scale: 1/200

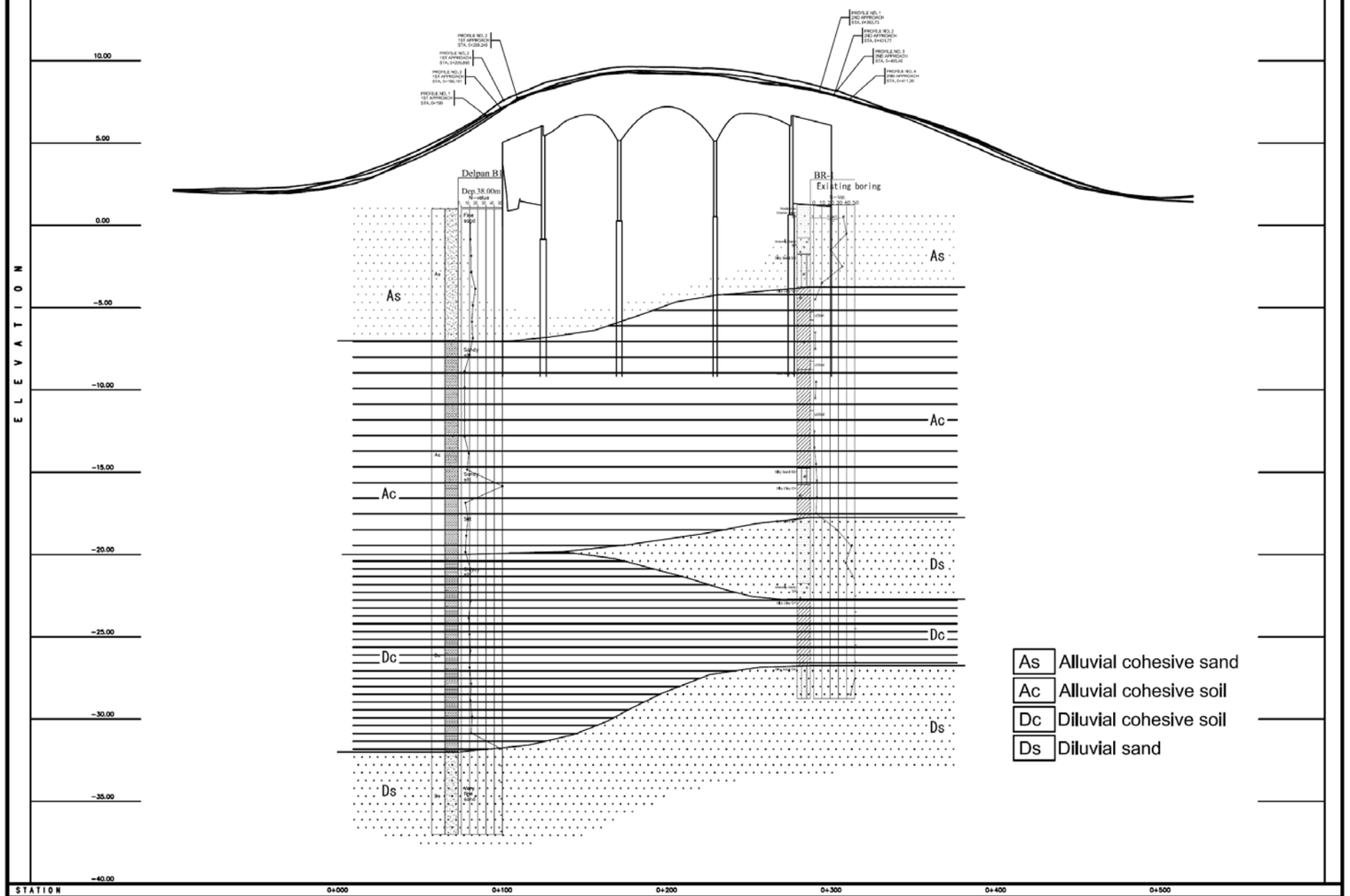
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Spiit spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

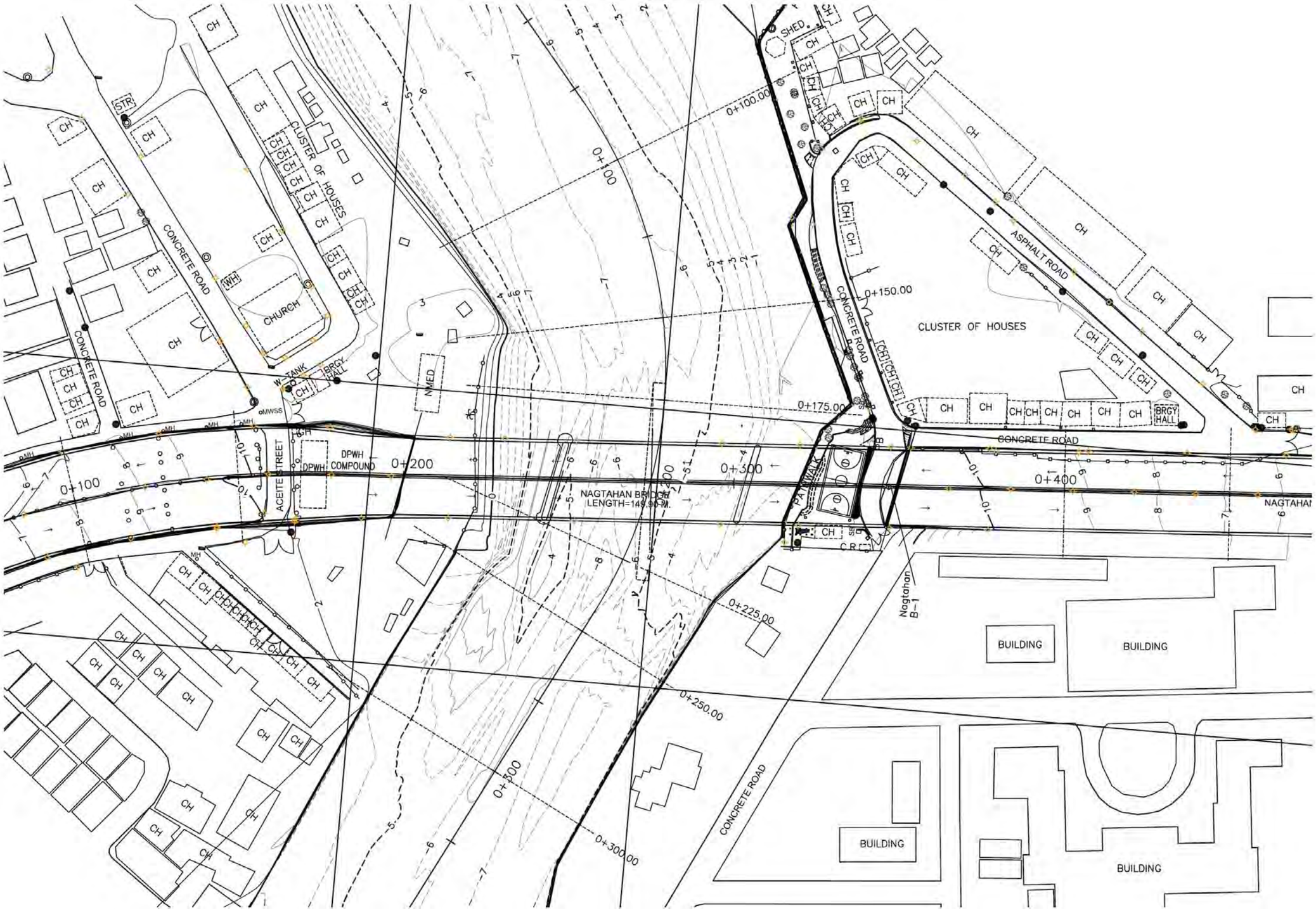
phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress



STATION	0+000	0+100	0+200	0+300	0+400	0+500
PROFILE NO. 1						
PROFILE NO. 2						
PROFILE NO. 3						
PROFILE NO. 4						

SURVEYED BY: | SURVEYED FOR: | PROJECT & LOCATION: | LEGEND: | NOTE: | SHEET CONTENTS: | SCALE | SHT. NO.

2) Nagtahan Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
B-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquakes in the Republic of the Philippines

DATE: 2012/11/05
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi Tanaka

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Nagtahan Bridge (right bank)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Gravel and sand including clay relatively low water content dark-gray colored	-	1	6 10 8	18	12.9	85.9	1.3						40.1																					1
2	N2					2	5 3 3	6	61.8	34.6	3.6						41.4																					2
3	N3			Fine sand with medium sand including 10-15 mm gravels gray colored		3	3 5 4	9	1.3	93.5	5.2						29.0																					3
4	N4	3.60 3.45				4	10 9 5	14	5.7	89.5	4.9						25.1																					4
5	N5					5	4 6 7	13	0.9	98.4	0.7						29.9																					5
6	N6					6	7 5 6	11																													6
7	N7					7	6 5 4	9																													7
8	N8				-	8	5 8 6	14	0.0	98.9	1.2						20.5																					8
9	N9					9	7 2 8	10	1.0	97.7	1.2						12.7																					9
10	N10					10	5 3 8	11	0.0	98.8	1.2						36.3																					10
11	N11					11	3 2 2	4	7.1	88.3	4.7						41.8																					11
12	N12					12	3 4 4	8	0.0	98.3	1.7						24.6																					12
13	N13			Gravel with sand and fines (probably silt) yellowish-gray/gray colored including gravel (20 mm in diameter)	-	13	6 7 9	16	51.6	47.6	0.9						25.5																					13
14	N14					14	7 8 8	16	63.5	35.2	1.3						21.1																					14
15	N15				-	15	5 8 8	16	22.4	74.0	3.7						23.2																					15
16	N16			Silty sand with gravel dark-gray colored relatively high water content		16	7 7 10	17	36.3	60.6	3.1						50.4																					16
17	N17				-	17	13 6 7	13	39.0	59.2	1.9						23.0																					17
18	N18			Gravel /sand with gravel yellowish-gray colored moderate to low water content		18	7 8 7	15	1.2	91.7	7.1						58.5																					18
19	N19					19	7 9 6	15	3.8	86.2	10.0						54.7																					19
20	N20			Mainly fine sand with medium sand relatively high water content sometimes including fines brownish-gary / yellowish -gray colored		20	6 7 7	14	0.6	83.9	15.5						58.9																					20
21	N21				-	21	8 9 18	27	2.7	90.1	7.2						58.8																					21
22	N22					22	9 9 10	19	3.6	89.2	7.2						51.8																					22
23	N23					23	10 9 14	23	0.0	97.6	2.4						55.0																					23
24	N24			Welded tuff including angular rock fragments and pumice sometime sandstone-like (tuff without rock fragments and/or pumice) yellowish-gray / brownish -gray colored		24	0 50 0	50	84.5	13.6	1.9						30.8																					24
25						25																															25
26						26																															26
27						27																															27
28						28																															28
29						29																															29
30	N25					30	0 50 0	50																													30

30.00 m : End of borehole.

Drawing scale: 1/200

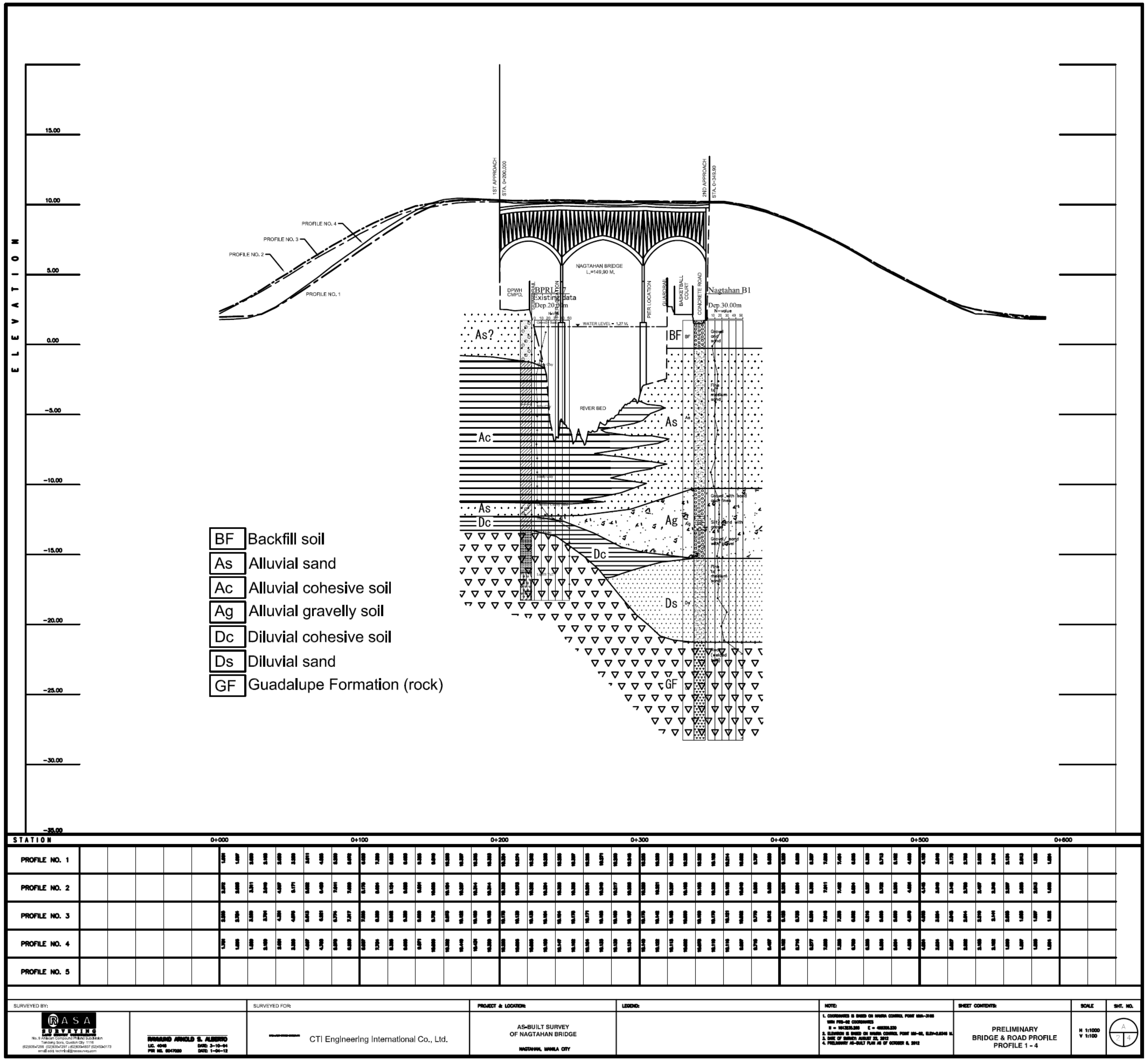
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

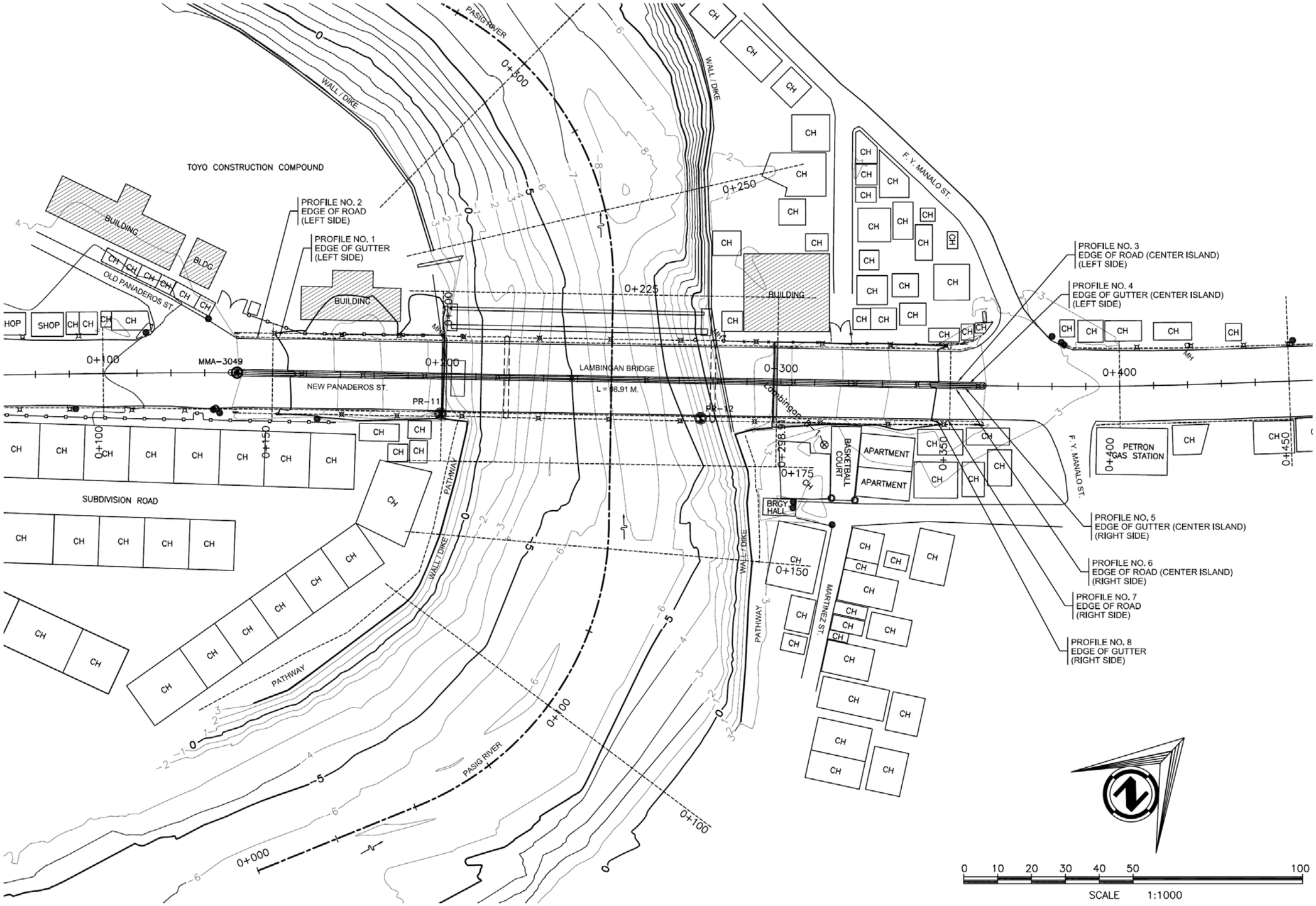
g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
PROFILE NO. 4
NAGTAHAN BRIDGE
RIVER BED
Nagtahan B1
Existing data
As?
BF
As
Ac
Ag
Dc
Ds
GF
BF Backfill soil
As Alluvial sand
Ac Alluvial cohesive soil
Ag Alluvial gravelly soil
Dc Diluvial cohesive soil
Ds Diluvial sand
GF Guadalupe Formation (rock)
STATION
0+000
0+100
0+200
0+300
0+400
0+500
0+600
PROFILE NO. 5
SURVEYED BY:
RASA SURVEYING
SURVEYED FOR:
CTI Engineering International Co., Ltd.
PROJECT & LOCATION:
AS-BUILT SURVEY
OF NAGTAHAN BRIDGE
NAGTAHAN, MANILA CITY
LEGEND:
NOTE:
SHEET CONTENTS:
PRELIMINARY
BRIDGE & ROAD PROFILE
PROFILE 1 - 4
SCALE
H 1:1000
V 1:100
SHT. NO.

3) Lambingan Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
B-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/10/10
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Lambingan Bridge (right bank)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Medium sand brown colored with broken shell fragments	-	1	14 7 5	12	8.3	90.8	0.9						21.2																					1
2	N2	1.50 2.50				2	5 4 3	7	0.0	82.0	18.0						48.6																					2
3	N3			Silty fine sand soft or loose relatively high water content mostly gray colored		3	3 3 3	6	0.0	72.0	28.0						44.6																					3
4	N4				-	4	4 4 4	8	6.0	82.1	12.0						41.4																					4
5	N5					5	5 7 8	15	1.6	91.1	7.3						62.7																					5
6	N6					6	7 9 12	21	0.0	92.7	7.3						46.4																					6
7	N7			Sandy clay or clayey sand dark-gray colored moderate water content		7	3 4 3	7	0.0	41.9	58.1					12.0	55.7																					7
8	N8					8	3 4 5	9	0.0	22.9	77.1					13.0	53.9																					8
9	N9				-	9	3 3 3	6	0.0	33.1	66.9					19.0	48.5																					9
10	N10					10	4 4 4	8	0.0	49.0	51.0					45.0	62.9																					10
11	N11			Weathered rock strongly weathered (probably tuff) gray colored sand-like	-	11	10 14 14	28	17.7	82.1	0.2						38.4																					11
12	N12					12	0 50 0	50	0.0	99.5	0.5						41.6																					12
13	N13			Tuff breccia, tuffs, and tuffaceous sandstones brownish-gray colored -11 m - -17 m: strongly weathered portion below -17 m: fresh and/or welded portion		13	0 50 0	50																														13
14	N14					14	0 50 0	50																														14
15	N15					15	0 50 0	50																														15
16	N16					16	0 50 0	50																														16
17	N17					17	0 50 0	50																														17
18	N18				-	18	0 50 0	50																														18
19	N19					19	0 50 0	50																														19
20	N20					20	0 50 0	50																														20
21	N21					21	0 50 0	50																														21
22	N22					22	0 50 0	50																														22
23	N23					23	0 50 0	50																														23
24	N24					24	0 50 0	50	0.7	98.2	1.1						25.1																					24
25	N25			Fine sand with broken shell fragments including fines and gravel dark-gray or brownish-gray colored	-	25	0 50 0	50	4.9	94.1	1.0						27.6																					25
26	N26					26	0 50 0	50	6.9	92.9	0.2						28.8																					26
27	N27			No core recovered (probably fine sand)		27	0 50 0	50																														27
28	N28				+	28	0 50 0	50																														28
29	N29			Strongly welded tuff black colored		29	0 50 0	50																														29
30	N30				-	30	0 50 0	50																														30

30.00 m : End of borehole.

Drawing scale: 1/200

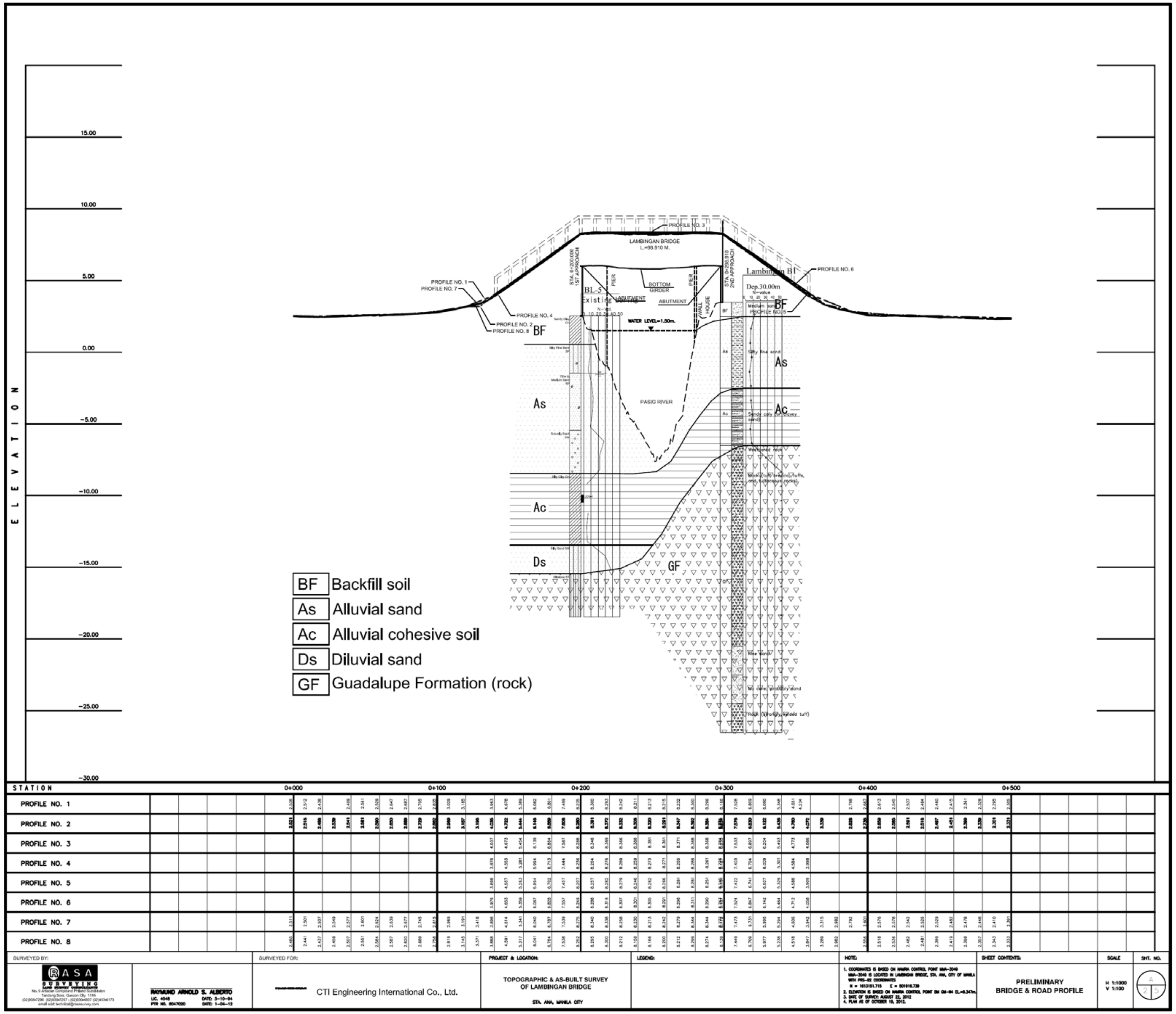
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

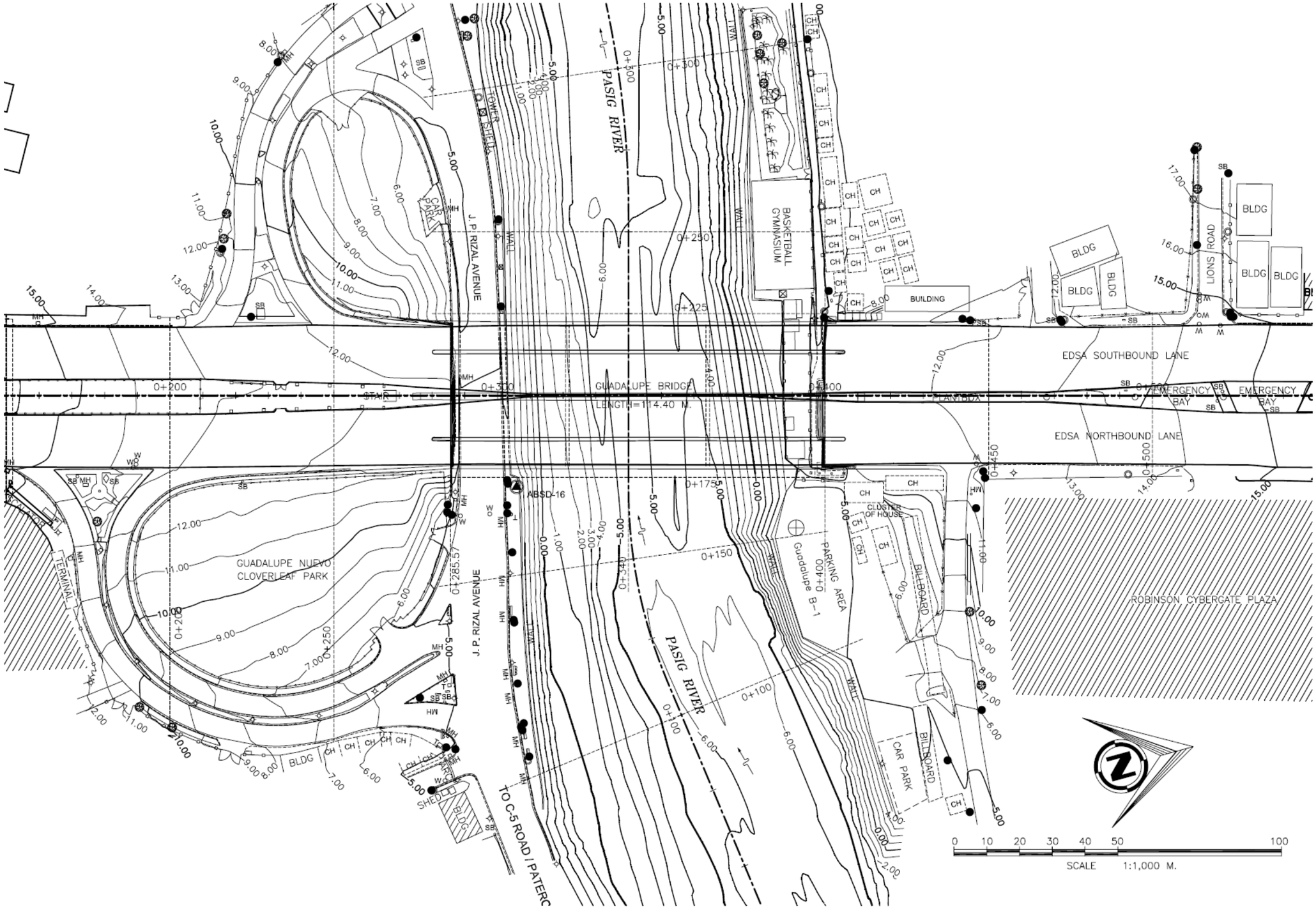
g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
PROFILE NO. 3
LAMBINGAN BRIDGE
L.=98.910 M.
STA. 0+200.000 1ST APPROACH
STA. 0+298.910 2ND APPROACH
PROFILE NO. 1
PROFILE NO. 7
PROFILE NO. 4
PROFILE NO. 2
PROFILE NO. 8
PROFILE NO. 6
PROFILE NO. 5
PIER
BOTTOM GIRDER
ABUTMENT
WALL
HOUSE
BL-5
Existing boring
Lambingan B1
Dep.30.00m
N-value
WATER LEVEL=1.50m.
PASIG RIVER
BF
As
Ac
Ds
GF
Silty fine sand
Sandy silty (or clayey sand)
Weathered rock
Rock (tuff breccia, tuffs, and tuffaceous rocks)
Fine sand
No core, probably sand
BF Backfill soil
As Alluvial sand
Ac Alluvial cohesive soil
Ds Diluvial sand
GF Guadalupe Formation (rock)
STATION
0+000
0+100
0+200
0+300
0+400
0+500
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
PROFILE NO. 4
PROFILE NO. 5
PROFILE NO. 6
PROFILE NO. 7
PROFILE NO. 8
SURVEYED BY:
RASA SURVEYING
RAYMUND ARNOLD S. ALBERTO
SURVEYED FOR:
CTI Engineering International Co., Ltd.
PROJECT & LOCATION:
TOPOGRAPHIC & AS-BUILT SURVEY OF LAMBINGAN BRIDGE
STA. ANA, MANILA CITY
LEGEND:
NOTE:
SHEET CONTENTS:
PRELIMINARY BRIDGE & ROAD PROFILE
SCALE
H 1:1000
V 1:100
SHT. NO.

4) Guadalupe Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
B-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Guadalupe Bridge (right bank)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N [Blows/30cm] 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu_r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1				Fill soils including rock/concrete fragment	-	1																																1
2						2																																2
3	N1	2.80		Mainly coarse to medium sand brownish-gray/yellowish -gray colored including broken shell fragments, fines and gravels (avg. 15 mm in diameter)		3	2 3 5	8	12.4	86.4	1.1						23.4																		3
4	N2					4	2 3 6	9	0.0	97.4	2.7						23.9																		4
5	N3				-	5	6 10 18	28	35.7	63.0	0.4						19.5																		5
6	N4					6	3 5 11	16	9.7	83.6	2.6						25.4																		6
7	N5					7	10 14 20	34	44.5	54.3	1.2						10.9																		7
8	N6			Gravel with sand Dark-gray/brownish -gray/gray colored		8	18 20 24	44	37.7	61.9	0.4						10.4																		8
9	N7				-	9	18 20 24	44	57.9	41.9	0.2						8.8																		9
10	N8					10	20 20 30	50	18.9	78.6	2.5						22.5																		10
11	N9			Mainly medium to fine sand sometime coarse sand rich with broken shell fragments blackish-gray colored very rich with broken shell fragments about -21.5 m including gravlel (10-15 mm in diameter)		11	15 17 17	34	34.7	64.6	0.8						8.3																		11
12	N10					12	16 19 18	37	3.9	95.9	0.2						25.4																		12
13	N11					13	15 18 19	37	3.0	96.0	1.1						23.4																		13
14	N12					14	15 16 19	35																											14
15	N13					15	16 16 30	46	2.1	97.5	0.5						21.0																		15
16	N14					16	19 18 19	37	2.6	96.1	1.3						23.5																		16
17	N15					17	16 18 20	38																											17
18	N16					18	12 16 18	34	1.1	98.7	0.2						28.3																		18
19	N17					19	14 17 20	37	0.0	99.3	0.7						31.1																		19
20	N18					20	16 19 21	40	2.7	96.6	0.7						32.4																		20
21	N19					21	17 18 19	37	6.8	91.5	1.8						24.2																		21
22	N20					22	13 17 21	38																											22
23	N21					23	15 19 22	41	23.8	75.7	0.5						23.0																		23
24	N22					24	17 20 21	41	41.2	58.6	0.2						9.3																		24
25	N23					25	14 18 19	37																											25
26	N24					26	15 17 18	35	1.0	98.2	0.8						33.5																		26
27	N25					27	13 17 16	33																											27
28	N26					28	12 18 15	33	0.0	99.5	0.5						27.9																		28
29	N27					29	14 19 15	34																											29
30	N28					30	16 18 18	36	2.4	97.4	0.2						29.1																		30
31	N29					31	10 12 14	26	1.0	93.0	3.9						82.8																		31
32	N30					32	15 17 16	33																											32
33	N31					33	16 18 19	37	0.0	99.1	0.9						63.2																		33
34	N32					34	13 16 18	34	3.3	95.6	1.2						71.6																		34
35	N33					35	11 18 20	38																											35
36	N34			Mainly fine to medium sand relatively low water content poor with broken shell fragements dark-gray/blackish-gray colored	-	36	12 17 19	36	3.1	90.8	6.2						89.5																		36
37	N35					37	15 19 17	36	0.2	97.1	2.7						65.9																		37

Continued

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu_r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
B-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Guadalupe Bridge (right bank)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
38	N36			Mainly fine to medium sand relatively low water content poor with broken shell fragements dark-grey/blackish-grey colored		38	14 17 18	35	0.0	97.7	2.3						32.7																					38
39	N37					39	16 19 20	39	0.0	82.7	17.3						46.5																					39
40	N38					40	15 17 18	35	0.0	99.8	0.2						75.2																					40
41	N39			Mainly medium to fine sand Moderate water content with broken shell fragments blackish-grey colored		41	0 50 0	50																													41
42	N40					42	0 50 0	50																													42
43	N41					43	0 50 0	50																													43
44	N42					44	0 50 0	50	0.0	99.8	0.2						66.7																					44
45	N43					45	27 50 0	50	16.5	83.3	0.2						55.4																					45
46	N44					46	22 50 0	50	0.5	98.9	0.7						58.0																					46

46.00 m : End of borehole.

Drawing scale: 1/200

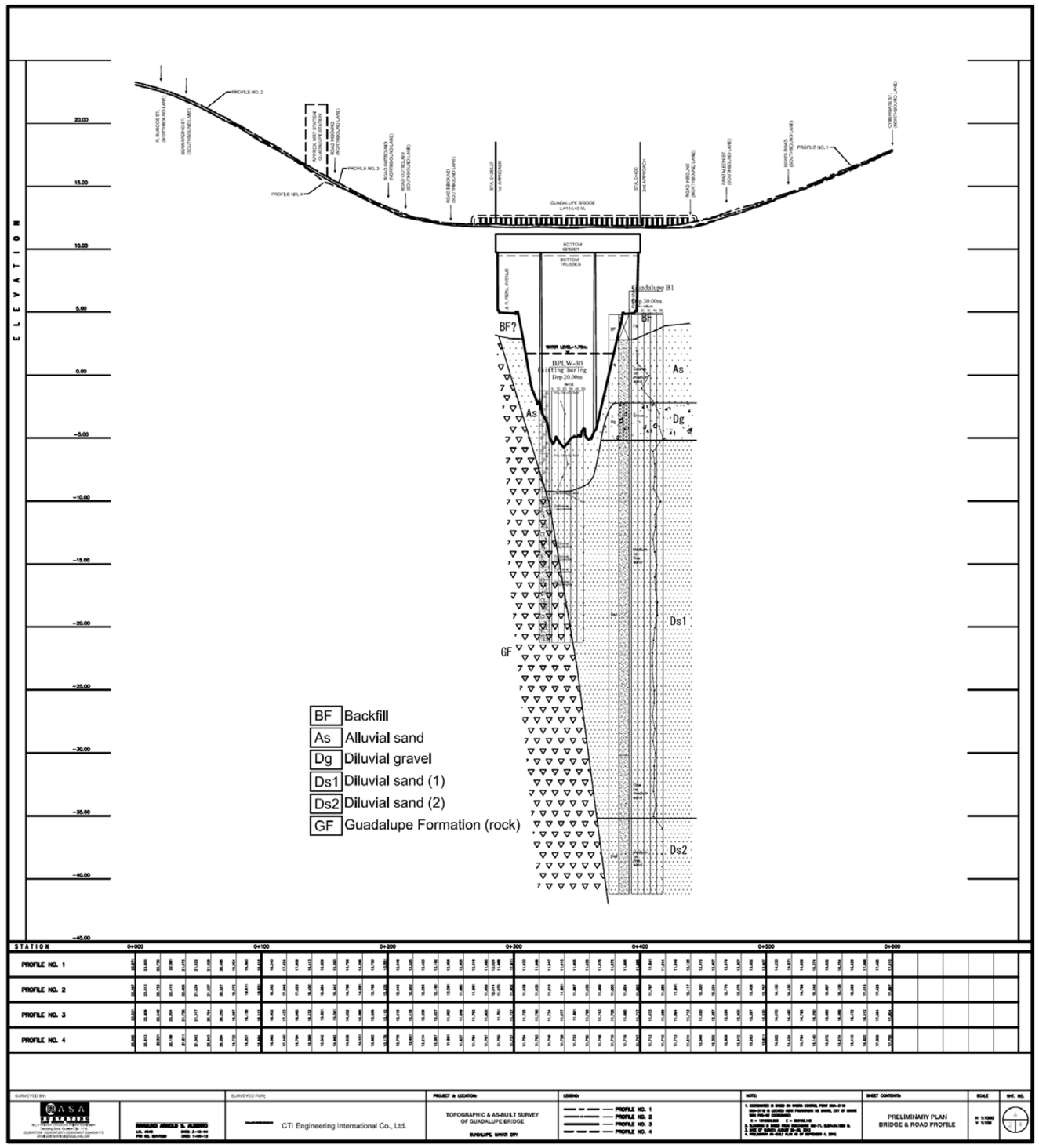
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress



SURVEYED BY: RASA Surveying

SURVEYED FOR: CTI Engineering International Co., Ltd.

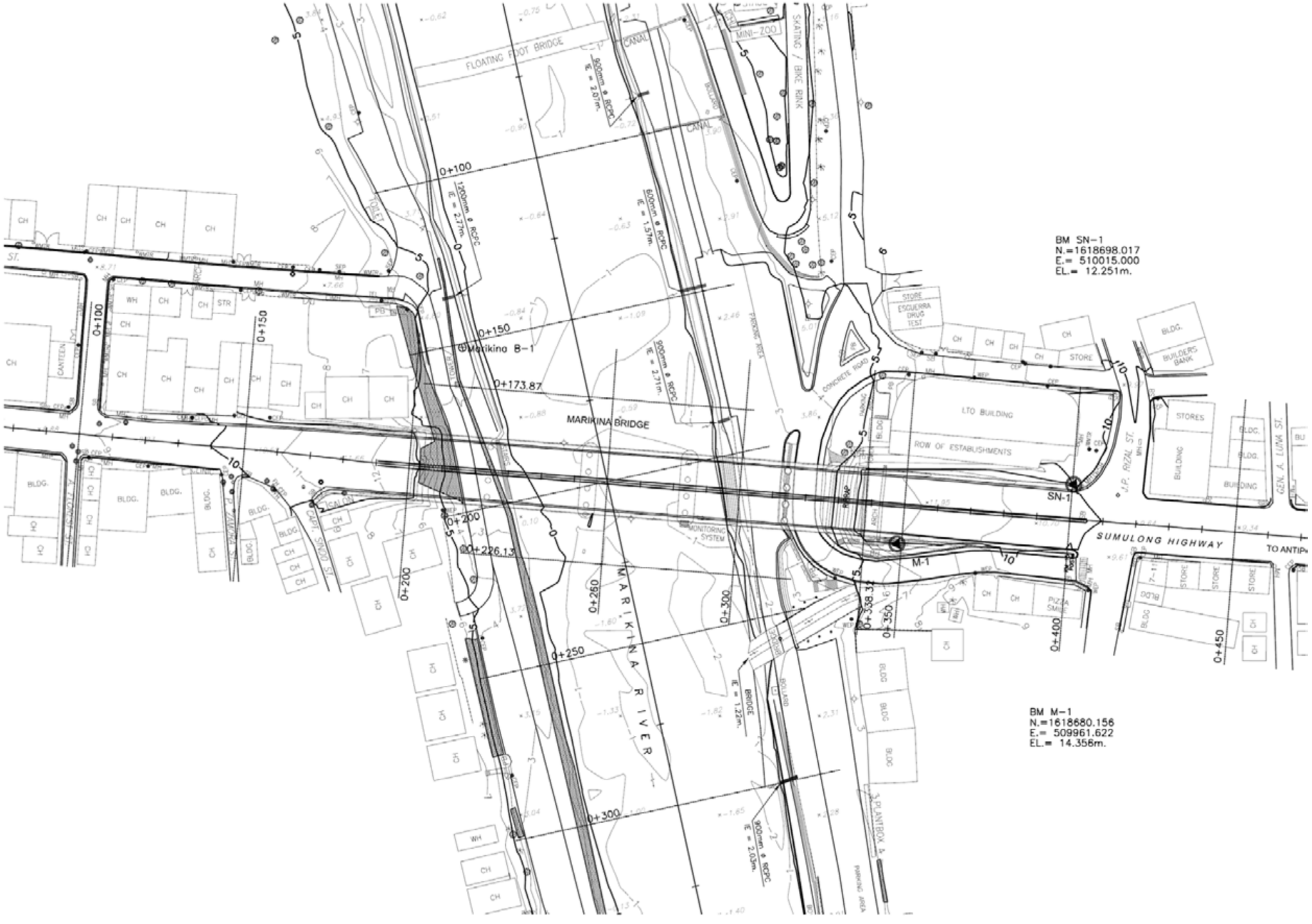
PROJECT & LOCATION: TOPOGRAPHIC & AS-BUILT SURVEY OF GUADALUPE BRIDGE, GUADALUPE, MAKATI CITY

LEGENDS: PROFILE NO. 1, PROFILE NO. 2, PROFILE NO. 3, PROFILE NO. 4

SHEET CONTENTS: PRELIMINARY PLAN BRIDGE & ROAD PROFILE

SCALE: H 1:1000, V 1:100

5) Marikina Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
B-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Marikina Bridge (right bank)

B-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) $Cu_{,r}$	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Very fine sand silty poor graded relatively high water content brown colored		1	2 1 2	3	0.0	82.4	17.6						44.4																					1
2	N2					2	2 2 3	5	0.0	99.6	0.4						47.4																					2
3	N3					3	3 2 4	6	0.0	91.5	2.6						45.6																					3
4	N4	3.20 4.20		Mainly very fine sand with silt brownish-gray colored		4	2 4 4	8	33.8	62.9	3.2						26.3																					4
5	N5					5	2 4 3	7	14.6	84.4	0.4						35.1																					5
6	N6			Very fine sand silty brownish-gray/gray colored		6	4 5 4	9	2.9	95.2	2.6						37.1																					6
7	N7					7	4 4 6	10	0.0	96.4	3.6						37.4																					7
8	N8			Mainly fine sand including silt and gravel relatively high water content dark-gray colored		8	4 5 5	10	3.2	96.4	0.4						25.8																					8
9	N9					9	4 6 5	11	0.7	99.1	2.6						32.6																					9
10	N10					10	8 7 8	15	0.0	96.7	3.3						37.3																					10
11	N11					11	6 8 8	16	27.5	72.2	0.4						22.9																					11
12	N12					12	7 9 9	18	23.4	73.0	2.6						25.8																					12
13	N13			Fine to medium sand relatively high to moderate water content blackish-gray colored		13	10 10 11	21	0.5	96.4	3.2						27.8																					13
14	N14					14	9 12 13	25	0.0	95.0	0.4						37.2																					14
15	N15			Gravel and sand relatively low to moderate water content sometime medium to fine sand with gravel including gravels (20-30 mm in diameter)		15	11 12 15	27	47.6	51.4	2.6						10.6																					15
16	N16					16	13 13 14	27	32.5	63.9	3.6						15.4																					16
17	N17					17	14 14 16	30	45.1	53.3	0.4						16.3																					17
18	N18					18	15 17 17	34	20.7	78.2	2.6						13.0																					18
19	N19			Coarse sand relatively high water content brownish-gray/blackish-gary colored		19	18 18 28	46	27.4	72.0	0.6						18.8																					19
20	N20					20	17 19 24	43	32.4	66.7	0.4						16.4																					20
21	N21					21	19 19 24	43	33.4	65.5	2.6						18.1																					21
22	N22					22	20 22 26	48	17.7	81.4	0.9						18.5																					22
23	N23					23	20 23 38	61	31.4	67.9	0.4						19.6																					23
24	N24			Mainly coarse to medium sand including gravel having diameters of 10-20 mm relatively high water content dark-gray/blackish-gray colored		24	19 23 24	47	1.4	97.8	2.6						27.6																					24
25	N25					25	24 27 26	53	13.1	86.2	0.7						23.2																					25
26	N26					26	25 26 28	54	7.8	91.2	0.4						24.8																					26
27	N27					27	27 28 27	55	1.3	98.0	2.6						27.4																					27
28	N28					28	30 29 21	50	2.0	97.2	0.8						23.9																					28
29	N29					29	28 30 20	50	4.7	94.2	0.4						29.5																					29
30	N30			30.00 m : End of borehole.		30	31 35 15	50	7.5	92.0	2.6						24.0																					30

Drawing scale: 1/200

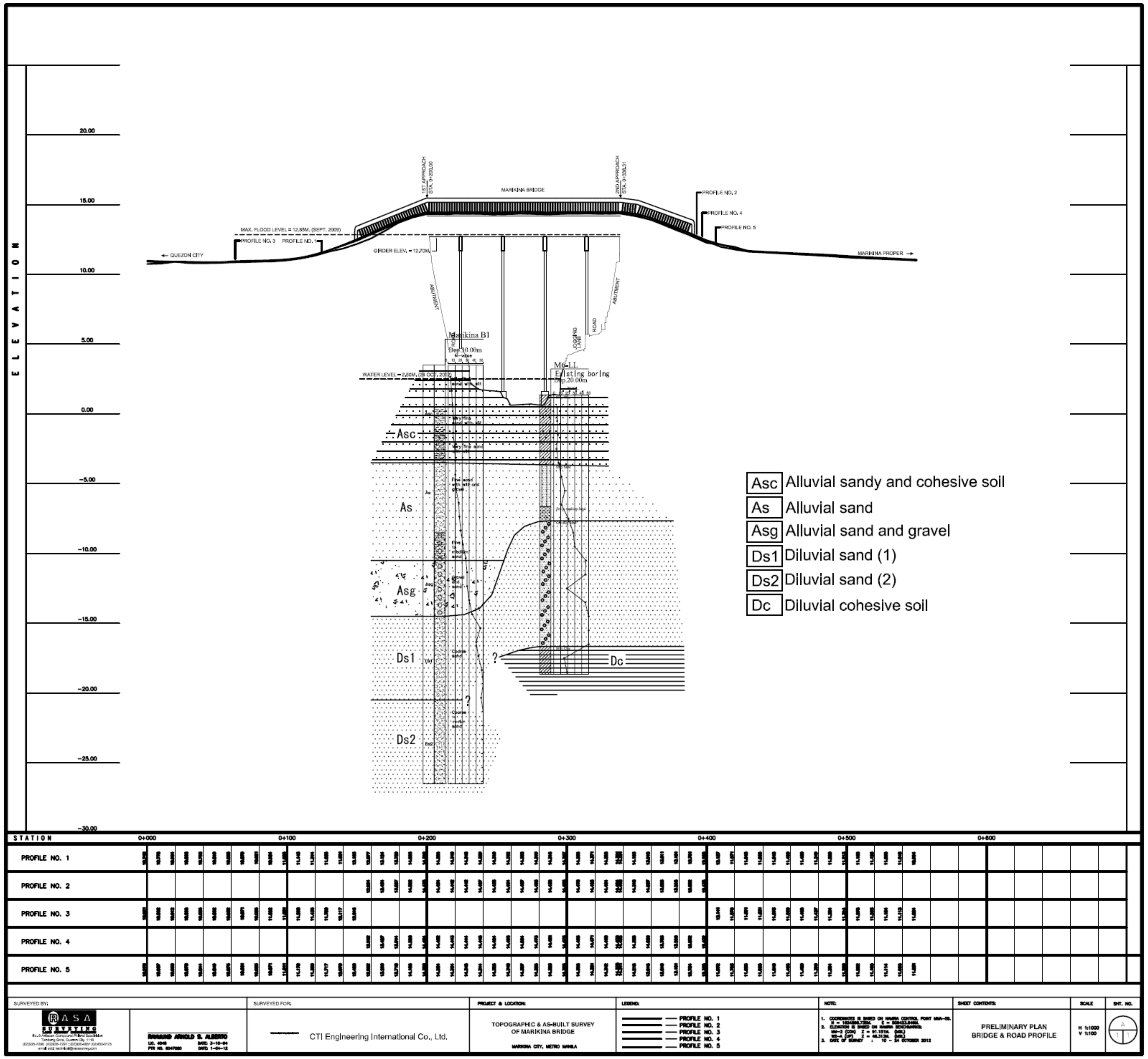
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - $Cu_{,r}$: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

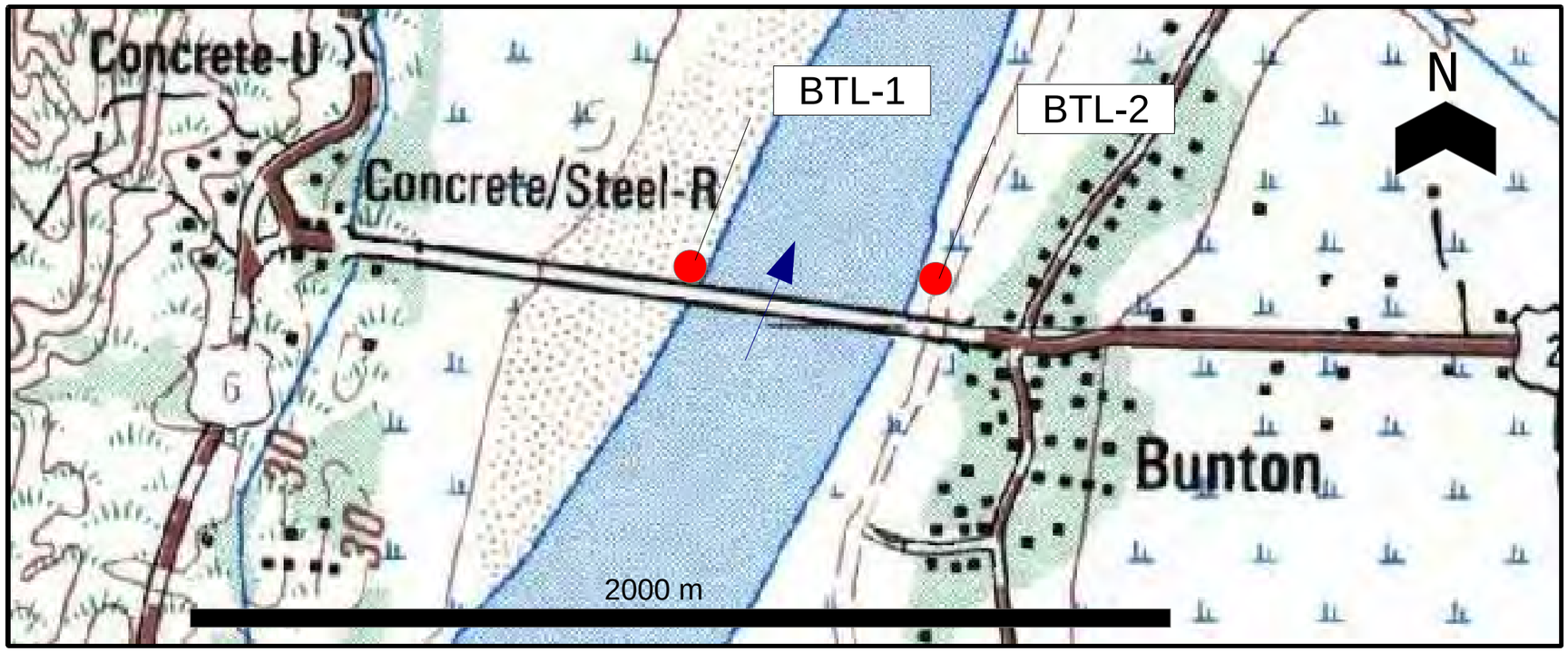
CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
MARIKINA BRIDGE
PROFILE NO. 2
PROFILE NO. 4
PROFILE NO. 5
QUEZON CITY
MARIKINA PROPER
Marikina B1
Asc
As
Asg
Ds1
Ds2
Dc
Asc Alluvial sandy and cohesive soil
As Alluvial sand
Asg Alluvial sand and gravel
Ds1 Diluvial sand (1)
Ds2 Diluvial sand (2)
Dc Diluvial cohesive soil
STATION
0+000
0+100
0+200
0+300
0+400
0+500
0+600
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
PROFILE NO. 4
PROFILE NO. 5
CTI Engineering International Co., Ltd.
TOPOGRAPHIC & AS-BUILT SURVEY
OF MARIKINA BRIDGE
PRELIMINARY PLAN
BRIDGE & ROAD PROFILE

(2) Package C

1) Buntun Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
BTL-1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Buntun Bridge (left bank)

BTL-1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	'Pc kPa	Depth (m)
1	N1			Silty clay including gravel and very fine sand	-	1	2 3 3	6	0.5	96.3	3.2																											1
2	N2			Fine sand with gravel	-	2	3 3 3	6	8.5	88.1	3.4																											2
3	N3			Clay including grval medium water content sometime including gravel	-	3	3 3 3	6	0.0	96.0	4.0																											3
4	N4					4	3 3 3	6	2.0	95.1	2.9																											4
5	N5					5	3 3 3	6	0.0	99.2	0.8																											5
6	N6					6	3 3 4	7	0.0	92.1	7.9																											6
7	N7					7	2 2 3	5	0.7	80.2	19.6																											7
8	N8					8	2 2 3	5	0.0	96.7	3.3																											8
9	N9			Caly medium water content dark-gray - bluish-gray colored	-	9	1 1 1	2	0.0	99.4	0.6																											9
10	N10					10	1 1 1	2	0.0	98.4	1.6																											10
11	N11			Silt very fine sandy relatively low water conent yellowish-brown colored	-	11	11 14 15	29	0.0	99.4	0.6																											11
12	N12					12	10 15 17	32	0.0	99.2	0.8																											12
13	N13					13	11 12 13	25	0.0	99.2	0.8																											13
14	N14					14	11 12 13	25	9.3	98.0	1.7																											14
15	N15			Very fine sand with gravel weakly consolidated reddish-brown colored	-	15	40 50 0	50																													15
16	N16					16	0 50 0	50																													16
17	N17			Very fine sand (probably strongly weathered sandstone) relatively low water content Reddish-brown/ bluish -gray/yellowish-gray colored very dense or relatively consolidated below -23m subrounded gravel (10mm in diameter) included about -25m	-	17	0 50 0	50	0.0	98.0	2.0																											17
18	N18					18	0 50 0	50	0.0	99.5	0.5																											18
19	N19					19	45 50 0	50	0.0	98.7	1.3																											19
20	N20					20	0 50 0	50	3.4	95.7	0.9																											20
21	N21					21	0 50 0	50	0.0	99.3	0.7																											21
22	N22					22	0 50 0	50	0.0	99.1	0.9																											22
23	N23					23	0 50 0	50	0.0	98.3	1.7																											23
24	N24					24	0 50 0	50	0.0	94.0	6.0																											24
25	N25					25	0 50 0	50	0.0	97.8	2.2																											25
26	N26					26	0 50 0	50	0.0	94.5	5.5																											26
27	N27					27	0 50 0	50	11.2	88.8	0.0																											27
28	N28					28	0 50 0	50	0.0	99.0	1.0																											28
29	N29					29	0 50 0	50	0.0	97.7	2.3																											29
30	N30					30	0 50 0	50	0.0	99.0	1.0																											30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
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Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
BTL-2

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Buntun Bridge (right bank)

BTL-2

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	e Void ratio	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Very fine sand with silt brownish-gray colored relatively high water content below -2 m		1	2 3 3	6	0.0	94.4	5.6						51.5																					1
2	N2					2	3 3 3	6	0.0	99.1	1.0						36.1																					2
3	N3	2.60 2.50				3	3 3 3	6	0.0	99.6	0.4						26.3																					3
4	N4					4	2 3 3	6	0.0	99.1	0.9						30.5																					4
5	N5					5	3 4 5	9	0.0	99.2	0.8						30.9																					5
6	N6			Fine to medium sand moderate water content dark-gray colored		6	3 3 6	9	0.0	99.5	0.5						33.7																					6
7	N7					7	2 2 7	9	0.0	99.6	0.4						19.6																					7
8	N8					8	3 3 6	9	0.0	99.8	0.2						12.9																					8
9	N9					9	2 4 5	9	0.5	99.1	0.5						23.9																					9
10	N10				-	10	3 4 5	9	0.7	98.8	0.5						26.3																					10
11	N11					11	3 4 4	8	0.0	99.8	0.2						27.4																					11
12	N12					12	2 5 7	12	0.0	99.5	0.5						20.1																					12
13	N13					13	2 6 6	12	0.7	99.0	0.2						19.8																					13
14	N14			Very fine sand with silt relatively high water content	-	14	15 16 17	33	0.0	99.1	0.9						38.0																					14
15	N15				-	15	14 16 17	33	0.0	99.5	0.5						23.9																					15
16	N16			Fine to medium sand blackish-gray colored	-	16	14 15 15	30	0.0	98.7	1.3						35.9																					16
17	N17			Very find sand with silt Dark-gray or blackish-gray colored		17	14 24 24	48																														17
18	N18					18	24 26 24	50																														18
19	N19			Very fine sand Relatively low water content Poorly graded Blackish-gray or dark-gray colored		19	30 40 10	50	5.5	94.1	0.4						3.8																					19
20	N20					20	36 41 9	50	3.6	95.9	0.5						7.7																					20
21	N21					21	36 45 5	50	2.4	97.1	0.5						8.7																					21
22	N22					22	36 45 5	50	6.5	92.8	0.8						15.7																					22
23	N23					23	40 50 0	50	1.0	97.7	1.3						14.7																					23
24	N24					24	45 50 0	50	0.0	99.2	0.8						26.7																					24
25	N25					25	40 50 0	50																														25
26	N26			Very fine sand with silt poorly graded relatively low water content yellowish-gray colored		26	0 50 0	50	40.3	56.9	2.8						13.8																					26
27	N27					27	20 25 25	50	0.0	97.5	2.5						31.9																					27
28	N28					28	19 26 24	50	0.0	96.6	3.4						28.9																					28
29	N29					29	20 27 23	50	0.0	97.3	2.7						31.9																					29
30	N30					30	21 25 25	50	0.3	98.4	1.4						30.4																					30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

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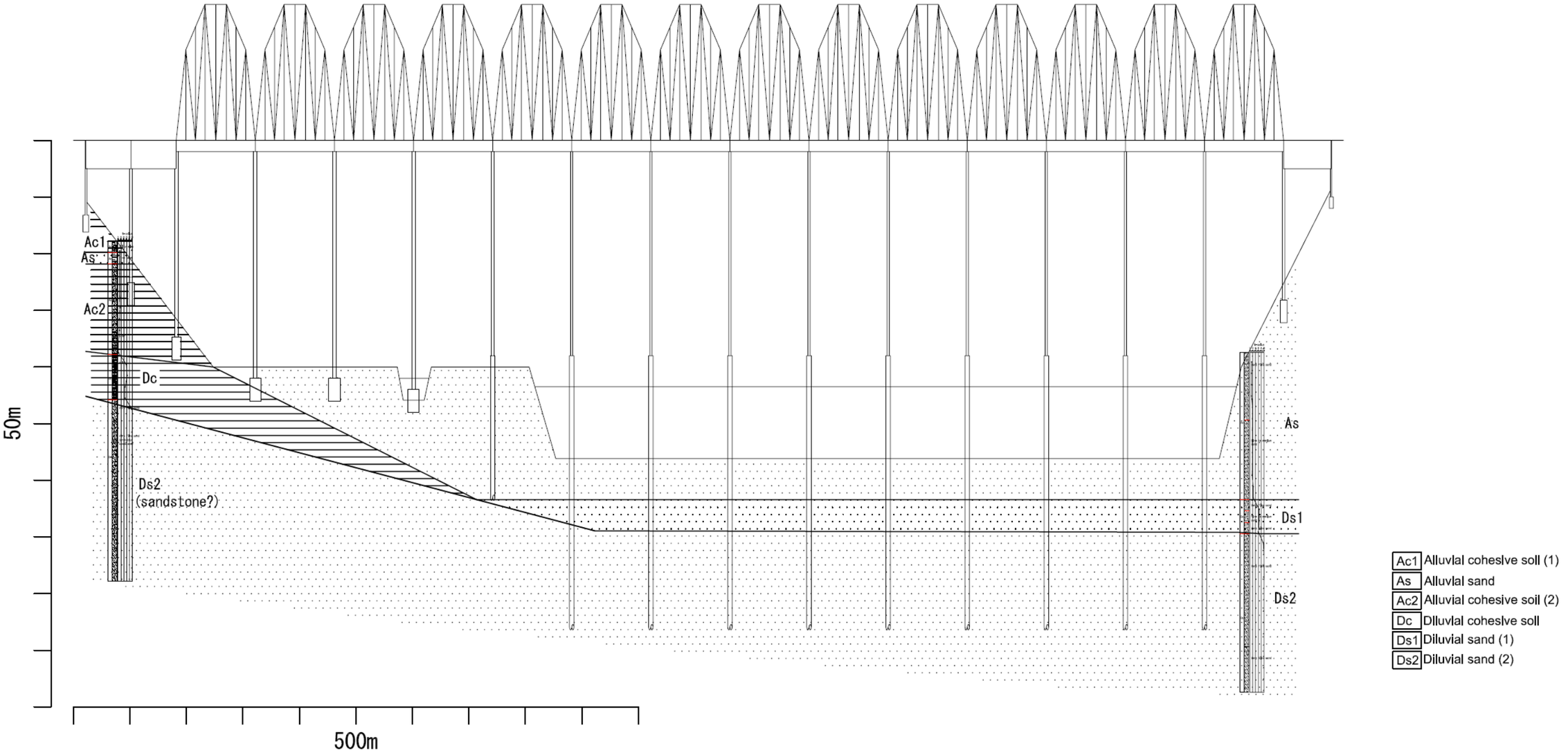
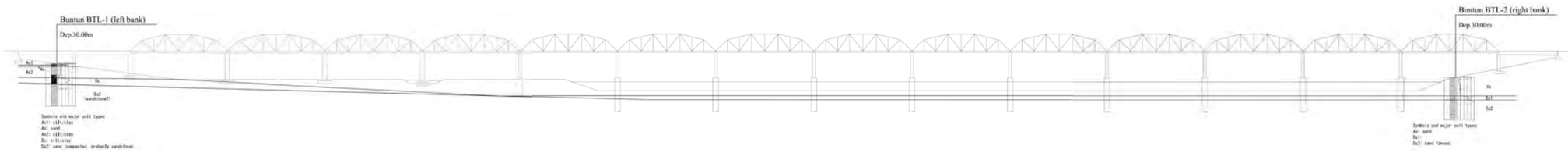
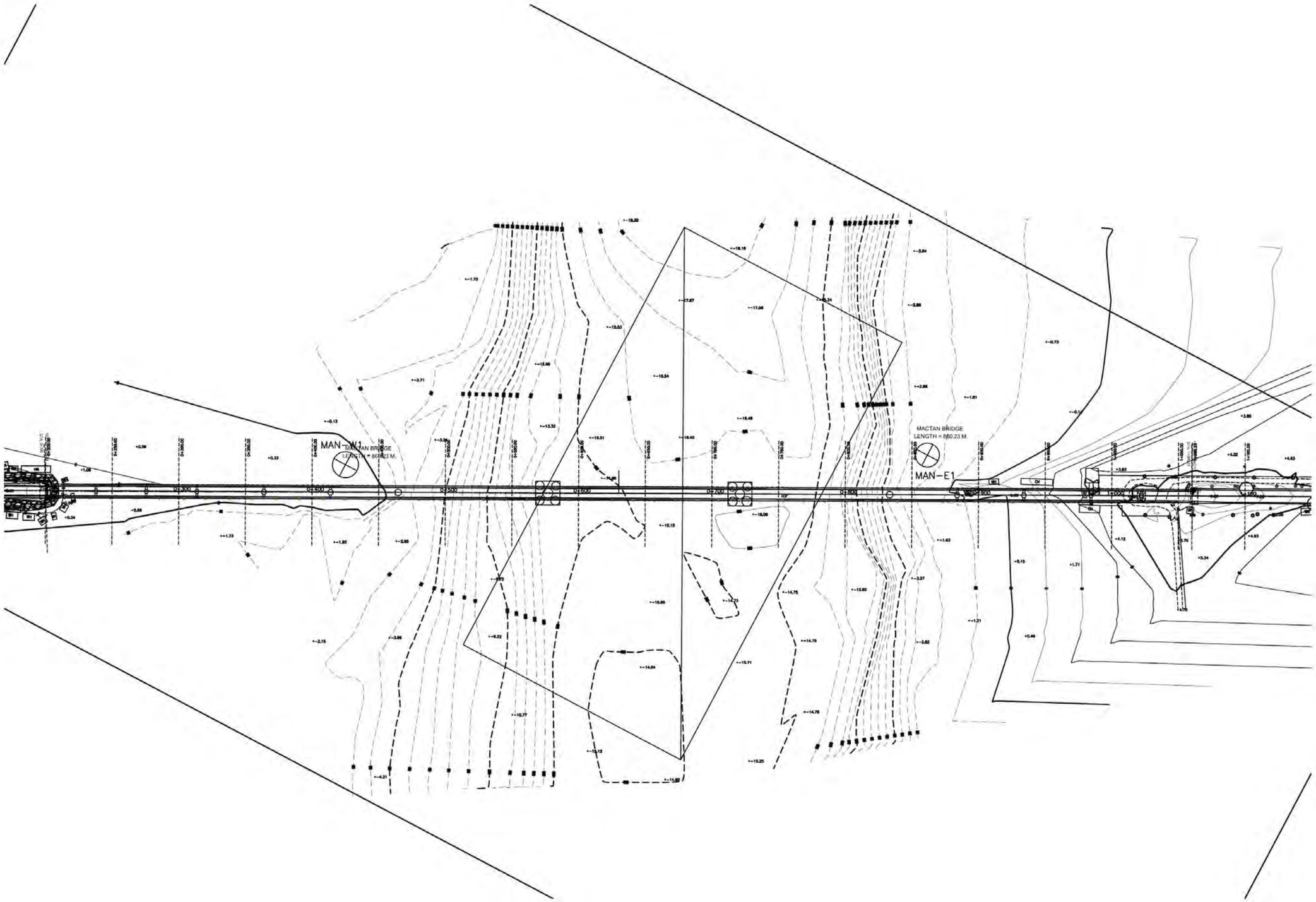
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


50m
Ac1
As
Ac2
Dc
Ds2
(sandstone?)
As
Ds1
Ds2
500m
Ac1 Alluvial cohesive soil (1)
As Alluvial sand
Ac2 Alluvial cohesive soil (2)
Dc Diluvial cohesive soil
Ds1 Diluvial sand (1)
Ds2 Diluvial sand (2)


Buntun BTL-1 (left bank)
Dep.30.00m
Buntun BTL-2 (right bank)
Dep.30.00m

2) 1st Mandaue-Mactan Birdge



Jica Study Team
CTII, CHODAI, and Nippon Koei
MAN-E1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla. Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: 1st Mandaue-Mactan Brdige

MAN-E1(1)

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50
1	N1			Limestone and sand		1	8 8 10	18
2	N2					2	9 10 9	19
3	N3					3	9 11 13	24
4	N4					4	10 10 13	23
5	N5					5	12 13 16	29
6	N6	6.10 6.00		Clay with coral fragments soft moderate to relatively high water content Dark-gray colored		6	3 3 3	6
7	N7					7	3 4 4	8
8	N8					8	4 4 4	8
9	N9					9	3 3 3	6
10	N10					10	3 3 4	7
11	N11			Silty sand mainly fine sand relatively high water content dark-gray colored		11	3 3 4	7
12	N12					12	3 3 4	7
13	N13			Sandy silt including fine sand relatively high water content dark gray colored		13	9 10 12	22
14	N14					14	10 12 15	27
15	N15			Sand mainly fine sand including silt relatively high water content Dark gray colored		15	11 13 16	29
16	N16					16	10 15 15	30
17	N17			Sand mainly medium sand relatively high water content dark gray colored		17	12 15 17	32
18	N18			Gravel with silt including 10-30 mm gravles relatively high water content yellowish-brown colored		18	10 10 15	25
19	N19					19	12 15 20	35
20	N20			Clay relatively low water content yellowish-brown colored		20	11 21 20	41
21	N21			Gravel with silt including 2-4 mm gravels relatively high water content yellowish brown colored		21	10 15 20	35
22	N22					22	10 10 15	25
23	N23			Clay with gravel relatively low to moderate water content sometime including coral fragments and brocken shell fragments moderate to relatively hard light brownish-gray colored between -19 m and -23 m: relatively rich in coral fragments below -23 m: relatively poor in coral fragments than upper part		23	10 10 10	20
24	N24					24	5 7 8	15
25	N25					25	6 8 8	16
26	N26					26	5 6 7	13
27	N27					27	5 8 9	17
28	N28					28	7 9 16	25
29	N29			Clay relatively low to moderate water content sometime rock fragments moderate to relatively hard dark gray colored		29	5 5 5	10
30	N30					30	4 5 7	12
31	N31			relatively low to moderate water content		31	4 6 6	12
32	N32					32	5 6 7	13
33	N33					33	6 6 8	14
34	N34			Clay relatively low to moderate water content sometime including coral fragments and/or broken shell fragments moderate to relatively hard yellowish-brown colored relatively low to moderate water content		34	6 7 8	15
35	N35					35	5 8 7	15
36	N36					36	13 22 23	45
37	N37					37	15 25 22	47

Continued

Clay
relatively low to moderate water content
sometime including coral fragments and/or broken shell fragments
moderate to relatively hard
yellowish-brown colored
relatively low to moderate water content

Depth (m)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	g	gd	G	e	Saturat. degree Sr%	Vane Test: Cu	Cu,r (remoulded)	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1																														1
2																														2
3																														3
4																														4
5																														5
6																														6
7																														7
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35																														35
36																														36
37																														37

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
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CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
MAN-E1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla. Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: 1st Mandaue-Mactan Brdige

MAN-E1(1)

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50
38	N38			Clay relatively low to moderate water content sometime including coral fragments and/or broken shell fragments moderate to relatively hard yellowish-brown colored relatively low to moderate water content		38	16 20 25	45
39	N39					39	19 25 25	50
40	N40					40	20 26 27	53
41	N41			Clay relatively low to moderate water content sometime including few coral fragments and broken shell fragments moderate to relatively hard yellowish-brown colored relatively low to moderate water content		41	10 10 10	20
42	N42					42	9 10 11	21
43	N43					43	7 9 8	17
44	N44					44	6 8 7	15
45	N45					45	7 6 8	14
46	N46					46	6 9 8	17
47	N47					47	7 10 10	20
48	N48			Clay (to be observed)		48	6 8 9	15
49	N49					49	5 7 8	15
50	N50					50	6 7 8	15
51	N51					51	6 9 8	17
52	N52					52	7 6 9	15
53	N53					53	5 7 9	16
54	N54					54	6 6 10	16
55	N55					55	6 7 10	17
56	N56					56	5 7 9	16
57	N57					57	6 8 9	17
58	N58					58	5 6 10	16
59	N59					59	5 6 12	18
60	N60					60	6 7 11	18
61	N61					61	7 7 10	17
62	N62					62	7 8 10	18
63	N63					63	7 9 9	18
64	N64					64	10 10 14	24
65	N65					65	12 16 16	32
66	N66					66	14 14 18	32
67	N67					67	11 14 20	34
68	N68					68	15 18 18	36
69	N69					69	17 19 23	42
70	N70			Silty sand (to be observed)		70	20 20 25	45
71	N71					71	24 23 23	46
72	N72					72	22 26 27	53
73	N73					73	28 34 16	50
74	N74					74	31 50 0	50

Continued

Depth (m)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	g	Bulk density	gd	Dry density	G	Spec. density	e	Void ratio	Sr%	Saturat. degree	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
38																																			38
39																																			39
40																																			40
41																																			41
42																																			42
43																																			43
44																																			44
45																																			45
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69																																			69
70																																			70
71																																			71
72																																			72
73																																			73
74																																			74

Drawing scale: 1/200

ABBREVIATIONS

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phi', c': Friction angle, cohesion (effective values)
C_c, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
MAN-E1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla. Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: 1st Mandaue-Mactan Brdige

MAN-E1(1)

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	Blows	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
75	N75			Silty sand (to be observed)		75	28 34 35	69																														75
76	N76					76	34 36 14	50																														76
77	N77					77	36 29 21	50																														77
78	N78					78	27 28 30	58																														78
79	N79					79	25 24 24	48																														79
80	N80					80	24 27 27	54																														80
81	N81					81	29 30 33	63																														81

81.00 m : End of borehole.

Drawing scale: 1/200

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Jica Study Team
CTII, CHODAI, and Nippon Koei
MAN-W1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla. Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: 1st Mandaue-Mactan Brdige

MAN-W1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)
1	N1			Clay with gravel including coral fragments moderate to relatively high water content brown colored	-	1
2	N2					2
3	N3	3.10 3.00		Coarse to medium sand including 10 mm gravels, and coral fragments relatively moderate water content brownish-gray/light brownish-gray colored	-	3
4	N4					4
5	N5					5
6	N6			Gravelly sand or sand with gravel mainly coarse to medium sand moderate water content light brownish gray colored	-	6
7	N7					7
8	N8					8
9	N9					9
10	N10			Sand with gravel mainly coarse to medium sand moderate water content Light brownish gray colored	-	10
11	N11					11
12	N12					12
13	N13			Coralline limestone light yellowish-gray colored/grayish-white colored weakly weathered soft rock porus below -23m: moderately weathered	-	13
14	N14					14
15	N15					15
16	N16					16
17	N17					17
18	N18					18
19	N19					19
20	N20					20
21	N21					21
22	N22					22
23	N23					23
24	N24					24
25	N25					25
26	N26					26
27	N27					27
28	N28					28
29	N29					29
30	N30					30

30.00 m : End of borehole.

Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)
1	10 9 12	21
2	9 11 13	24
3	10 12 12	24
4	14 13 13	26
5	12 15 14	29
6	14 18 32	50
7	23 31 19	50
8	28 34 16	50
9	30 37 13	50
10	33 37 13	50
11	0 50 0	50
12	0 50 0	50
13	0 50 0	50
14	0 50 0	50
15	0 50 0	50
16	0 50 0	50
17	0 50 0	50
18	0 50 0	50
19	0 50 0	50
20	0 50 0	50
21	0 50 0	50
22	0 50 0	50
23	0 50 0	50
24	0 50 0	50
25	0 50 0	50
26	0 50 0	50
27	0 50 0	50
28	0 50 0	50
29	0 50 0	50
30	0 50 0	50

Drawing scale: 1/200

Depth (m)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1																														1
2																														2
3																														3
4																														4
5																														5
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27																														27
28																														28
29																														29
30																														30

ABBREVIATIONS

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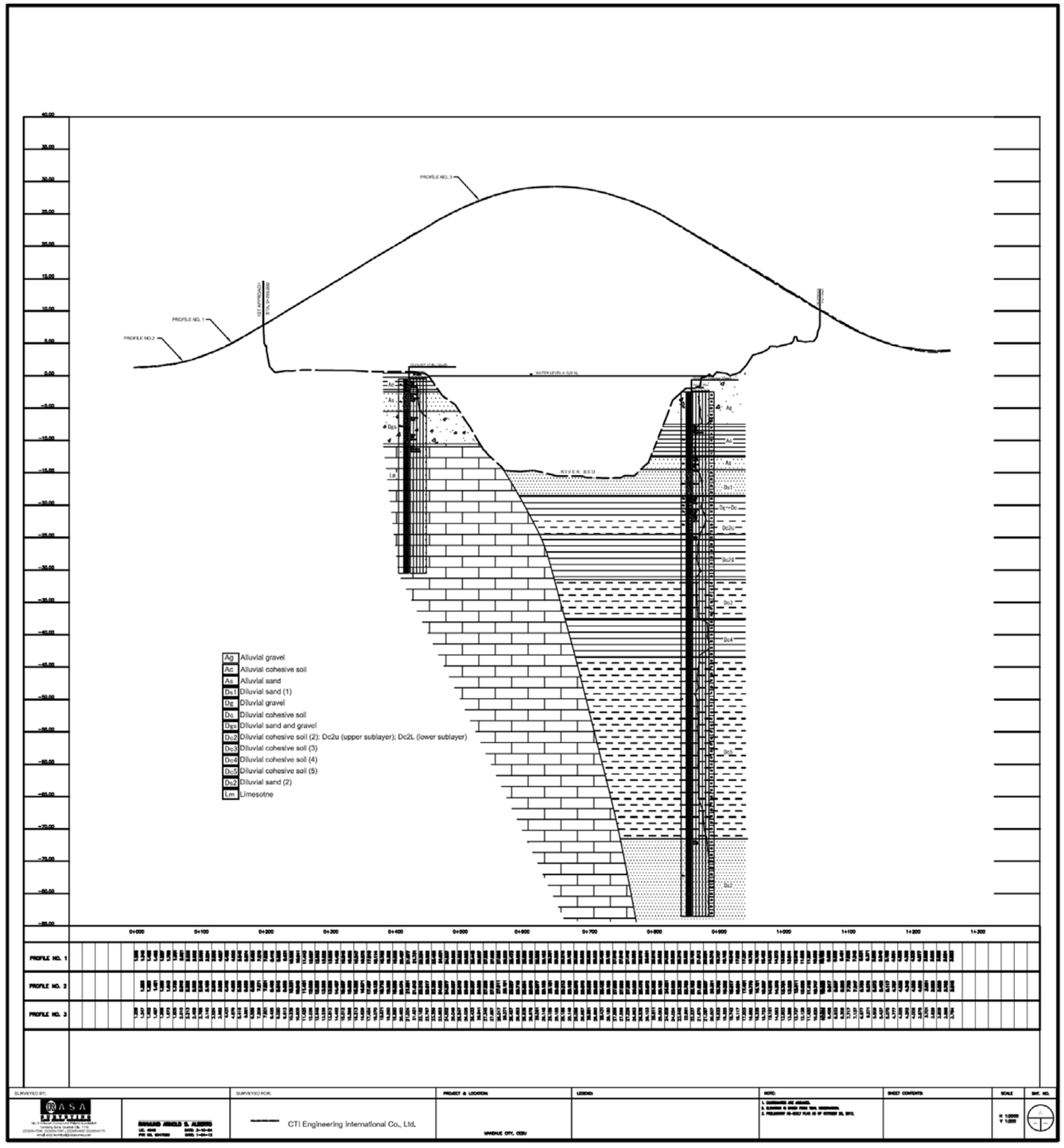
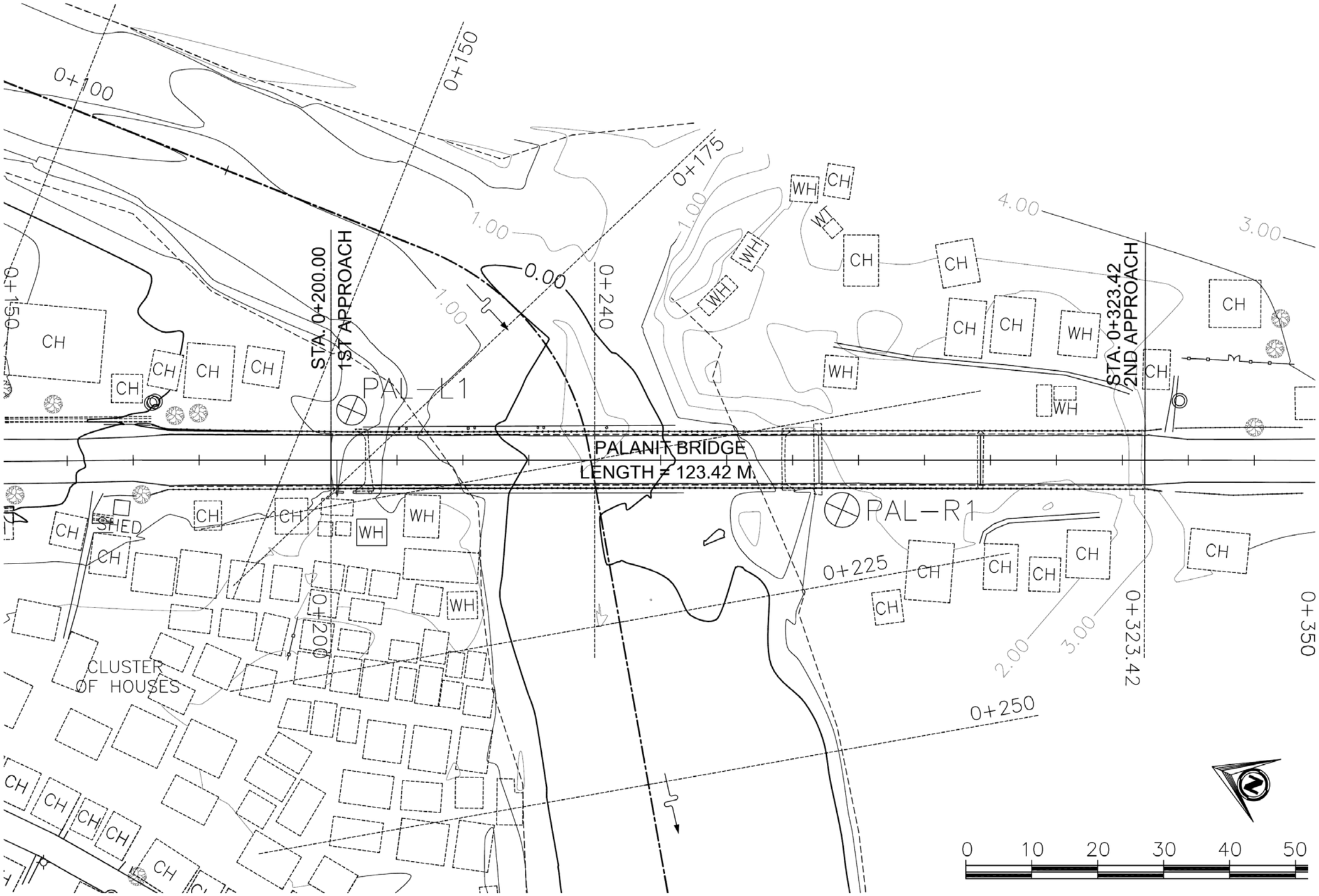
Pc: Effective preconsolidation stress


PROFILE NO. 3
PROFILE NO. 1
PROFILE NO. 2
RIVER BED
Ag Alluvial gravel
Ac Alluvial cohesive soil
As Alluvial sand
Dg Diluvial gravel
Dc Diluvial cohesive soil
Dgs Diluvial sand and gravel
Dc2 Diluvial cohesive soil (2): Dc2u (upper sublayer); Dc2L (lower sublayer)
Dc3 Diluvial cohesive soil (3)
Dc4 Diluvial cohesive soil (4)
Dc5 Diluvial cohesive soil (5)
Ds2 Diluvial sand (2)
Lm Limesotne
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
CTI Engineering International Co., Ltd.

3) Palanit Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
PAL-L1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Palanit Bridge (right bank)

PAL-L1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Clayey sand clayey or silty sand brown/brownish -gray/greenish -gray/yellowish-gray colored relatively low to moderate water content -1 m: clayey medium sand with gravel -2 m: gravelly sand -3 m, -4 m: silty sand with gravel	-	1	6 7 8	15	0.0	96.8	3.2					27.0																		1
2	N2					2	12 14 15	29	8.9	87.9	3.2						19.0																			2
3	N3					3	14 18 20	38	0.0	95.0	5.0						29.1																			3
4	N4					4	20 22 24	46	0.0	95.8	4.2						29.2																			4
5	N5				-	5	22 25 25	50	0.0	97.2	2.8						38.7																			5
6	N6				-	6	18 23 26	49	0.0	97.1	2.9						35.1																			6
7	N7			Silty sand mainly coarse to medium sand moderate water content brownish-gray colored		7	0 50 0	50																												7
8	N8					8	0 50 0	50																												8
9	N9					9	0 50 0	50																												9
10	N10			Clay with gravel moderate water content including 30 mm gravel	-	10	0 50 0	50																												10
11	N11			Welded tuff light-gray/greenish-gray colored soft rock CL-CM class		11	0 50 0	50																												11
12	N12					12	0 50 0	50																												12
13	N13					13	0 50 0	50																												13
14	N14					14	0 50 0	50																												14
15	N15			Tuffaceous rock tuffaceous siltstone/mudstone soft rock greenish-gray colored CL class sometime weathered		15	0 50 0	50																												15
16	N16					16	0 50 0	50																												16
17	N17					17	0 50 0	50																												17
18	N18					18	0 50 0	50																												18
19	N19					19	0 50 0	50																												19
20						20																														20
21	N20					21	0 50 0	50																												21
22						22																														22
23	N21					23	0 50 0	50																												23
24						24																														24
25	N22					25	0 50 0	50																												25
26						26																														26
27	N23					27	0 50 0	50																												27
28						28																														28
29	N24					29	0 50 0	50																												29
30				30.00 m : End of borehole.		30																														30

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu_r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
PAL-R1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Palanit Bridge (left bank)

PAL-R1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classification	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Gravely sand relatively low water content, including plant roots and 10-15 mm gravel, dark-grown colored	-	1	3 4 5	9	13.3	84.1	2.7						21.0																					1
2	N2					2	3 4 4	8	20.1	76.8	3.0						20.3																					2
3	N3			Tuffaceous rock tuffaceous siltstone greenish-gray colored soft rock CL class		3	0 50 0	50																													3
4	N4					4	0 50 0	50																													4
5	N5				-	5	0 50 0	50																													5
6	N6					6	0 50 0	50																													6
7	N7			Tuffaceous rock mainly tuffaceous siltstone greenish-gray colored in fresh portions dark-grown colored in weathered portions soft to medium-hard rock CL class -7 to -13 m: relatively weathered sometime interbedded by blackish mudstone		7	0 50 0	50																													7
8	N8					8	0 50 0	50																													8
9						9																															9
10	N9					10	0 50 0	50																													10
11	N10					11	0 50 0	50																													11
12	N11					12	0 50 0	50																													12
13	N12					13	0 50 0	50																													13
14	N13					14	0 50 0	50																													14
15	N14					15	0 50 0	50																													15
16						16																															16
17	N15					17	0 50 0	50																													17
18	N16					18	0 50 0	50																													18
19	N17					19	0 50 0	50																													19
20						20																															20
21	N18					21	0 50 0	50																													21
22	N19					22	0 50 0	50																													22
23	N20					23	0 50 0	50																													23
24						24																															24
25	N21					25	0 50 0	50																													25
26						26																															26
27	N22					27	0 50 0	50																													27
28						28																															28
29	N23					29	0 50 0	50																													29
30	N24			30.00 m : End of borehole.		30	0 50 0	50																													30

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
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CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
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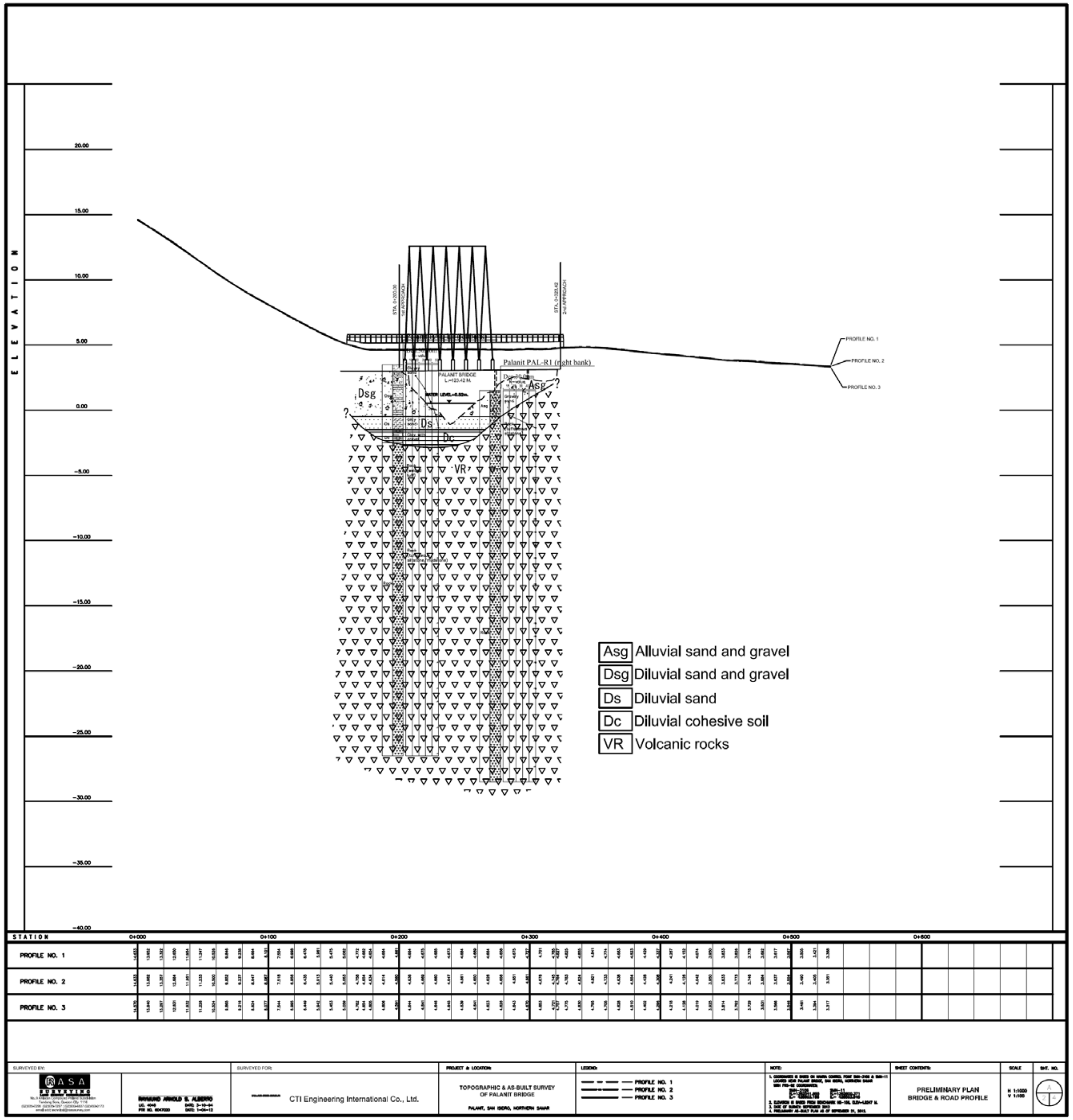
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
Palanit PAL-R1 (right bank)
Dsg
Asg
Ds
Dc
VR
Asg Alluvial sand and gravel
Dsg Diluvial sand and gravel
Ds Diluvial sand
Dc Diluvial cohesive soil
VR Volcanic rocks
STATION
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
CTI Engineering International Co., Ltd.
TOPOGRAPHIC & AS-BUILT SURVEY OF PALANIT BRIDGE
PRELIMINARY PLAN
BRIDGE & ROAD PROFILE

4) Mawo Bridge

Jica Study Team
CTII, CHODAI, and Nippon Koei
MAW-L1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Mawo Bridge (Right Bank)

MAW-L1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Mainly clay sometime silty including gravels moderate to relatively high water content Dark-gray colored	-	1	1 1 1	2	0.0	65.0	35.0					12.0	29.9																					1
2	N2					2	1 1 2	3	0.0	43.7	56.3					2.0	72.6																					2
3	N3					3	2 1 3	4	0.0	43.7	56.3					2.0	54.7																					3
4	N4					4	2 2 1	3	0.0	20.3	79.7					8.0	73.8																					4
5	N5					5	3 1 3	4	0.0	97.8	2.2						69.1																					5
6	N6			Very fine sand silty including 20-30 mm gravel relatively high water content Dark-gray colored	-	6	5 4 4	8	0.0	98.5	1.5						56.6																					6
7	N7					7	4 5 7	12	0.0	98.5	1.5						46.3																					7
8	N8			Gravel with silt relatively high water content including 10-30 mm gravel green-gray colored	-	8	11 14 10	24	80.0	19.8	0.2						6.9																					8
9	N9					9	10 15 8	23	33.2	66.2	0.6						15.7																					9
10	N10					10	10 12 9	21	24.4	75.4	0.2						24.7																					10
11	N11			Mainly gravel sometime with sand relatively high water content dark-gray/blackish -brown/brownish-gray colored	-	11	17 10 11	21	49.6	49.4	1.1						13.7																					11
12	N12					12	13 11 13	24	39.1	59.7	1.3						14.9																					12
13	N13					13	9 9 8	17	41.7	55.2	3.1						13.5																					13
14	N14			Mainly gravel with silt and sand greenish-gray colored sometime sand with gravel relatively high water content	-	14	10 9 13	22	69.6	30.2	0.2						13.9																					14
15	N15					15	10 7 15	22	5.4	93.0	1.6						24.1																					15
16	N16			Clay with very fine sand sometime sandy or sandy/clayey silt moderately water content greenish-gray/dark -gray/blackish-gray colored		16	4 4 3	7	0.0	38.2	61.8					12.0	58.0																					16
17	N17					17	5 4 3	7	0.0	32.0	68.0					9.0	54.9																					17
18	N18					18	4 4 3	7	0.0	27.9	72.1					4.0	56.0																					18
19	N19					19	5 6 6	12	0.0	43.4	56.6					2.0	59.7																					19
20	N20					20	3 4 3	7	0.0	24.3	75.7					4.0	64.1																					20
21	N21					21	3 3 4	7	0.0	43.4	56.6					5.0	51.9																					21
22	N22				-	22	5 4 5	9	0.0	64.4	35.6					4.0	44.6																					22
23	N23					23	4 5 4	9	0.0	56.6	43.4					4.0	66.2																					23
24	N24					24	5 5 5	10	0.0	39.5	60.5					4.0	43.5																					24
25	N25					25	3 4 4	8	0.0	64.7	35.3					3.0	53.4																					25
26	N26					26	4 5 3	8	1.1	96.6	2.4						46.1																					26
27	N27					27	4 6 5	11	0.3	98.1	1.6						51.8																					27
28	N28					28	6 5 6	11	0.0	96.7	3.3						41.8																					28
29	N29			Sand with clay mainly medium to fine sand dark-gray/blackish-gray colored moderate to relatively high water content		29	8 9 8	17	0.0	99.1	0.9						55.2																					29
30	N30				-	30	8 12 12	24	0.0	99.2	0.8						57.3																					30
31	N31					31	6 6 4	10																													31
32	N32			Fine to medium sand sometime with 10-20 mm gravel relatively low to moderate water content dark-gray colored		32	9 10 12	22	0.0	97.7	2.3						26.5																					32
33	N33					33	13 21 22	43	0.0	99.6	0.4						22.0																					33
34	N34					34	10 15 16	31	10.7	86.8	2.5						39.8																					34
35	N35				-	35	13 17 14	31	19.0	79.6	1.4						33.3																					35
36	N36					36	7 10 13	23	61.6	37.2	1.2						14.1																					36
37	N37					37	9 11 12	23	0.0	97.8	2.2						30.0																					37

Continued

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
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N: Split spoon sample

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CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
MAW-L1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Mawo Bridge (Right Bank)

MAW-L1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	g Bulk density	gd Dry density	G Spec. density	e Void ratio	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
38	N38			Fine to medium sand: sometime with 10-20 mm gravel relatively low to moderate water content dark-gray colored		38	9 11 39	50	2.6	95.9	1.5						25.6																				38
39	N39			Basalt mainly auto-breccia medium-hard rock CH-CH class relatively fresh green colored		39	0 50 0	50																												39
40	N40					40	0 50 0	50																												40
41	N41					41	0 50 0	50																												41
42	N42					42	0 50 0	50																												42
43	N43					43	0 50 0	50																												43
44	N44					44	0 50 0	50																												44

44.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
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CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
MAW-L2

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Mawo Bridge (Left Bank)

MAW-L2

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Specific density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Silty gravel with sand including 10-20 mm gravel relatively high water content Yellowish-brown colored	-	1	5 4 5	9	0.0	99.8	0.2						39.4																					1
2	N2				-	2	4 3 3	6	0.8	99.0	0.2						26.7																					2
3	N3			Gravel with very fine sand stone (probably weathered rock) relatively low water content Yellowish-brown colored	-	3	2 1 1	2	7.7	92.1	0.2						23.1																					3
4	N4				-	4	1 1 1	2	0.7	98.9	0.5						32.2																					4
5	N5				-	5	0 50 0	50	0.4	99.4	0.2						14.4																					5
6	N6			Sandy clay relatively high water content including 10-20 mm gravel Dark-bluish-gray/gray colored	-	6	0 50 0	50																													6
7	N7				-	7	0 50 0	50																													7
8	N8				-	8	0 50 0	50																													8
9	N9			Weathered rock strongly weathered relatively low water content soft rock D-CL class brownish-gray colored	-	9	0 50 0	50																													9
10	N10				-	10	0 50 0	50																													10
11	N11				-	11	0 50 0	50																													11
12	N12			Volcanic rocks (andesite) sometime slightly weathered Medium-hard rock CL-CM class gray colored	-	12	0 50 0	50																													12
13	N13				-	13	0 50 0	50																													13
14	N14				-	14	0 50 0	50																													14
15	N15				-	15	0 50 0	50																													15
16	N16				-	16	0 50 0	50																													16
17	N17				-	17	0 50 0	50																													17
18	N18				-	18	0 50 0	50																													18
19	N19				-	19	0 50 0	50																													19
20	N20				-	20	0 50 0	50																													20
21	N21				-	21	0 50 0	50																													21
22	N22				-	22	0 50 0	50																													22
23	N23				-	23	0 50 0	50																													23
24	N24				-	24	0 50 0	50																													24
25	N25				-	25	0 50 0	50																													25
26	N26				-	26	0 50 0	50																													26
27	N27			Volcanic rocks (andesite) sometime slightly weathered Medium-hard rock CL-CM class gray colored	-	27	0 50 0	50																													27
28	N28				-	28	0 50 0	50																													28
29	N29				-	29	0 50 0	50																													29
30	N30			30.00 m : End of borehole.		30	0 50 0	50																													30

Drawing scale: 1/200

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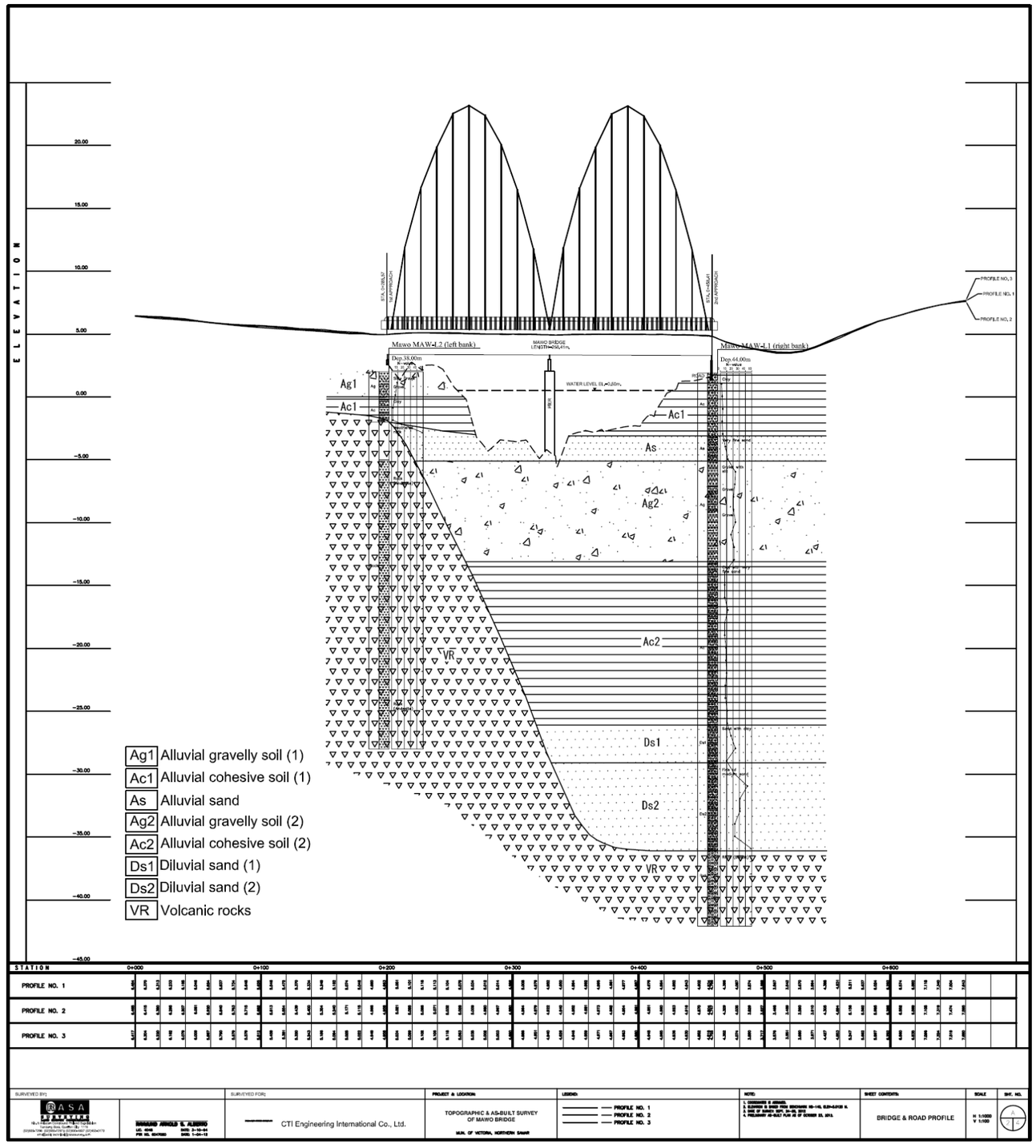
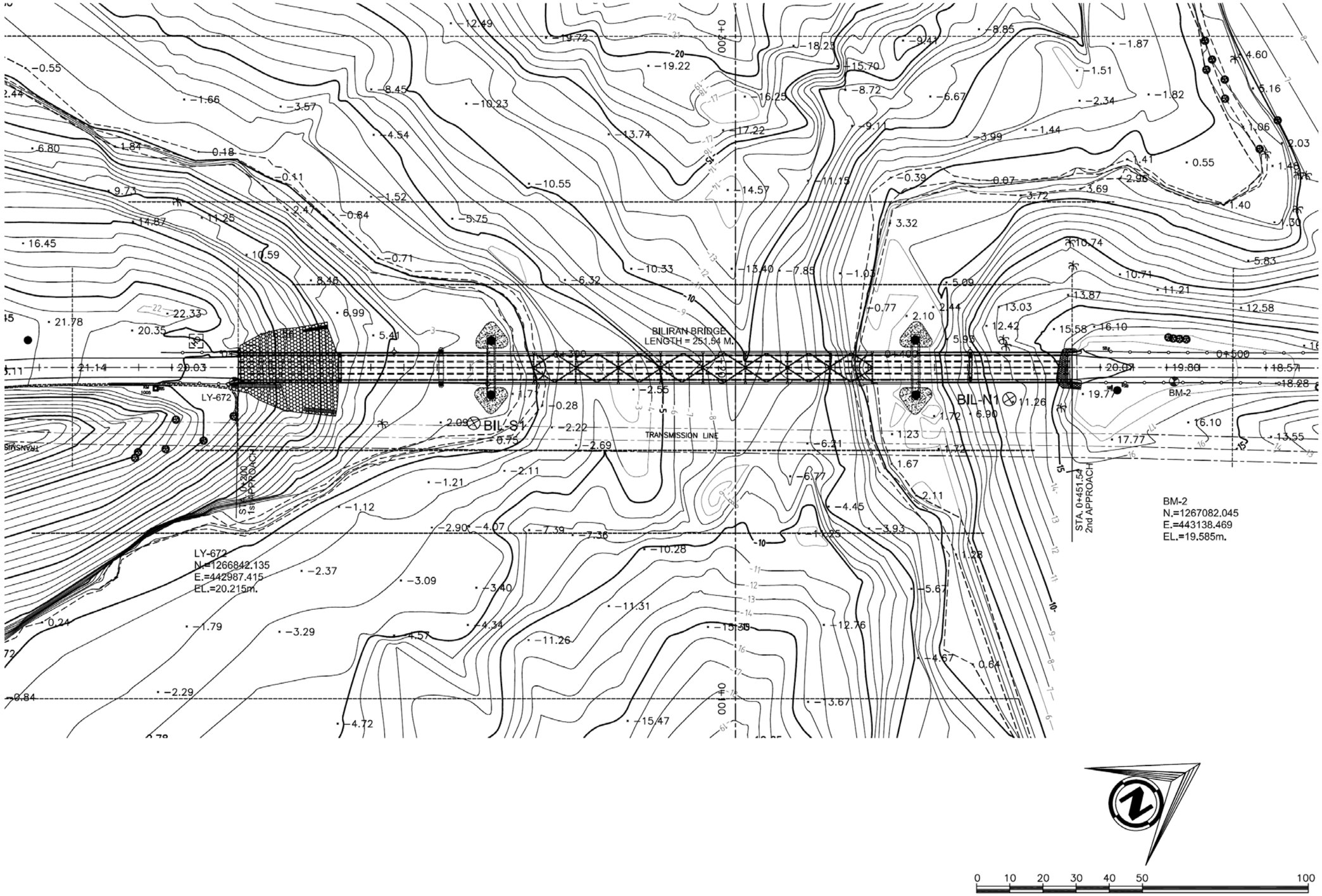
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-40.00
-45.00
Mawo MAW-L2 (left bank)
Mawo MAW-L1 (right bank)
Dep.38.00m
Dep.44.00m
MAWO BRIDGE
WATER LEVEL EL.+0.00m
Ag1
Ac1
As
Ag2
Ac2
Ds1
Ds2
VR
PROFILE NO. 3
PROFILE NO. 1
PROFILE NO. 2
Ag1 Alluvial gravelly soil (1)
Ac1 Alluvial cohesive soil (1)
As Alluvial sand
Ag2 Alluvial gravelly soil (2)
Ac2 Alluvial cohesive soil (2)
Ds1 Diluvial sand (1)
Ds2 Diluvial sand (2)
VR Volcanic rocks
STATION
0+000
0+100
0+200
0+300
0+400
0+500
0+600
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
SURVEYED BY:
SURVEYED FOR:
CTI Engineering International Co., Ltd.
PROJECT & LOCATION:
TOPOGRAPHIC & AS-BUILT SURVEY OF MAWO BRIDGE
MUN. OF VICTORIA, NORTHERN SAMAR
LEGEND:
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
NOTE:
SHEET CONTENTS:
BRIDGE & ROAD PROFILE
SCALE
H 1:1000
V 1:100
SHT. NO.

5) Biliran Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
BIL-N1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Biliran Bridge (north side)

BIL-N1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Consolidated clay with gravel	-	1	30 50 0	50	3.1	94.7	2.2						31.3																					1
2	N2			Andesite (lava) between -1 m and -7 m: slightly weathered below -7 m: relatively fresh medium hard to hard rock Blakish-gray/dark-gray colored CL-CH class		2	0 50 0	50																													2
3	N3					3	0 50 0	50																													3
4	N4					4	0 50 0	50																													4
5	N5					5	0 50 0	50																													5
6	N6					6	0 50 0	50																													6
7	N7					7	0 50 0	50																													7
8	N8					8	0 50 0	50																													8
9	N9				-	9	0 50 0	50																													9
10	N10					10	0 50 0	50																													10
11	N11					11	0 50 0	50																													11
12	N12					12	0 50 0	50																													12
13	N13					13	0 50 0	50																													13
14	N14					14	0 50 0	50																													14
15	N15					15	0 50 0	50																													15
16	N16					16	0 50 0	50																													16
17	N17			Basalt mainly auto-breccia dark-green/dark-gray colored medium hard rock CM-CH class		17	0 50 0	50																													17
18	N18					18	0 50 0	50																													18
19	N19					19	0 50 0	50																													19
20	N20					20	0 50 0	50																													20
21	N21					21	0 50 0	50																													21
22	N22					22	0 50 0	50																													22
23	N23					23	0 50 0	50																													23
24	N24					24	0 50 0	50																													24
25	N25					25	0 50 0	50																													25
26	N26					26	0 50 0	50																													26
27	N27					27	0 50 0	50																													27
28	N28					28	0 50 0	50																													28
29	N29					29	0 50 0	50																													29
30	N30					30	0 50 0	50																													30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
BIL-S1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Biliran Bridge (south side)

BIL-S1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)
1	N1			Clay with gravel including 15 mm gravel moderate water content dark-brown colored	-	1	9 2 3	5
2	N2					2	25 30 20	50
3	N3	3.10 3.00		Andesite blackish gray/black colored medium hard rock relatively fresh, sometime slightly weathered		3	0 50 0	50
4	N4					4	0 50 0	50
5	N5					5	0 50 0	50
6	N6					6	0 50 0	50
7	N7					7	0 50 0	50
8	N8					8	0 50 0	50
9	N9					9	0 50 0	50
10	N10					10	0 50 0	50
11	N11					11	0 50 0	50
12	N12					12	0 50 0	50
13	N13					13	0 50 0	50
14	N14					14	0 50 0	50
15	N15					15	0 50 0	50
16	N16					16	0 50 0	50
17	N17					17	0 50 0	50
18	N18					18	0 50 0	50
19	N19					19	0 50 0	50
20	N20			andesite relatively grassy weakly weathered soft/medium hard rock blackish gray/black colored		20	0 50 0	50
21	N21					21	0 50 0	50
22	N22					22	0 50 0	50
23	N23					23	0 50 0	50
24	N24					24	0 50 0	50
25	N25					25	0 50 0	50
26	N26					26	0 50 0	50
27	N27					27	0 50 0	50
28	N28					28	0 50 0	50
29	N29					29	0 50 0	50
30	N30					30	0 50 0	50

30.00 m : End of borehole.

Depth (m)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu
1	0.0	31.9	68.1					5.0	47.4								
2	0.0	82.7	17.4						47.6								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
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29																	
30																	

Depth (m)	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1													1
2													2
3													3
4													4
5													5
6													6
7													7
8													8
9													9
10													10
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24													24
25													25
26													26
27													27
28													28
29													29
30													30

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
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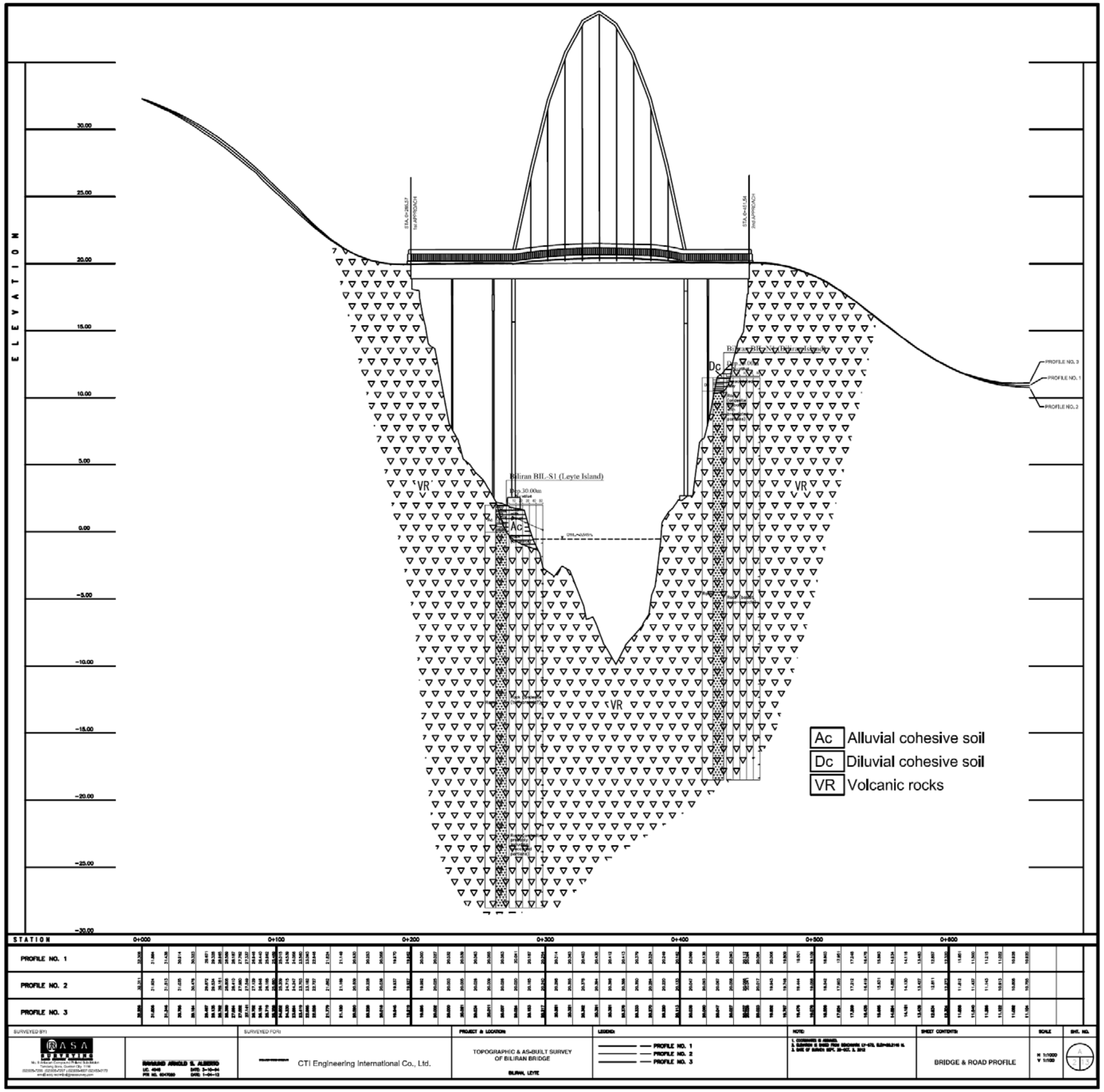
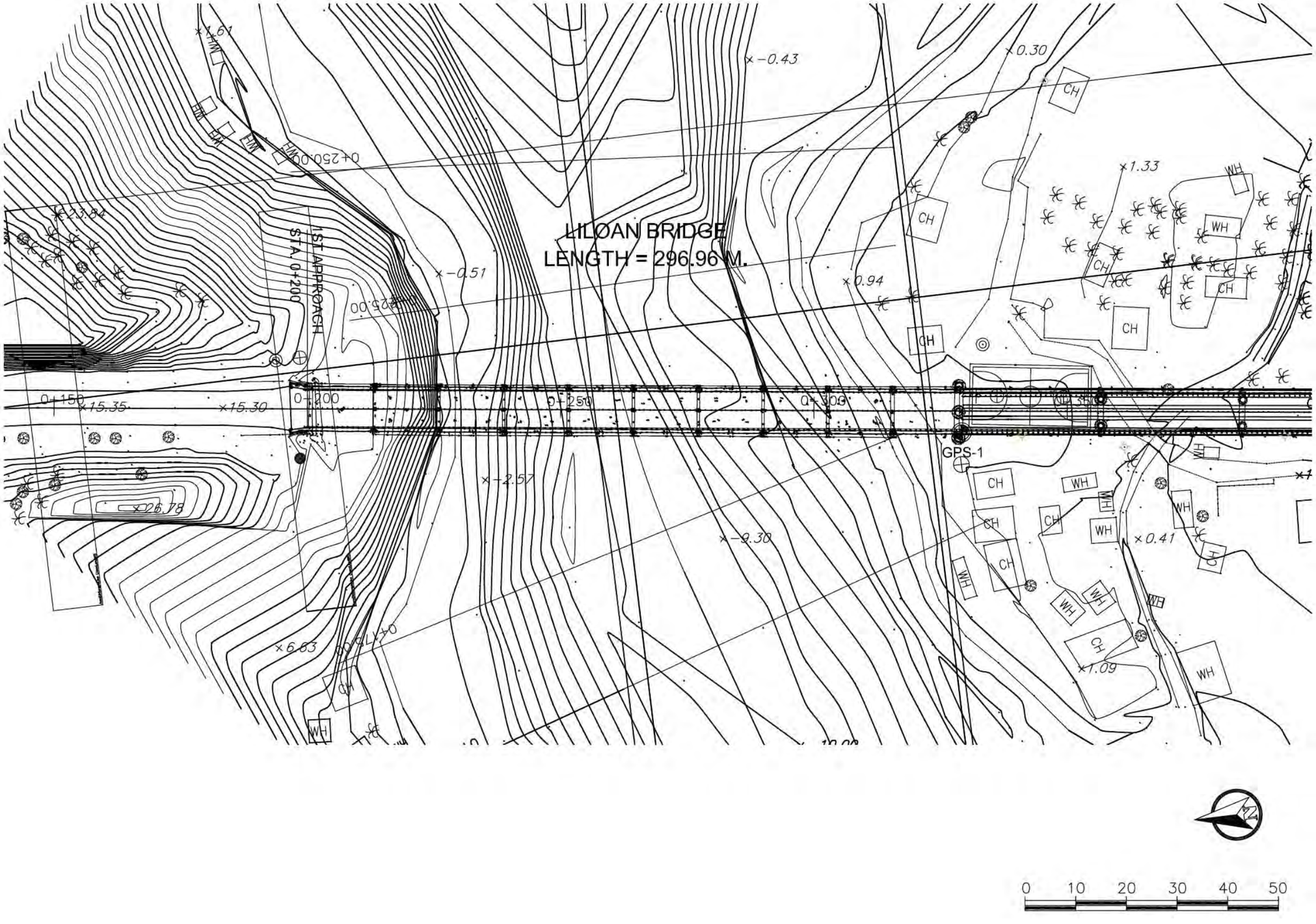
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress



ELEVATION
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
Biliran BIL-S1 (Leyte Island)
VR
Ac
Dc
Ac Alluvial cohesive soil
Dc Diluvial cohesive soil
VR Volcanic rocks
STATION
0+000
0+100
0+200
0+300
0+400
0+500
0+600
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
CTI Engineering International Co., Ltd.
TOPOGRAPHIC & AS-BUILT SURVEY OF BILIRAN BRIDGE
BRIDGE & ROAD PROFILE

6) Liloan Bridge



Jica Study Team
CTII, CHODAI, and Nippon Koei
LIL-N1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG

Elevation:
Location: Liloan Bridge (North side)

LIL-N1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm) 0 10 20 30 40 50	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Specific density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu_r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm^2/s	M MPa	Pc kPa	Depth (m)
1	N1			Sandy silt (residual soil as weathered limestone) white colored relatively high water content	-	1	19 50 0	50	0.0	86.4	13.6						25.9																						1
2	N2					2	0 50 0	50																														2
3	N3	2.60 2.50				3	0 50 0	50																														3
4	N4			Limestone coral/silty-sandy limestone relatively high porosity including fossils and calcite soft rock CL class		4	0 50 0	50																														4
5	N5					5	22 25 25	50																														5
6	N6					6	18 50 0	50																														6
7	N7					7	0 50 0	50																														7
8	N8					8	0 50 0	50																														8
9	N9					9	0 50 0	50																														9
10	N10					10	0 50 0	50																														10
11	N11					11	0 50 0	50																														11
12	N12					12	0 50 0	50																														12
13	N13					13	0 50 0	50																														13
14	N14					14	0 50 0	50																														14
15	N15					15	0 50 0	50																														15
16	N16				-	16	0 50 0	50																														16
17	N17					17	0 50 0	50																														17
18	N18					18	0 50 0	50																														18
19	N19					19	0 50 0	50																														19
20	N20					20	0 50 0	50																														20
21	N21					21	0 50 0	50																														21
22	N22					22	0 50 0	50																														22
23	N23					23	0 50 0	50																														23
24	N24					24	0 50 0	50																														24
25	N25					25	0 50 0	50																														25
26	N26					26	0 50 0	50																														26
27	N27					27	0 50 0	50																														27
28	N28					28	0 50 0	50																														28
29	N29					29	0 50 0	50																														29
30	N30					30	0 50 0	50																														30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
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CU: Consolidated sample, undrained loading conditions
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CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

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Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, and Nippon Koei
LIL-S1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Mawo Bridge (South side)

LIL-S1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Specific density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Gravel probably including boulders of andesite Dark-gray colored		1	0 50 0	50																													1
2	N2					2	0 50 0	50																													2
3	N3	3.00		Coarse to medium sand relatively high water content including broken shell fragments Blackish-gray/dark-gray colored		3	16 20 20	40	0.0	99.1	0.9						30.2																			3
4	N4					4	12 16 17	33	0.0	99.5	0.5						26.7																			4
5	N5			Gravel probably including boulders of andesite dark-gray colored		5	0 50 0	50																												5
6	N6			Sand with gravel mainly medium to fine sand including 10-5 mm gravel		6	14 16 16	32	8.7	90.6	0.7						18.1																			6
7	N7					7	0 50 0	50																												7
8	N8			Gravel including probably boulders of andesite blackish-gray colored		8	0 50 0	50																												8
9	N9					9	0 50 0	50																												9
10	N10			Sandy gravel mainly coarse sand including broken shell/coral fragments moderate water content blackish gray colored		10	0 50 0	50	25.2	74.6	0.2						11.1																			10
11	N11					11	0 50 0	50																												11
12	N12			Gravel probably including boulders of andesite		12	0 50 0	50																												12
13	N13			Sandy gravel including broken coral/shell fragments moderate water content blackish-gray colored		13	0 50 0	50	24.7	75.1	0.2						12.3																			13
14	N14			Gravelly sand sometme sandy gravel mainly coarse to medium sand relatively poor in broken coral/shell fragments		14	23 50 0	50	4.4	95.4	0.2						9.3																			14
15	N15					15	19 50 0	50	33.3	66.5	0.2						10.1																			15
16	N16					16	0 50 0	50																												16
17	N17					17	17 50 0	50	9.0	90.8	0.2						17.4																			17
18	N18					18	22 50 0	50	18.6	81.2	0.2						18.6																			18
19	N19					19	0 50 0	50																												19
20	N20					20	17 50 0	50	7.5	92.2	0.2						23.2																			20
21	N21			Sandy gravel probably including boulders of basalt relatively low to moderate water content blackish gray colored		21	18 50 0	50	22.2	77.2	0.6						10.7																			21
22	N22					22	0 50 0	50																												22
23	N23			Sand medium to fine sand rich in broken coral/shell fragments relatively low water content blackish-gray/dark-gray colored		23	27 50 0	50	17.7	82.1	0.2						0.1																			23
24	N24					24	0 50 0	50																												24
25	N25					25	25 50 0	50	19.9	80.0	0.2						6.6																			25
26	N26					26	0 50 0	50																												26
27	N27					27	0 50 0	50																												27
28	N28					28	22 50 0	50	19.7	80.1	0.2						7.6																			28
29	N29					29	12 50 0	50	29.7	70.2	0.2						6.6																			29
30	N30					30	14 50 0	50	16.7	83.1	0.2						5.7																			30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
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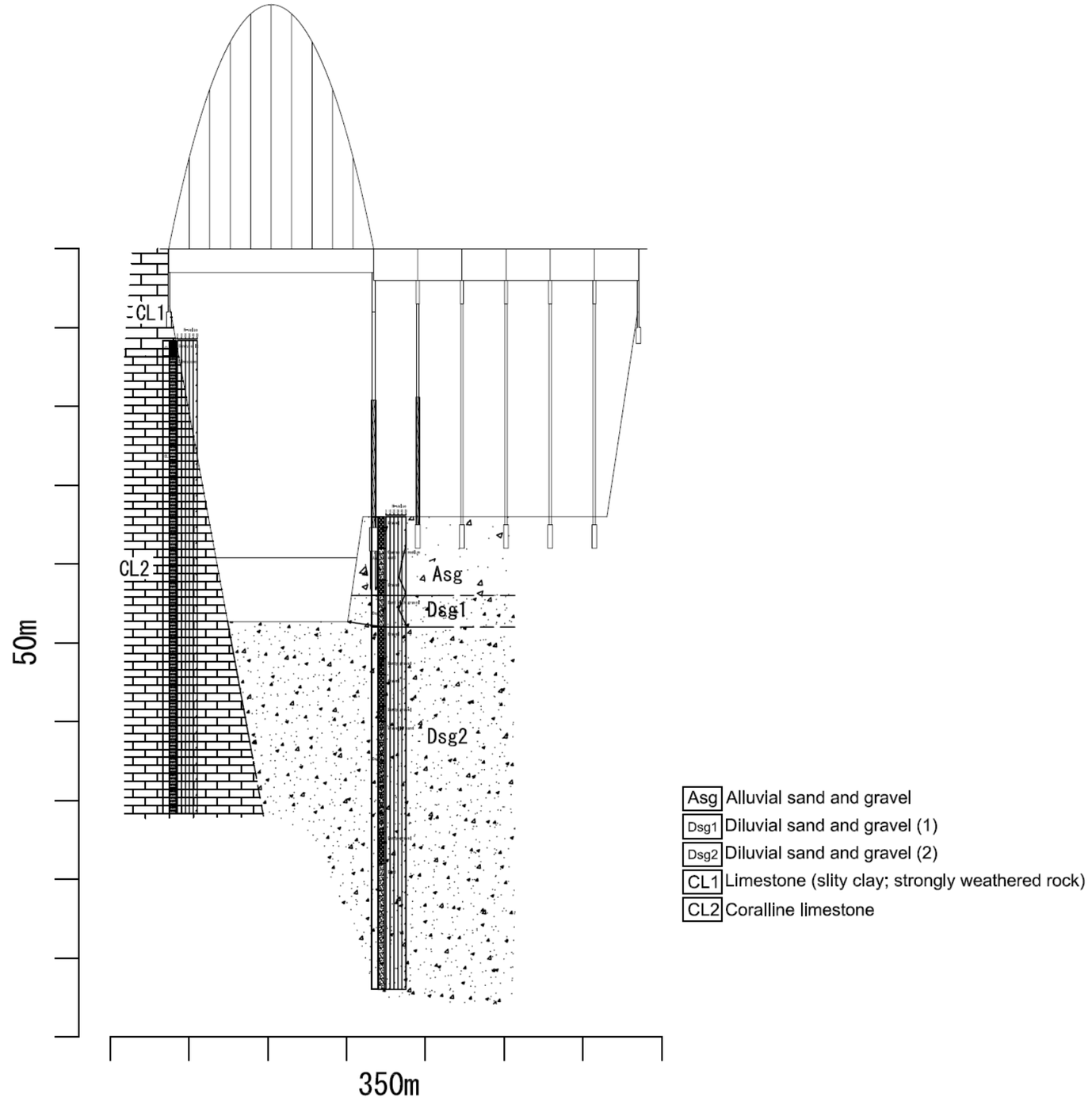
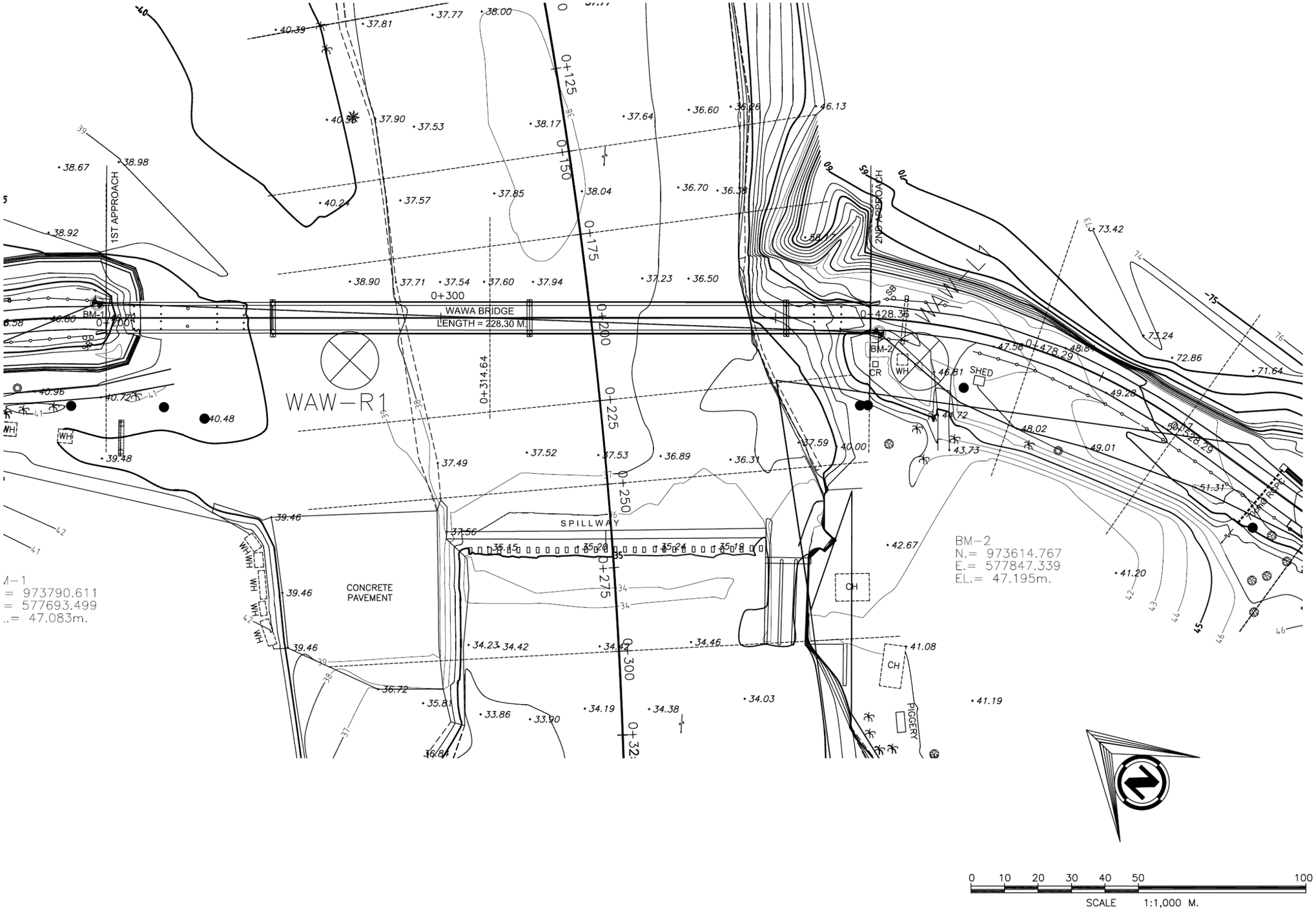
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress



Asg Alluvial sand and gravel
Dsg1 Diluvial sand and gravel (1)
Dsg2 Diluvial sand and gravel (2)
CL1 Limestone (slity clay; strongly weathered rock)
CL2 Coralline limestone

7) Wawa Bridge



Jica Study Team
CTII, CHODAI, Nippon Koei
WAW-L1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Wawa Bridge (left bank)

WAW-L1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	Specific density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Clay with gravel relatively low water content including gravels of 10-40 mm in diameter brownish-gray colored		1	7 9 11	20	11.8	88.0	0.2						20.3																					1
2	N2					2	8 10 15	25	26.3	73.3	0.4						20.2																					2
3	N3					3	7 10 17	27	0.9	96.6	2.5						22.0																					3
4	N4					4	10 12 18	30	2.4	97.4	0.2						18.3																					4
5	N5			Clay with gravel including gravel of 20-30 mm in diameter relatively low water content blackish-brown colored		5	8 11 19	30	0.0	99.5	0.5						29.5																					5
6	N6					6	9 10 20	30	3.7	95.8	0.5						27.4																					6
7	N7			Clay with gravel relatively high-moderate water content dark-gray/blackish-gray colored		7	10 15 25	40	0.0	11.1	89.0					10.0	32.3																					7
8	N8					8	10 19 30	49	0.0	99.5	0.5						41.1																					8
9	N9					9	0 50 0	50	0.0	99.7	0.3						43.8																					9
10	N10			Clay with gravel relatively high-moderate water content dark-gray/blackish-gray colored medium soft/hard		10	12 15 35	50	0.0	99.7	0.3						42.4																					10
11	N11					11	11 17 33	50	0.0	5.6	94.5					19.0	46.1																					11
12	N12					12	0 50 0	50	0.0	8.8	91.2					10.0	40.9																					12
13	N13			Clay with gravel relatively high-moderate water content dark-gray/blackish-gray colored relatively hard		13	0 50 0	50	0.0	3.4	96.6					30.0	33.1																					13
14	N14					14	0 50 0	50	0.0	1.9	98.1					14.0	38.1																					14
15	N15	15.40 15.00				15	0 50 0	50	0.0	1.6	98.4					11.0	25.3																					15
16	N16			Clay relatively high water content greenish-gray colored		16	10 11 30	41	0.0	3.0	97.0					22.0	26.2																					16
17	N17					17	10 10 35	45	0.0	1.3	98.7					11.0	30.6																					17
18	N18			Clay relatively low water content bluish-gray/greenish-gray colored soft-hard, sometime consolidated		18	12 14 30	44	0.0	3.3	96.8					12.0	27.5																					18
19	N19					19	12 15 27	42	0.0	11.7	88.3					11.0	30.6																					19
20	N20					20	15 15 35	50	0.0	33.3	66.7					18.0	26.3																					20
21	N21					21	20 21 32	53	0.0	31.4	68.6					8.0	44.3																					21
22	N22			Clay somtime with gravel medium-soft hard dark-greenish-gray colored moderate water content relatively consolidated below -29 m		22	21 23 30	53	0.0	89.2	10.8						47.8																					22
23	N23					23	20 25 27	52	0.0	5.3	94.8					5.0	44.1																					23
24	N24					24	21 26 25	51	0.0	8.7	91.3					9.0	47.1																					24
25	N25					25	22 25 33	58	0.0	6.4	93.6					4.0	51.3																					25
26	N26					26	23 27 34	61	0.0	9.7	90.3					6.0	26.7																					26
27	N27					27	25 25 30	55	0.0	5.6	94.4					17.0	42.0																					27
28	N28					28	20 26 25	51	0.0	10.5	89.5					14.0	30.6																					28
29	N29					29	22 27 36	63	0.0	99.6	0.4					7.0	34.3																					29
30	N30					30	25 36 35	71	0.0	97.4	2.6					22.0	28.8																					30

30.00 m : End of borehole.

Drawing scale: 1/200

ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu,r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress

Jica Study Team
CTII, CHODAI, Nippon Koei
WAW-R1

PROJECT: The Project for the Study on Improvement of the Bridges through Disaster Mitigating Measures for the Large-Scale Earthquake in the Republic of Philippines

DATE: 2012/11/06
Drill: Eascon Mla.Const. Co. Inc.
Prepared by: Kenichi TANAKA

GEOTECHNICAL BOREHOLE LOG
Elevation:
Location: Wawa Bridge (right bank)

WAW-R1

Depth (m)	Technical log & Sampling	Ground water table	Stratigraphy	Soil description & Classifiaction	Classification	Depth (m)	Standard Penetration Test: Blows per 15cm	Standard Penetration Test: N (blows/30cm)	Grain size analysis: Gravel	Sand	Fines < 76 µm	Clay < 2 µm	% Organics	Atterberg lim.: Liquit limit WL	Plastic limit WP	Plasticity index IP	Physical Characteristics: Water content w%	Bulk density g	Dry density gd	G Spec. density G	Void ratio e	Saturat. degree Sr%	Vane Test: Cu	(remoulded) Cu,r	Strength (kPa) qu	Shear Test: phi' deg	c' kPa	Triaxial Compression Test: Test type	phi deg	c kPa	phi' deg	c' kPa	1D Consolidation Test: Cc	Cs	Cv cm²/s	M MPa	Pc kPa	Depth (m)
1	N1			Gravel with clay relatively high water content including gravels of 15 mm brownish-gray/yellowish -gray colored		1	4 4 8	12																													1
2	N2					2	7 10 10	20																													2
3	N3					3	9 9 12	21																													3
4	N4	3.30 1.20				4	8 10 10	20																													4
5	N5			Very fine sand with gravel and clay brownish-gray/yellowish -gray colored relatively low water content (probably strongly weathered sandstone)		5	10 9 14	23																													5
6	N6					6	11 17 30	47																													6
7	N7					7	15 18 27	45																													7
8	N8					8	16 18 24	42																													8
9	N9					9	19 19 25	44																													9
10	N10			Clay relatively low water content sometime consolidated dark-gray/greenish-gray colored		10	20 23 28	51																													10
11	N11					11	11 19 27	46																													11
12	N12					12	13 21 39	60																													12
13	N13			Clay with rock fragments relatively high water content greenish-gray colored		13	17 20 27	47																													13
14	N14			Clay with gravel relatively low water content greenish-gray/blackish-gray colored		14	16 24 33	57																													14
15	N15					15	20 23 28	51																													15
16	N16			(clay with rock fragments) no core recovered		16	24 27 35	62																													16
17	N17					17	26 32 37	69																													17
18	N18			Consolidated clay greenish-gray/blackish-gray colored		18	27 23 40	63																													18
19	N19					19	35 38 31	69																													19
20	N20			Clay with gravel relatively high water content including gravels of 10-30 mm in diameter (probably sheared/fractured clayey/silty rocks) blackish-gray/greenish-gray colored		20	32 34 26	60																													20
21	N21					21	33 50 0	50																													21
22	N22					22	0 50 0	50																													22
23	N23					23	48 50 0	50																													23
24	N24					24	0 50 0	50																													24
25	N25					25	46 50 0	50																													25
26	N26					26	0 50 0	50																													26
27	N27					27	0 50 0	50																													27
28	N28					28	0 50 0	50																													28
29	N29					29	0 50 0	50																													29
30	N30					30	0 50 0	50																													30

30.00 m : End of borehole.

Drawing scale: 1/200

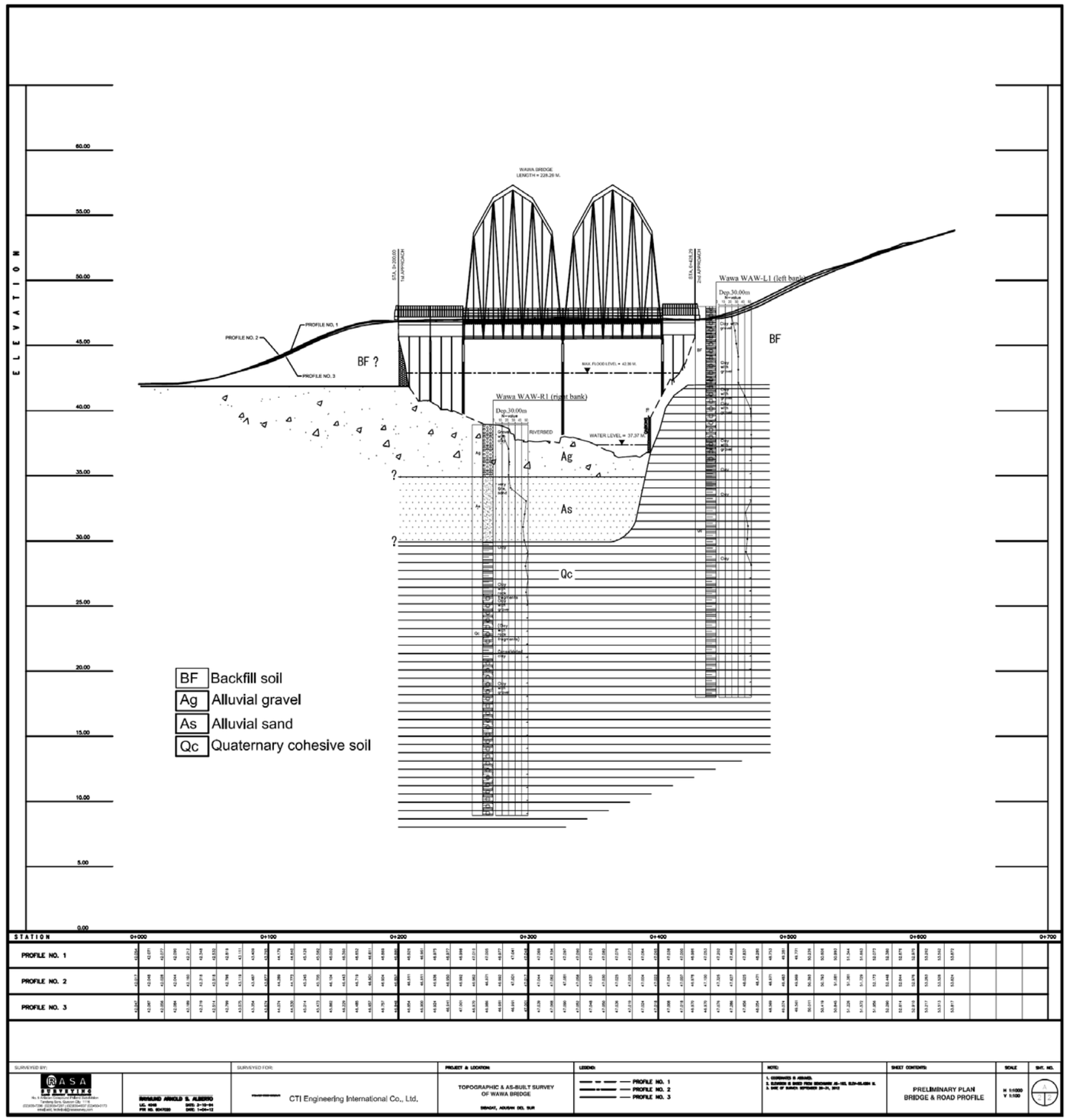
ABBREVIATIONS

D: Disturbed core barel sample
C: Dry core barrel sample
U: Undisturbed stationary double tube sample
N: Split spoon sample

g: Bulk density (kN/m³)
gd: Dry density (kN/m³)
G: Specific density (kN/m³)
Cu - Cu_r: Undrained strength form VST (kPa)
qu: Unconfined compression strength (kPa)

CU: Consolidated sample, undrained loading conditions
UU: Unconsolidated sample, undrained loading conditions
CUPP: Consolidated sample, undrained loading conditions with pore pressure measurements
CD: Consolidated sample, drained loading conditions
phi, c: Friction angle, cohesion (total values)

phi', c': Friction angle, cohesion (effective values)
Cc, Cs: Compression index (loading, unloading)
Cv: Consolidation coefficient
M: Compression modulus
Pc: Effective preconsolidation stress


ELEVATION
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
WAWA BRIDGE
LENGTH = 228.26 M.
1st APPROACH
2nd APPROACH
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
BF ?
BF
MAX. FLOOD LEVEL = 43.56 M.
WATER LEVEL = 37.37 M.
REVERSED
Wawa WAW-L1 (left bank)
Wawa WAW-R1 (right bank)
Dep.30.00m
Ag
As
Qc
BF Backfill soil
Ag Alluvial gravel
As Alluvial sand
Qc Quaternary cohesive soil
STATION
0+000
0+100
0+200
0+300
0+400
0+500
0+600
0+700
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
SURVEYED BY:
RASA SURVEYING
SURVEYED FOR:
CTI Engineering International Co., Ltd.
PROJECT & LOCATION:
TOPOGRAPHIC & AS-BUILT SURVEY OF WAWA BRIDGE
BINGHAY, AGUSAN DEL SUR
LEGEND:
PROFILE NO. 1
PROFILE NO. 2
PROFILE NO. 3
NOTE:
SHEET CONTENTS:
PRELIMINARY PLAN
BRIDGE & ROAD PROFILE
SCALE
H 1:1000
V 1:100
SHT. NO.

APPENDIX 3-B

DETAILED RESULTS FOR FIRST SCREENING OF CANDIDATE BRIDGES

(1) Package B

1) Delpan Bridge

BRIDGE SEISMIC INVENTORY DATA									
A. GENERAL									
(1) Bridge Name:	*Delpan Bridge (Downstream)*					(2) Posted Load Limit	*20*	tons	
(3) Location:	km.:		Route:	*Bonifacio Drive*		Prov./ City	*P ort Area*		
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )								
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?	Yes( ) No( )				
(8) Alignment:	Straight , Curved, (Radius) _____m	Skewed, (Skew Angle) 30°							
(9) No. of Spans:	*5*	(10) Span Lengths	*26.65+46.0+57.60+46.0+26.65*			(11) Total Length:	*202.9*		
(121) Left Sidewalk Width:	*1.6*	(13) Carriageway Width:	*17.32*	(14) Right Sidewalk Width:	*1.6*				
(15) Overall Width (including sidewalk):						(16) Year Built:	*1 965(1988)*		
(17) As-builts or design drawings available?	Yes No								
(18) Design calculations available?	Yes No								
(19) Structure hydraulically adequate?	Yes No Don't know ()								
(21) Seismically Retrofitted?	Yes No Description (But some are stolen)								
B. SUPERSTRUCTURE									
(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG (Gerber Box Girder), Others( )								
(24) Number of Girders/Span:	*Box Girder 1, PCI Girder 7*	(25) Continuous?	Yes No						
(26) Number of Expansion Joints:	*6*	(27) Type of Expansion Joints:	Steel, Rubber, Seam	*–*					
C. BEARINGS									
(28) Bearing Type:	Roller, Rocker, Rubber, Others (Pier: Steel)			Condition:	Functioning( ) Not Functioning ( )				
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):							
(31) Seating Length (Longi, Trans) :	Abutments:	*1 .3, 0.7*	Piers:		Hinges:	*1*			
D. ABUTMENTS									
(32) Type:	*Wall Type*		(33) Height:	*4.8*					
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)		(35) Wingwall Lengths	L:		R:			

E. COLUMNS AND PIERS

(36) Column Type:	*Wall type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing	On Piles	Others ( )	

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

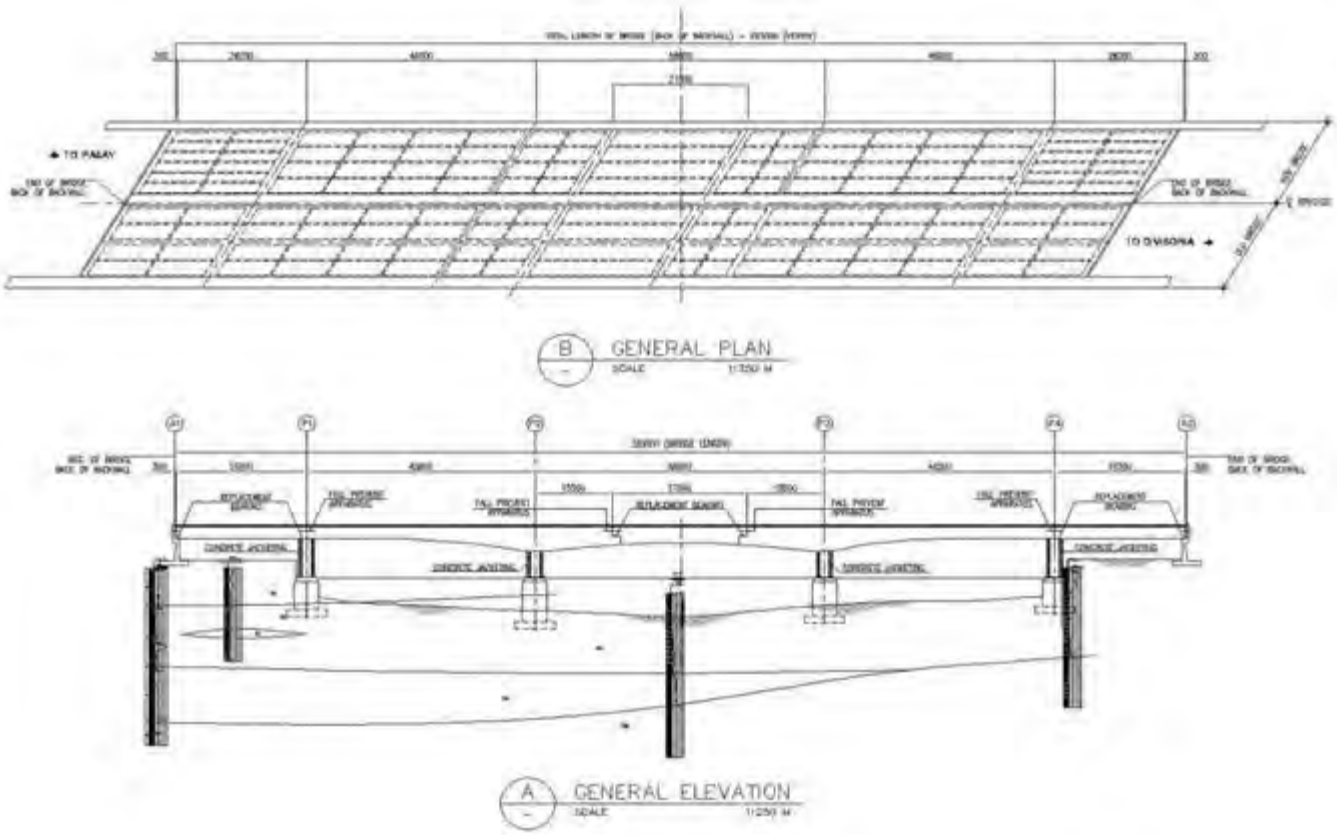
G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 

Bridge Profile



Main Features of the Bridge

2) Jones Bridge

BRIDGE SEISMIC INVENTORY DATA									
A. GENERAL									
(1) Bridge Name:	*Jones Bridge*				(2) Posted Load Limit		tons		
(3) Location:	km.:		Route:			Prov./ City			
(4) Crossing Condition:	(Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )								
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?	Yes( ) No( )				
(8) Alignment:	(Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°								
(9) No. of Spans:	*3*	(10) Span Lengths	*35.51+43.40+35.50*		(11) Total Length:	*114.41*			
(121) Left Sidewalk Width:	*2.35*	(13) Carriageway Width:	*16.5*		(14) Right Sidewalk Width:	*2.35*			
(15) Overall Width (including sidewalk):	*21.2*				(16) Year Built:	*1948*			
(17) As-built or design drawings available?	Yes (No)								
(18) Design calculations available?	Yes (No)								
(19) Structure hydraulically adequate?	(Yes) No Don't know ()								
(21) Seismically Retrofitted?	Yes (No) Description								
B. SUPERSTRUCTURE									
(23) Superstructure Type:	Steel Truss, (Steel Girder,) RCDG, PSCG, Others( )								
(24) Number of Girders/Span:	*8*	(25) Continuous?	(Yes) No						
(26) Number of Expansion Joints:	*2*	(27) Type of Expansion Joints:	(Steel,) Rubber, Seam						
C. BEARINGS									
(28) Bearing Type:	Roller,(Rocker,) Rubber, Others ( )				Condition:	Functioning( ) Not Functioning ( )			
(29) Type of Restraint (Transverse):	*C oncrete Block*				(30) Type of Restraint (Longitudinal):				
(31) Seating Length (Longi, Trans) :	Abutments:	*0.9, 0.8*	Piers:	*0.7, 1.0*	Hinges:				
D. ABUTMENTS									
(32) Type:	*Wall*		(33) Height:						
(34) Foundation Type:	(Spread Footing,) On Piles, Others (RCP)		(35) Wingwall Lengths	L:		R:			

E. COLUMNS AND PIERS

(36) Column Type:	*Wall*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles	Others (*Caisson*)		

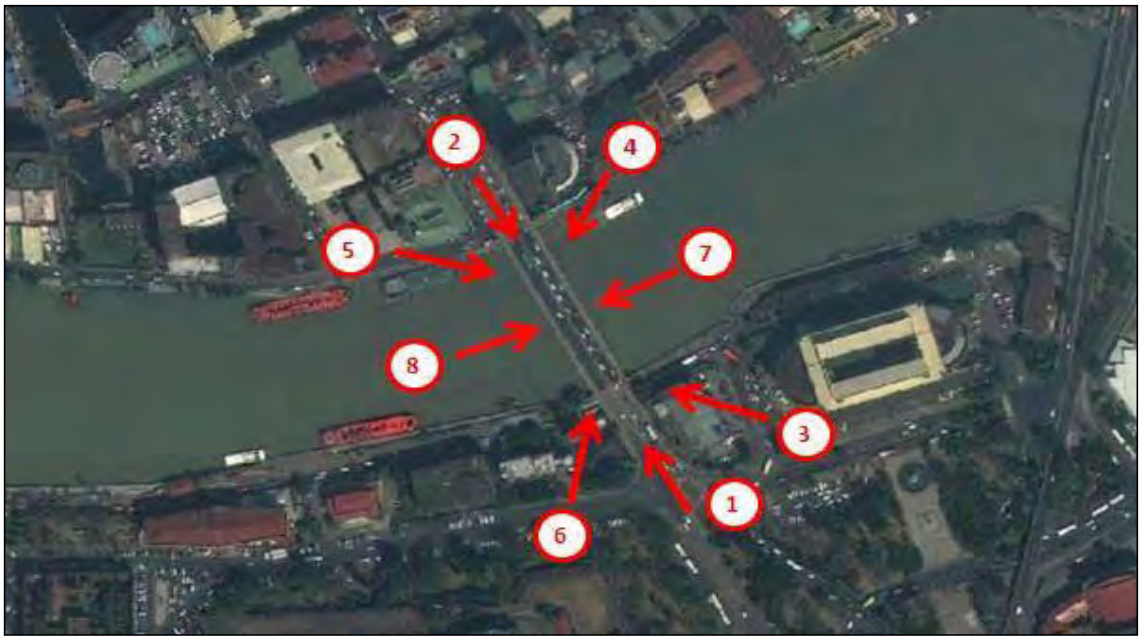
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 
9. 	10. 

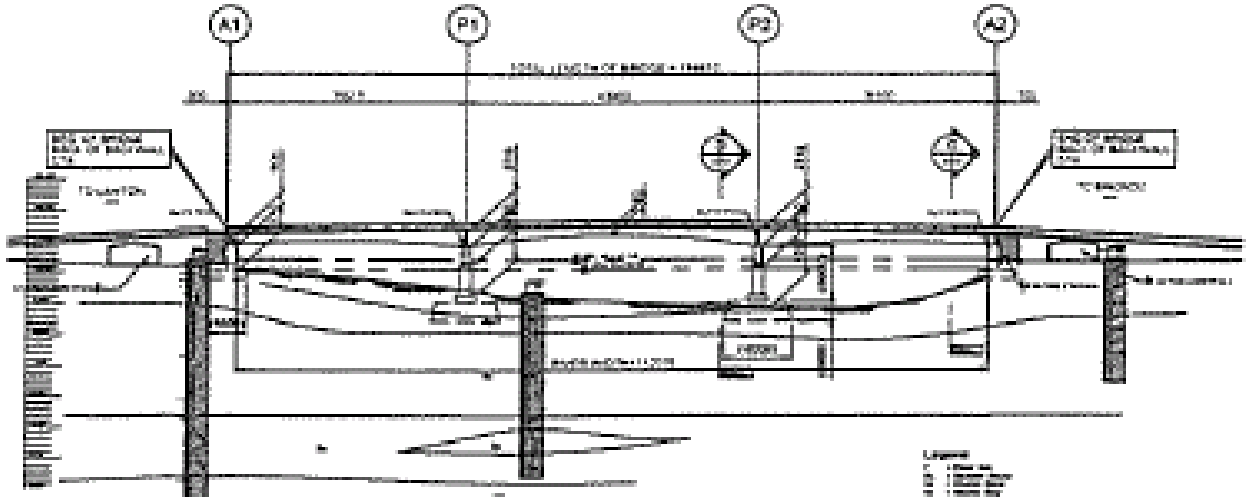
Main Viewpoints of the Bridge

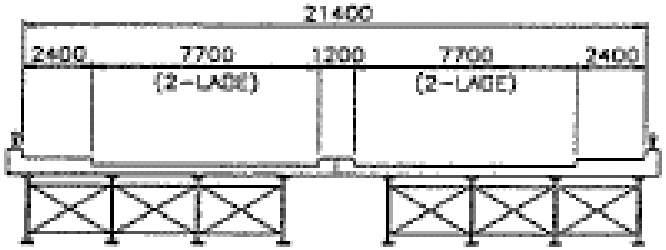
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Most of cracks are less than width 0.3mm but several cracks are long and more than 1mm are observed.
	Water leaking		At several cracks portion or cold joints, water leaking is observed.
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		Corrosion is occurred at end girder portion.
	Paint Peel off		Paint peel off is entirely progressing on steel girders.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Shoe/Bearing	Corrosion		All steel bearings are considerably corroded.
Abutments	Cracking concrete		Many vertical clacks are observed.
Piers	Cracking concrete		A few vertical cracks are observed on concrete wall between pier columns
Curb and Railing (Secondary)	Cracking		Many cracks are occurred on newly repaired walkway.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Expansion Joint	Water leaking		Water leaking from expansion joint at both abutments is observed.
	Displacement		Cover of expansion joint is displaced.

Bridge Profile





Main Features of the Bridge

3) McArthur Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*McAurthur Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Rizal St.*		Prov./ City	*M anila*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)^{o}						
(9) No. of Spans:	*3*	(10) Span Lengths	*3 7.3+40.3+37.0*		(11) Total Length:	*114.6*	
(121) Left Sidewalk Width:	*1.8*	(13) Carriageway Width:	*6.70+6.70*	(14) Right Sidewalk Width:		*1.8*	
(15) Overall Width (including sidewalk):	*17.6*				(16) Year Built:	*1948*	
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )				
(24) Number of Girders/Span:	*7*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*2*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others (Abut: Fix, Pier: Pin)		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	*C oncrete Block*	(30) Type of Restraint (Longitudinal):			
(31) Seating Length (Longi, Trans) :	Abutments: *1 .2, 0.8*	Piers: *0 .7, 0.7*	Hinges: *—*		

D. ABUTMENTS

(32) Type:	*Wall*	(33) Height:			
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:	R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Wall*		
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension	
(39) Height Range:		(40) Fixity:	Top Bottom Both
(41) Percentage of Longitudinal Reinforcement:			
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral
(43) Foundation Type:	Spread Footing On Piles Others ( )		

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

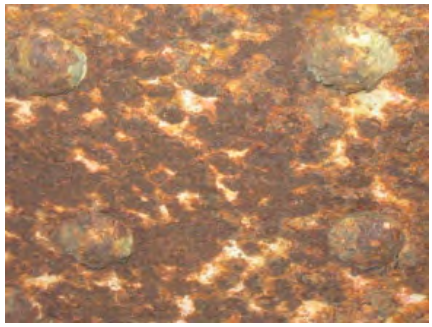
G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 
9. 	10. 

Main Viewpoints of the Bridge

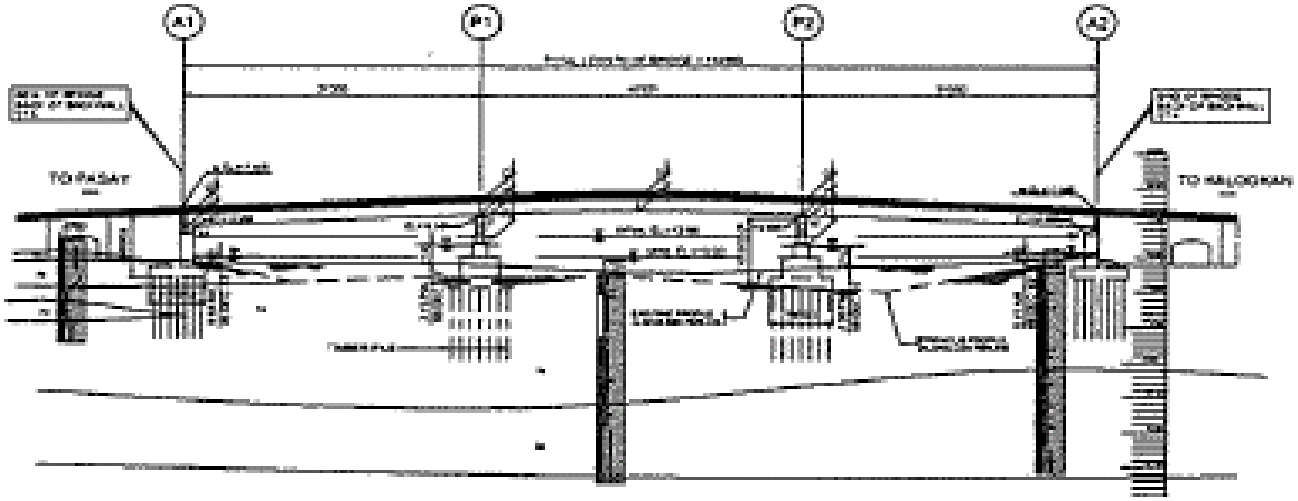
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks with width less than 1mm are observed in a ratio of 20% of deck slab and water leaking is occurred on a part of cracks.
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		Corrosion on steel members is progressing, especially; Gusset plates and lower flanges are severely corroded.
	Deformation/Buckling		Lower flange of Plate girder is deformed due to impact of ship.
	Paint Peel off		Paint peel off is entirely observed on the steel plate girders. (Poor Condition)

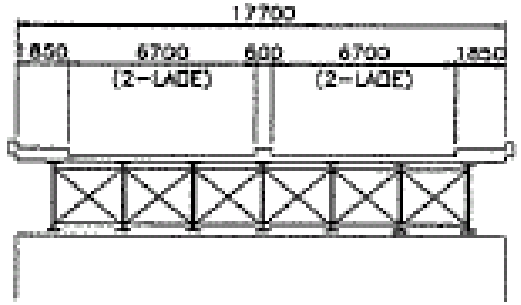
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Shoe/Bearing	Corrosion		Steel bearings are severely corroded and stopped sliding function properly.
	Abnormal Displacement		Some of steel bearings are displaced abnormally.
Abutments	Cracking concrete		Several long cracks with width more than 1mm are observed horizontally.
	Honeycomb		A few honeycombs caused by unskilled workman ship are observed.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Spalling, Scaling,Disintegration		Scaling due to scratching by ship on the pier concrete surface is observed.
	Cracking concrete		Many cracks with width less than 1mm are observed vertically.
	Exposure/Corrosion of Reinf.		At some parts of spalling, Exposure/ Corrosion of Rebars is observed.
Expansion Joint (Primary)	Water leaking		Water leaking is observed at expansion joints.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Expansion Joint (Primary)	Displacement		Expansion joints are displaced.
Painting Cond. (Primary)	Discoloration		Discoloration due to paint peer off is observed.
	Rust		After Paint peel off, rusting is starting on the steel plate girders.

Bridge Profile





Main Features of the Bridge

4) Quezon Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Quezon Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Quezon Blvd.*		Prov./ City	*Quezon City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*1*	(10) Span Lengths	*102.4*		(11) Total Length:	*102.4*	
(121) Left Sidewalk Width:	*3*	(13) Carriageway Width:	*7.70+7.70*	(14) Right Sidewalk Width:	*3*		
(15) Overall Width (including sidewalk):	*21.9*			(16) Year Built:	*1946*		
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others(Steel Type Arch)				
(24) Number of Girders/Span:	*3*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*2*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others (Anchor)	Condition:	Functioning( ) Not Functioning ( )		
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):			
(31) Seating Length :	Abutments:		Piers:		Hinges:

D. ABUTMENTS

(32) Type:	*Wall*	(33) Height:			
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:	R:	

E. COLUMNS AND PIERS

(36) Column Type:	–			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II (III) IV Don't Know
(46) Liquefaction Potential:	(Yes) No Don't Know ( )
(47) Boring Data Available:	(Yes) No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

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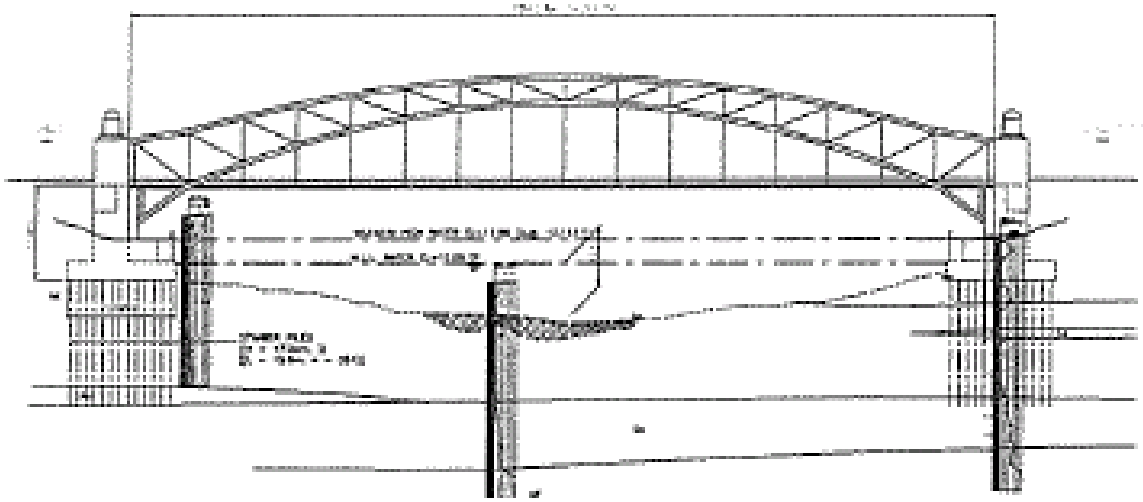
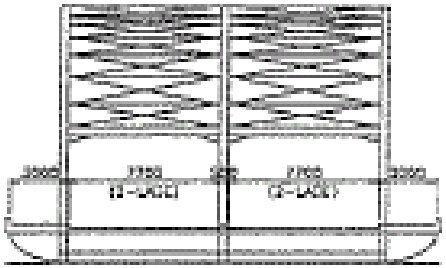
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Deck slab on main bridge is quite good condition but some cracks are detected.
	Waterleaking		At end portion of deck slab, waterleaking is detected.
Concrete Beam/ Girder (Approach Bridge) (Primary)	Cracking		Many cracks with width more than 1mm are observed on approach bridge girders.
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		Many gusset plates are corroded but members of arch bridge are good condition.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Deformation/Buckling		Gusset plate is deformed due to impact of bridge.
	Loose Connection		Some bolts are missing and loosing connection.
	Paint Peel off		Paint peels off on some arch members are deserved.
Abutments	Cracking concrete		Some cracks with width less than 1mm are observed vertically on abutment.

Bridge Profile





Main Features of the Bridge

5) Ayala Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Ayala Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:			Prov./ City	
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?	Yes( ) No( )		
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)^{o}						
(9) No. of Spans:	*2*	(10) Span Lengths	*61560+(4265)+73650*		(11) Total Length:	*139475*	
(121) Left Sidewalk Width:	*2335*	(13) Carriageway Width:	*8570+8550*	(14) Right Sidewalk Width:	*3685*		
(15) Overall Width (including sidewalk):	*25350*				(16) Year Built:		
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description (Retrofitted in 1999)						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )				
(24) Number of Girders/Span:	*3*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*3*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )			Condition:	Functioning( ) Not Functioning ( )
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):			
(31) Seating Length (Longi, Trans) :	Abutments: *1.8, 1.2*	Piers:		Hinges:	

D. ABUTMENTS

(32) Type:		(33) Height:			
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:	R:	

E. COLUMNS AND PIERS

(36) Column Type:			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension	
(39) Height Range:		(40) Fixity:	Top Bottom Both
(41) Percentage of Longitudinal Reinforcement:			
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral
(43) Foundation Type:	Spread Footing On Piles Others ( )		

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II (III) IV Don't Know
(46) Liquefaction Potential:	(Yes) No Don't Know ( )
(47) Boring Data Available:	(Yes) No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

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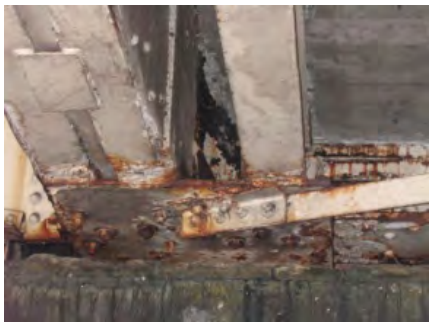
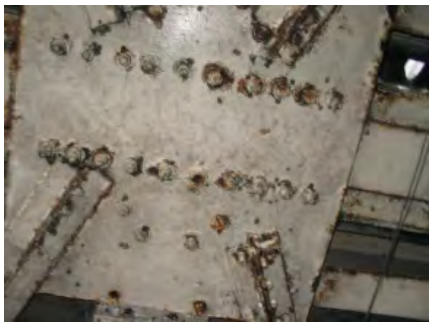
Main Viewpoints of the Bridge

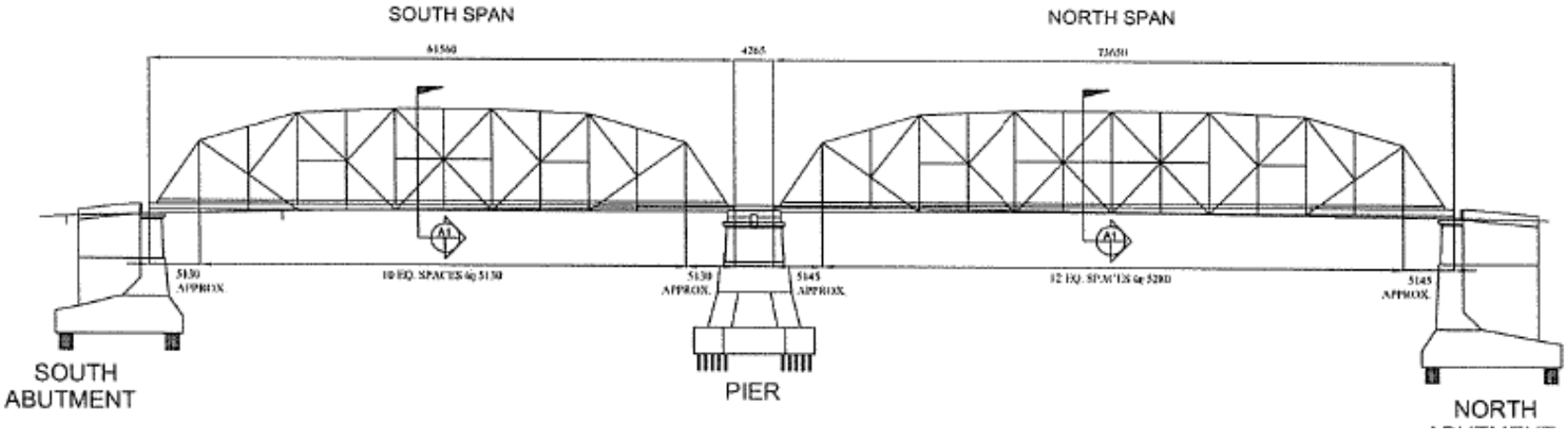
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Many cracks with width less than 0.3mm are observed on deck slab.
	Scaling/Spalling		Several small spallings are observed on the deck slab.
	Water leaking		Some portion of deck slab, cracks are combined with water leaking
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		Joints and bracing members are severely corroded and main truss members are also progressing corrosion.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Cracking/Fracture		Bracing members are fractured or cracking or missing due to impact of ship, especially flooring system.
	Deformation/Buckling		Many bracing members are deformed due to impact of ship.
	Loose Connection		Same bracing members are missing due to loose connection or broken by impact of ship.
	Paint Peel off		Paint of steel truss members are progressing peel off entirely.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Shoe/Bearing	Corrosion		Steel bearings, especially base plate and connection to truss members are severely corroded.
	Displacement		Slightly displacement of steel bearing is observed horizontally.
Abutments	Spalling, Scaling,Disintegration		Many spallings or scalings are observed on abutment.
	Cracking concrete		Many cracks with width less than 1mm are observed vertically and horizontally.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Piers	Spalling, Scaling,Disintegration		Large spallings/ disintegrations are observed on pier and degrade of concrete strength is predicted.
	Cracking concrete		Same cracks with width more than 1mm are observed vertically but crack is a little crack entirely.

Bridge Profile



Main Features of the Bridge

6) Nagtahan Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Nagtahan Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Nagtahan St.*		Prov./ City	*Sta. Mesa. Manila*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?	Yes( ) No( )		
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, 11°						
(9) No. of Spans:	*3*	(10) Span Lengths	*4 5.60+57.73+45.60*		(11) Total Length:	*148.93*	
(121) Left Sidewalk Width:	*1*	(13) Carriageway Width:	*11.1+11.1*	(14) Right Sidewalk Width:	*1*		
(15) Overall Width (including sidewalk):	*24.7*				(16) Year Built:	*1966*	
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )				
(24) Number of Girders/Span:	*10*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*2*	(27) Type of Expansion Joints:	Steel, Rubber, Seam	*–*	

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others (Steel)		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	*Concrete Block*	(30) Type of Restraint (Longitudinal):			
(31) Seating Length (Longi, Trans) :	Abutments:	*1.0, 1.0*	Piers:		Hinges:

D. ABUTMENTS

(32) Type:	*Wall*	(33) Height:			
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:	R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Wall*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

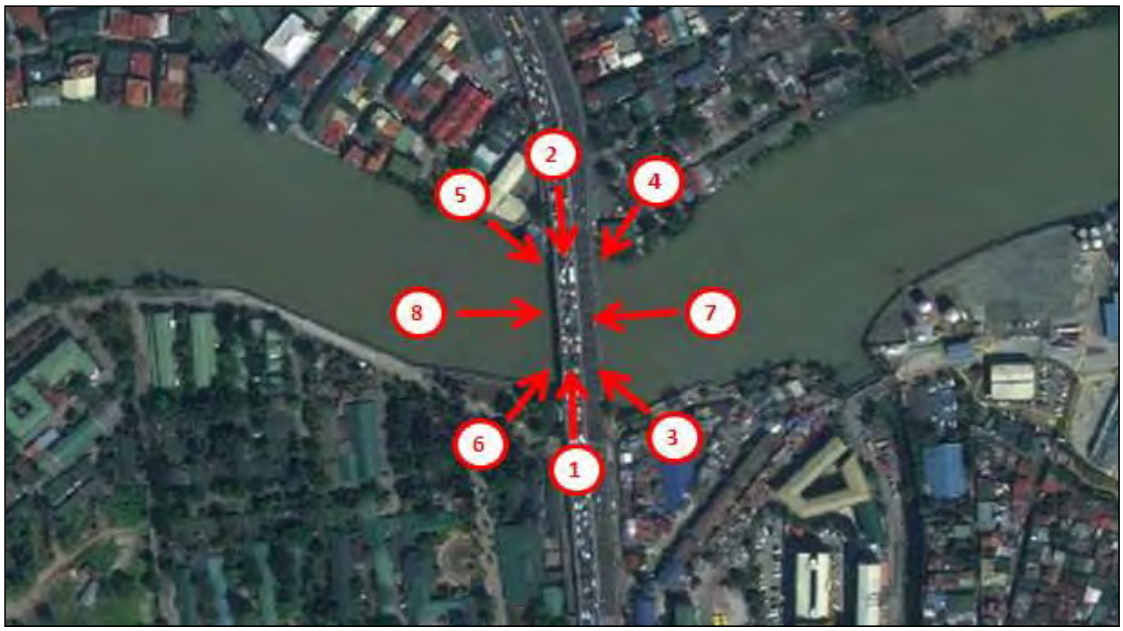
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



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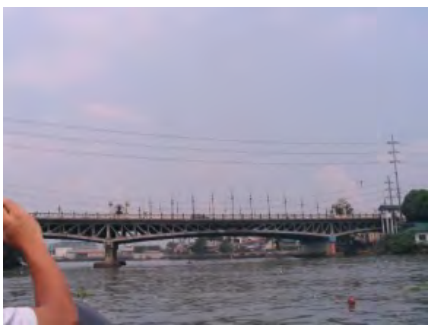
7. 	8. 
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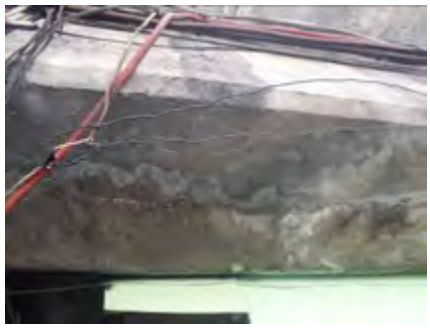
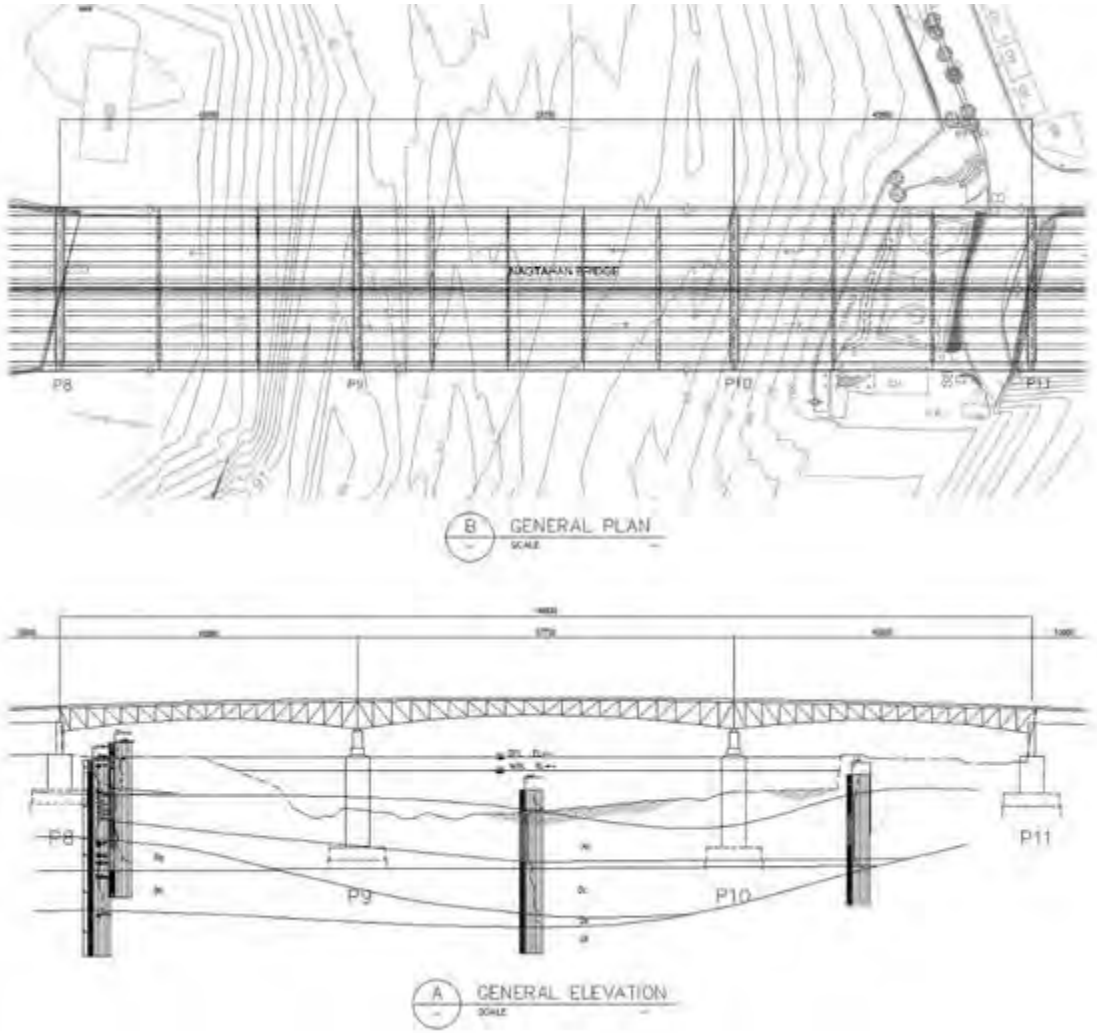
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Most of cracks are less than width 0.3mm but several cracks are long and more than 1mm are observed.
	Waterleaking		Waterleaking are observed at some parts of cracks at end of deck slab.
Concrete Beam/ Girder (Primary)	Cracking		Cracks with width less than 1mm are observed on half of girders.
	Spalling, Scaling, Disintegration		Spalling is observed at the connection between concrete girder and slab.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Delamination		Some delaminations are observed at the bottom of girders.
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		After paint peel off, some parts are corroded especially gusset plates.
	Paint Peel off		Paint peel off is observed overall steel truss members.
Shoe/Bearing	Corrosion		Steel bearing is slightly corroded.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Cracking concrete		Several cracks with width less than 1mm are observed.
	Spalling, Scaling,Disintegration		Some spallings are detected on pier.
	Exposure/Corrosion of Reinf.		Exposure of rebars due to scaling are observed pier wall.
Expansion Joint (Primary)	Water leaking		Water leaking from expansion joint at pier is observed.

Bridge Profile



Main Features of the Bridge

7) Pandacan Bridge

BRIDGE SEISMIC INVENTORY DATA								
A. GENERAL								
(1) Bridge Name:	*Pandacan Bridge (Nagtahan Link)*				(2) Posted Load Limit		tons	
(3) Location:	km.:		Route:	*PACO-STA. MESA Road*		Prov./ City	*P andacan*	
(4) Crossing Condition:	(Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )							
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	(Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°							
(9) No. of Spans:	*5*	(10) Span Lengths	*2 3.80+25.00+46.00+25.10+27.50*		(11) Total Length:		*147.4*	
(121) Left Sidewalk Width:	*1.2*	(13) Carriageway Width:	*6.5+6.5*		(14) Right Sidewalk Width:		*1.2*	
(15) Overall Width (including sidewalk):	*16.6*				(16) Year Built:		*1997*	
(17) As-builts or design drawings available?	(Yes) No							
(18) Design calculations available?	(Yes) No							
(19) Structure hydraulically adequate?	(Yes) No Don't know ()							
(21) Seismically Retrofitted?	Yes (No) Description							
B. SUPERSTRUCTURE								
(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, (PSCG, Others( )							
(24) Number of Girders/Span:	*6*	(25) Continuous?	Yes (No)					
(26) Number of Expansion Joints:		(27) Type of Expansion Joints:	Steel, Rubber, Seam		*–*			
C. BEARINGS								
(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )			Condition:	Functioning( ) Not Functioning ( )			
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):						
(31) Seating Length :	Abutments:		Piers:		Hinges:	*–*		
D. ABUTMENTS								
(32) Type:	***Column Bent with Diaghram Wall***	(33) Height:						
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:		R:			

E. COLUMNS AND PIERS

(36) Column Type:	*Column Bent*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

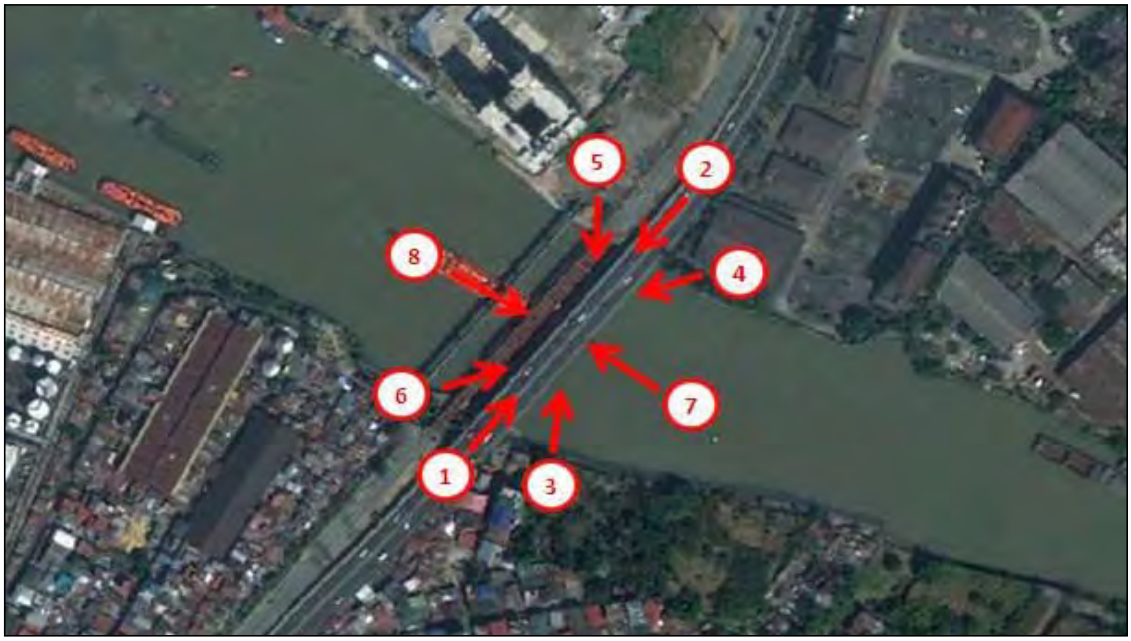
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I **II** III IV Don't Know
(46) Liquefaction Potential:	**Yes** No Don't Know ( )
(47) Boring Data Available:	**Yes** No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



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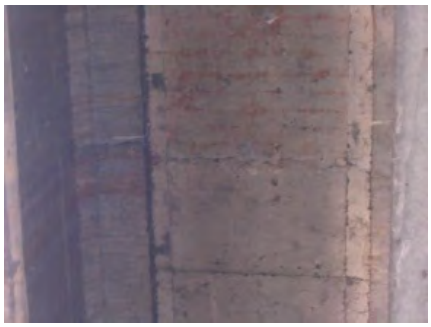
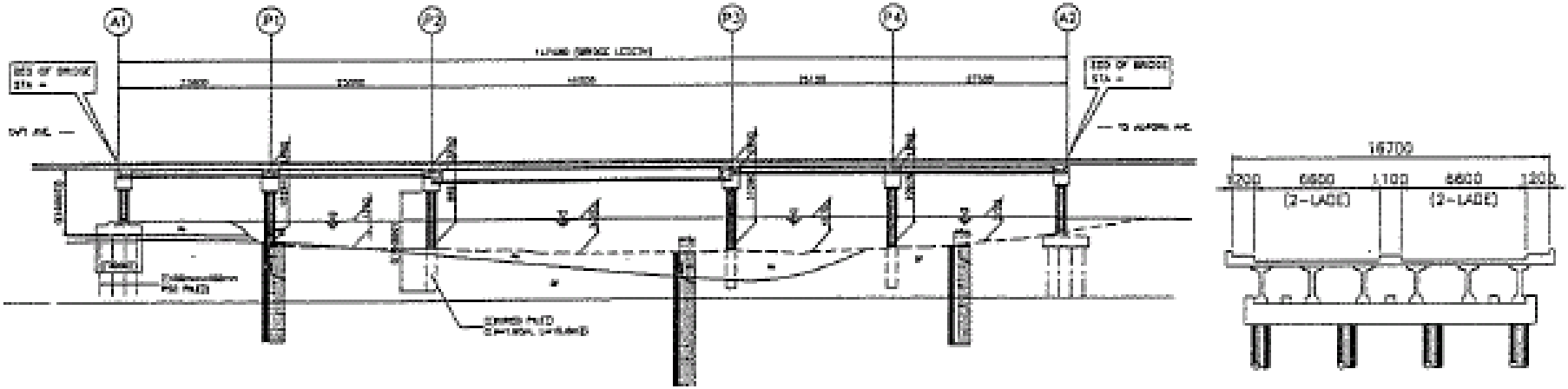
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Most of cracks are less than width 0.3mm but several cracks are long and more than 1mm are observed.
	Scaling/Spalling		A few spallings are observed on deck slab.
	Water leaking		At some parts of cracks, water leaking are observed
Concrete Beam/ Girder (Primary)	Cracking		A few Cracks with width less than 0.3mm are observed.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Exposure/Corrosion of Rebars		Exposure/Corrosion of Rebars caused by unskilled workmanship is observed.
Abutments	Cracking concrete		Many cracks are observed horizontally and vertically on abutment.
	Exposure/Corrosion of Reinf.		A few Exposure/ Corrosion of Rebar is observed on piers
Pier	Spalling, Scaling,Disintegration		Several spallings are observed on piers.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Cracking concrete		Shear crack is observed on pier wall.
	Exposure/Corrosion of Reinf.		Exposure/Corrosion of Rebars due to impact of ship is detected at pile cap.
Expansion Joint (Primary)	Waterleaking		Waterleaking is observed at expansion joints.
	Difference in elevation		Difference in elevation is occurred between bridge and approach slab.

Bridge Profile



Main Features of the Bridge

8) Lambingan Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Lambingan Bridge*				(2) Posted Load Limit	*15*	tons
(3) Location:	km.:		Route:	*New Panaderos St.*		Prov./ City	*Manila*
(4) Crossing Condition:	(Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*3*	(10) Span Lengths	*18.50+61.10+18.50*		(11) Total Length:	*98.1*	
(121) Left Sidewalk Width:	*1.5*	(13) Carriageway Width:	*10.0+10.0*	(14) Right Sidewalk Width:		*1.5*	
(15) Overall Width (including sidewalk):	*24*				(16) Year Built:	*1979*	
(17) As-builts or design drawings available?	Yes (No)						
(18) Design calculations available?	(Yes) No						
(19) Structure hydraulically adequate?	(Yes) No Don't know ()						
(21) Seismically Retrofitted?	Yes (No) Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, (PSCG(Gerber)), Others( )				
(24) Number of Girders/Span:	*12*	(25) Continuous?	Yes (No)		
(26) Number of Expansion Joints:		(27) Type of Expansion Joints:	Steel, Rubber, Seam	*–*	

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, (Rubber), Others ( )		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):			
(31) Seating Length :	Abutments:	*0.85*	Piers:	Hinges:	*0.5*

D. ABUTMENTS

(32) Type:	*Wall*	(33) Height:	*4.83*		
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:	R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Wall*		
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension	
(39) Height Range:		(40) Fixity:	Top Bottom Both
(41) Percentage of Longitudinal Reinforcement:			
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral
(43) Foundation Type:	Spread Footing On Piles Others ( )		

F. SITE

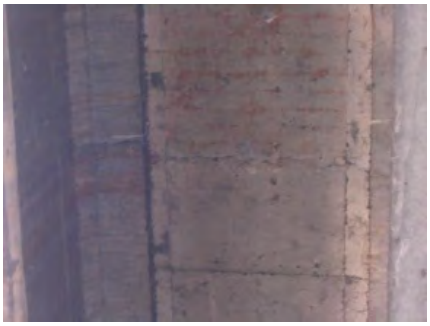
(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II (III) IV Don't Know
(46) Liquefaction Potential:	(Yes) No Don't Know ( )
(47) Boring Data Available:	(Yes) No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

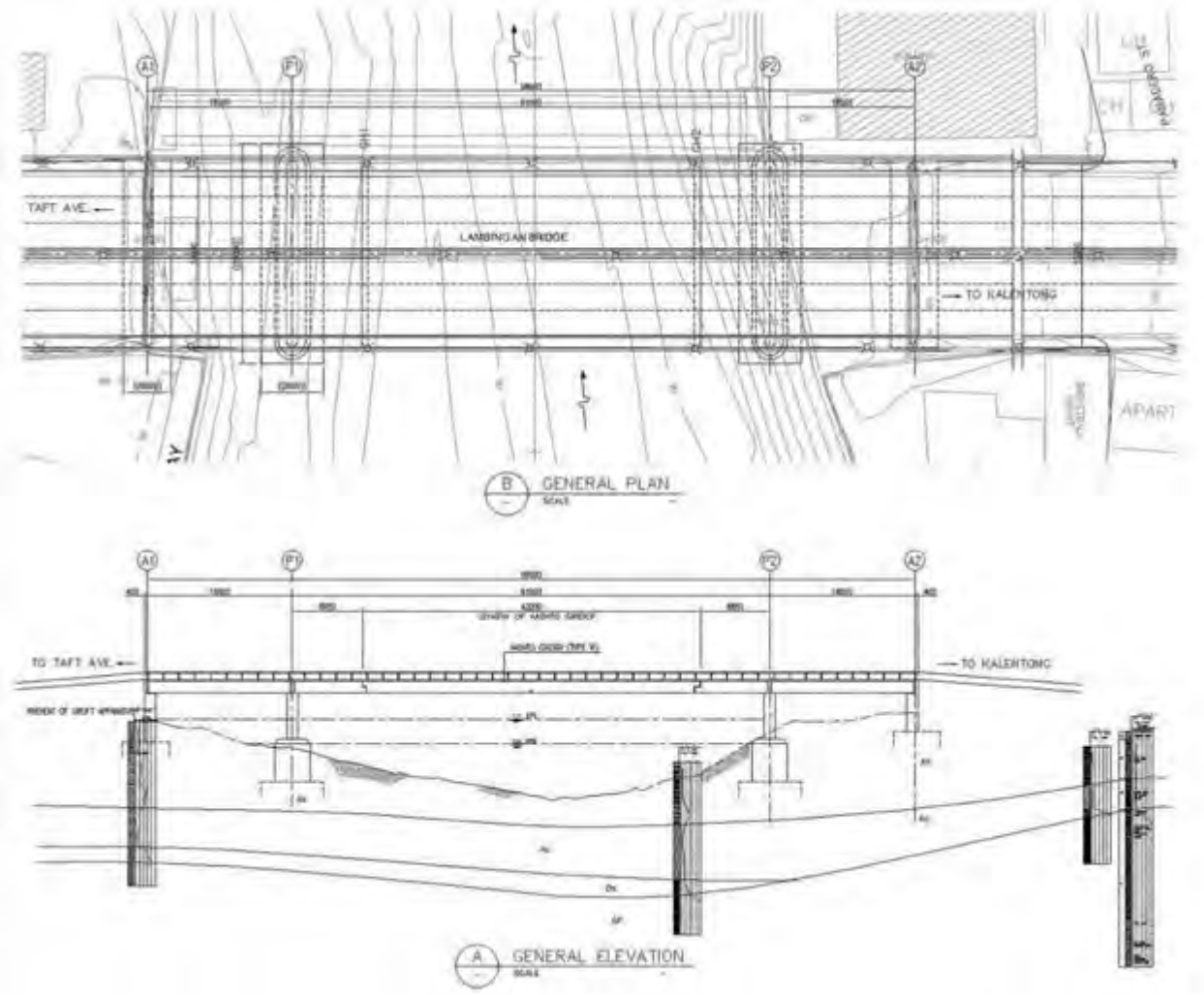
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks on deck slab of PC girder are mostly observed on bottom side. Cracks are not serious but developing on entire deck slab.
	Water leaking		At some parts of cracks, water leaking are observed in transverse direction.
Concrete Beam/ Girder (Primary)	Cracking concrete		Many cracks are observed on the outside girder. Especially, On the all hinge portion, shear cracks are observed that are considered to be fatal cracks
	Spalling, Scaling,Disintegration		A few spallings caused by collision by ship are observed. The damage is serious.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Honeycomb		A few honeycombs caused by unskilled workmanship are observed.
Abutments	Spalling, Scaling,Disintegration		A few spallings are observed at shear key block.
	Cracking concrete		Many vertical clacks are observed near the joint between wing wall and retaining wall.
Pier	Spalling, Scaling,Disintegration		Scaling on surface of concrete is scraped due to ship.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Cracking concrete		Many cracks with less than 0.3mm observed horizontally and vertically.
Curb and Railing (Secondary)	Cracking/Corrosion		Severe corrosion is occurred on steel railing.
Expansion Joint (Primary)	Water leaking		Water leaking is observed at all expansion of hinge joints.
	Difference in elevation		Difference in elevation is observed between girders and approach slab.

Bridge Profile



Main Features of the Bridge

9) Makati Mandalyong Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:		*Makati-Mandaluyong Bridge*			(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Burgos St.*		Prov./ City	*Makati City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?		Yes( ) No( )
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*3*	(10) Span Lengths	*30.0+50.0+30.0*		(11) Total Length:		*110*
(121) Left Sidewalk Width:	*1.5*	(13) Carriageway Width:	*7.4+7.4*		(14) Right Sidewalk Width:		*1.5*
(15) Overall Width (including sidewalk):		*18.8*			(16) Year Built:		*1986*
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG (Gerber), Others( )				
(24) Number of Girders/Span:	*9 (Center)*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*4*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		*finger*

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others (Steel)		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):			
(31) Seating Length :	Abutments:		Piers:	Hinges:	*0.8*

D. ABUTMENTS

(32) Type:	*Column Bent with Diaghram Wall*	(33) Height:				
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)	(35) Wingwall Lengths	L:		R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Column Bent*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

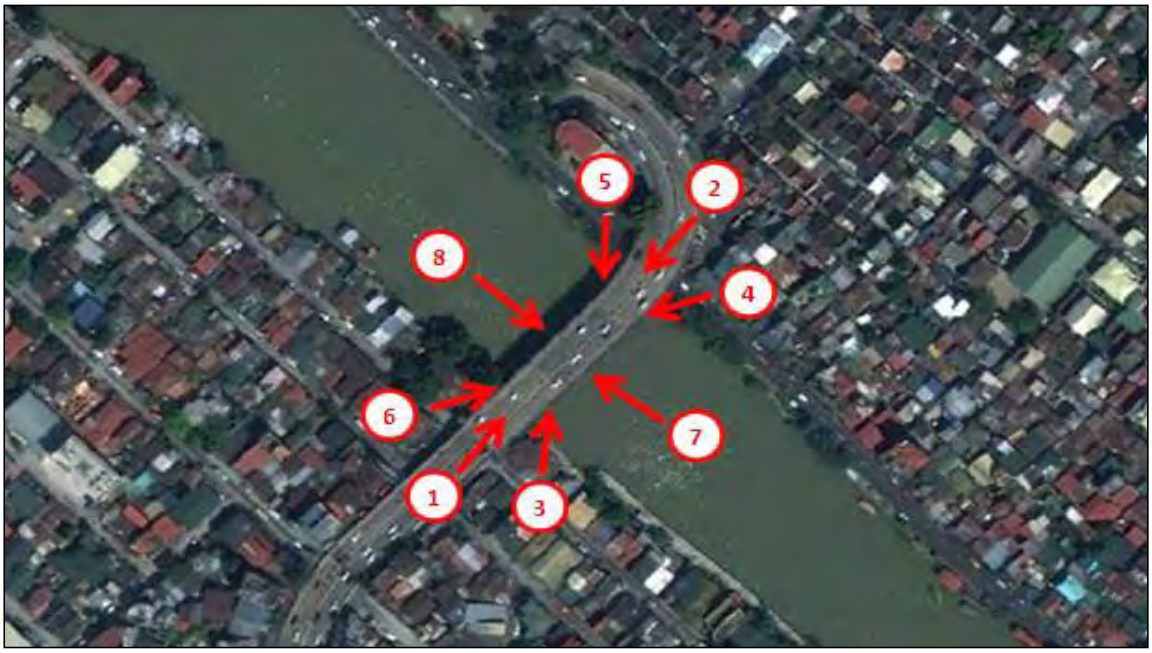
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



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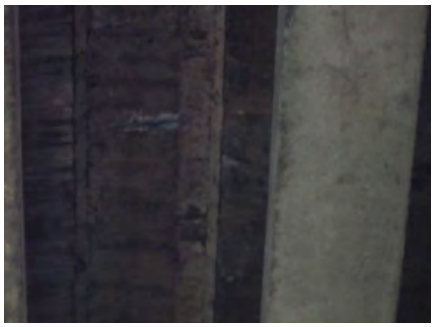
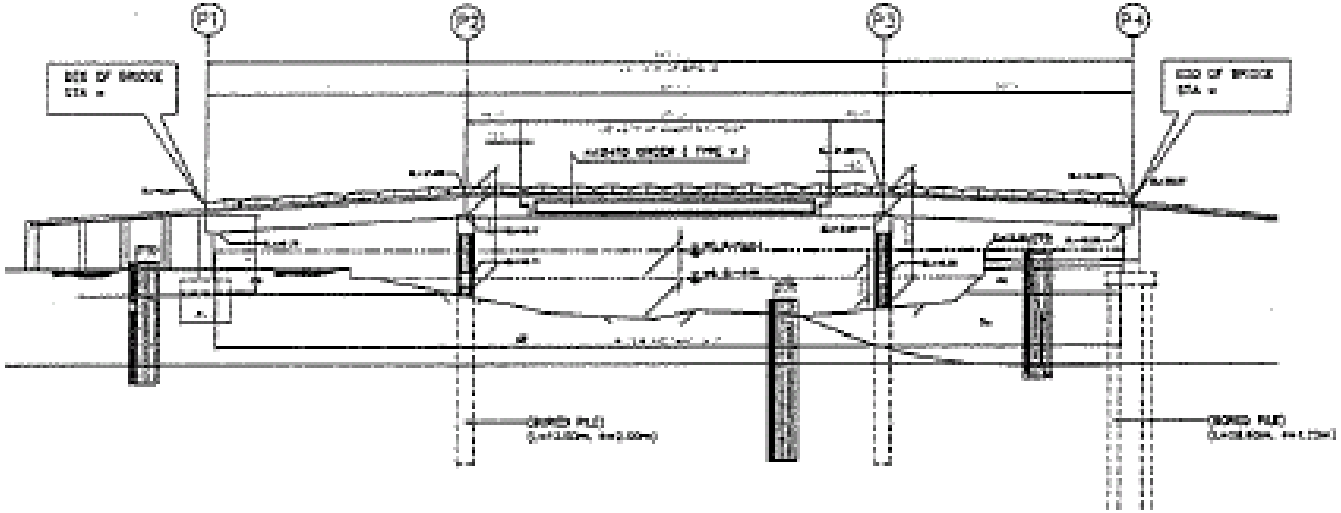
Main Viewpoints of the Bridge

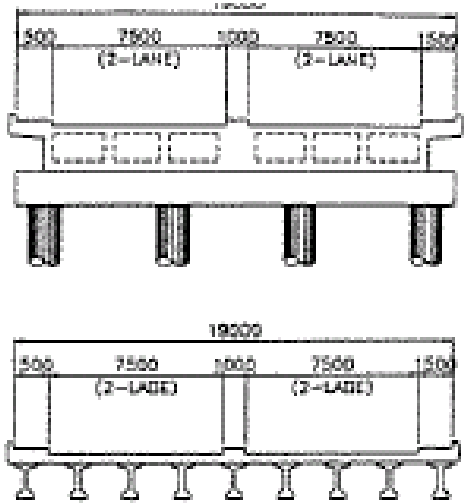
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks with width less than 1mm are entirely observed on bottom deck slab.
Concrete Beam/ Girder (Primary)	Cracking concrete		Many cracks on concrete surface of both sides of box girder are observed. Especially at the end box girders cracks are severely developed.
	Exposure/Corrosion of Rebars		A few exposure/ Corrosion of rebars is observed due to delamination.
	Spalling, Scaling,Disintegration		A few small spallings are observed on bottom of box girder.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Honeycomb		Several honeycombs caused by unskilled workman ship are observed.
Shoe Bearing (Primary)	Corrosion		Steel bearing plates are severely corroded by waterleaking from expansion joint.
	Abnormal Displacement		Steel bearings located at curved section are displaced outward.
	Bulging/Rupture		Rubber bearing pads are bulging and gaps are caused at expansion joints. The lubber pads are not recognized but bearing height (space) is shorting toward outside.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Abutments	Cracking concrete		Several cracks are observed on abutment.
Pier	Spalling, Scaling,Disintegration		Spalling and scaling caused by ship are observed on piers in the river.
	Cracking concrete		Many cracks with less than 0.3mm are observed but covered by painting.
	Exposure/Corrosion of Reinf.		A few Exposure/ Corrosion of Rebars are observed on piers, which caused by ship.

Bridge Profile





Main Features of the Bridge

10) Guadalupe Bridge

BRIDGE SEISMIC INVENTORY DATA							
A. GENERAL							
(1) Bridge Name:	*Guadalupe Bridge (Central)*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*EDSA*		Prov./ City	*Makati City / Mandaluyong City*
(4) Crossing Condition:	(Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	(Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*3*	(10) Span Lengths	*3 5.7+42.8+35.94*		(11) Total Length:		*144.44*
(121) Left Sidewalk Width:	*—*	(13) Carriageway Width:	*12.3+12.5*		(14) Right Sidewalk Width:		*—*
(15) Overall Width (including sidewalk):	*25.4*				(16) Year Built:		*1962*
(17) As-built or design drawings available?	Yes (No)						
(18) Design calculations available?	Yes (No)						
(19) Structure hydraulically adequate?	(Yes) No Don't know ()						
(21) Seismically Retrofitted?	Yes (No) Description						
B. SUPERSTRUCTURE							
(23) Superstructure Type:	(Steel Truss, Steel Girder, RCDG, PSCG, Others( )						
(24) Number of Girders/Span:	*10 / 3*	(25) Continuous?	(Yes) No				
(26) Number of Expansion Joints:	*2*	(27) Type of Expansion Joints:	(Steel, Rubber, Seam				
C. BEARINGS							
(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )			Condition:	Functioning( ) Not Functioning ( )		
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):					
(31) Seating Length :	Abutments:		Piers:		Hinges:		*—*
D. ABUTMENTS							
(32) Type:	*Wall Type*		(33) Height:				
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)		(35) Wingwall Lengths	L:		R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Wall Type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

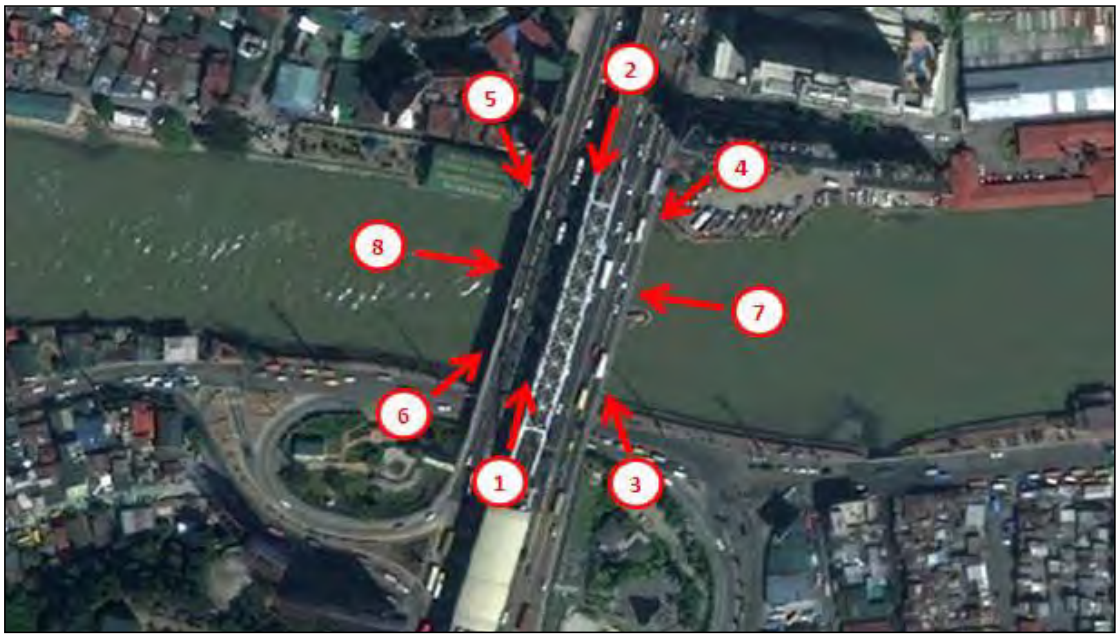
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



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Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks on deck slab of PC girder are mostly observed on bottom side.
	Water leaking		At some parts of cracks, water leaking are observed.
Concrete Beam/ Girder (Primary)	Cracking		Many cracks are observed on the outside girder. Especially, On the all hinge portion, shear cracks are observed that are considered to be fatal cracks
	Delamination		A few delaminations are observed on bottom of girders.

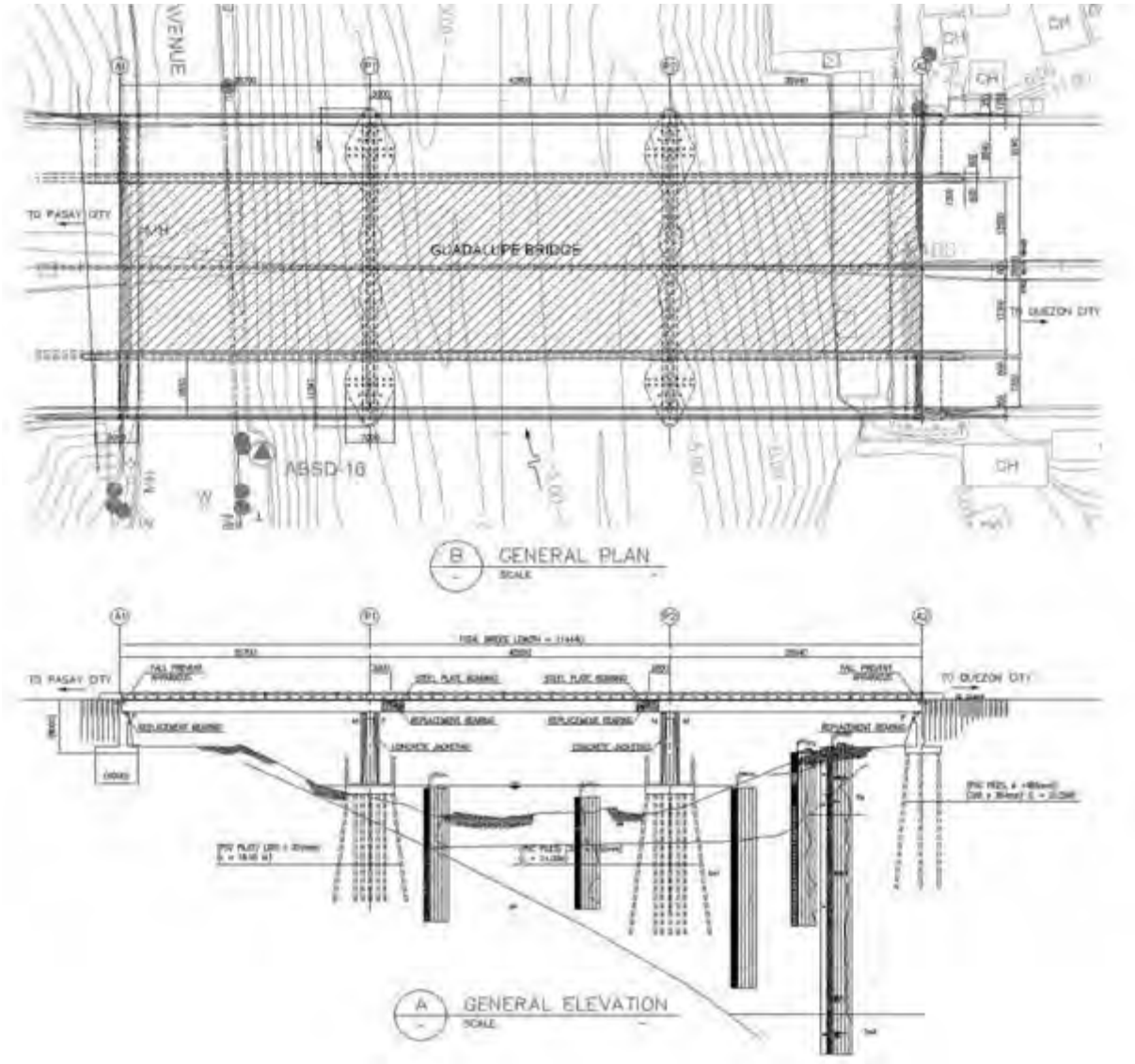
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Loose Connection		A few missing steel bracings are observed.
	Paint Peel off		Paints of Steel truss bridge is quite good condition but paint peel off is observed at some places.
Abutments	Delamination		A few delaminations are observed on abutment.
	Cracking concrete		A few cracks are observed on abutment.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Piers	Spalling, Scaling,Disintegration		Many spallings and scaling due to impact of ships are observed.
	Cracking concrete		Cracks are occurred on wall concrete between rectangular piles
	Exposure/Corrosion of Reinf.		Many exposure /corrosion of rebars due to impact of ships are observed.
Curb and Railing (Secondary)	Cracking		Cracks on railing are observed.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Curb and Railing (Secondary)	Spalling/Delamination		Several spalling and delamination are observed.
Expansion Joint	Water leaking		Water leaking is observed at all expansion of hinge joints.
	Abnormal Space/Noise		Normal spaces are occurred on expansion joint at all hinge joints, because of deflection of center girders.
Painting Cond. (Primary)	Discoloration		Discoloration is entirely progressing.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Slope Protection (Secondary)	Cracks		Many cracks are occurred on concrete facing slope.
Approach Road	Cracking		Many asphalt cracks are observed.
River Condition (Secondary)	Others		River course is slightly bent so ships are often hit pier body. Strong protects are necessary.

Bridge Profile



Main Features of the Bridge

11) C-5 Bridge

BRIDGE SEISMIC INVENTORY DATA									
A. GENERAL									
(1) Bridge Name:	*C-5 Bridge (Makati-Pasig Bridge)*					(2) Posted Load Limit		tons	
(3) Location:	km.:		Route:	*C-5*		Prov./ City	*Pasig City*		
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )								
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?		Yes( ) No( )		
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°								
(9) No. of Spans:	***10***	(10) Span Lengths	***2 4.85+24.95+25.12+25.00+24.85 +45.88+22.21+26.95+26.70+26.45***			(11) Total Length:	***272.96***		
(121) Left Sidewalk Width:	***2***	(13) Carriageway Width:	***11.25+11.25***		(14) Right Sidewalk Width:		***2***		
(15) Overall Width (including sidewalk):	***27.7***					(16) Year Built:	***1998***		
(17) As-builts or design drawings available?	Yes No								
(18) Design calculations available?	Yes No								
(19) Structure hydraulically adequate?	Yes No Don't know ()								
(21) Seismically Retrofitted?	Yes No Description (Seismic Design is applied)								
B. SUPERSTRUCTURE									
(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )								
(24) Number of Girders/Span:	***1 2 / 10***	(25) Continuous?	Yes No						
(26) Number of Expansion Joints:	***8***	(27) Type of Expansion Joints:	Steel, Rubber, Seam						
C. BEARINGS									
(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )				Condition:	Functioning( ) Not Functioning ( )			
(29) Type of Restraint (Transverse):		(30) Type of Restraint (Longitudinal):							
(31) Seating Length :	Abutments:		Piers:		Hinges:	***—***			
D. ABUTMENTS									
(32) Type:	***Wall Type***		(33) Height:						
(34) Foundation Type:	Spread Footing, On Piles, Others (Bored Pile)		(35) Wingwall Lengths	L:	***3.8***	R:			

E. COLUMNS AND PIERS

(36) Column Type:	*Pier Pile Bent*				
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension			
(39) Height Range:		(40) Fixity:	Top	Bottom	Both
(41) Percentage of Longitudinal Reinforcement:					
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied	Spiral	
(43) Foundation Type:	Spread Footing	On Piles	Others (*Bored Pile*)		

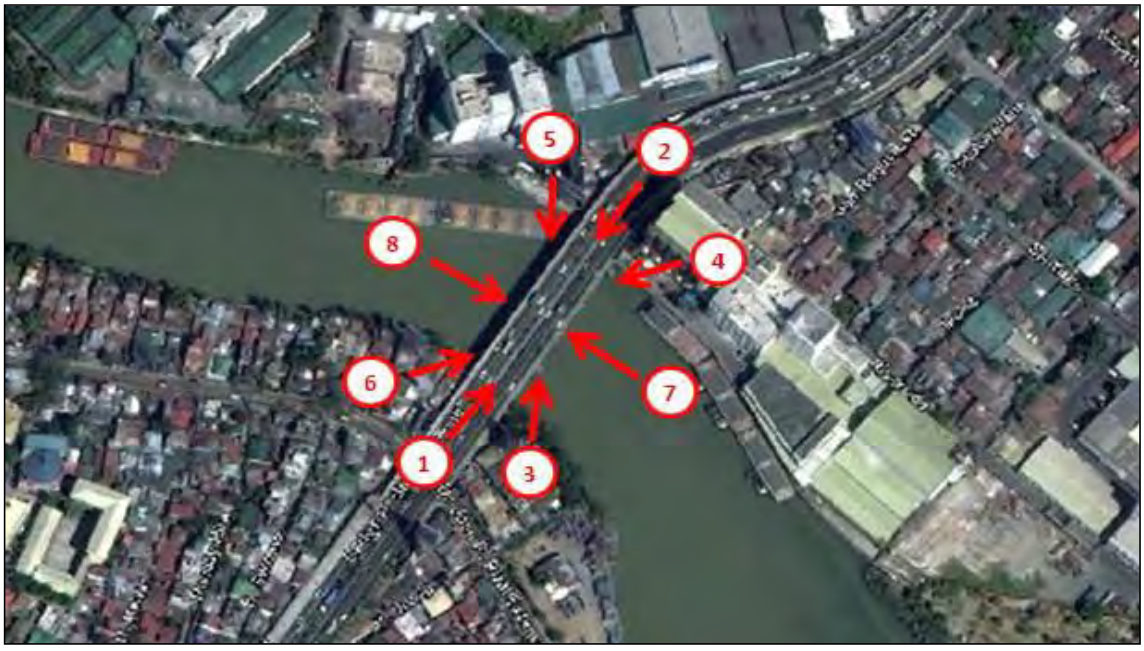
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



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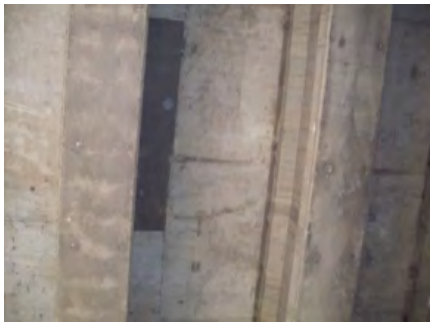
7. 	8. 
9. 	10. no load limit id

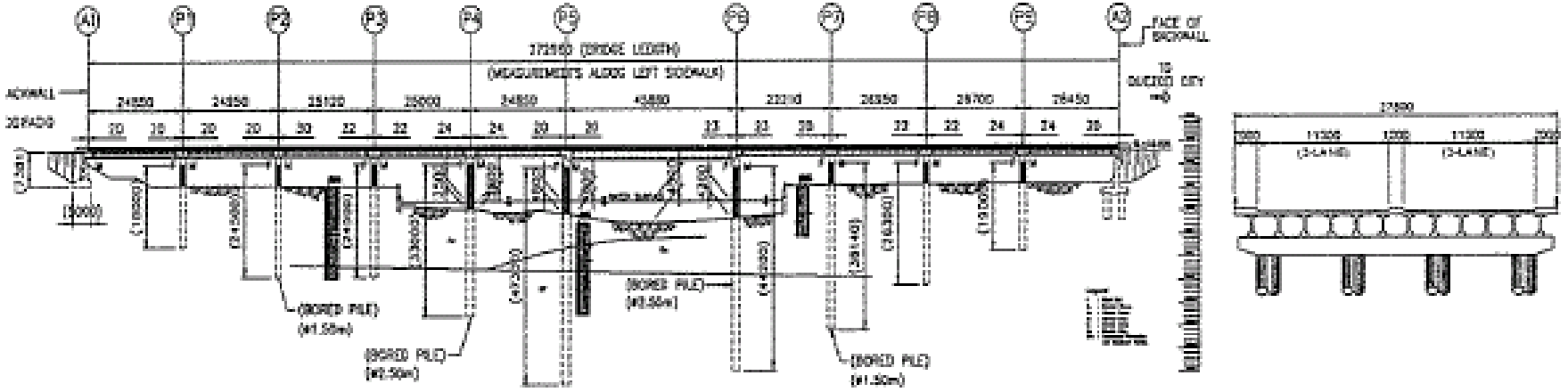
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Crackings width less than 0.3mm is observed on some part.
	Water leaking		Cracks with water leaking are at end of slab but only one place.
Concrete Beam/ Girder (Primary)	Exposure/Corrosion of Rebars		Exposure/Corrosion of rebars is observed on flange of girder but only this place.
	Spalling, Scaling,Disintegration		Several spalling are observed on girders.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Honeycomb		Few honeycombs are observed on cross beams.
Piers (Primary)	Spalling, Scaling,Disintegration		Spalling and scalling are observed on pier concrete due to intentionally impact
	Cracking concrete		Some Cracks less than 1mm are observed on interval wall between Circular piles at several piers.
Curb and Railing (Secondary)	Cracking		Small cracks are observed on end post of railings.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Curb and Railing (Secondary)	Impact Damaged		One hand railing is damaged due to impact of car.
Expansion Joint (Primary)	Water leaking		Water leaking from expansion joint is observed.
	Abnormal Space/Noise		Abnormal space is occurred which should be covered.
	Displacement		Covers of expansion joint are displaced. It is caused by water leaking.

Bridge Profile



Main Features of the Bridge

12) Bambang Bridge

BRIDGE SEISMIC INVENTORY DATA							
A. GENERAL							
(1) Bridge Name:	*Bambang Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*A.Luna*		Prov./ City	*Pasig City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*9*	(10) Span Lengths	*(12.0+11.65+11.7)+(25.9+40.19 +25.93)+(12.15+11.95+11.85)*		(11) Total Length:		*163.32*
(121) Left Sidewalk Width:	*1.5*	(13) Carriageway Width:	*3.4+3.4*		(14) Right Sidewalk Width:		*1.5*
(15) Overall Width (including sidewalk):	*10.35*				(16) Year Built:		*1992*
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description (Seismic design is applied)						
B. SUPERSTRUCTURE							
(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )						
(24) Number of Girders/Span:	*8 / 6, 4 / 3*	(25) Continuous?	Yes No				
(26) Number of Expansion Joints:	—	(27) Type of Expansion Joints:	Steel, Rubber, Seam		—		
C. BEARINGS							
(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )			Condition:	Functioning( ) Not Functioning ( )		
(29) Type of Restraint (Transverse):	—	(30) Type of Restraint (Longitudinal):	—				
(31) Seating Length (Longitudinal):	Abutments:	*0.6*	Piers:		Hinges:		
D. ABUTMENTS							
(32) Type:	*Wall Type*		(33) Height:	*1*			
(34) Foundation Type:	Spread Footing, On Piles, Others (RCP)		(35) Wingwall Lengths	L:		R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Column Type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing (On Piles) Others ( )			

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II (III) IV Don't Know
(46) Liquefaction Potential:	(Yes) No Don't Know ( )
(47) Boring Data Available:	(Yes) No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

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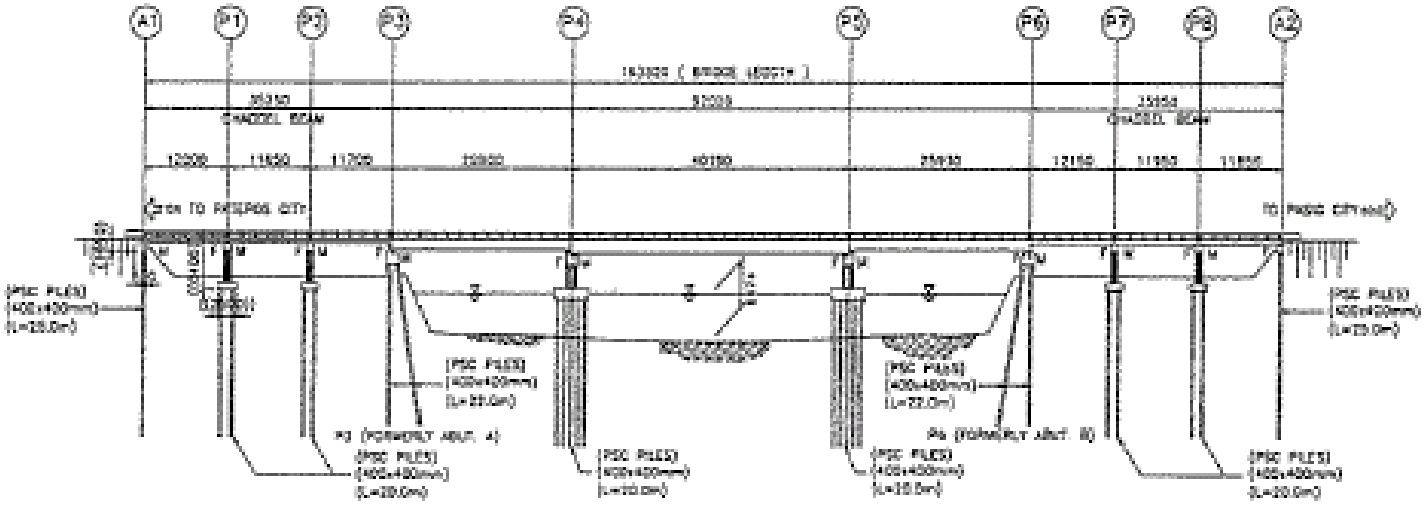
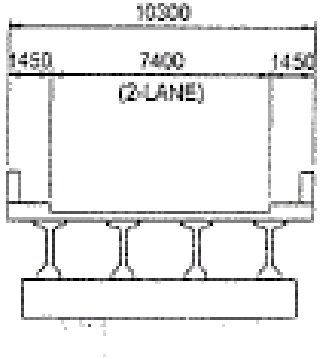
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracking width about 1mm on slab is covered with 30%.
	Scaling/Spalling		Scaling on the deck slab is observed entirely but its condition is not bad.
Concrete Beam/ Girder (Primary)	Exposure/Corrosion of Rebars		Few Exposure/ Corrosion of rebars are observed on concrete girders.
	Spalling, Scaling,Disintegration		Few spalling and scalling are observed on concrete girders.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Delamination		One Delamination is observed on concrete girder.
Abutments	Spalling, Scaling,Disintegration		Several Spallings and disintegration are observed on abutment.
	Cracking concrete		Cracks on side of pile bent abutment are appeared.
Slope Protection (Secondary)	Erosion		Slope protection on A1 abutment is heavily damaged.

Bridge Profile





Main Features of the Bridge

13) Vargas Bridge (Upstream)

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Vargas Bridge (Upstream)*				(2) Posted Load Limit	*20*	tons
(3) Location:	km.:		Route:	*Pasig Boulevard Extension*		Prov./ City	*P asig City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*4*	(10) Span Lengths	*1 9.3+30.5+50.6+22.04*		(11) Total Length:	*122.44*	
(121) Left Sidewalk Width:	*0.5*	(13) Carriageway Width:	*7.32*		(14) Right Sidewalk Width:	*0.9*	
(15) Overall Width (including sidewalk):	*8.72*				(16) Year Built:	*1992*	
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description (Seismic design is applied)						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )				
(24) Number of Girders/Span:	*4 / 4*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*5*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	*C oncrete Block*	(30) Type of Restraint (Longitudinal):	*(missing)*		
(31) Seating Length :	Abutments:	Piers:	Hinges:	*0.8*	

D. ABUTMENTS

(32) Type:	*Wall Type*	(33) Height:				
(34) Foundation Type:	Spread Footing, On Piles, Others (Steel Pipe Pile)	(35) Wingwall Lengths	L:		R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Column Type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles	Others (Steel Pipe Pile)		

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 
9. no bridge id	10. 

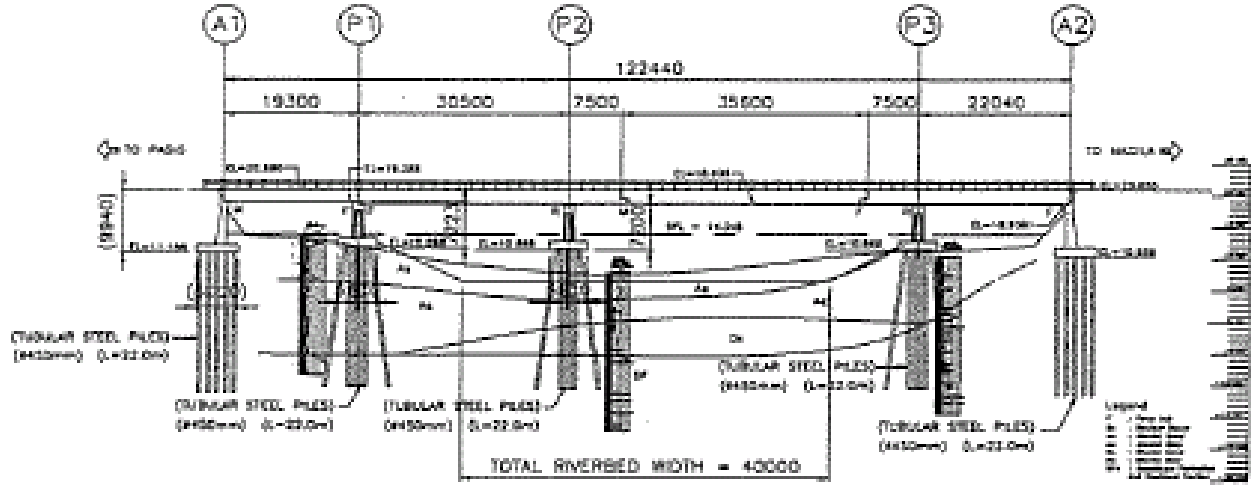
Main Viewpoints of the Bridge

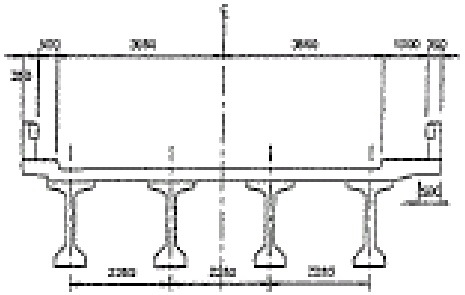
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Small cracks are visible but deck slab is good condition.
	Scaling/Spalling		Small spallings are visible but deck slab is good condition.
Abutment	Cracking concrete		A few Cracks with width less than 0.3mm are observed
Pier	Cracking concrete		Some vertical cracks are visible but maintain good condition.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Exposure/Corrosion of Reinf.		Only one Exposure/ Corrosion of Rebars is observed at pile cap.
Expansion Joint (Primary)	Water leaking		Water leaking from expansion joint is observed.
Slope Protection	Material Loss		Slope protection is maintained properly but material losses are observed.
Approach Road	Settlement		Many pot-holes are observed on approach road.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
River Condition	Scouring		A few local scouring around piers is observed.

Bridge Profile





Main Features of the Bridge

14) Vargas Bridge (Downstream)

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Vargas Bridge (Downstream)*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Pasig Boulevard Extension*		Prov./ City	*Pasig City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:		(7) Essential Bridge?		Yes( ) No( )	
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	*4*	(10) Span Lengths	*30.62+30.83+50.70+30.65*		(11) Total Length:	*142.8*	
(121) Left Sidewalk Width:	*0.75*	(13) Carriageway Width:	*7.4*		(14) Right Sidewalk Width:	*0.75*	
(15) Overall Width (including sidewalk):	*8.9*				(16) Year Built:	*1973*	
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description (Preventing bridge Falls are Stolen)						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )				
(24) Number of Girders/Span:	*3 / 4*	(25) Continuous?	Yes No		
(26) Number of Expansion Joints:	*5*	(27) Type of Expansion Joints:	Steel, Rubber, Seam		

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others (Slide)		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	*Concrete Block*	(30) Type of Restraint (Longitudinal):	*(missing)*		
(31) Seating Length :	Abutments:		Piers:		Hinges:

D. ABUTMENTS

(32) Type:	*Wall Type*	(33) Height:				
(34) Foundation Type:	Spread Footing, On Piles, Others (PSC Pile)	(35) Wingwall Lengths	L:		R:	

E. COLUMNS AND PIERS

(36) Column Type:	*Column Type*				
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension			
(39) Height Range:		(40) Fixity:	Top	Bottom	Both
(41) Percentage of Longitudinal Reinforcement:					
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied	Spiral	
(43) Foundation Type:	Spread Footing	On Piles	Others (PSC Pile)		

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):				
(45) Soil Profile Type:	I	II	III	IV	Don't Know
(46) Liquefaction Potential:	Yes	No	Don't Know ( )	
(47) Boring Data Available:	Yes	No		

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

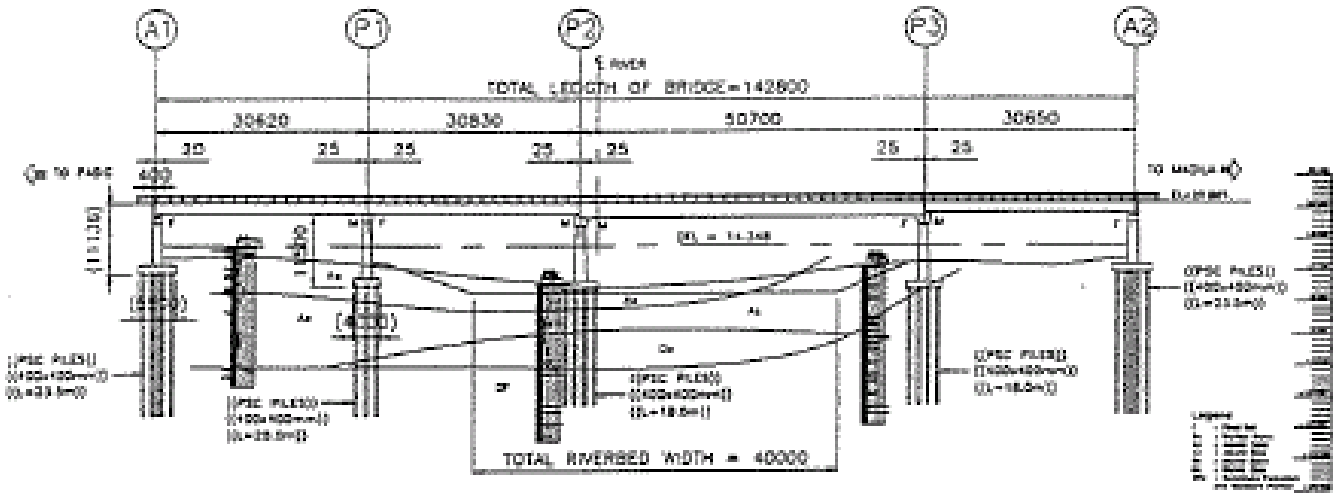
1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 
9. no bridge id	10. 

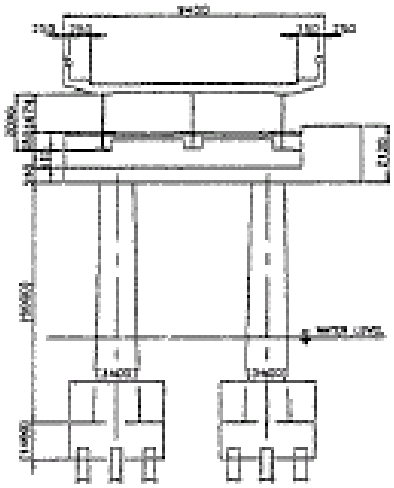
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks with width less than 1mm are observed on a half of deck slab.
	Water leaking		Water leaking are observed from the cracks with width more than 1mm.
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Corrosion		Lower flanges of steel I-girders are corroded but corrosion is limited.
	Loose Connection		Some H.T.Bolts are missing or loose connection.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Steel Beam/ Truss Member (Bracings, etc.) (Primary)	Paint Peel off		Paint peel off is progressing entirely steel plates.
Pier	Cracking concrete		Some cracks with width more than 1mm are observed on bottom of pile cap.
Slope Protection (Secondary)	Erosion		Slope protection is scoured by flood and approximately a half of protection is damaged.
Approach Road	others		Many pot-holes are observed on approach road.

Bridge Profile





Main Features of the Bridge

15) Rosario Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:	*Rosario Bridge*				(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*Ortigas Ave. Extension*		Prov./ City	*Brgy. Rosario Pasig City*
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?		Yes( ) No( )
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	***6***	(10) Span Lengths	***2 5.50+31.20+31.19+ 30.98+31.07+25.41***		(11) Total Length:		***175.35***
(121) Left Sidewalk Width:		(13) Carriageway Width:			(14) Right Sidewalk Width:		
(15) Overall Width (including sidewalk):					(16) Year Built:		***1952 / 1978***
(17) As-builts or design drawings available?	Yes No						
(18) Design calculations available?	Yes No						
(19) Structure hydraulically adequate?	Yes No Don't know ()						
(21) Seismically Retrofitted?	Yes No Description						

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, *PCI Girder* Others( )			
(24) Number of Girders/Span:	***10 / 6***	(25) Continuous?	Yes No	
(26) Number of Expansion Joints:	***7***	(27) Type of Expansion Joints:	Steel, Rubber, Seam	

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )		Condition:	Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	***C oncrete Block***	(30) Type of Restraint (Longitudinal):			
(31) Seating Length (Longitudinal) :	Abutments:	***1***	Piers:	***1***	Hinges: ***—***

D. ABUTMENTS

(32) Type:	***Wall Type***	(33) Height:	***3.127***			
(34) Foundation Type:	Spread Footing, On Piles, Others ( )	(35) Wingwall Lengths	L:	***3.8***	R:	***—***

E. COLUMNS AND PIERS

(36) Column Type:	*Wall Type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others ( )			

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):
(49) Slope Bank Protection Type:			

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

1. 	2. 
3. no access	4. 
5. 	6. 
7. 	8. 
9. 	10. 

Main Viewpoints of the Bridge

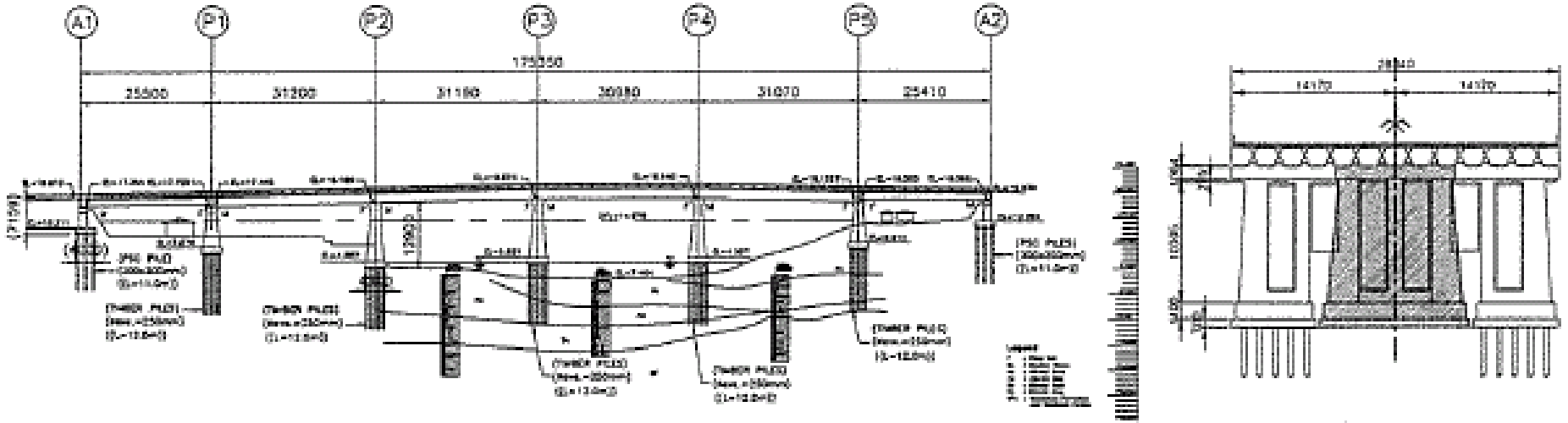
Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks with width less than 1mm observed entirely on deck slab. Some cracks are over 1mm.
	Exposure/Corrosion of Rebars		At end of deck slab, Exposure/Corrosion of Rebars due to spalling is detected.
	Scaling/Spalling		Several spallings are observed on the bottom of deck slab.
Concrete Beam/ Girder (Primary)	Cracking		

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Exposure/Corrosion of Rebars		Exposure/Corrosion of Rebars is detected at the deep spallings.
	Delamination		Delamination is observed at hunch.
Abutments	Spalling, Scaling,Disintegration		Spallings caused by unskilled workman ship are observed.
	Cracking concrete		Many cracks are detected on abutment.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Cracking concrete		A few Cracks are observed on the interval wall of pier.
	Exposure/Corrosion of Reinf.		At a few piers, Exposure/Corrosion of Rebars due to impact of ship is observed.
Curb and Railing (Secondary)	Impact Damaged		Railing is damaged due to impact of traffic.
Expansion Joint (Primary)	Water leaking		Water leaking from expansion joint is observed.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Expansion Joint (Primary)	Difference in elevation		Difference in elevation at expansion joint is occurred due to displacement of girders.
	Displacement		Due to displacement of girders, portion of expansion joint is closed and bottom of girders are opened.
Slope Protection	Erosion		At Abutment A1, erosion of slope protection is observed.
	Material Loss		At abutment A2, material losses are observed.

Bridge Profile



Main Features of the Bridge

16) Marikina Bridge

BRIDGE SEISMIC INVENTORY DATA

A. GENERAL

(1) Bridge Name:		*Marikina Bridge*			(2) Posted Load Limit		tons
(3) Location:	km.:		Route:	*A.Bonifacio Ave. / E.Rodrigues Ave.*		Prov./ City	*Marikina City*
(4) Crossing Condition:	(Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )						
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?		Yes( ) No( )
(8) Alignment:	(Straight), Curved, (Radius) _____m Skewed, (Skew Angle)°						
(9) No. of Spans:	***5***	(10) Span Lengths	***24.20+3@30.00+24.00***		(11) Total Length:		***138.2***
(121) Left Sidewalk Width:	***1.15***	(13) Carriageway Width:	***8.30+8.30***		(14) Right Sidewalk Width:		***1.15***
(15) Overall Width (including sidewalk):		***20.3***			(16) Year Built:		***1980***
(17) As-builts or design drawings available?			Yes (No)				
(18) Design calculations available?			Yes (No)				
(19) Structure hydraulically adequate?			(Yes) No Don't know ()				
(21) Seismically Retrofitted?			(Yes) No Description (All Piers have been retrofitted)				

B. SUPERSTRUCTURE

(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, (PSCG *PCI Girder*), Others( )				
(24) Number of Girders/Span:	***12 / 5***	(25) Continuous?		(Yes) No	
(26) Number of Expansion Joints:	***2***	(27) Type of Expansion Joints:	(Steel), Rubber, Seam		***Fingers***

C. BEARINGS

(28) Bearing Type:	Roller, Rocker, (Rubber), Others ( )		Condition:	(Functioning( ) Not Functioning ( )	
(29) Type of Restraint (Transverse):	***Concrete Block***	(30) Type of Restraint (Longitudinal):		***—***	
(31) Seating Length (Longitudinal):	Abutments:	***0.65***	Piers:	***—***	Hinges: ***—***

D. ABUTMENTS

(32) Type:	***Wall Type***	(33) Height:	***1.545***			
(34) Foundation Type:	Spread Footing, On Piles, (Others (RCP))	(35) Wingwall Lengths	L:	***27~49***	R:	***63***

E. COLUMNS AND PIERS

(36) Column Type:	*Column Type*				
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension			
(39) Height Range:		(40) Fixity:	Top	Bottom	Both
(41) Percentage of Longitudinal Reinforcement:					
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied	Spiral	
(43) Foundation Type:	Spread Footing	On Piles	Others (*RC Piles*)		

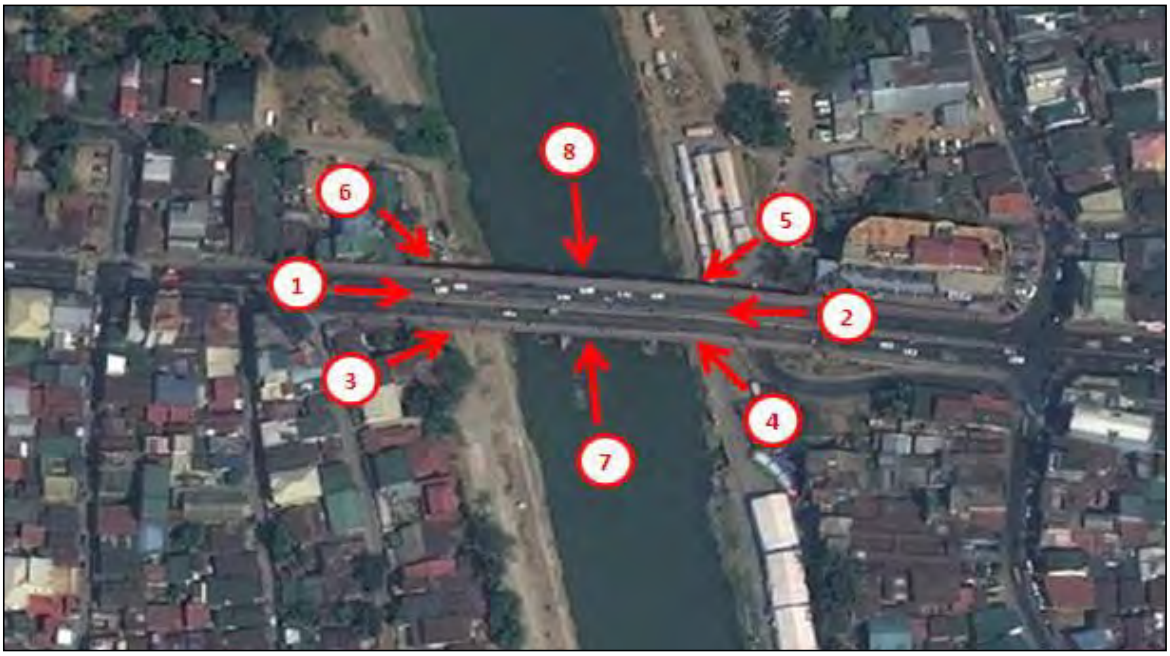
F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):					
(45) Soil Profile Type:	I	II	III	IV	Don't Know
(46) Liquefaction Potential:	Yes	No	Don't Know ( )		
(47) Boring Data Available:	Yes	No			

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)



1. 	2. 
3. no photo	4. 
5. 	6. no photo
7. 	8. 
9. 	10. 

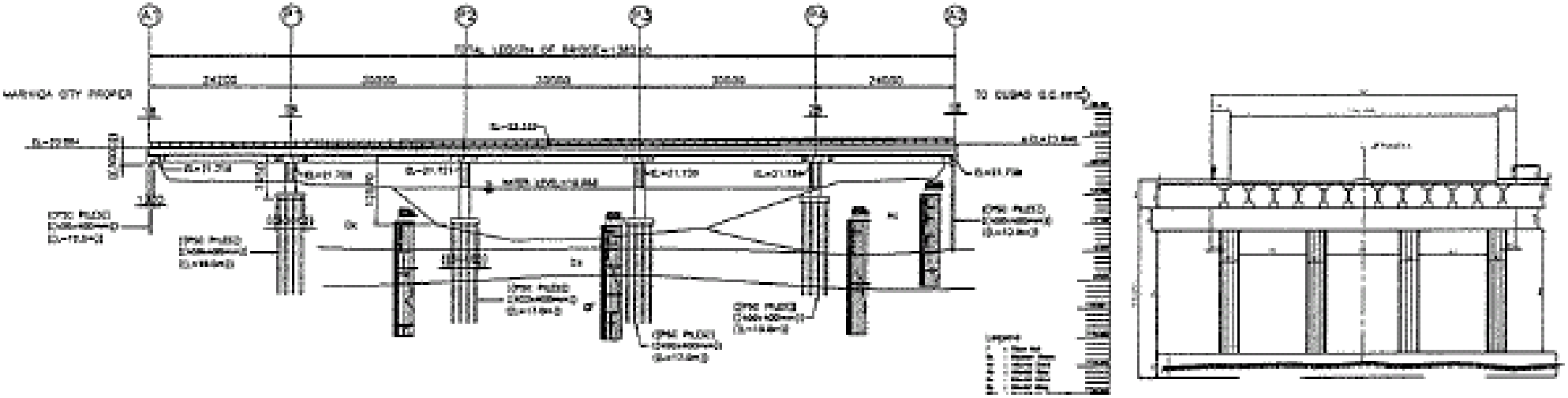
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Deck Slab (Primary)	Cracking		Cracks with width less than 1mm observed entirely on deck slab. Some cracks are over 1mm. (Poor condition)
	Scaling/Spalling		Many but small spalling are observed on the deck slab.
	Water leaking		Cracks combined water leaking are observed at several parts.
Concrete Beam/ Girder (Primary)	Exposure/Corrosion of Rebars		Exposure/Corrosion of Rebars is observed on cross beams.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Honeycomb		A few honeycombs caused by unskilled workmanship are observed.
Shoe/Bearing	Bulging/Rupture		Rubber pads are ruptured.
Pier (Primary)	Spalling, Scaling,Disintegration		Several spallings are observed on piers.
	Cracking concrete		Many cracks are observed horizontally and vertically on pier.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Expansion Joint (Primary)	Water leaking		Water leaking is observed from expansion joints.
	Displacement		

Bridge Profile



Main Features of the Bridge

17) San Jose Bridge

BRIDGE SEISMIC INVENTORY DATA											
A. GENERAL											
(1) Bridge Name:	*San Jose Bridge*						(2) Posted Load Limit		tons		
(3) Location:	km.:		Route:	*Rodrigues Highway*			Prov./ City	*R izal*			
(4) Crossing Condition:	Crossing River,( ) Railway,( ) Roadway,( ) Valley,( ) Others ( )										
(5) AADT:		(6) Detour Distance:			(7) Essential Bridge?	Yes( ) No( )					
(8) Alignment:	Straight , Curved, (Radius) _____m Skewed, (Skew Angle)										
(9) No. of Spans:	*8*	(10) Span Lengths	*24.90+24.97+24.95+24.97+ 25.00+24.97+24.96+24.95*				(11) Total Length:	*199.67*			
(121) Left Sidewalk Width:	*1.45*	(13) Carriageway Width:	*7.50+7.50*				(14) Right Sidewalk Width:	*1.45*			
(15) Overall Width (including sidewalk):	*19.1*						(16) Year Built:	*1980*			
(17) As-builts or design drawings available?	Yes No										
(18) Design calculations available?	Yes No										
(19) Structure hydraulically adequate?	Yes No Don't know ()										
(21) Seismically Retrofitted?	Yes No Description										
B. SUPERSTRUCTURE											
(23) Superstructure Type:	Steel Truss, Steel Girder, RCDG, PSCG, Others( )										
(24) Number of Girders/Span:	*8 / 8*	(25) Continuous?	Yes No								
(26) Number of Expansion Joints:	*9*	(27) Type of Expansion Joints:	Steel, Rubber, Seam	*Angular*							
C. BEARINGS											
(28) Bearing Type:	Roller, Rocker, Rubber, Others ( )					Condition:	Functioning( ) Not Functioning ( )				
(29) Type of Restraint (Transverse):	—				(30) Type of Restraint (Longitudinal):			—			
(31) Seating Length (Longitudinal):	Abutments:	*0.8*	Piers:	*0.7*	Hinges:	—					
D. ABUTMENTS											
(32) Type:	*Wall Type*				(33) Height:	*1.2*					
(34) Foundation Type:	Spread Footing, On Piles, Others (RC Pile)				(35) Wingwall Lengths	L:	*3.6*	R:	*3.7*		

E. COLUMNS AND PIERS

(36) Column Type:	*Wall Type*			
(37) Min. Transverse Cross-Section Dimension:		(38) Min. Longitudinal Cross-Section Dimension		
(39) Height Range:		(40) Fixity:	Top Bottom Both	
(41) Percentage of Longitudinal Reinforcement:				
(42) Transverse Reinforcements:	Bar Size: Spacing:		Tied Spiral	
(43) Foundation Type:	Spread Footing On Piles Others (RC Pile)			

F. SITE

(44) Estimated Peak Ground Accelaration (0.4-0.7g):	
(45) Soil Profile Type:	I II III IV Don't Know
(46) Liquefaction Potential:	Yes No Don't Know ( )
(47) Boring Data Available:	Yes No

G. OTHER ITEMS

(48) Approach Slab:Yes ( ) Length		(47) Embankment Side-slope type(Approach Road):	(H:V):	
(49) Slope Bank Protection Type:				

PHOTOGRAPHS / SKETCHES (Use additional sheets if necessary)

1. 	2. 
3. 	4. 
5. 	6. 
7. 	8. 
9. 	10. 

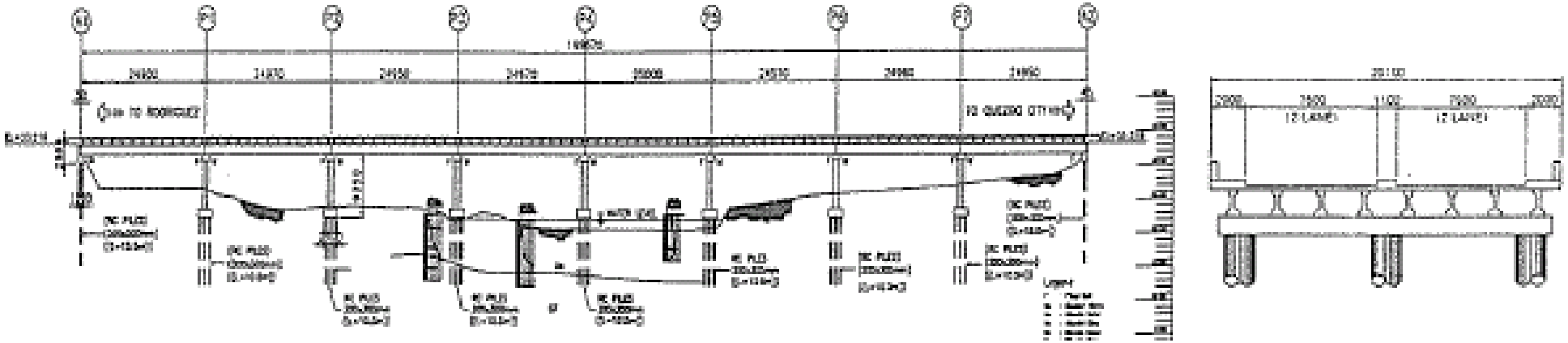
Main Viewpoints of the Bridge

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Concrete Beam/ Girder (Primary)	Cracking		Crack with width more than 1mm is detected o flange of PC T-girder. Length is approximately 3m.
	Spalling, Scaling,Disintegration		Several small spallings are observed.
Shoe/Bearing	Corrosion		Steel bearings are severely corroded but not yet section loss.
	Loose Connection		Connection of Steel bearing may be loosed and the bearing is slightly moved ahead.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Pier	Delamination		Delamination of concrete may be occurred at pile cap.
	Spalling, Scaling,Disintegration		Small spallings are observed on pier concrete.
	Cracking concrete		A few vertical cracks with width more than 1mm are observed on each pier.
Expansion Joint (Primary)	Water leaking		Water leaking is observed from expansion joints.

Component/ Material/ Classification	Type of Damages	Picture of the Damage	Reasoning for the Evaluation
Expansion Joint (Primary)	Abnormal Space/Noise		Space of expansion joints are closed abnormally.
Drainage Pipe	Clogged		Drainage pipes are completely clogged with dusts and sand.
River Condition (Secondary)	Scouring		Pile foundations are exposed by local scoring and its piles are projected.

Bridge Profile



Main Features of the Bridge