APPENDIX 6
OTHER REFERENCE MATERIALS/INFORMATION

6-1 Technical Memorandum (at Field survey stage)

6-2 Results of the Natural Conditions Survey (Soil)

6-3 Results of Site Investigation (Traffic Count)

6-4 Exiting Assin Praso Bridge Inspection Sheets

6-5 Basic Design Drawings

6-1 Technical Memorandum (at Field survey stage)

CONSTRUCTION PROJECT CONSULTANTS, INC.
YSK Bldg., 3-23-1 Takadanobaba, Shinjuku-ku,
Tokyo 169-0075, JAPAN
Phone:+81-3-5337-4062 Facsimile:+81-3-5337-4092

28 April, 2008

The Chief Executive
Ghana Highway Authority (GHA)
The Republic of Ghana

Subject: **Submission of Technical Note for The Basic Design Study on the Project for the Rehabilitation of National Truck Road N8 of the Japanese Grant Aid Project**

Dear Sir,

We are pleased to submit the Technical Note which indicates the key design value to be used for the Basic Design Study for the captioned project by the Japan International Cooperation Agency (JICA) as Japanese Grant Aid Project.

The values on the Technical Note are following the result of discussion by the Study Team and GHA technical representative which was carried out at the conference room of GHA head quarter on 28th April, 2008.

Please confirm the attached Technical Note and we are looking forward to receive your reply for us to start our designing work.

Very truly yours,

Hideaki Morita
Chief Consultant
The Basic Design Study on the Project for the Rehabilitation of National Truck Road N8
Construction Project Consultants, Inc. Japan (CPC)

Memorandum

28-April, 2008

Subject: **Technical note of Design Value to be used for the Basic Design Study on the Project for the Rehabilitation of National Truck Road N8**

The Japan International Cooperation Agency (JICA) Basic Design Study Team will propose the following principal standard for the design of .captioned project.

Description		Units	Value
Road			
Design Speed		Km/hr	80
No. of Lanes		No.	2
Right of Way Width		m	60 (30m each from existing road center)
Carriageway Width		m	7.3
Climbing Lane Width		m	3.5
Shoulder width		m	2.0
Cross Fall on Carriageway		%	2.5
Cross Fall on Shoulder		%	3.0
Minimum Radius of Horizontal Curve		m	233
Maximum Gradient		%	4 (Max = 8)
Maximum Superelevation		%	6
Fill Slope	Granular soil	Angle	1:1.5~2.0 (depend on soil type)
Cut Slope	Hard Rock	Angle	1:0.5
	Decomposed Rock	Angle	1:0.75
	Other than Rock	Angle	1:1.0~1.5 (depend on soil type)
Pavement Design Life		-	15 years (GHA standard)
Pavement Type (Carriageway)		-	AC
Pavement Type (Shoulder)		-	AC
Bridge			
Location		-	30m downstream side from existing Assin Praso Bridge
Standard		-	Specification for Highway Bridges of Japan Road Association
Seismic coefficient		-	0.1
Carriageway Width		m	8.3
Footway Width		m	1.5 x 2

Elevation of bottom of girder	-	1m higher than the elevation of surface of slab of existing Assin Praso Bridge, tentatively
Type	-	3 span bridge
others	-	Existing Assin Praso Bridge will be remained as Pedestrian Bridge

Note: Proposed horizontal road alignment will be traced on the existing road alignment except Assin Praso Bridge section, AC = Ashpaltic Concrete.

E. ODURO-KONADU
CHIEF EXECUTIVE
GHANA HIGHWAY AUTHORITY

H. MORITA
Chief Consultant of JICA Study Team
The Basic Design Study on the Project for the Rehabilitation of National Truck Road N8

6-2 Results of the Natural Conditions Survey (Soil)

MATERIALS REPORT

ASSIN PRASO - ANWIANKWANTA

ROAD REHABILITATION PROJECT

(1) EXECUTIVE SUMMARY

As part of the studies for the Assin Praso – Awiankwanta Road Rehabilitation Project, a material survey has been carried out.

The survey has entailed the identification of possible sources of road building materials. The survey has identified possible sources of aggregates for asphalt concrete, surface dressing and Portland cement concrete.

Also identified were two possible sources of sand as fine aggregate for use in asphalt concrete and Portland cement concrete.

Seven possible sources of natural gravel sub-base, selected fill and ordinary fill were also identified.

Materials were taken from the identified sources and subjected to appropriate laboratory tests to enable the suitability or otherwise of the sources be determined.
The assessment of the materials from the identified sources have been made based on the Ghana Ministry of Transportation's "STANDARD SPECIFICATION FOR ROAD AND BRIDGE WORKS" published in February 2007.

The investigations indicate that while the identified source of course aggregates meets the requirement for Portland cement concrete it is regarded as marginal with respect to the requirement for its use in asphalt concrete and surface dressing.

Of the two sources of natural sand, material from one source was found to be unacceptable for use as fine aggregate either in asphalt concrete or in Portland cement concrete. The other source could be sieved and blended with other sources of fine aggregate and in Portland concrete cement or asphalt concrete.

Material from none of the seven identified natural gravel sources met the specifications for natural gravel sub-base.

Although materials from four of the sources could be regarded as marginal in meeting the required specifications, they could be used as selected fill in areas with good drainage.

Material from all seven borrow pits met the specifications for common fill.

Some of the materials could be stabilized with cement or other cementitious material for use as sub-base.

It is recommended that further investigations be carried out within the road corridor for other possible sources which may have materials meeting all the requirements of the specifications.

ASSIN PRASO – ANWIANKWANTA ROAD REHABILITATION PROJECT

SUMMARY OF TEST RESULTS ON SOIL (1 of 2)

SAMPLE IDENTIFICATION	PARTICLE SIZE DISTRIBUTION													ATTERBERG LIMITS		
	PERCENTAGE BY WEIGHT PASSING B.S. SIEVE															
	75	53.0	37.5	26.5	19.0	10.0	4.75	2.00	1.00	425	300	150	75	LL	PL	PI
LABELLED	mm	mm	mm	mm	mm	mm	mm	mm	mm	µm	µm	µm	µm	%	%	%
BH 1,2+800m DEPTH 0.80m	100	100	100	100	100	99	90	82	78	74	71	58	47	59	27	32
BH 2,7+800m DEPTH 0.70m	100	100	100	98	97	89	56	40	37	36	35	30	25	45	23	22
BH 3,25+000m DEPTH 0.50m	100	100	100	99	98	97	95	91	89	77	72	62	52	53	29	24
BH 4,30+000m STOCK PILE	100	100	100	100	100	97	73	54	50	48	46	40	33	42	21	21
B P S	100	96	95	93	55	49	32	22	20	18	17	14	11	43	22	21
BH 6,42+570m DEPTH 0.40m	100	100	100	97	96	93	75	59	57	55	53	44	38	57	31	26
BH 7,65+000m TRAIL PIT	100	97	91	87	80	60	43	31	29	25	24	22	20	53	30	23

ASSIN PRASO – ANWIANKWANTA ROAD REHABILITATION PROJECT

SUMMARY OF TEST RESULTS ON SOIL (2 of 2)

SAMPLE IDENTIFICATION	COMPACTION TEST			CBR TEST			
	MDD	OMC	NMC	96HRS SOAKED			
LABELLED	kg/m^3	%	%	100%	98%	95%	93%
BH 1,2+800m DEPTH 0.80m	1780	17.3	-	21	15	6	3
BH 2,7+800m DEPTH 0.70m	2142	10.4	-	50	44	36	31
BH 3,25+000m DEPTH 0.50m	1840	14.5	-	17	15	12	10
BH 4,30+000m STOCK PILE	2160	10.4	-	22	20	18	17
B P S	2300	8.9	-	47	36	24	19
BH 6,42+570m DEPTH 0.40m	2020	13.9	-	21	18	12	9
BH 7,65+000m TRAIL PIT	2015	7.0	-	16	15	13	12

ASSIN PRASO – ANWIANKWANTA ROAD REHABILITATION PROJECT

SUMMARY OF TEST RESULTS ON SAND (1 of 1)

DATE: 23 - 05 - 2008

SAMPLE IDENTIFICATION	PARTICLE SIZE DISTRIBUTION														ATTERBERG LIMITS		
	PERCENTAGE BY WEIGHT PASSING B.S. SIEVE																
	75	53.0	37.5	26.5	19.0	10.0	4.75	2.00	1.00	600.00	425	300	150	75	LL	PL	PI
SAMPLE LABELLED	mm	mm	mm	mm	mm	mm	mm	mm	mm	µm	µm	µm	µm	µm	%	%	%
AHINSAN 0.70M SAND PIT 2	100	100	100	100	100	100	99	97	60	36	32	30	26	23	36	17	19
OLD EDUBIASE	100	100	100	100	100	100	100	97	76	53	43	35	22	16	NON PLASTIC		

ASSIN PRASO – ANWIANKWANTA ROAD REHABILITATION PROJECT

SUMMARY OF TEST RESULTS ON ROCK (1 of 3)

DATE: 23 - 05 - 2008

SAMPLE IDENTICATION	AGGREGATE IMPACT VALUE (%)	LOS ANGELES ABRASION VALUE (%)	S. G. APPARENT kg/m³	ABSORPTION (%)	SODIUM SULPHATE SOUNDNESS (%)
APONSIE ROCK SAMPLE	25	32	2644	0.58	0.39

SUMMARY OF TEST RESULTS ON ROCK 2 OF 3

A.E.S.L. GEOTECHNICAL LABORATORY

COARSE AGGREGATE TEST RESULTS

PROJECT : ASSIN PRASO-ANWIANKWANTA ROAD REHABILITATION PROJECT
LOCATION : APONSIE
CLIENT : TWUM BOAFO AND PARTNERS
CONTRACTOR:

DATE : 26/06/2008
AESL OFFICIAL : EFA

SAMPLE IDENTIFICATION	GRADING % PASSING BS 410 SIEVES																Flakiness Index	SSS	Impact Value	ACV	LA	10% FINES KN		Specific Gravity	WATER ABSORPTION
	50mm	37.5mm	25mm	20mm	14mm	12.5mm	10mm	6.3mm	5.0mm	3.35mm	2.36mm	1.18mm	600	300	150	75	%	%	%	%	%	Dry	Wet		%
COARSE AGGREGATE																				28		110			

HEAD OF DEPARTMENT (GEOTECH)
A. E. S. LTD.
P. O. BOX 2968
ACCRA

Architectural & Engineering Services Ltd.

GHANA HIGHWAY AUTHORITY
CENTRAL MATERIALS LABORATORY
STRIPPING TEST SUMMARY SHEET

CUSTOMER:TWUM BOAFO AND PATNERS

DATE:4TH JULY 2008

PROJECT: APONSIE QUARRY

SAMPLE IDENTIFICATION	LESS THAN 5% STRIPPED	GREATER THAN 5% STRIPPED
ROCK	YES	

NOTE:THIS RESULTS DO NOT CONSTITUTE APPROVAL BY GHA

X-RAY FLOURESCENCE RESULTS FOR APONSIE ROCK

DATE: 27-06-2008

Major Elemenets

Element	Dimensior	APONSIE
Na_2O	%	4.01
MgO	%	1.47
Al_2O_3	%	13.92
SiO_2	%	72.41
P_2O_5	%	0.12
SO_3	%	0.15
Cl	%	< 0.00060
K_2O	%	3.60
CaO	%	1.57
TiO_2	%	0.17
MnO	%	0.02
Fe_2O_3	%	1.15
L.O.I	%	1.50
Total	%	**100.09**

Minor Elements

V	ppm	22
Cr	ppm	35
Co	ppm	< 15
Ni	ppm	15.7
Cu	ppm	15.8
Zn	ppm	35.8
Ga	ppm	21.8
Br	ppm	< 0.6
Rb	ppm	159.4
Sr	ppm	335
Y	ppm	< 1.1
Zr	ppm	232.9
Nb	ppm	17.3
Mo	ppm	3.7
Cs	ppm	< 8.2
Ba	ppm	1201
La	ppm	38.6
Ce	ppm	60
Hf	ppm	28
Ta	ppm	8.9
Pb	ppm	27.8
Bi	ppm	6.9
Th	ppm	9.8
U	ppm	26.9

ATTN: TWUM BOAFO & PARTNERS

NB: SAMPLE TYPE ROCK QUARRY

.....

MR. EMMANUEL EFFUM
(SENIOR TECHNICAL OFFICER)
GEOLOGICAL SURVEY DEPARTMENT
P. O. BOX M. 80
ACCRA

X-RAY FLOURESCENCE RESULTS FOR AHENSAN AND OLD EDUBIASE SAND DEPOSITS

DATE: 27-06-2008

Major Elemenets

Element	Dimension	AHESAN	OLD EDUBIESI
Na_2O	%	3.46	3.86
MgO	%	2.17	2.38
Al_2O_3	%	14.62	14.69
SiO_2	%	69.51	66.43
P_2O_5	%	0.02	0.05
SO_3	%	0.17	0.16
Cl	%	< 0.0030	< 0.0030
K_2O	%	0.23	0.40
CaO	%	0.05	0.06
TiO_2	%	1.29	1.03
MnO	%	0.02	0.01
Fe_2O_3	%	2.73	1.38
L.O.I	%	5.50	9.50
Total	%	**99.76**	**99.94**

Minor Elements

V	ppm	84	47
Cr	ppm	715	587
Co	ppm	< 22	< 16
Ni	ppm	22	17.1
Cu	ppm	4.2	4.1
Zn	ppm	69.1	69.1
Ga	ppm	17.5	11.5
Br	ppm	3.2	0.5
Rb	ppm	17.6	14.8
Sr	ppm	17.1	17.6
Y	ppm	16.6	12.7
Zr	ppm	732	802
Nb	ppm	28.6	20
Mo	ppm	7.2	< 4.8
Cs	ppm	10.7	< 6.8
Ba	ppm	76.7	160.6
La	ppm	29.2	30.8
Ce	ppm	44	53.7
Hf	ppm	38.1	33.2
Ta	ppm	12.4	7.3
Pb	ppm	22	13.7
Bi	ppm	12.3	4.7
Th	ppm	10.3	3.4
U	ppm	21.3	14.7

ATTN: TWUM BOAFO & PARTNERS

NB: SAMPLE TYPE SOIL

MR. EMMANUEL EFFUM
(SENIOR TECHNICAL OFFICER)

LOGICAL SURVEY DEPARTMENT
P. O. BOX M. 80
ACCRA

6-3 Results of Site Investigation (Traffic Count)

TRAFFIC REPORT

ASSIN PRASO - ANWIANKWANTA

ROAD REHABILITATION PROJECT

(1) INTRODUCTION

The traffic surveys, which involved manual classified link counts, pedestrian volume counts and origin and destination surveys, commenced on the 25th of April 2008 and were carried out at three established census stations on the Yamoransa – Bekwai road for three (3) days. Apart from these surveys, turning movement counts were also conducted at the Praso-Obuasi-Bekwai intersection to determine vehicle manoeuvre as well as their composition.

Vehicles were classified in the following categories:-

- Motorcycle;
- Taxi, Jeep and Pick-up;
- Minibus and Wagon;
- Medium Bus and Large Bus;
- 2-axle Truck;
- 3-axle Truck;
- 4-axle Truck;
- 5-axle Truck;
- 6-axle Truck;
- 8-axle Truck; and
- Others.

The counts were carried out for 24 hours at the various census stations.

(2) TRAFFIC SURVEY RESULT

Question 1.1 Sex of Drivers

	Sex of Respondents	
Sex	Frequency	Percentage
Male	112	100.0
Female	0	0.0
Total	**112**	**100**

Question 1.2 Vehicle Classification

	Classification of Vehicle	
Vehicle Type	Frequency	Percentage
2 axles truck	25	22.3
3 axles truck	11	9.8
4 axles truck	16	14.3
5 axles truck	36	32.1
6 axles truck	23	20.5
7 axles truck	0	0.0
8 axles truck	1	0.9
Total	**112**	**100.0**

Question 1.3 Age of Drivers

	Age of Respondents	
Age	Frequency	Percentage
20-29	11	9.8
30-39	49	43.8
40-49	32	28.6
50-59	17	15.2
>60	3	2.7
Total	**112**	**100.0**

Question 1.4 Trip Purpose

	Trip Purpose	
Purpose	Frequency	Percentage
Business	111	99.1
Personal	1	0.9
Total	**112**	**100**

Question 1.4b Classification of Cargo

	Type of Cargo	
Cargo	**Frequency**	**Percentage**
Cocoa	14	12.5
Lime	1	0.9
Cement	21	18.8
Flour pouder	1	0.9
Beer/ Soft drink	6	5.4
Construction Material	5	4.5
Chemical	5	4.5
Wood/ Log	15	13.4
Bauxite	4	3.6
Gold	0	0.0
General goods	22	19.6
Cotton	0	0.0
Food Stuff	15	13.4
Fuel	2	1.8
Others	1	0.9
Total	**112**	**100.0**

Question 2.1a Origin and Destination of Trip

	Origin	
Town	**Frequency**	**Percentage**
Fr. Kumasi	26	23.2
Fr. Obuasi	4	3.6
Fr. Burkina Faso	0	0.0
Fr. Techiman	3	2.7
Fr. New Edubiase	2	1.8
Fr. Dunkwa Offin	2	1.8
Fr. Dompoase	1	0.9
Fr. Wa	2	1.8
Fr. Brong Ahafo	1	0.9
Fr. Wurayie	1	0.9
Fr. North	1	0.9
Fr. Tema	1	0.9
Fr. Ejisu	1	0.9
Fr. Niger	1	0.9
Fr. Swedru	1	0.9
Fr. Awaso	1	0.9
Fr. Takoradi	45	40.2
Fr. Capecoast	8	7.1
Fr. Accra	2	1.8
Fr. Assin Praso	2	1.8
Fr. Assin Fosu	5	4.5

Fr. Mankessim	1	0.9
Fr. Oda	1	0.9
Total	**112**	**100.0**

Question 2.1b Origin and Destination of Trip

	Destination	
Town	Frequency	Percentage
To. Takoradi	24	21.4
To. Capecoast	3	2.7
To. Accra	3	2.7
To. Assin Praso	4	3.6
To. Assin Fosu	4	3.6
To. Tema	3	2.7
To. Elmina	2	1.8
To. Oda	1	0.9
To. Twifo Praso	1	0.9
To. Mankesim	1	0.9
To. Ivory Coast	1	0.9
To. Sefwi	1	0.9
To. Kumasi	39	34.8
To. Obuasi	3	2.7
To. Burkina Faso	0	0.0
To. Atobiase	2	1.8
To. Techiman	5	4.5
To. Wa	2	1.8
To. New Edubiase	2	1.8
To. Kenyasi	2	1.8
To. Niger	2	1.8
To. Sunyani	2	1.8
To. Awaso	3	2.7
To. Bibiani	1	0.9
To. Tamale	1	0.9
Total	**112**	**100.0**

Question 2.1c Origin and Destination of Trip through where?

	Through where?	
Town	Frequency	Percentage
Obuasi	64	57.1
Fomena	48	42.9
Total	**112**	**100.0**

Question 2.2 Frequency of use of the road

	Frequency use of road	
	Frequency	Percentage
Everyday	24	21.4
Once a week	61	54.5
More than once a week	14	12.5
Once or twice in a month	13	11.6
Less than once a month	0	0.0
No reply	0	0.0
Total	**112**	**100.0**

Question 2.3 If frequency is everyday, how many time in a day.

	No. of times in a day	
	Frequency	Percentage
Less one way in a day	0	0.0
One way in a day	0	0.0
One round-trip in a day	20	17.9
Two round-trips in a day	3	2.7
More two round-trips in a day	0	0.0
No daily trip	89	79.5
Total	**112**	**100.0**

Question 2.4 Travel Hours spent on road.

	Hours Spent on Road	
Time (Hours)	Frequency	Percentage
1-5	26	23.2
6-10	58	51.8
11-15	13	11.6
16-20	4	3.6
21-25	6	5.4

26-30	1	0.9
Over >30	4	3.6
Total	**112**	**100.0**

Question 3.0 Problems faced the on Road.

	Problems on Road	
Category of Problems	Frequency	Percentage
Pot hole(P)	40	27.2
Narrow width (W)	1	0.7
No sufficient sight-distance(S)	0	0.0
Steep in Mountain terain(M)	12	8.2
Darkness (D)	0	0.0
Many Curves (C)	0	0.0
Insufficient Road Signs (RS)	1	0.7
Road Depression (DR)	64	43.5
Many Balancing(B)	16	10.9
Others (O)	0	0.0
No Problem (N)	13	8.8
Total	**147**	**100.0**

Question 3.0 Problems faced the on Bridge.

	Problems on Bridge	
Category of Problems	Frequency	Percentage
Narrow width (W)	91	81.3
None(N)	21	18.8
Total	**112**	**100.0**

6-4 Exiting Assin Praso Bridge Inspection Sheets

Inspection Form (No.1) Bridge Elements & Comprehensive Observations

Bridge Name	Assin Praso Bridge			Road Name	National Highway No.8				Governing Agency	Ghana Highway Authority (GHA)				Bridge Code					
Location	From	Assin Praso		Station No.	From									Date Inspected	Oct. 16, 2008				
	To				To														
Opening Date		Bridge Length	82m	Live Load & Grade				Standard	BS								Traffic Condition		
Superstructure	Truss	Width		Whole Width	Verge	Foot Path	Traffic Lane/Lane		Traffic Lane/Lane		Foot Path	Verge	Middle Traffic Lane	Central Reservation			Year Inspected	2003	
				Carriageway	0.15m	0m	5.5m	1									Traffic Volume	2600/day	
Substructure	Ellipse Wall Type	Memo															Heavy Vehicle Index	40%	
Foundation	Unknown																Allowable Load	Truck 12ton	

Comprehensive Observations

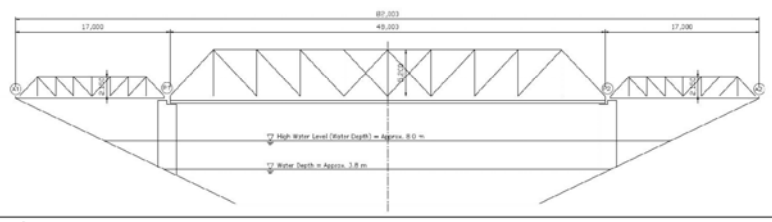
1. The bridge was constructed 72 years ago. Limit loads indicated are truck=12t, trailer= 18t and crowd load=100lb/sq.ft. Current traffic per day is 800-2200 including traffic of heavy trailers and heavy trucks whose live loads extremely exceed the limit loads.
2. Substructure: Due to inadequate treatment of horizontal construction joint at upper part under bearing conrete of right side pier, seepage was observed. There seems no problem in strength of concrete.
3. Superstructure: Lateral member of vertical element was removed and reinforcing angles were mounted on the truss crowns in lieu. Deformed guardrail pipes, as well as a deformed vertical element, signify frequent bumps by vehicles.
4. The original structure seems jointed with rivets, and most of them were replaced with high tension bolts.
5. All drainage structures were closed with asphalt when the bridge surface was rehabilitated. As for kerbs, cracks were observed at every transverse beam positions. From these cracks, rainwater has been seeped onto the transverse beams under the floor slab and aggravate the corrosion of transverse beams.
6. In the middle of the bridge, considerable oscillation was observed during the transit of heavy trailers.
7. GHA (Ghana Hihgway Authority) concluded the soundness survey on October 15, 2003 and resulted that no problem had been found with the bridge. However, considering comprehensively the current conditions of the bridge observed and surveyed through this study as stated 1, 5 and 7 above, it is highly recommendable that the bridge shall be reconstructed as urgently as possible.
8. GHA is desirous to use the existing bridge as a pedestrian bridge after completion of the new bridge.
   - Provide drainage structures to the existing bridge;
   - Repair crack of kerb concrete; and
   - Implement countermeasure works which prevent corrosion of cross beam and stringer under the floor slab.

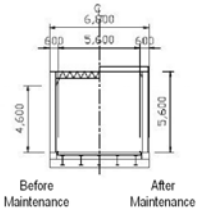
Inspection Form (No.2) General View for Each Span

Bridge Name	Assin Praso Bridge		Road Name	National Highway No.8		Governing Agency	Ghana Highway Authority (GHA)	Span No.	1,2,3
Location	From		Station No.	From				Bridge Code	
	To			To				Date Inspected	Oct. 16, 2008

General View 1

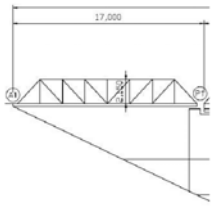
Span 1,2,3





General View 2

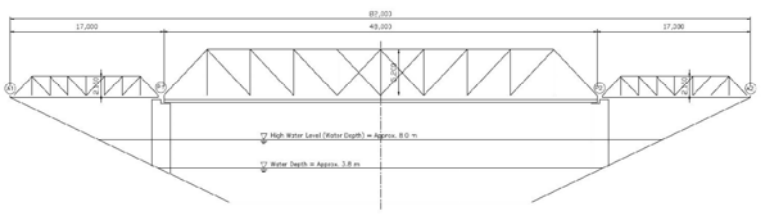
Span 2

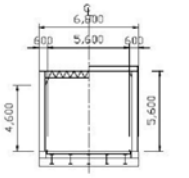


Inspection Form (No.2) General View for Each Span						Span No.	1,2,3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

General View 1

Span 1,2,3

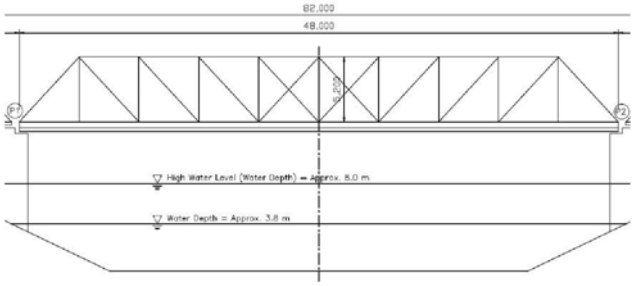




Before Maintenance | After Maintenance

General View 2

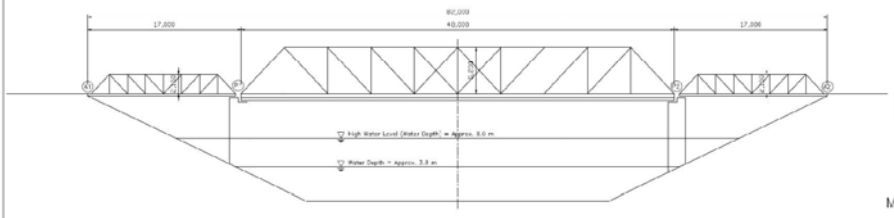
Span 2

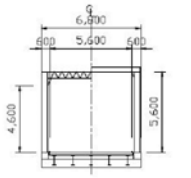


Inspection Form (No.2) General View for Each Span						Span No.	1,2,3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

General View 1

Span 1,2,3

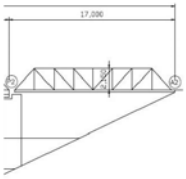




Before Maintenance | After Maintenance

General View 2

Sapn 3



Inspection Form (No.3) Photo/Current Condition

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1,2,3
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Photo/Current Condition

Photo No.	1	Date	2008.04.11	Photo No.	2	Date	2008.04.14
Span No.	1.2.3.	Memo		Span No.	1.2.3.	Memo	
Comment	Front View	From Kumasi side		Comment	Side View	From upper right bank	
							
Photo No.	3	Date	2008.04.14	Photo No.	4	Date	2008.04.14
Span No.	1.2.3.	Memo		Span No.	1.2.3.	Memo	
Comment	Bridge surface	From Yamoransa		Comment	Floor system	∟Span 2 Floor slab under side ⌜Span 1 Floor slab under side	
				 			

Inspection Form (No.3) Photo/Current Condition

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1,2,3
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Photo/Current Condition

Photo No.	5	Date	2008.04.14	Photo No.	6	Date	2008.04.14
Span No.	2	Memo		Span No.	2	Memo	
Comment	Superstrucure	Poral bracing had been removed		Comment	Clearance	Where the standard clearance is designated as 5.2m, the clearance of the bridge is 4.6m.	
							
Photo No.	7	Date	2008.04.14	Photo No.	8	Date	2008.04.14
Span No.	1.2.3.	Memo		Span No.	2	Memo	
Comment	Loads limit	Truck : 12 ton Trailer : 18 ton Crowd load : 100 lb/ft²		Comment	Revetment work	Collapse of Concrete block of the revetment work.	
							

Inspection Form (No.3) Photo/Current Condition

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1,2,3
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Photo/Current Condition

Photo No.	9	Date	2008.04.21	Photo No.	Date
Span No.	1.2.3.	Memo		Span No.	Memo
Comment	Drainage	Drainage lost its function after the aspalt pavement work had been implemented on the bridge surface regardless of the drainage.		Comment	
					
Photo No.		Date		Photo No.	Date
Span No.		Memo		Span No.	Memo
Comment				Comment	

Inspection Form (No.4) Numbers of Parts and Elements

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Numubers of Parts and Elements

Cross Beam (Cr)

	0101	0102	0103	0104	0105	0106	0107
	0201	0202	0203	0204	0205	0206	0207
	0301	0302	0303	0304	0305	0306	0307
	0401	0402	0403	0404	0405	0406	0407
	0501	0502	0503	0504	0505	0506	0507
	0601	0602	0603	0604	0605	0606	0607

A1 P1

Stringer (St)

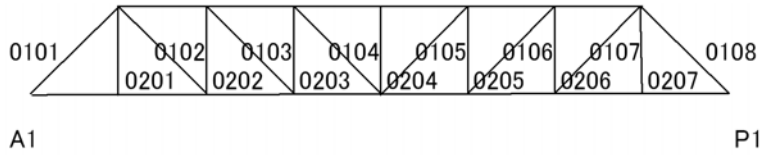
0101	0102	0103	0104	0105	0106	0107	0108
0201	0202	0203	0204	0205	0206	0207	0208
0301	0302	0303	0304	0305	0306	0307	0308
0401	0402	0403	0404	0405	0406	0407	0408
0501	0502	0503	0504	0505	0506	0507	0508

A1 P1

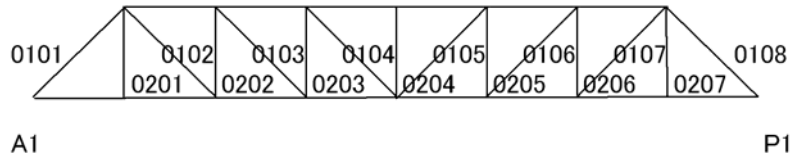
Inspection Form (No.4) Numbers of Parts and Elements						Span No.	1
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Diagonal Bracing/Vertival Member Downstream (Dtd)



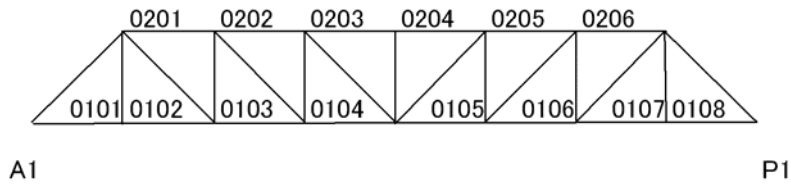
Diagonal Bracing/Vertival Member Upstream (Dtu)



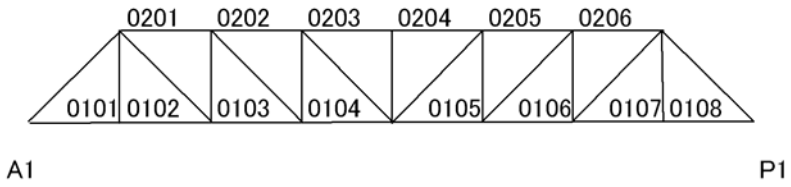
Inspection Form (No.4) Numbers of Parts and Elements						Span No.	1
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Upper/Bottom Chord Downstream (Btd)



Upper/Bottom Chord Upstream (Btu)



Inspection Form (No.4) Numbers of Parts and Elements						Span No.	2
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Cross Beam (Cr)

	0101	0102	0103	0104	0105	0106	0107	0108	0109
	0201	0202	0203	0204	0205	0206	0207	0208	0209
	0301	0302	0303	0304	0305	0306	0307	0308	0309
	0401	0402	0403	0404	0405	0406	0407	0408	0409
	0501	0502	0503	0504	0505	0506	0507	0508	0509
	0601	0602	0603	0604	0605	0606	0607	0608	0609

P1 P2

Stringer (St)

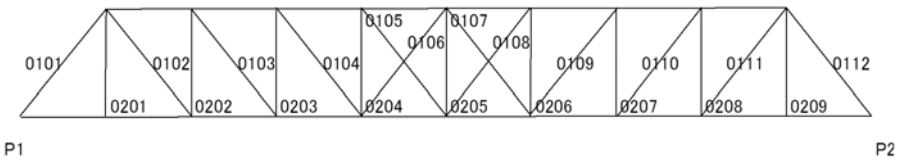
0101	0102	0103	0104	0105	0106	0107	0108	0109	0110
0201	0202	0203	0204	0205	0206	0207	0208	0209	0210
0301	0302	0303	0304	0305	0306	0307	0308	0309	0310
0401	0402	0403	0404	0405	0406	0407	0408	0409	0410
0501	0502	0503	0504	0505	0506	0507	0508	0509	0510

P1 P2

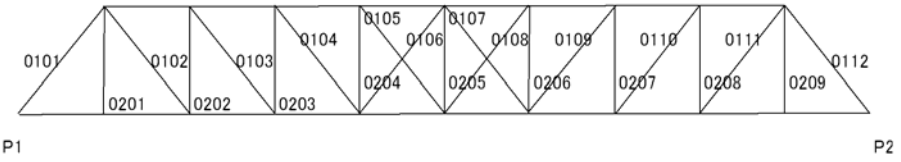
Inspection Form (No.4) Numbers of Parts and Elements						Span No.	2
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Diagonal Bracing/Vertival Member Downstream (Dtd)



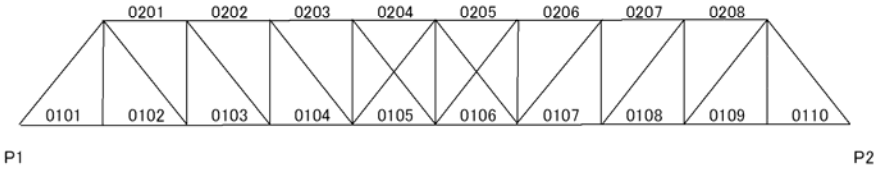
Diagonal Bracing/Vertival Member Upstream (Dtu)



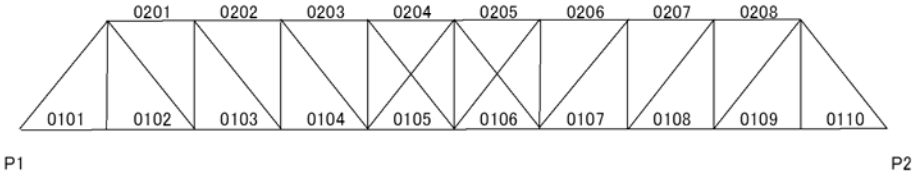
Inspection Form (No.4) Numbers of Parts and Elements						Span No.	2
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Upper/Bottom Chord Downstream (Btd)



Upper/Bottom Chord Upstream (Btu)



Inspection Form (No.4) Numbers of Parts and Elements						Span No.	3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Numubers of Parts and Elements

Cross Beam (Cr)

0101	0102	0103	0104	0105	0106	0107
0201	0202	0203	0204	0205	0206	0207
0301	0302	0303	0304	0305	0306	0307
0401	0402	0403	0404	0405	0406	0407
0501	0502	0503	0504	0505	0506	0507
0601	0602	0603	0604	0605	0606	0607

P2 A2

Stringer (St)

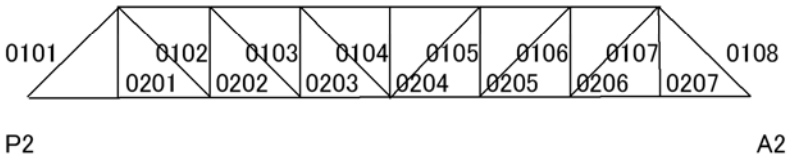
0101	0102	0103	0104	0105	0106	0107	0108
0201	0202	0203	0204	0205	0206	0207	0208
0301	0302	0303	0304	0305	0306	0307	0308
0401	0402	0403	0404	0405	0406	0407	0408
0501	0502	0503	0504	0505	0506	0507	0508

P2 A2

Inspection Form (No.4) Numbers of Parts and Elements						Span No.	3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

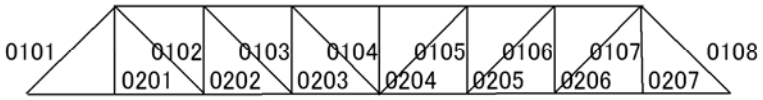
Numubers of Parts and Elements

Diagonal Bracing/Vertival Member Downstream (Dtd)



P2 A2

Diagonal Bracing/Vertival Member Upstream (Dtu)

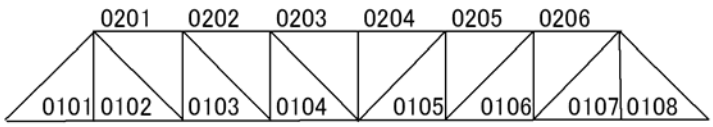


P2 A2

Inspection Form (No.4) Numbers of Parts and Elements						Span No.	3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

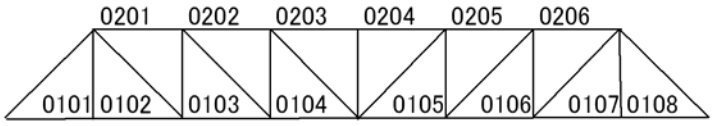
Numubers of Parts and Elements

Upper/Bottom Chord Downstream (Btd)



P2 A2

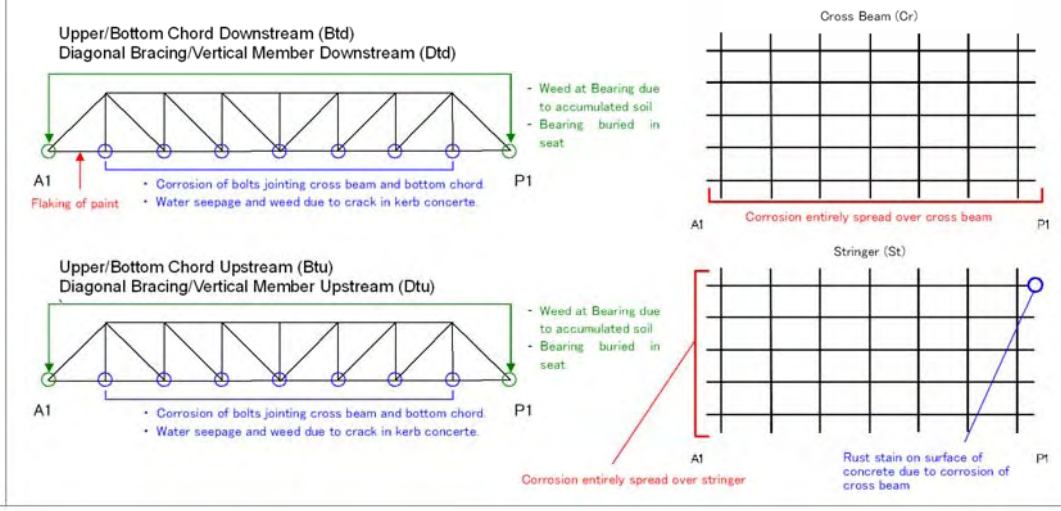
Upper/Bottom Chord Upstream (Btu)



P2 A2

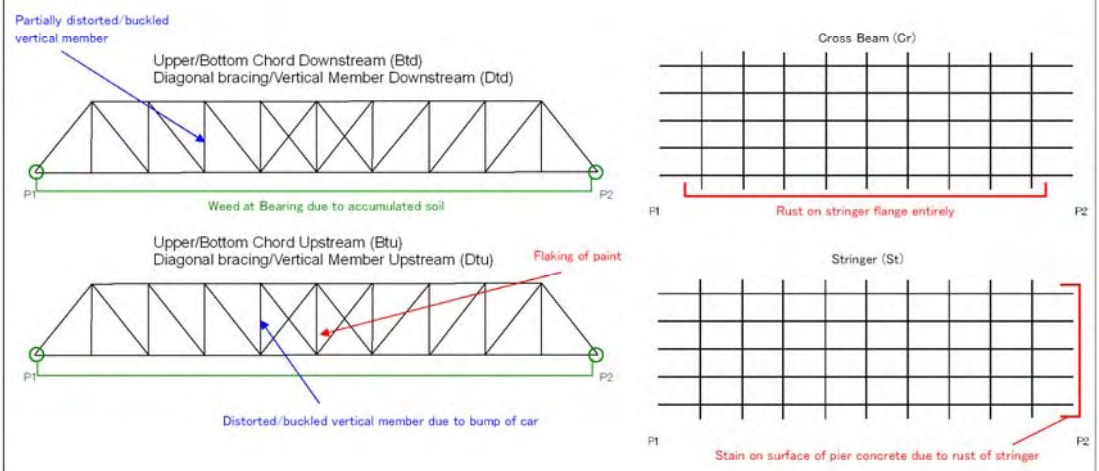
Inspection Form (No.5) Defects						Span No.	1
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects



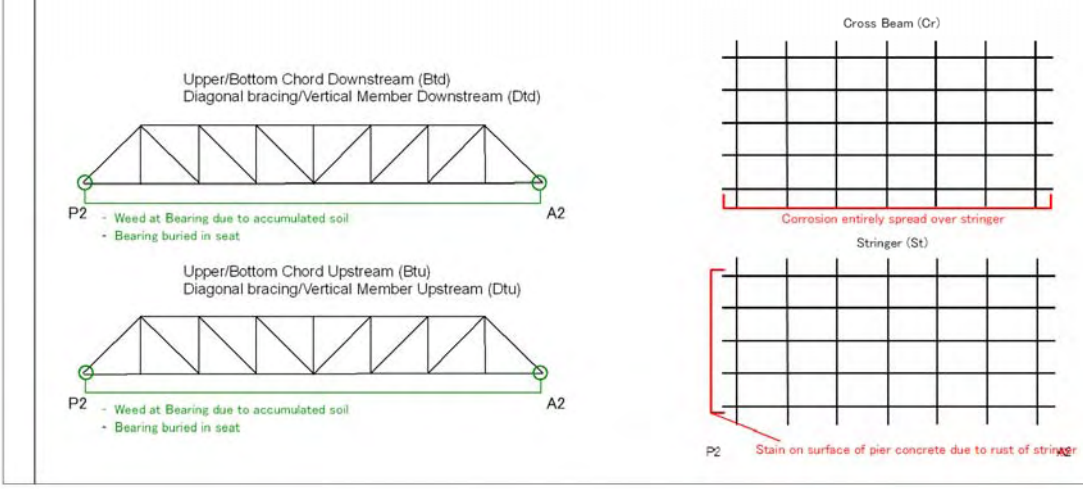
Inspection Form (No.5) Defects						Span No.	2
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects



Inspection Form (No.5) Defects						Span No.	3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects



Inspection Form (No.6) Photo/Defects						Span No.	1
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.	1	Span No.	1	Date	2008.4.15
Parts & Elements	Bottom Chord	Element No.	Btd/Btu 0101-0108	Memo	
Defects	Corrosion	Grade	d	Flaking of paint of bottom chord.	

Photo No.	2	Span No.	1	Date	2008.4.15
Parts & Elements	Bottom Chord	Element No.	Btd/Btu 0101-0108	Memo	
Defects	Corrosion	Grade	e	Corrosion of bolt jointing cross beam and bottom chord.	

Photo No.	3	Span No.	1	Date	2008.4.15
Parts & Elements	Pavement	Element No.		Memo	
Defects	Pothole	Grade	e	Flaking of pavement of bridge surface.	

Photo No.	4	Span No.	1	Date	2008.4.15
Parts & Elements	Expansion Joint	Element No.		Memo	
Defects	Accumulated Soil	Grade	c	Accumulated soil in allowance of expansion joint.	

Inspection Form (No.6) Photo/Defects

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Defects

Photo No.	5	Span No.	1	Date	2008.4.13	Photo No.	6	Span No.	1	Date	2008.4.13
Parts & Elements	Cross Beam / Stringer	Element No.	Cr 0101-0607 St 0101-0508	Memo		Parts & Elements	Stringer	Element No.	0108	Memo	
Defects	Corrosion	Grade	e	Corrosion spread over cross beam entirely.		Defects	Corrosion	Grade	e	Rust stain on surface of pier concrete due to corrosion of stringer.	

Photo No.	7	Span No.	1	Date	2008.4.13	Photo No.	8	Span No.	1	Date	2008.4.15
Parts & Elements	Stringer	Element No.	0101	Memo		Parts & Elements	Cross Beam / Stringer	Element No.	Cr 0101-0607 St 0101-0508	Memo	
Defects	Accumulated Soil	Grade	e	Bearing buried in accumulate soil.		Defects	Corrosion	Grade	e	Corrosion spread over cross beam and stringer entirely.	

Inspection Form (No.6) Photo/Defects

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	1
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Defects

Photo No.	9	Span No.	1	Date	2008.4.15	Photo No.	10	Span No.	1	Date	2008.4.15
Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo		Parts & Elements	Bearing	Element No.	Seat Concrete	Memo	
Defects	Accumulate Soil	Grade	e	Weed at Bearing due to accumulated soil.		Defects	Reduced section	Grade	e	Bearing of cross beam buried in seat.	

Photo No.		Span No.		Date		Photo No.		Span No.		Date	
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade				Defects		Grade			

Inspection Form (No.6) Photo/Defects

Span No.	1

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.	11	Span No.	1	Date	2008.4.15	Photo No.		Span No.		Date	
Parts & Elements	Kerb	Element No.	-	Memo		Parts & Elements		Element No.		Memo	
Defects	Crack	Grade	e	Weed at joint of cross beam and bottom chord due to crack of kerb.		Defects		Grade			

Photo No.	12	Span No.	1	Date	2008.4.15	Photo No.	13	Span No.	1	Date	2008.4.15
Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo		Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo	
Defects	Accumulated Soil	Grade	e	Weed at Bearing due to accumulated soil.		Defects	Accumulated Soil	Grade	e	Same as left.	

Inspection Form (No.6) Photo/Defects

Span No.	2

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.	1	Span No.	2	Date	2008.4.13	Photo No.	2	Span No.	2	Date	2008.4.15
Parts & Elements	Stringer	Element No.	0101, 0201, 0101, 0401, 0501	Memo		Parts & Elements	Cross Beam	Element No.	0101-0609	Memo	
Defects	Corrosion	Grade	e	Rust stain on surface of pier concrete due to corrosion of stringer.		Defects	Corrosion	Grade	e	Entire corrosion of cross beam down side flange.	

Photo No.	3	Span No.	2	Date	2008.4.15	Photo No.	4	Span No.	2	Date	2008.4.14
Parts & Elements	Cross Beam / Stringer	Element No.	Cr 0101-0609 St 0101-0510	Memo		Parts & Elements	Cross Beam · Stringer	Element No.	Cr 0101-0609 St 0101-0510	Memo	
Defects	Corrosion	Grade	e	Rust stain on stringer. Corrosion of cross beam down side flange.		Defects	Corrosion	Grade	e	Same as left.	

Inspection Form (No.6) Photo/Defects

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	2
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Defects

Photo No.	5	Span No.	2	Date	2008.4.15	Photo No.	6	Span No.	2	Date	2008.4.15
Parts & Elements		Element No.	Bearing (entire)	Memo		Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo	
Defects	Accumulated Soil	Grade	e	Weed at Bearing due to accumulated soil.		Defects	Accumulated Soil	Grade	e	Same as left	

Photo No.	7	Span No.	2	Date	2008.4.15	Photo No.	8	Span No.	2	Date	2008.4.15
Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo		Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo	
Defects	Accumulated Soil	Grade		Same as above		Defects	Accumulated Soil	Grade	e	Same as above	

Inspection Form (No.6) Photo/Defects

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Span No.	2
Location	From	Station No.	From			Bridge Code	
	To		To			Date Inspected	Oct. 16, 2008

Defects

Photo No.	9	Span No.	2	Date	2008.4.15	Photo No.	10	Span No.	2	Date	2008.4.15
Parts & Elements	Handrail	Element No.	-	Memo		Parts & Elements	Vertical Member	Element No.	Dtu0204	Memo	
Defects	Distortion-Buckling	Grade	c	Distortion-Buckling of handrail pipe due to bump of car.		Defects	Distortion-Buckling	Grade	C	Distortion-Buckling of vertical mem ber due to bump of car. Large vibration by traffic of heavy vehicles.	

Photo No.	11	Span No.	2	Date	2008.4.15	Photo No.	12	Span No.	2	Date	2008.4.15
Parts & Elements	Vertical Member	Element No.	Dtu0205	Memo		Parts & Elements	Bearing	Element No.	Bearing (entire)	Memo	
Defects	Corrosion	Grade	c	Flaking of paint of some vertical members.		Defects	Accumulated Soil	Grade	e	Weed at Bearing due to accumulated soil.	

Inspection Form (No.6) Photo/Defects

Span No.	2

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.	13	Span No.		Date		Photo No.	14	Span No.		Date	2008.4.15
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade		Distortion-Buckling of some handrails due to bump of cars.		Defects		Grade		Flaking of pavement of bottom chord.	

Photo No.	15	Span No.		Date		Photo No.	16	Span No.		Date	
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade		Distortion-Buckling of some vertical members.		Defects		Grade			

Inspection Form (No.6) Photo/Defects

Span No.	3

Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.		Span No.		Date	2008.4.15	Photo No.		Span No.		Date	2008.4.15
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade		Water seepage at construction joints of pier concrete.		Defects		Grade		Corrosion of cross beam.	

Photo No.		Span No.		Date		Photo No.		Span No.		Date	
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade				Defects		Grade			

Inspection Form (No.6) Photo/Defects						Span No.	3
Bridge Name	Assin Praso Bridge	Road Name	National Highway No.8	Governing Agency	Ghana Highway Authority (GHA)	Bridge Code	
Location	From	Station No.	From			Date Inspected	Oct. 16, 2008
	To		To				

Defects

Photo No.		Span No.		Date	2008.4.15	Photo No.		Span No.		Date	2008.4.15
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade		Weed at Bearing due to accumulated soil.		Defects		Grade		Same as left.	
											
Photo No.		Span No.		Date		Photo No.		Span No.		Date	
Parts & Elements		Element No.		Memo		Parts & Elements		Element No.		Memo	
Defects		Grade				Defects		Grade			