DETAILED INSPECTION

(REPORT)

The Project for Capacity Development on Bridge Maintenance and Management in Laos
JICA-BMM

Nam Mone Bridge and Xe Bangnouan Bridges
Detailed Inspection Report

Prepared by:

ລາວ ຄອນຊາວຕິ້ງກຼຸບ ຈຳກັດ
LAO CONSULTING GROUP

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Document history

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Contents

1 INTRODUCTION

Looking at the practice of the bridge maintenance, many bridges are being damaged and deteriorated, but only "breakdown-maintenance" is in place, in which repairs are performed only after the damage to the bridge has enlarged and "planned repair" has been absent. There are 3,580 bridges and structures nationwide, including 1,350 on National Roads, of which 35% require regular maintenance and 17% require emergency repairs. In addition, 40% are temporary bridges such as wooden bridges and Bailey bridges, which usually lack durability, and there have been multiple incidents of bridge collapse due to damage to bridges mainly caused by improper bridge repair and maintenance and overloaded vehicles. Bridges in Laos have been constructed and maintained with the support of Japan, but in order to ensure safe and smooth traffic on trunk roads, well planned maintenance and repair of bridges is crucial.

Accordingly, JICA provides technical assistance program, entitled the Project for Capacity Development on Bridge Maintenance and Management (hereinafter referred to as "JICA-BMM") to establish bridge maintenance cycles (i.e., Inspection-Diagnosis-Planning-Repair) and contributes to the improvement of bridge maintenance capabilities of DOR, PTTI and DPWTs. Notably, Public-Private-Academia collaboration and adaptation of Japanese technologies to the bridge inspection and diagnosis are part of area JICA-BMM emphasizes in order to practice effective infrastructure management and lifetime extending maintenance technology and establish institutional maintenance framework and nationwide robust road network in Laos.

Lao Consulting Group Ltd. (LCG) was contracted by JICA-BMM to carry out the detailed inspection for Nam Mone Bridge in Vientiane Province and Xe Bangnouan Bridge in Savannakhet Province.

1.1 Nam Mone Bridge Background

Nam Mone Bridge was built in 1991, located on National Road 13 North (NR13N) at km 142+300 from Vientiane Capital. The bridge has 2 spans, with 4 main precast, post-tensioned girders, 22.00m-long for both spans. The bridge length and width are 46.08m and 7.30m, respectively. For further details please see Appendix 1-a.

1.2 Xe Bangnouan Bridge Background

Xe Bangnouan Bridge was built in 1998, located on National Road 13 South (NR13S) at km 540+200 from Vientiane Capital. The bridge has 3 spans, with 2-main steel girders with a length of 43.00m, 53.00m and 43.00m for span-1, span-2 and span-3, respectively. The bridge length is 140.00m and the bridge width is 7.30m. For further details please see Appendix 2-a.

2 INSPECTION TEAM MEMBERS

Team formulated with following members:

Project Manager	: Arouny Anne Sakulku
Team Leader	: Dr. Thong Sopha
Inspector	: Vannaxay Soumpholphakdy
Assistant inspectors	: Nilandone Xaiyavong, Vannasin Souksavanh
Safety control staff	: Phanthong Bounlivong
Traffic control staff	: Sivixay Vongnalath, Vi Thailavanh

3 SCOPE OF WORK

This detailed inspection report, consists of the following scope:

- Detailed drawings
- Detailed inspection

4 DETAILED DRAWINGS

Detailed measurement survey was carried out on site for all key members and these measurements were used to create a detailed drawings for each bridge.

4.1 Nam Mone Bridge

The detailed measurement survey for Nam Mone was carried out between 26-Jan-2022 and 28-Jan-2022. Please see Appendix 1-b for Nam Mone Bridge detailed drawings. The drawing was prepared based on the information obtained from measurement works on site by using measuring tape, laser distance measurer, ultrasonic measuring meter, caliper scale.

4.2 Xe Bangnouan Bridge

The detailed measurement survey for Xe Bangnouan Bridge was carried out between 22-Feb-2022 and 24-Feb-2022. Please see Appendix 2-b for Xe Bangnouan Bridge detailed drawings. The drawing was prepared based on following information:

- 3D Laser Scanner Data: Inspection team have used a point cloud data which obtained from JICA-BMM to specify a main/sub girder splices location, vertical bracing location, pier height, RC cross beam sizes, main girders types A and B flanges width, P1/P2 concrete pedestal size, shape of deck slab, and main/sub girder width and height.
- Assumption: Due to site constraints, it was assumed that every vertical bracing have the same steel sizes as the measured sizes at the near abutment segment, where the inspection team was able to access. And similarly, the main/sub girder steel plate thickness along the bridge were also assumed the same as the measured sizes at the abutment segment, where the inspection team was able to access.
- Drone and binoculars: drone and binoculars were used to confirm that the assumption which mentioned above are correct, and to check the type of bearings at pier P1 and P2.
- The remaining items were measured by using measuring tape, laser distance measurer, ultrasonic measuring meter, caliper scale.

5 DETAILED INSPECTION

The Field Inspection team carried out a detailed inspection for each bridge, created a damage drawing, summarized a quantity of damage, and made a damage grade evaluation based on the procedures set out by the JICA-BMM Project. The detailed inspections were carried out from 26-Jan-2022 and 28-Jan-2022 for Nam Mone Bridge and 22-Feb-2022 and 24-Feb-2022 for Xe Bangnouan Bridge.

5.1 Nam Mone Bridge

5.1.1 Damage Drawings

Please see Appendix 1-c for Nam Mone Bridge damage drawings as well as damage photo and damage sketch. The Damage drawings are separated into 3 parts as following:

- Bottom View: Many cracks have been found at the end of main girder at pier P1, damage status is ranged from grade C to D. 2 serious peeling also have been found at the end of main girder at abutments A1 and A2 close to the bearings. In addition, many cracks on deck slab ranged from grade C to E were generally found at most of the precast deck.
- Substructure: Sediment and water leakage have been noted at the abutments A1 & A2, and pier P1.
- Top View: There are generally slight corrosion on most of the railing, and some railings are damaged from impact, especially at Span1 downstream side. The rough road surface have been also found in a wide area in both spans. Every expansion joint gap has been overlaid by pavement.

5.1.2 Quantity of Damage

The damage is mainly cracks on slab, shown in the bottom of deck slab. Crack width with smaller than and equal to 0.2mm is widely spread out with the percentage of about 50% of total bottom deck slab area. In details, please see Appendix 1-d.

5.1.3 Damage grade evaluation

The severed damage is the cracks on slab, mainly seen in the deck slab. The damage state is graded as A, B, C, D and E with 55, 0, 30, 10 and 5%, respectively for span-1. And 46, 0, 9, 35 and 10%, respectively for span-2. In details, please see Appendix 1-e for a damage grade evaluation of Nam Mone Bridge.

5.2 Xe Bangnouan Bridge

5.2.1 Damage Drawings

Please see Appendix 2-c for Xe Bangnouan Bridge detailed drawings as well as damage photo. The Damage drawings are separated into 3 parts as following:

- Bottom View: slight corrosion with grade B has been noted mainly in the main/sub girder and vertical bracing close to the abutments A1 & A2. Quite similar to Nam Mone Bridge, the cracks on deck slab with grade D are generally observed at the bottom of the deck. There are some free lime with grade D also found at span-2.
- Substructure: Similar to Nam Mone Bridge, sediment and water leakage were noted at abutment A1 & A2. The bearings are generally slightly corroded. Bearing anchor bolt at abutment A1 is deformed, causing a crack and peeling in mortar (grout pad). There are many serious cracks with a width of 0.10-0.25mm in a parapet wall at abutment A2. Piers P1 & P2 are damaged, possibly caused by river flow. It is observed that the bottom of

piers P1 & P2 surface shows evidence of scouring, moreover cracks and peeling also can be seen in pier P1/G1.

- Top View: Railings is generally slightly corroded, as well as rough road surfaces also have been found in a wide area due to peeling of the pavement. Both expansion joints have a step of 10-20mm. There are many cracks on deck slab with grade E have been found, especially at span-2, where from bottom view the free lime is observed, presumably the cracks could go through deck slab.

5.2.2 Quantity of Damage

The damage is mainly, cracks on slab shown in both top and bottom faces of deck slab. Crack width with smaller than and equal to 0.2mm is widely spread out with the percentage of about 80% of total bottom deck slab area. Crack width ranged from 0.2 to 1.0mm is widely observed with the percentage of about 25% of total top deck slab area, but it probably could have more crack under a pavement. In details, please see Appendix 2-d.

5.2.3 Damage grade evaluation

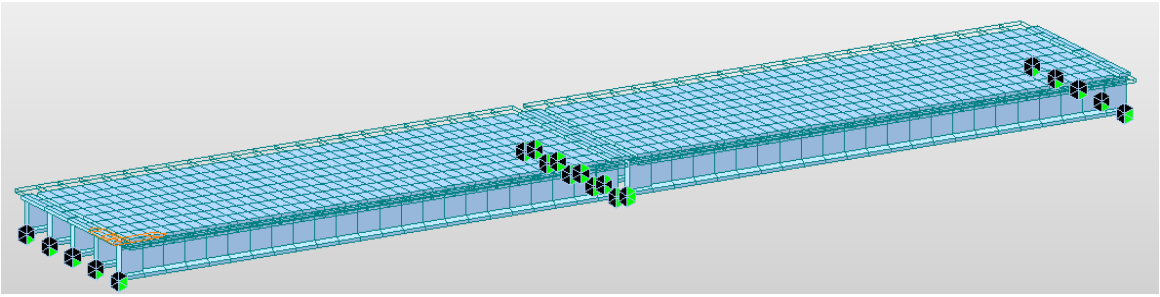
The severed damage is the cracks on slab, mainly seen in the deck slab. The damage state is graded as A, B, C, D and E with 0, 0, 0, 85 and 15%, respectively for span-1. And 0, 0, 0, 65 and 35%, respectively for span-2. And 0, 0, 0, 75 and 25%, respectively for span-3. In details, please see Appendix 2-e for a damage grade evaluation of Xe Bangnouan Bridge.

6 DISCUSSION

A detailed inspection has been carried out for Nam Mone Bridge in Vientiane Province and Xe Bangnouan Bridge in Savannakhet Province. As per above mentioned observations, the bridge damage for these two bridges are similar, in terms of cracks on the deck slab. However, the damage causes might be different a little bit.

6.1 Nam Mone Bridge in Vientiane Province

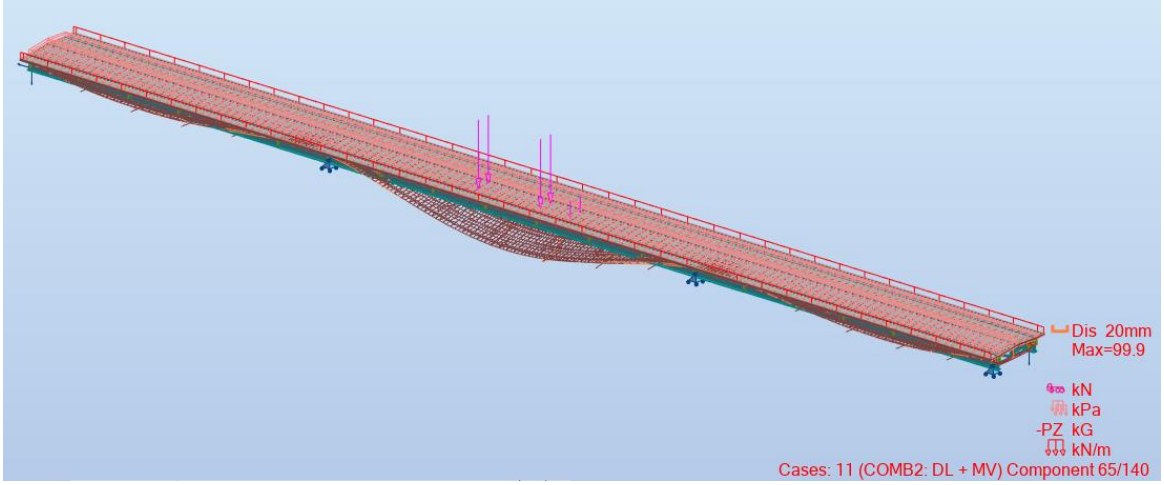
- From our detailed visual inspection, it is observed that the expansion joint gap between deck slabs, and between main girder end and abutment parapet wall is abnormally small.
- At the abutment ledges, there are mud that have congealed over the bearings and water stains indicating water leakage through the joint in the deck slab.
- From top view it is observed that both expansion joints have been paved over. Based on our results of the bridge simulation, an expansion joint gap should be at least 20 mm.



The above observations could have contributed to the bridge structural damages i.e bridge bearing might not function properly, leading to the case that girders and deck slab do not able to act as per the original design concept, and consequently the cracks appeared on the main girders and deck slab.

6.2 Xe Bangnouan Bridge in Vientiane Province

- From our detailed visual inspection, it is observed that bearing anchor bolt at abutment A1 is deformed. For this damage, it is noticed that longitudinal reaction is very high from our simulation. It could be the case the current pot bearing does not suit to the actual bridge reaction.
- There are many serious cracks with a width of 0.10-0.25mm in a parapet wall at abutment A2. For this damage, in our opinion, it could be the case that the abutment parapet wall is under designed, reinforcement is not enough to resist the longitudinal forces. Or else, the movable bearings at the abutment A2 failed to function probably.
- Both expansion joints have a step of 10-20mm (settlement). This could cause by settlement of abutment, or deformation of the abutment parapet wall confined by back fills.
- There are many cracks on deck slab with grade E have been found, especially at span -2, where from bottom view the free lime is observed, suspecting that the cracks could go through the deck slab.



Based on our results of the bridge simulation, the steel bridge deflection is quite high up to the allowable. The crack could be occurred due to the dynamic moving loads. The deck slab reinforcement might be insufficient in order to resist the forces induced by the cyclic dynamic loads.

Appendix 1: Nam Mone Bridge

Appendix 1-a: Inventory Data and General View

Bridge Inventory Data (General Information)

Road No.	13N	Latest updated by whom	Vannaxay
Road name	NR No.13 North	Date of update	10-02-22
Road class	National Road	Availability of bridge drawings	absence
Road link ID	H	Bridge type (Steel [Bailey]/PC/RC)	PC
Bridge ID/No.	Unknown	Bridge length (m)	46.08
Bridge name	Namone	Number of span(s)	2
River name	Nam Mone	Number of substructure(s)	3
Location of bridge centre (Chainage)	142 Km 300 m	Max. Span length (m)	22.00
Coordinates (Latitude: ° ' ")	N: 18°51'22.67"	Min. Span length (m)	22.00
Coordinates (Longitude: ° ' ")	E: 102°31'45.14"	Number of main girder(s)	4
Bridge location (Province)	Vientiane	Total bridge width (m)	7.3
Year of construction	1991	Inbound lane width (m)	2.95
Latest repair year	2020	Outbound lane width (m)	2.95
Design standard of bridge	Unknown	Freeboard (m)	2.98
Max. permissible design load	40 Ton	Material of superstructure	PC
Sourse of funding	Unknown	Material of substructure	RC
Latest year of traffic volume survey	No Data	Material of expansion joint	Steel
Traffic volume	No Data	Material of bearing shoes	Elastomeric
Traffic volume of heavy vehicle	No Data		
Detour	absence		

Remarks

① Inbound direction

② Outbound direction

③ Upstream direction

④ Downstream direction

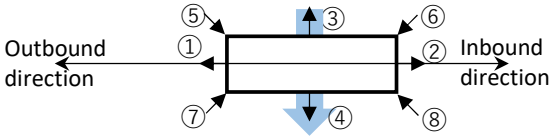
⑤ From the right bank direction of upstream

⑥ from the left bank direction of upstream

⑦ From the right bank direction of downstream

⑧ From the left bank direction of downstream

Remarks



Bridge Inventory Data (Superstructure)

Inspection type	Detailed Inspection	Inspection method	Close visual inspection
Span No.	1	Span name	SP-1
Structure type	PC Girder	Use material	PC
Span length (m)	22.00	Deck material	RC
Crossing object	River	Main girder structure	Simple
Bearing type	Elastomeric	Rust proofing	Absence
Span No.	2	Span name	SP-2
Structure type	PC Girder	Use material	PC
Span length (m)	22.00	Deck material	RC
Crossing object	River	Main girder structure	Simple
Bearing type	Elastomeric	Rust proofing	Absence
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	
Span No.		Span name	
Structure type		Use material	
Span length (m)		Deck material	
Crossing object		Main girder structure	
Bearing type		Rust proofing	

Remarks

Bridge Inventory Data (Substructure)

Substructure No.	1	Substructure name	A1
Body type	Abutment	Foundation type	Unknown
Substructure No.	2	Substructure name	P1
Body type	Pier	Foundation type	Unknown
Substructure No.	3	Substructure name	A2
Body type	Abutment	Foundation type	Unknown
Substructure No.	4	Substructure name	
Body type		Foundation type	
Substructure No.	5	Substructure name	
Body type		Foundation type	
Substructure No.	6	Substructure name	
Body type		Foundation type	
Substructure No.	7	Substructure name	
Body type		Foundation type	
Substructure No.	8	Substructure name	
Body type		Foundation type	
Substructure No.	9	Substructure name	
Body type		Foundation type	
Substructure No.	10	Substructure name	
Body type		Foundation type	
Substructure No.	11	Substructure name	
Body type		Foundation type	

Remarks

Bridge General View

Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitudu)	102° 31' 45.14"

Side Views

Plan Views

Appendix 1: Nam Mone Bridge

Appendix 1-b: Detailed Drawings

Drawing List	
Drawing Number	Drawing Title
0	Drawings List
1	General View of Nam Mone Bridge
2	3D View of Nam Mone Bridge
3	Superstructure Plan and Section
4	Superstructure Deck Slab Plan and Section
5	PC Girder Details
6	Substructure Pier Details
7	Substructure Abutment Details
8	Bearing Layout Plan

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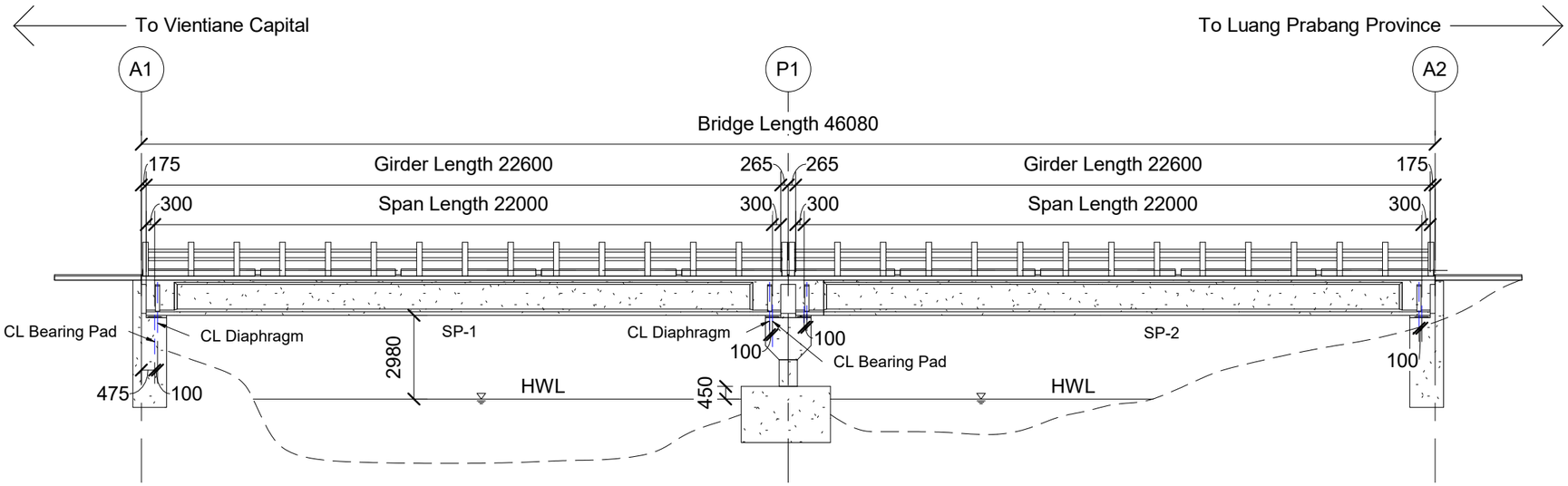
THE PROJECT FOR CAPACITY DEVELOPMENT ON BRIDGE MAINTENANCE AND MANAGEMENT

DRAWING TITLE: Drawings List

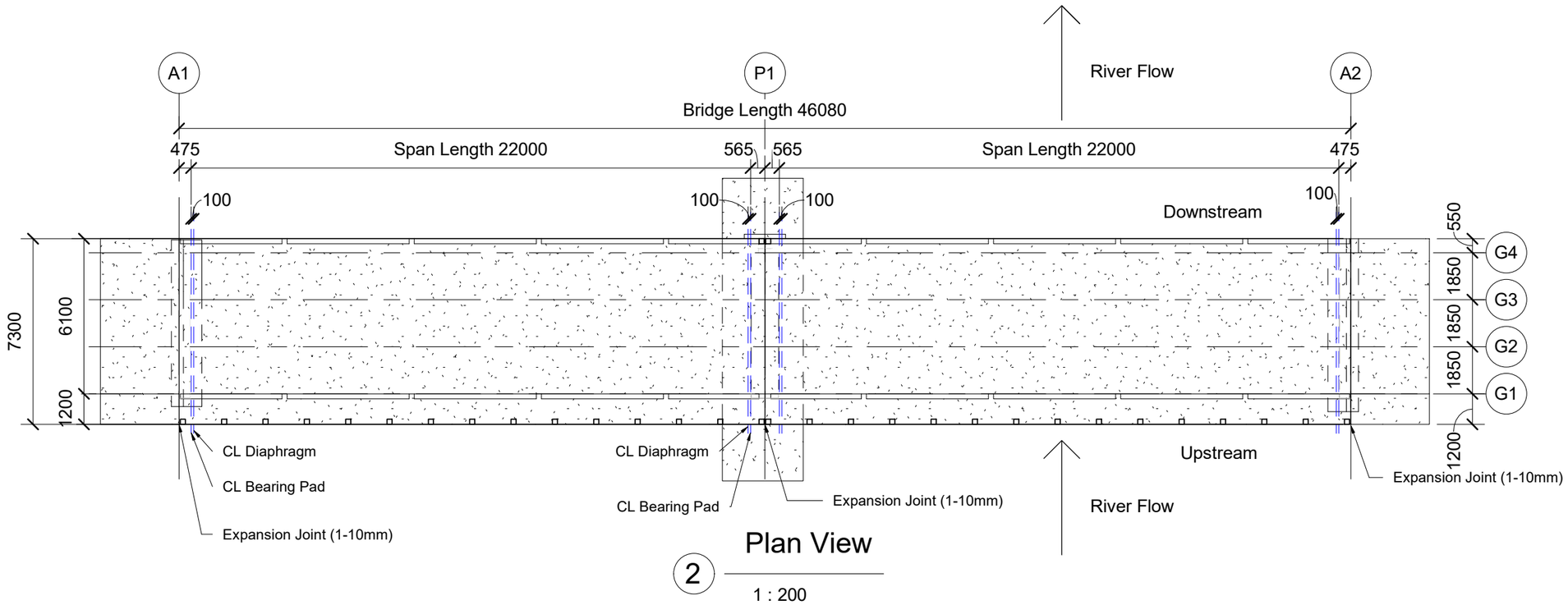
TITLE	NAME	SIGNATURE	DRAWING No.:
DRAWN:	NILANDONE		0
INSPECTOR:	VANNAXAY		SCALE:
TEAM LEADER:	Dr. SOPHA		
PROJECT MANAGER:	A. SAKULKU		

General View of Nam Mone Bridge



Side View

1 : 200



Plan View

1 : 200

Bridge Data	
Road No.	13N
Road Name	NR No.13 North
Bridge Type	PC Girder Bridge
Bridge Name	Namone Bridge
River Name	Nam Mone
Province	Vientiane
Location	142km +300m
Total Bridge Length	46.08m
Total Bridge Width	7.30m
Max Load Capacity	40.00T
Construction Year	1991
Number of Span	2
Number of Substructure	3
Max Span Length	23.00m
Min Span Length	23.00m
Number of Main Girder	4
Material of Superstructure	PC
Material of Substructure	RC
Material of Expansion Joint	Steel
Material of Bearing	Elastomeric
Source of Funding	Unknown

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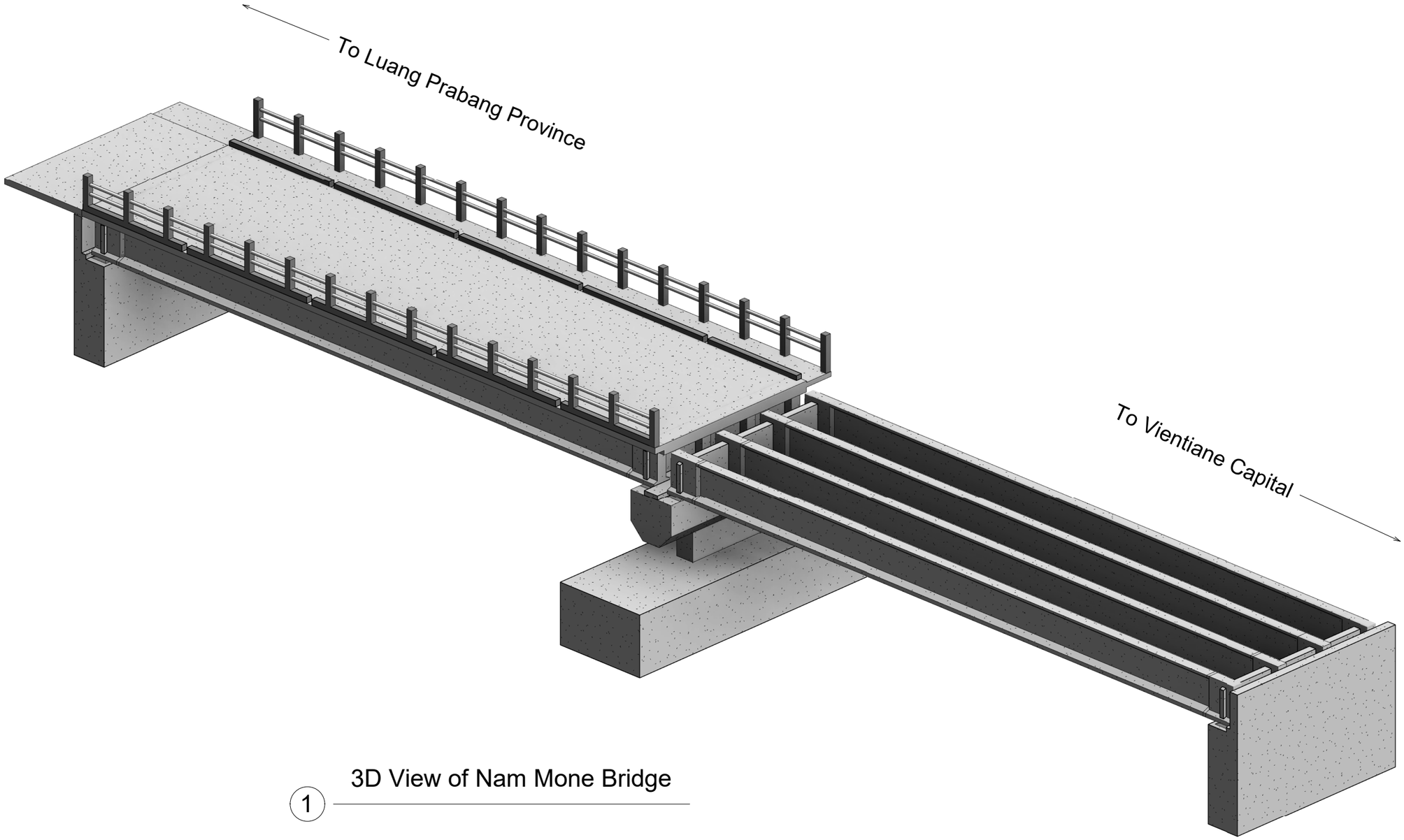
DRAWING TITLE: General View of Nam Mone Bridge

TITLE	NAME	SIGNATURE	DRAWING No.:
DRAWN:	NILANDONE		1
INSPECTOR:	VANNAXAY		SCALE:
TEAM LEADER:	Dr. SOPHA		As indicated
PROJECT MANAGER:	A. SAKULKU		



1 3D View of Nam Mone Bridge

A1-10

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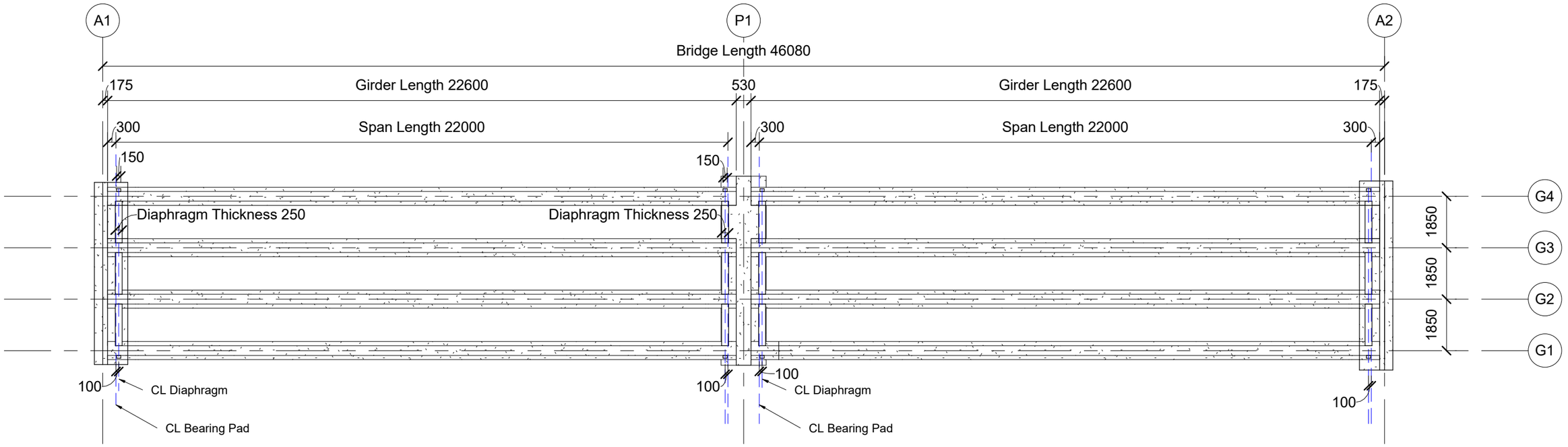
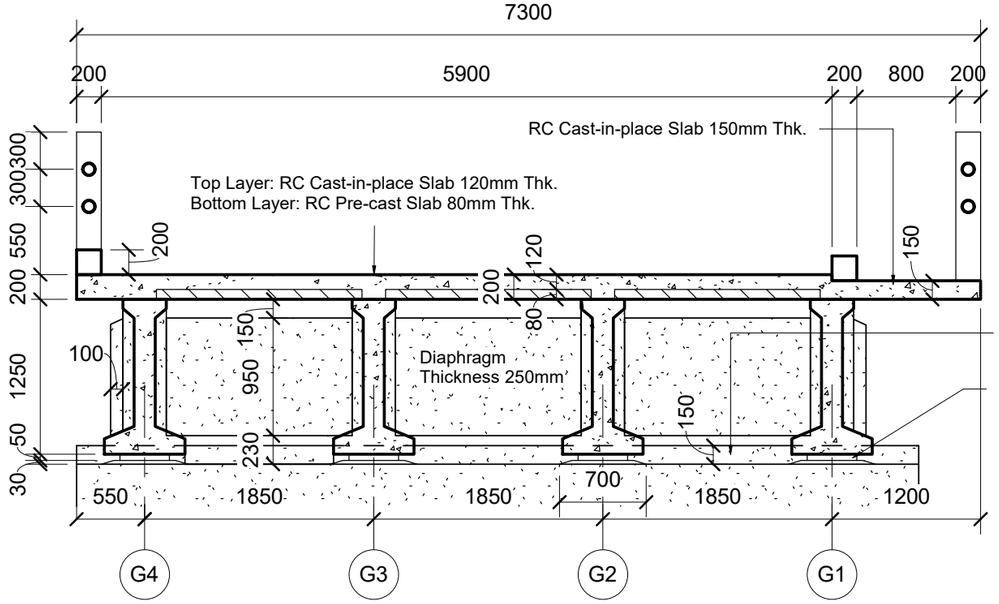
				DRAWN:	NILANDONE		
				INSPECTOR:	VANNAXAY		SCALE:
				TEAM LEADER:	Dr. SOPHA		
				PROJECT MANAGER:	A. SAKULKU		



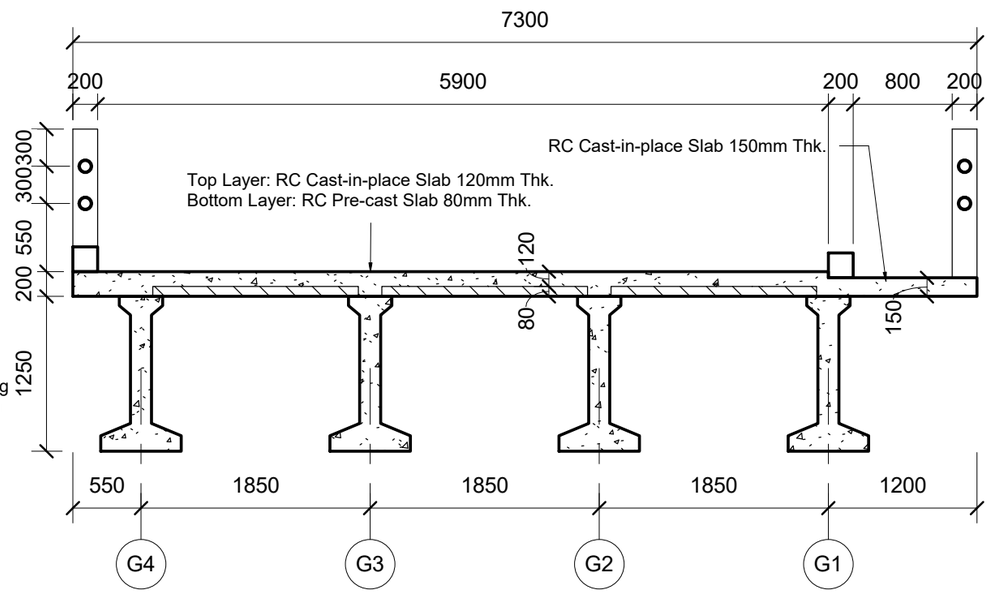
1 Superstructure Section Plan View

1 : 150



2 Superstructure Cross Section at Abutment & Pier

1 : 50



3 Superstructure Cross Section at middle of Span

1 : 50

A1-11

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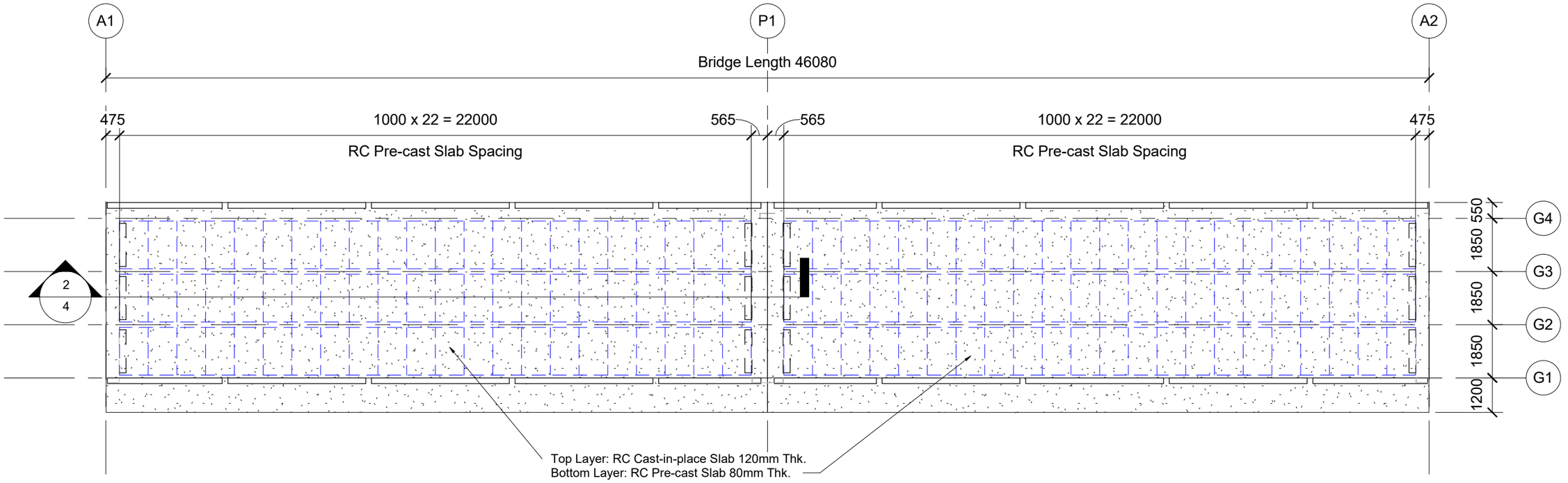
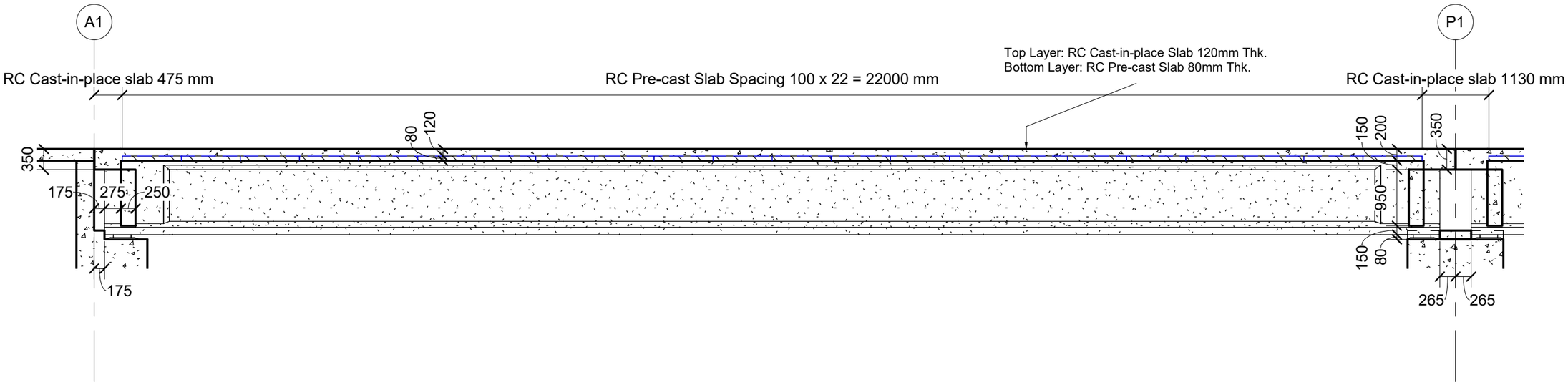
DRAWING TITLE: Superstructure Plan and Section

	TITLE	NAME	SIGNATURE	DRAWING No.:
	DRAWN:	NILANDONE		3
	INSPECTOR:	VANNAXAY		SCALE:
	TEAM LEADER:	Dr. SOPHA		As indicated
	PROJECT MANAGER:	A. SAKULKU		



1 Superstructure Deck Slab Plan View

1 : 150



2 Superstructure Longitudinal Section

1 : 75

A1-12

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THE PROJECT FOR CAPACITY DEVELOPMENT ON BRIDGE MAINTENANCE AND MANAGEMENT

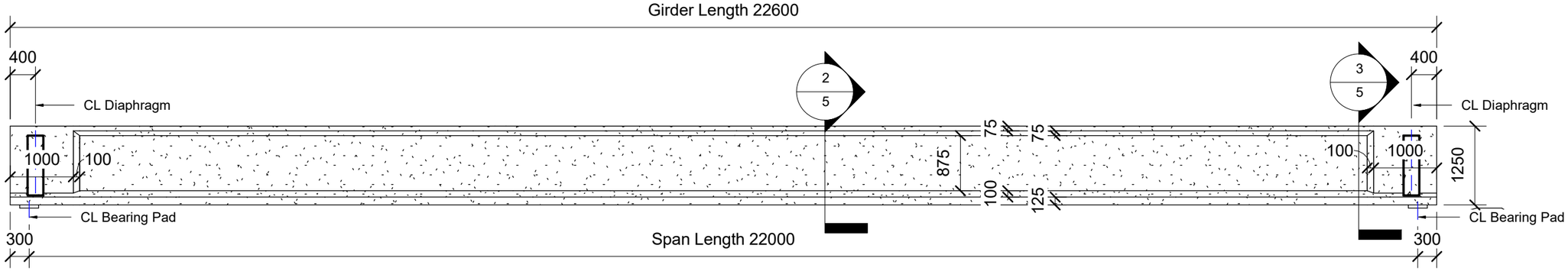
DRAWING TITLE:

Superstructure Deck Slab Plan and Section

TITLE	NAME	SIGNATURE
DRAWN:	NILANDONE	
INSPECTOR:	VANNAXAY	
TEAM LEADER:	Dr. SOPHA	
PROJECT MANAGER:	A. SAKULKU	

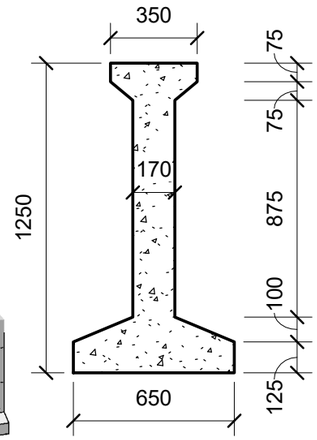
DRAWING No.: 4

SCALE: As indicated



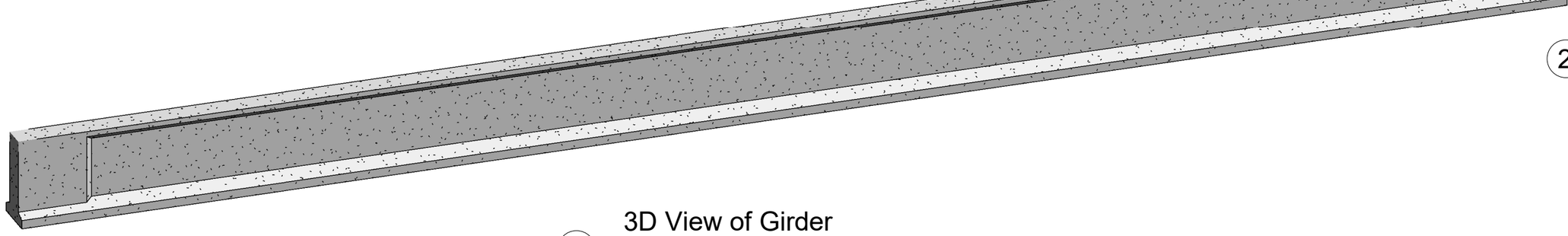
1 Side View of Girder

1 : 75

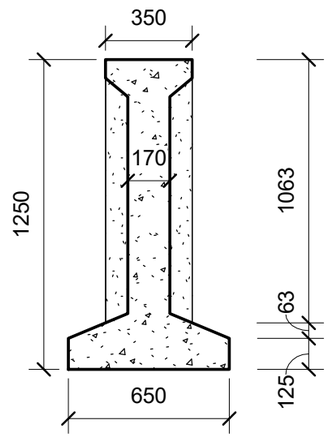


2 Middle Section

1 : 25



4 3D View of Girder



3 End Section

1 : 25

A1-13

THE LAO PEOPLE'S DEMOCRATIC REPUBLIC
MINISTRY OF PUBLIC WORKS AND TRANSPORT

THE CONSORTIUM OF:

INTERNATIONAL DEVELOPMENT CENTER OF JAPAN INC.
AND
NAGASAKI UNIVERSITY
AND
ORIENTAL CONSULTANTS GLOBAL CO., LTD.
AND
KATAHIRA ENGINEERING INTERNATIONAL CO., LTD.

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377 Lao-Thai Road
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P.O. BOX 3097
Vientiane, Lao PDR

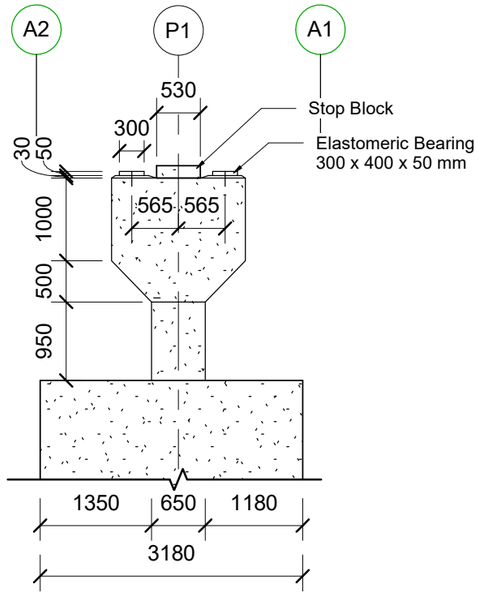
THE PROJECT FOR CAPACITY DEVELOPMENT ON BRIDGE MAINTENANCE AND MANAGEMENT

DRAWING TITLE: PC Girder Details

TITLE	NAME	SIGNATURE
DRAWN:	NILANDONE	
INSPECTOR:	VANNAXAY	
TEAM LEADER:	Dr. SOPHA	
PROJECT MANAGER:	A. SAKULKU	

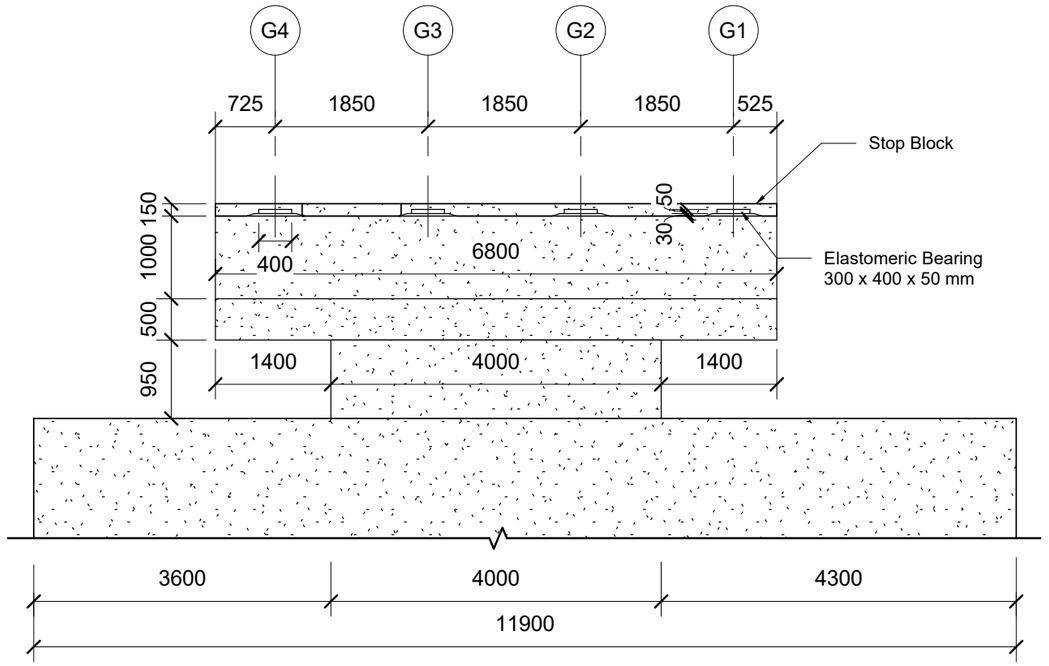
DRAWING No.: 5

SCALE: As indicated



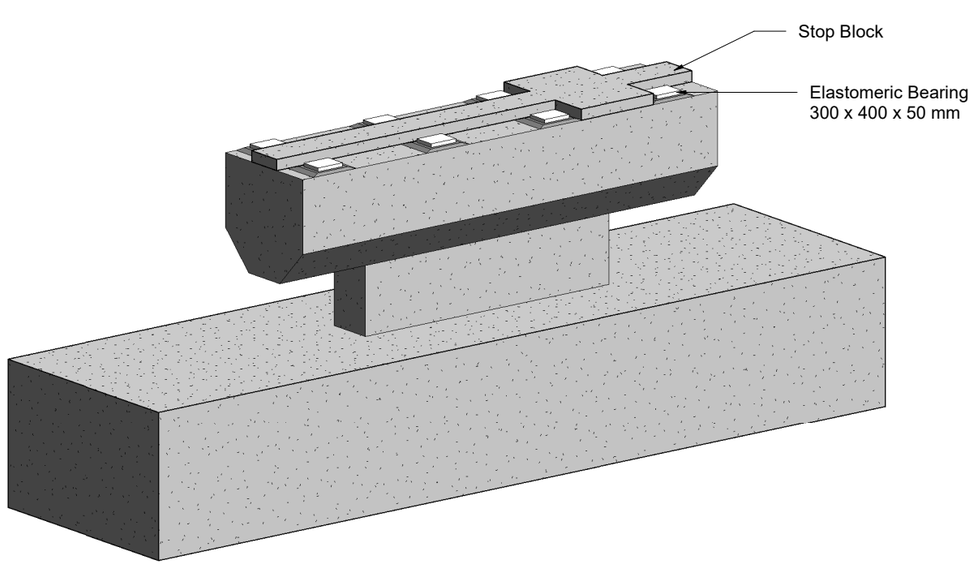
1 Side View of Pier P1

1 : 75

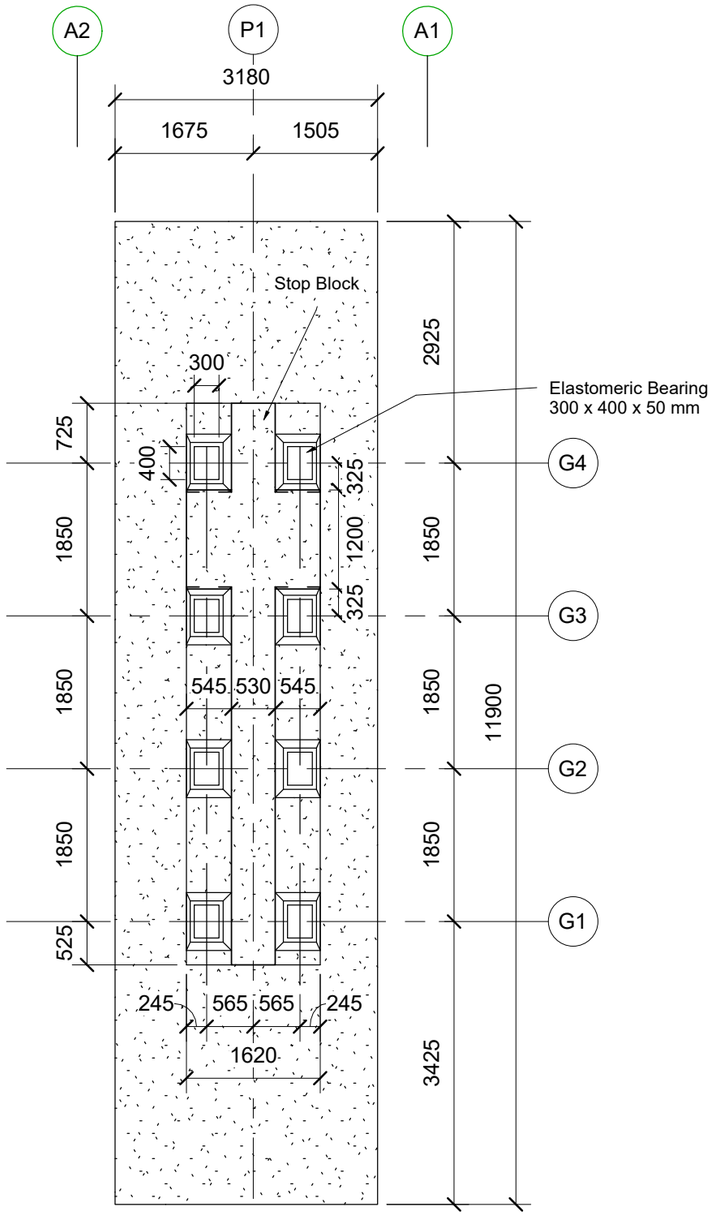


2 Cross Section View of Pier P1

1 : 75



3 3D View of Pier P1



4 Plan View of Pier P1

1 : 75

A1-14

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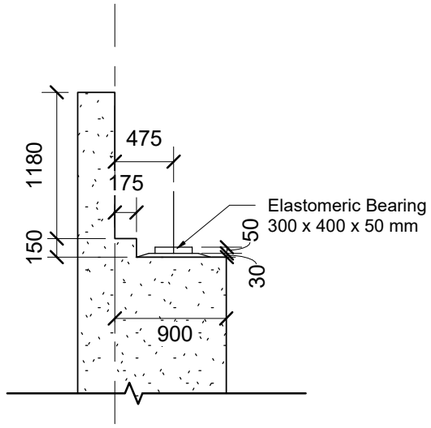
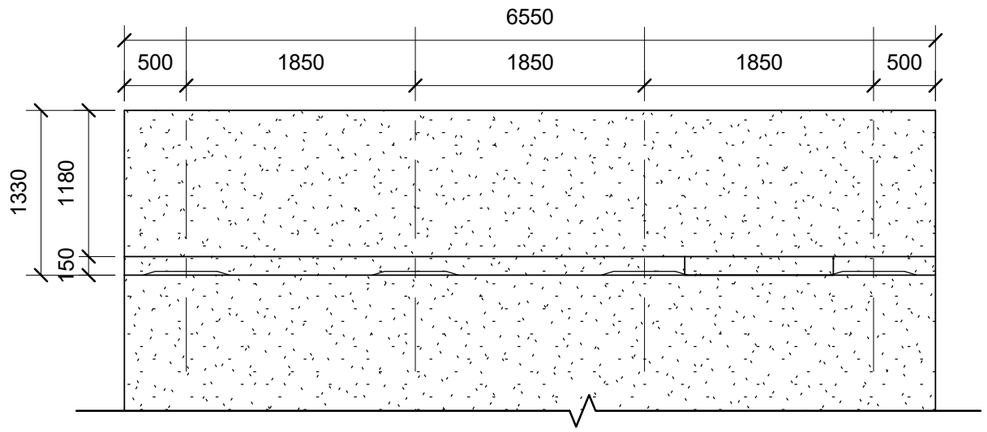


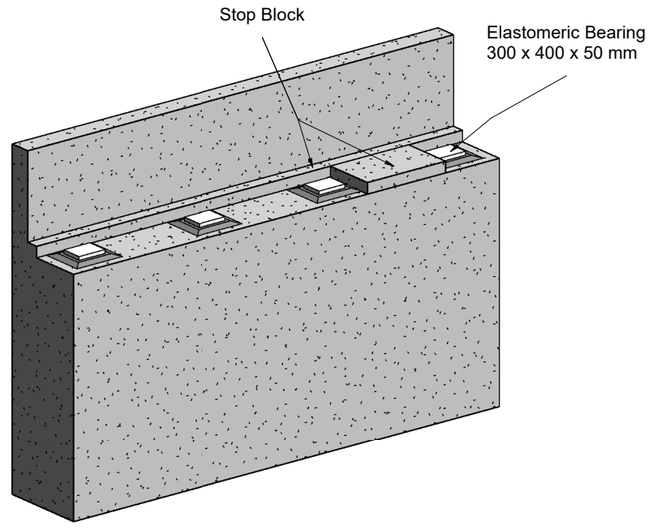
1 Side View of Abutment A1 & A2

1 : 50



2 Cross Section View of Abument A1 & A2

1 : 50



3 3D View of Abutment

A1-15

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AND

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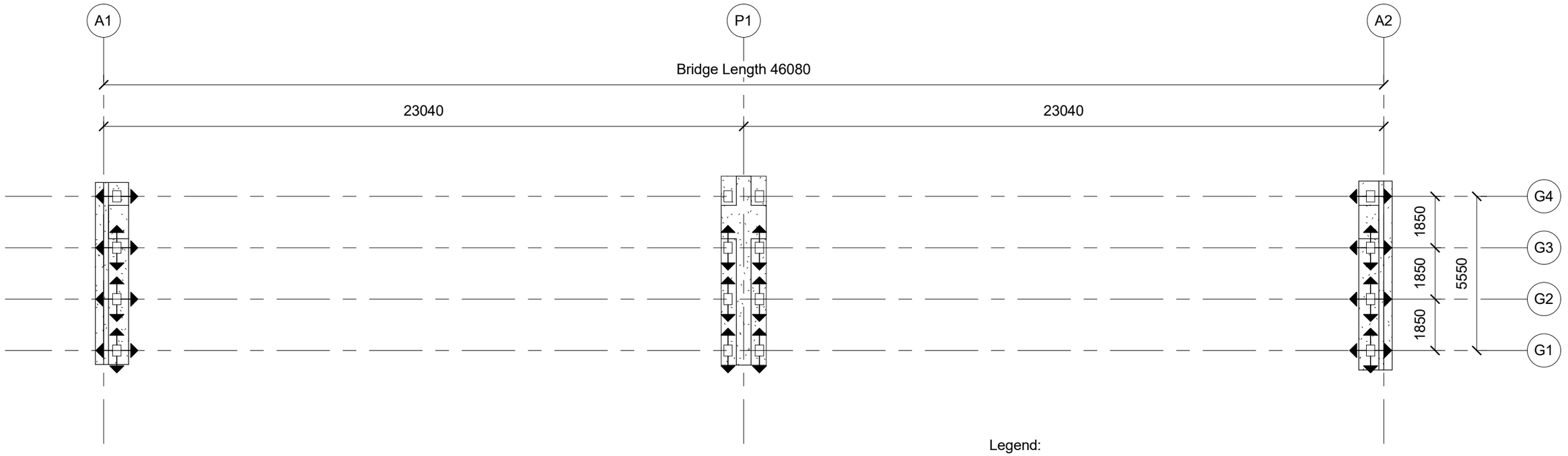
P.O. BOX 3097
Vientiane, Lao PDR

THE PROJECT FOR CAPACITY DEVELOPMENT ON BRIDGE MAINTENANCE AND MANAGEMENT

DRAWING TITLE:

Substructure Abutment Details

	TITLE	NAME	SIGNATURE	DRAWING No.:
	DRAWN:	NILANDONE		7
	INSPECTOR:	VANNAXAY		SCALE:
	TEAM LEADER:	Dr. SOPHA		1 : 50
	PROJECT MANAGER:	A. SAKULKU		



Legend:

- Fixed Bearing
- Longitudinal Direction Movable Bearing
- Free Bearing
- Transverse Direction Movable Bearing

1 Bearing Layout Plan

1 : 150

A1-16

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Vientiane, Lao PDR

THE PROJECT FOR CAPACITY DEVELOPMENT ON BRIDGE MAINTENANCE AND MANAGEMENT

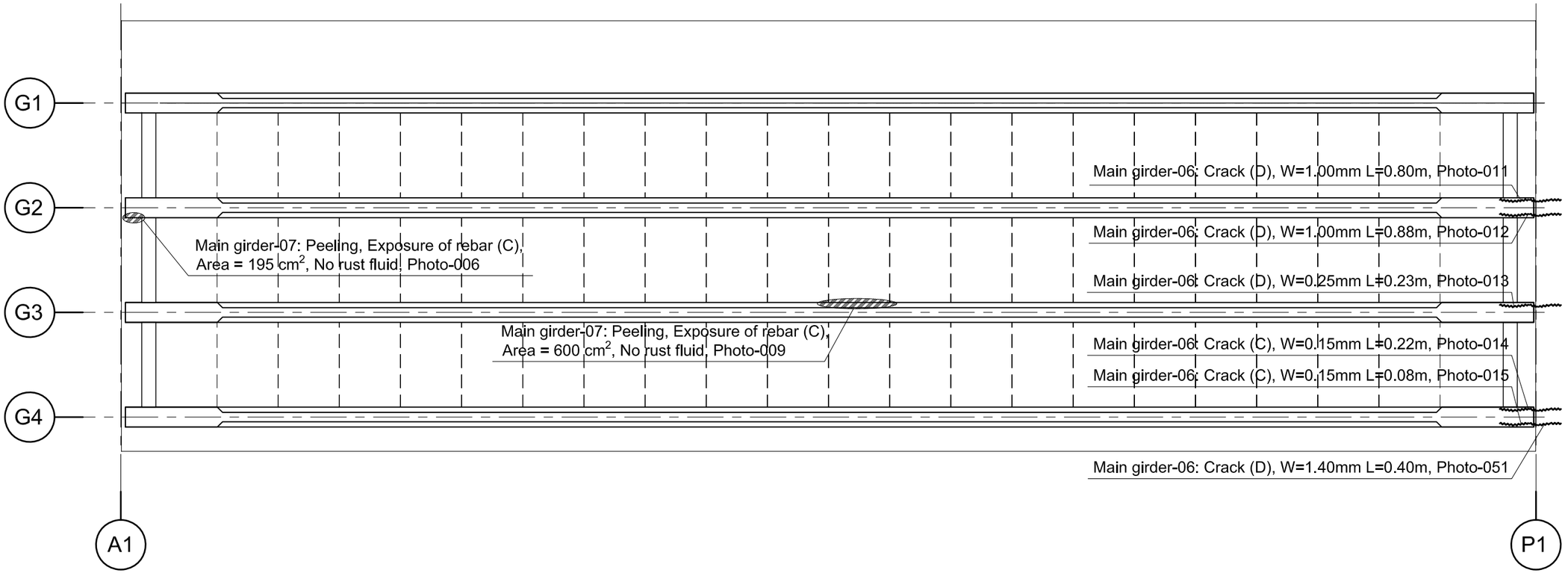
DRAWING TITLE: Bearing Layout Plan

TITLE	NAME	SIGNATURE	DRAWING No.:
DRAWN:	NILANDONE		8
INSPECTOR:	VANNAXAY		SCALE:
TEAM LEADER:	Dr. SOPHA		1 : 150
PROJECT MANAGER:	A. SAKULKU		

Appendix 1: Nam Mone Bridge

Appendix 1-c: Damage Drawings

*Note1: Main girder-13: Unusual or Abnormal Gap. The gap between girder and stop block is unusually wide (less than 10mm). Photo-020

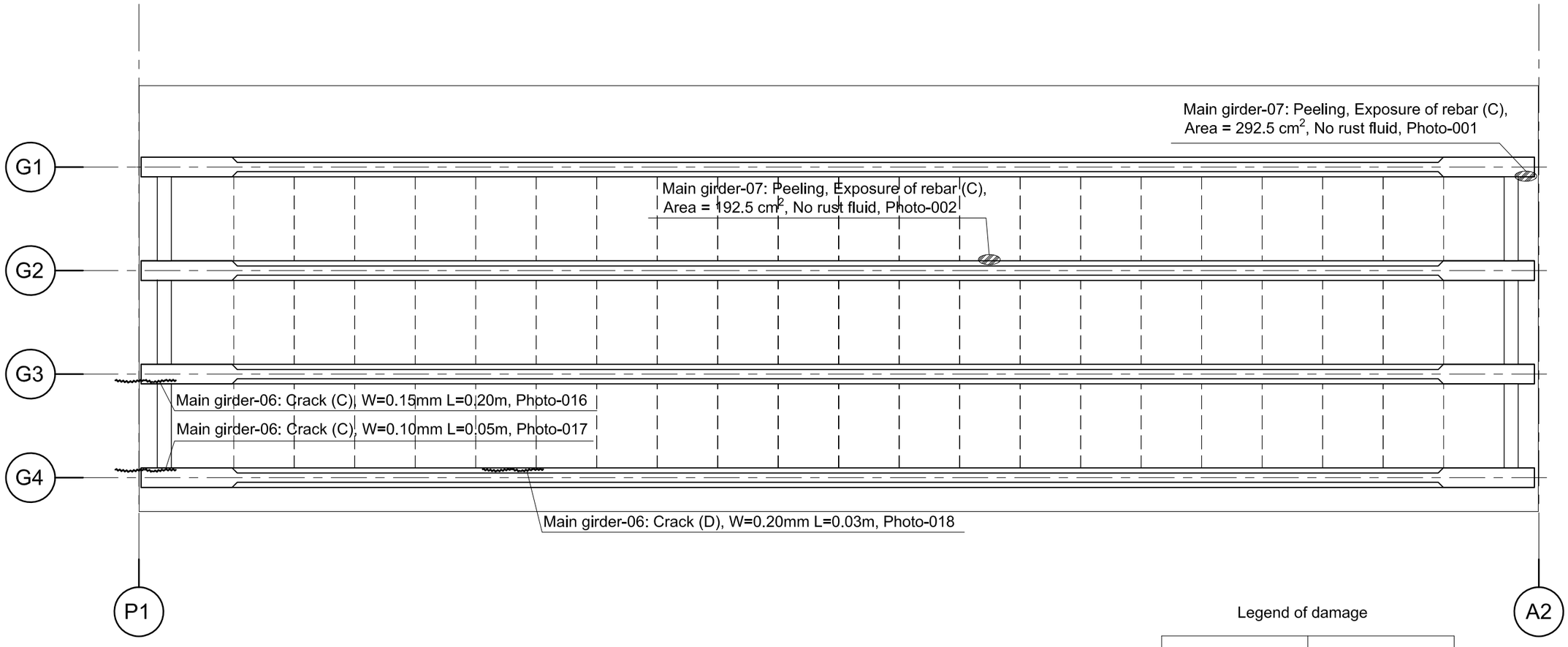


Legend of damage

Damage type	Mark
06-Cracks	
07-Peeling, Exposure of rebar	

Damage Drawings Bottom View (Main Girder) Span - 1

*Note1: Main girder-13: Unusual or Abnormal Gap. The gap between girder and stop block is unusually wide (less than 10mm). Photo-020



Legend of damage

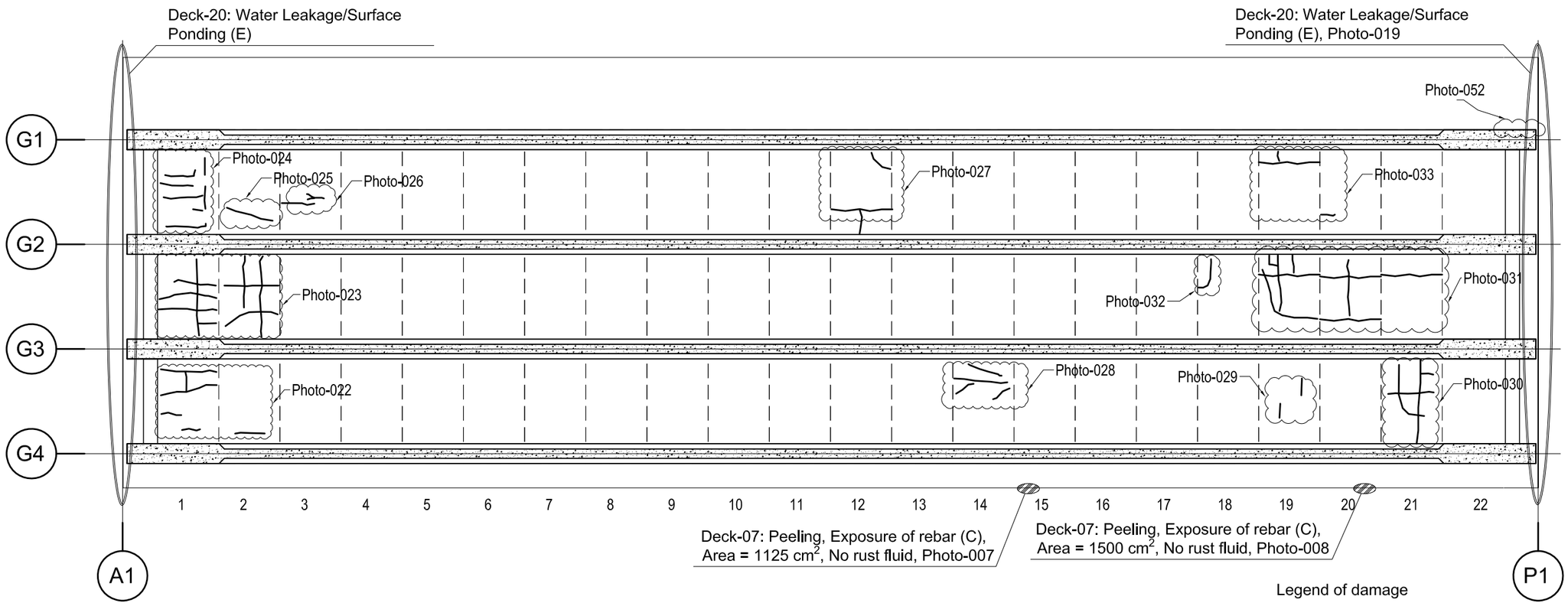
Damage type	Mark
06-Cracks	
07-Peeling, Exposure of rebar	

Damage Drawing Bottom View (Main Girder) Span - 2

*Note1: Deck RC pre-cast slab-07: Peeling/Exposure of Rebar. The damage grade C is generally observed at the joint between each pre-cast slab, but grade D cracks can be observed locally. Photo-021

*Note2: Deck-13: Unusual or Abnormal Gap. The gap between deck or deck and abutment back wall is unusually wide (less than 10mm). Photo-020

*Note 3: Due to the area between pre-cast slab No.4 to No.18 is hard to access. Therefore, only the cracks with the width of more than and equal to 0.2mm are recorded.



Legend of damage

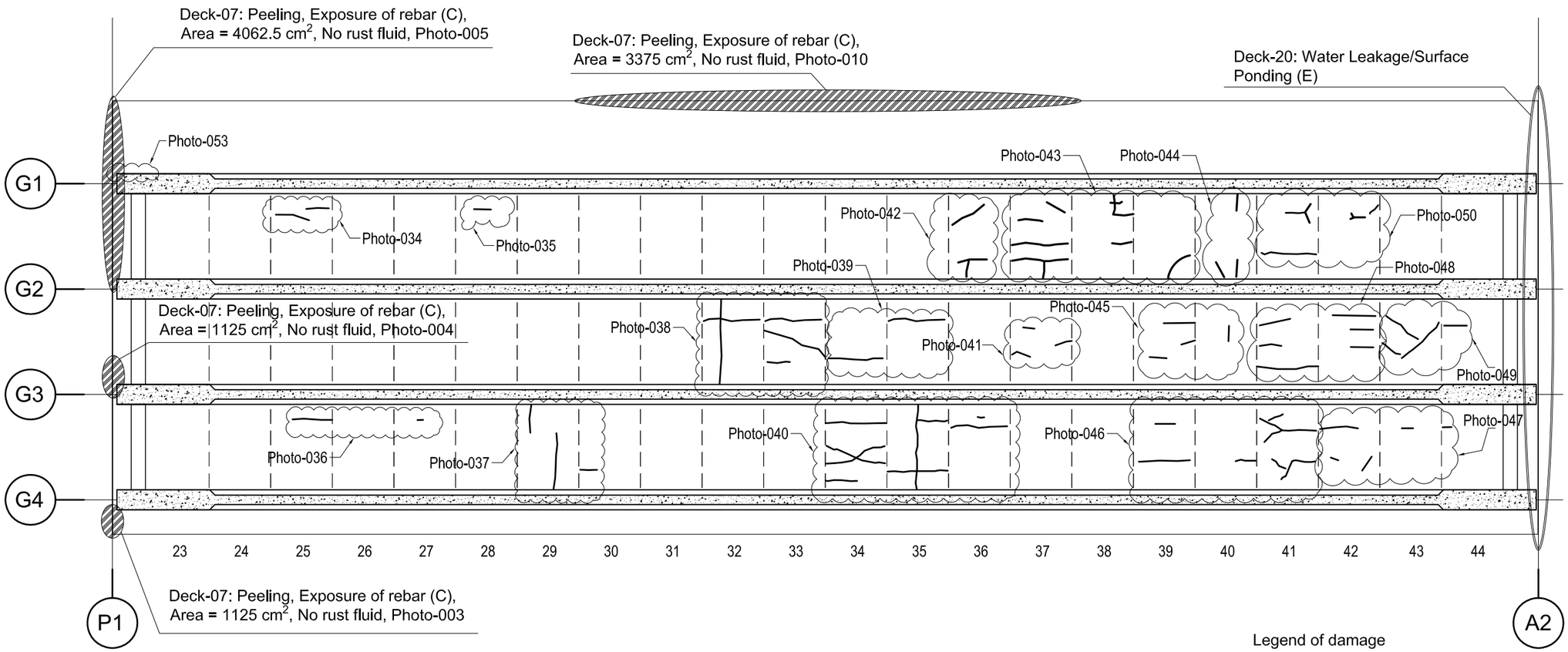
Damage type	Mark
11-Cracks on Slab	
07-Peeling, Exposure of rebar	
20-Water Leakage Surface Ponding	

Damage Drawing Bottom View (Deck) Span - 1

*Note1: Deck RC pre-cast slab-07: Peeling/Exposure of Rebar. The damage grade C is generally observed at the joint between each pre-cast slab, but grade D cracks can be observed locally. Photo-021

*Note2: Deck-13: Unusual or Abnormal Gap. The gap between deck or deck and abutment back wall is unusually wide (less than 10mm). Photo-020

*Note 3: Due to the area between pre-cast slab No.25 to No.33 is hard to access. Therefore, only the cracks with the width of more than and equal to 0.2mm are recorded.

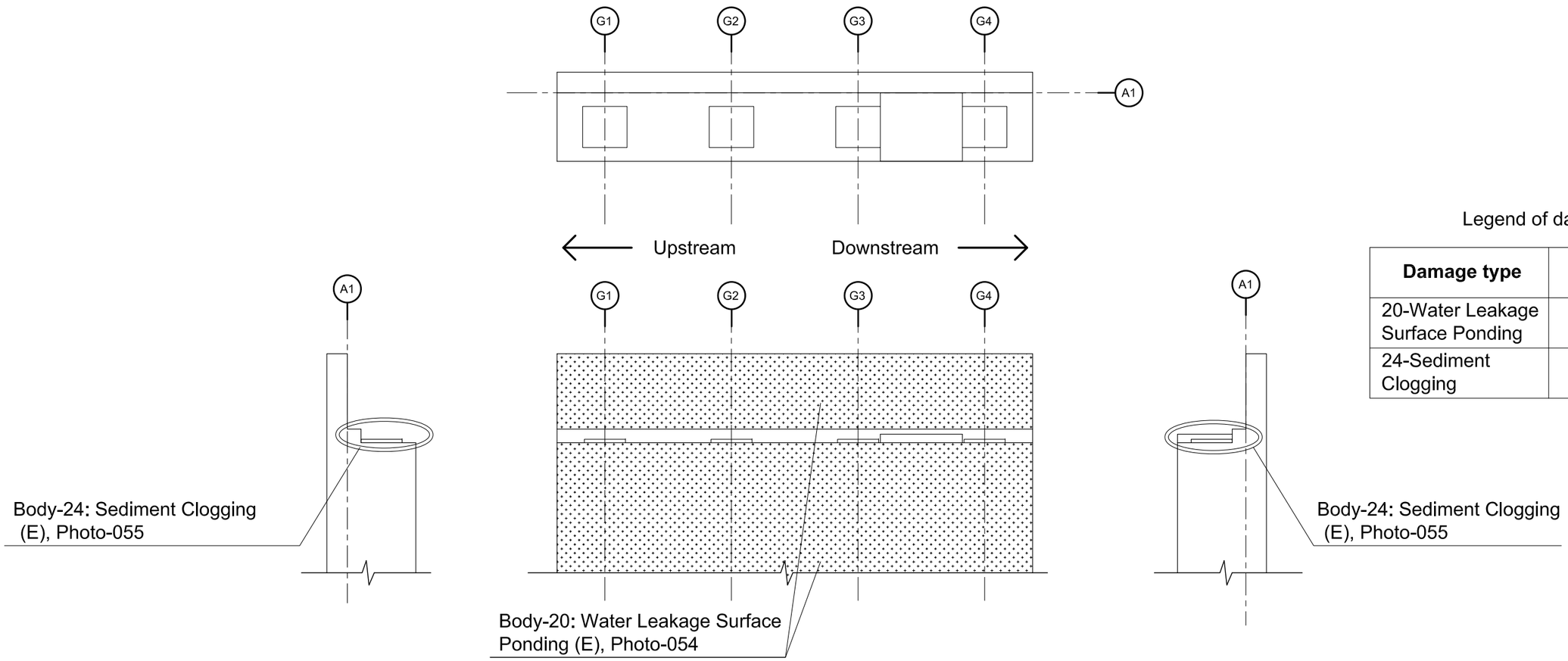


Legend of damage

Damage type	Mark
11-Cracks on Slab	
07-Peeling, Exposure of rebar	
20-Water Leakage Surface Ponding	

Damage Drawing Bottom View (Deck) Span - 2

Abutment A1 Damage Drawings



Side View (Upstream Side)

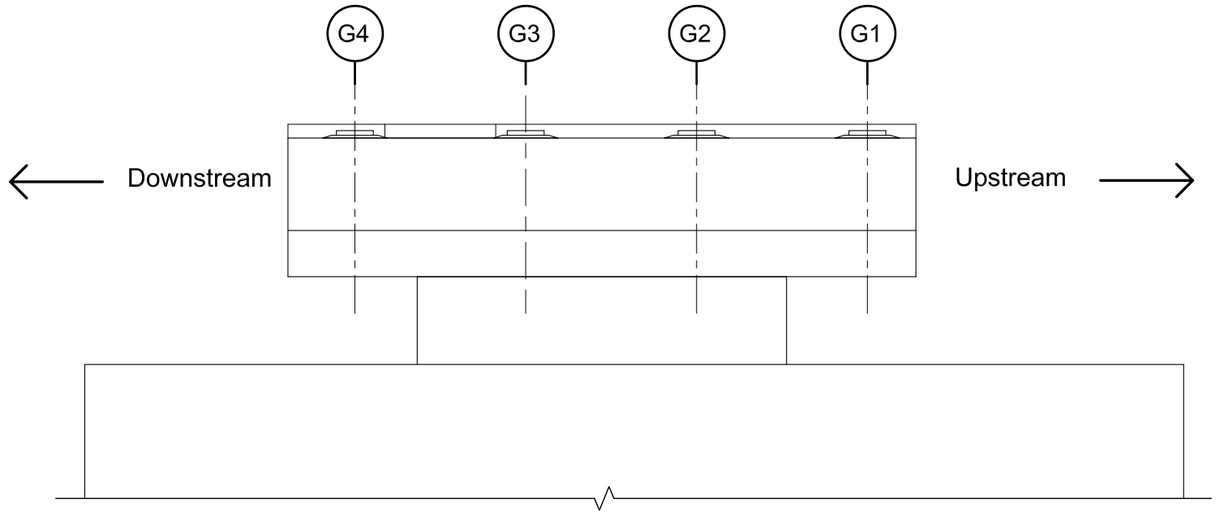
Front View (A2 Side)

Side View (Downstream Side)

Legend of damage

Damage type	Mark
20-Water Leakage Surface Ponding	
24-Sediment Clogging	

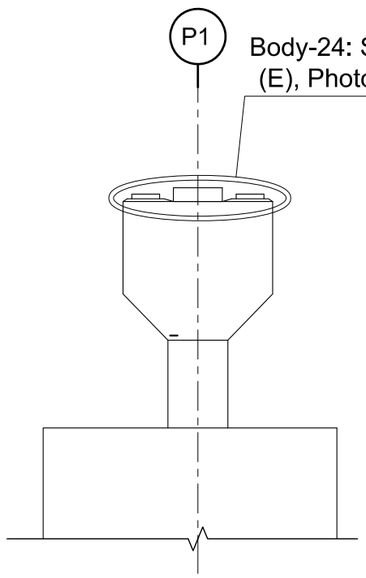
Pier P1 Damage Drawings



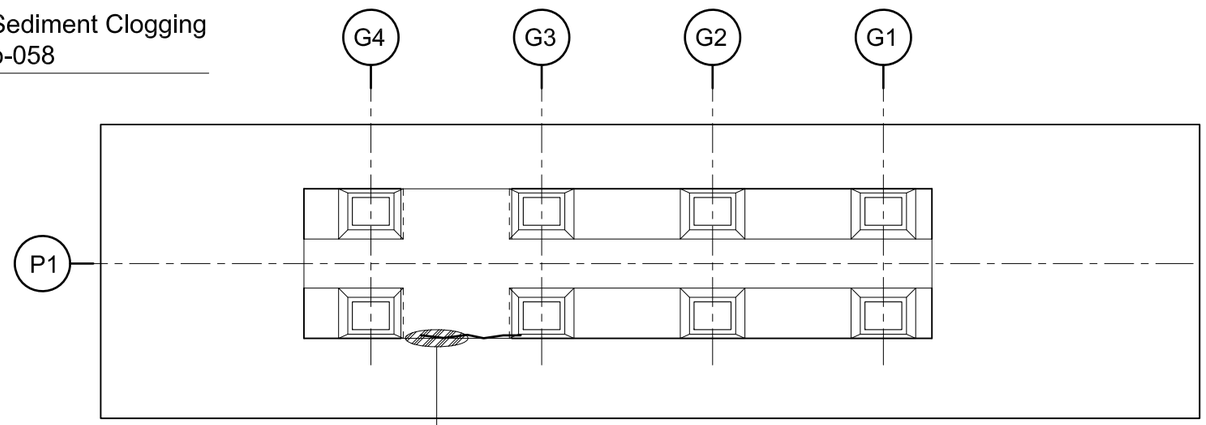
Front View (A2 Side)

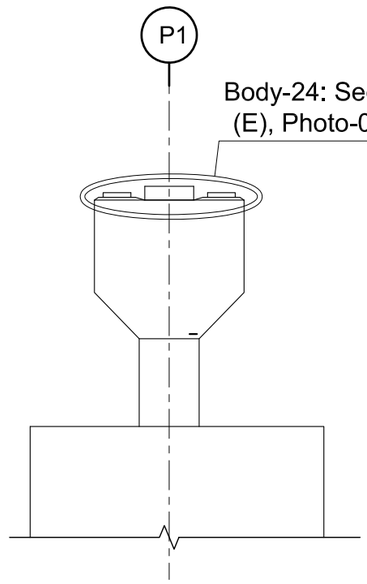
Legend of damage

Damage type	Mark
06-Cracks	
07-Peeling, Exposure of rebar	
24-Sediment Clogging	

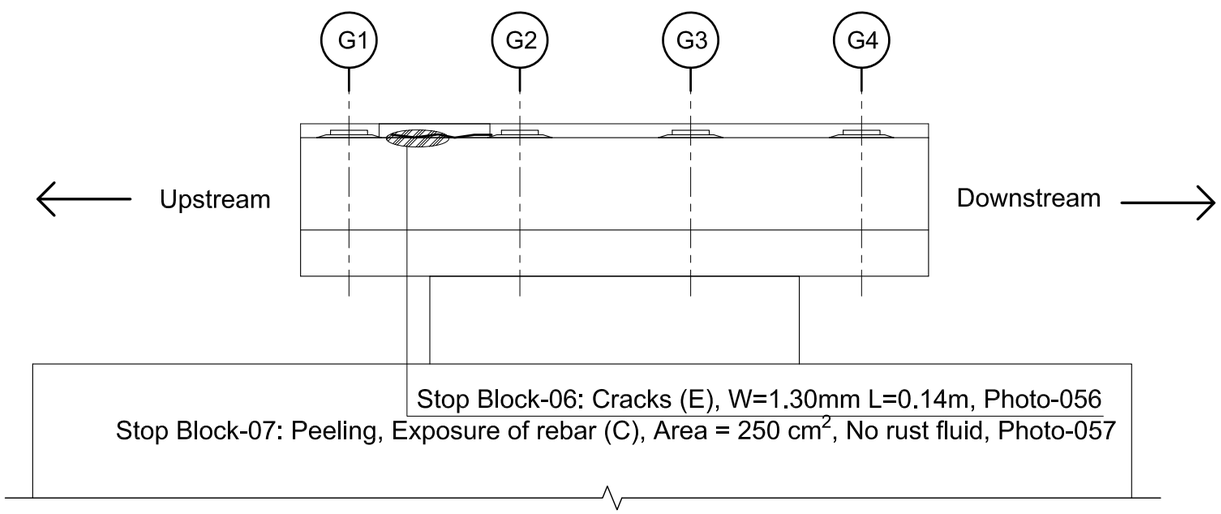


Side View (Upstream Side)



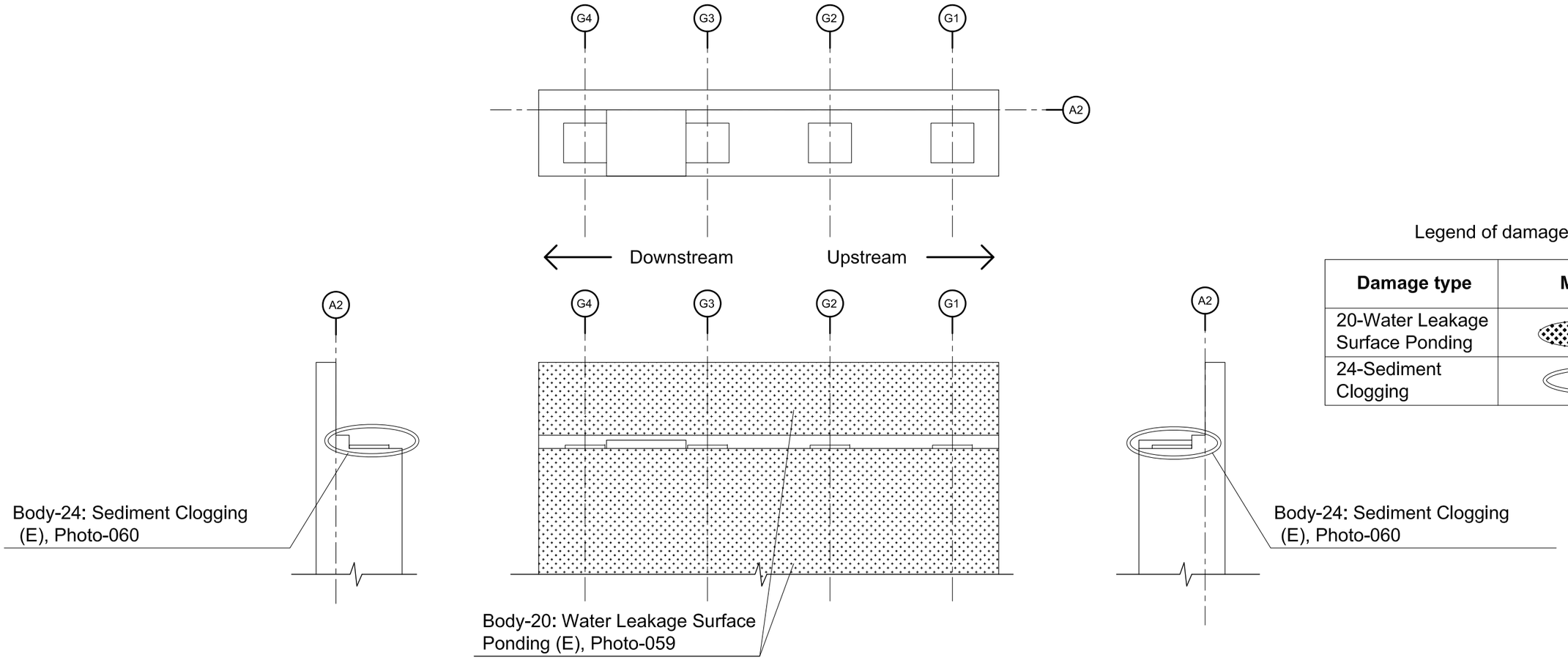


Side View (Downstream Side)



Front View (A1 Side)

Abutment A2 Damage Drawings



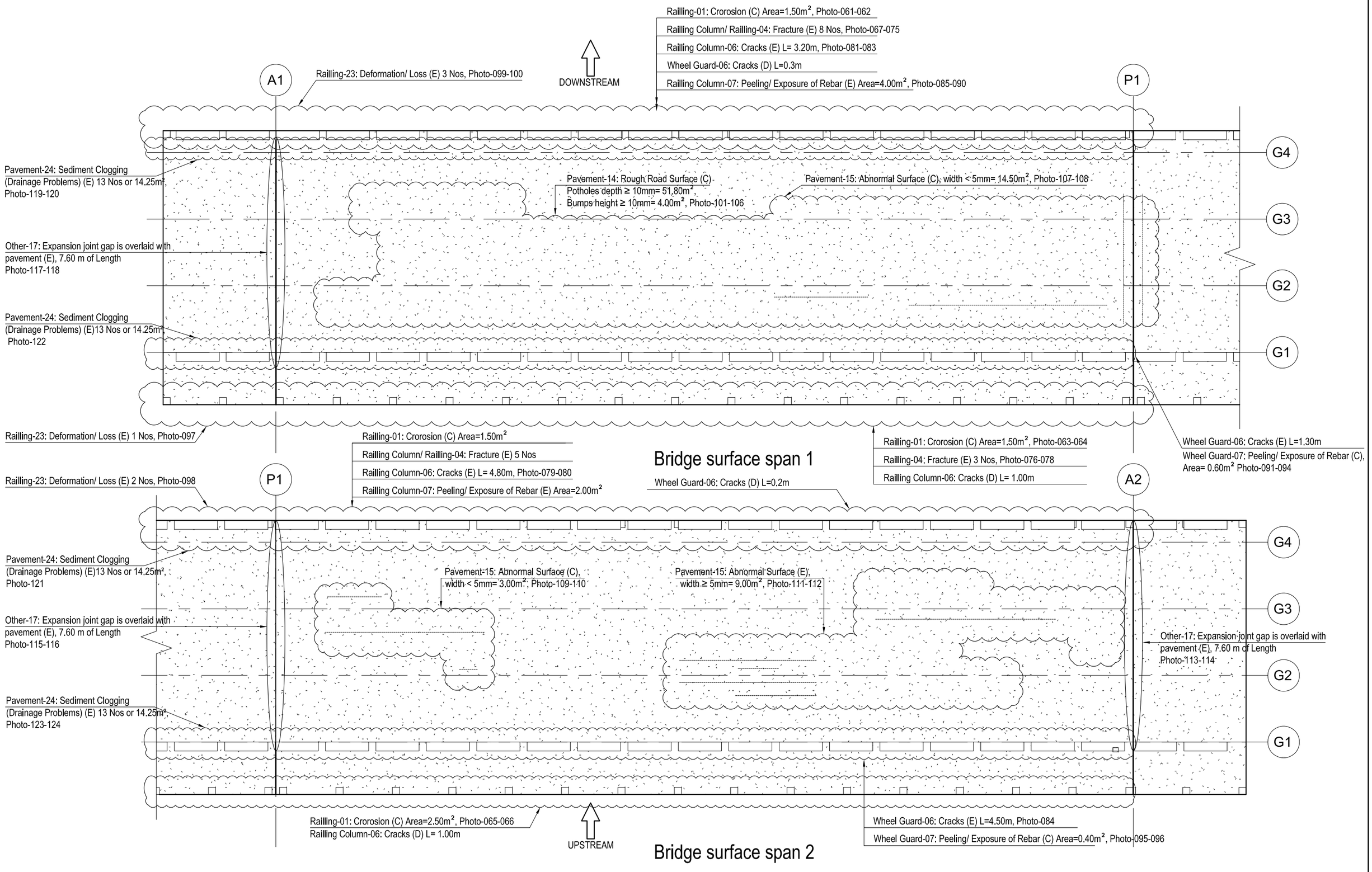
Side View (Downstream Side)

Front View (A1 Side)

Side View (Upstream Side)

Legend of damage

Damage type	Mark
20-Water Leakage Surface Ponding	
24-Sediment Clogging	



A1-25

Damage Drawing Top View (Bridge Surface)

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	001	Component	Superstructure	Photo No.	002	Component	Superstructure
Element name	Main structure (Girder)			Element name	Main structure (Girder)		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C

Photo No.	003	Component	Superstructure	Photo No.	004	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C

Photo No.	005	Component	Superstructure	Photo No.	006	Component	Superstructure
Element name	Deck			Element name	Main structure (Girder)		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	007	Component	Superstructure	Photo No.	008	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C

Photo No.	009	Component	Superstructure	Photo No.	010	Component	Superstructure
Element name	Main structure (Girder)			Element name	Deck		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C

Photo No.	011	Component	Superstructure	Photo No.	012	Component	Superstructure
Element name	Main structure (Girder)			Element name	Main structure (Girder)		
Damage type	06	Damage grade	D	Damage type	06	Damage grade	D

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	013	Component	Superstructure	Photo No.	014	Component	Superstructure
Element name	Main structure (Girder)			Element name	Main structure (Girder)		
Damage type	06	Damage grade	D	Damage type	06	Damage grade	C

Photo No.	015	Component	Superstructure	Photo No.	016	Component	Superstructure
Element name	Main structure (Girder)			Element name	Main structure (Girder)		
Damage type	06	Damage grade	C	Damage type	06	Damage grade	C

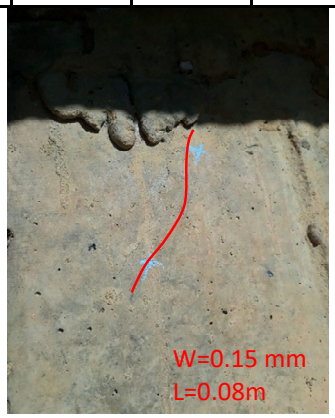


Photo No.	017	Component	Superstructure	Photo No.	018	Component	Superstructure
Element name	Main structure (Girder)			Element name	Main structure (Girder)		
Damage type	06	Damage grade	C	Damage type	06	Damage grade	D

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	019	Component	Superstructure	Photo No.	020	Component	Superstructure
Element name	Deck			Element name	Main structure (Girder & Deck)		
Damage type	20	Damage grade	E	Damage type	13	Damage grade	E

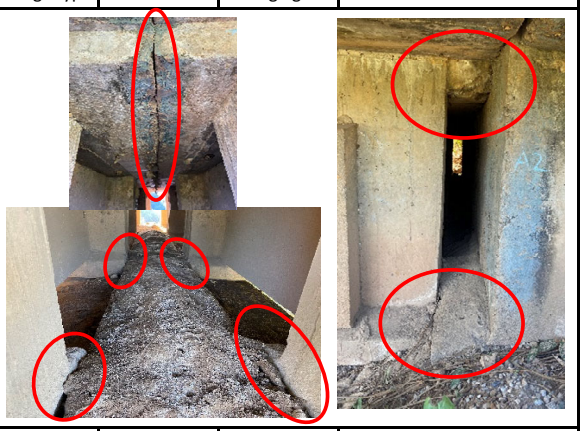
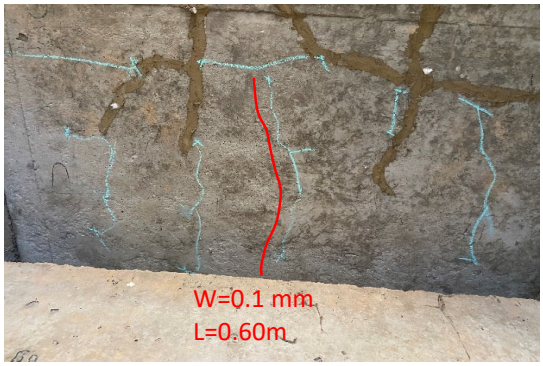


Photo No.	021	Component	Superstructure	Photo No.	022	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	07	Damage grade	D	Damage type	11	Damage grade	C

Photo No.	023	Component	Superstructure	Photo No.	024	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	C	Damage type	11	Damage grade	C



Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	025	Component	Superstructure	Photo No.	026	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	C

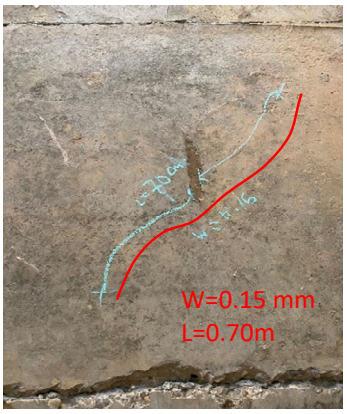
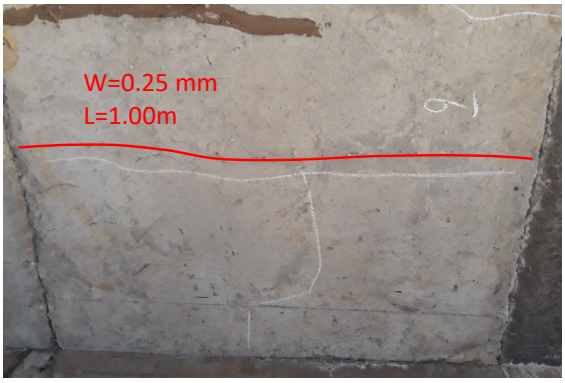


Photo No.	027	Component	Superstructure	Photo No.	028	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	E	Damage type	11	Damage grade	D



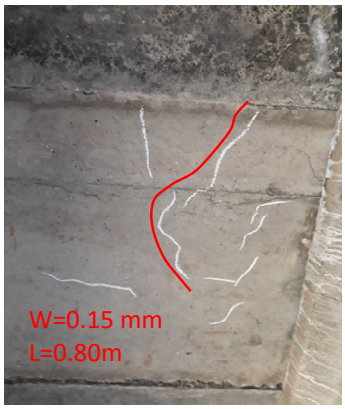
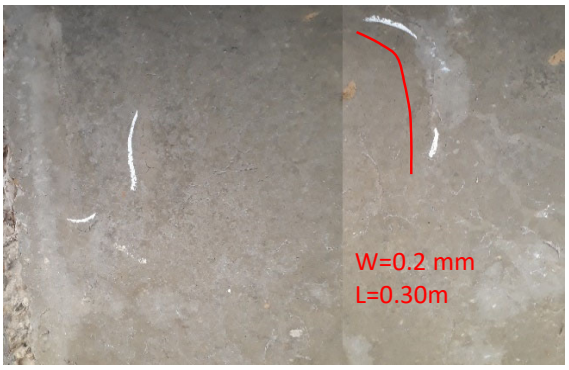
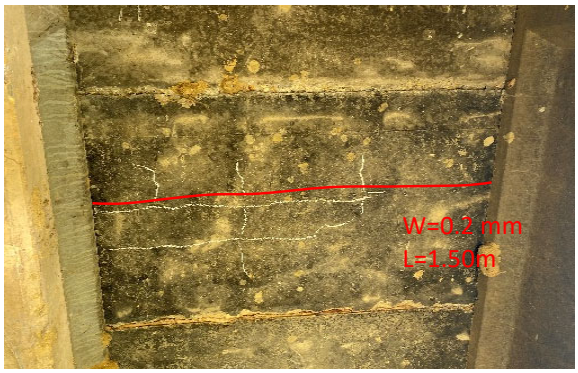


Photo No.	029	Component	Superstructure	Photo No.	030	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	D





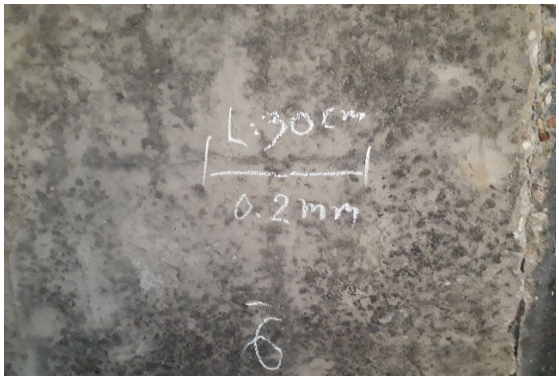
Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	031	Component	Superstructure	Photo No.	032	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	E	Damage type	11	Damage grade	D

Photo No.	033	Component	Superstructure	Photo No.	034	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	D

Photo No.	035	Component	Superstructure	Photo No.	036	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	D



Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	037	Component	Superstructure	Photo No.	038	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	E

Photo No.	039	Component	Superstructure	Photo No.	040	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	E	Damage type	11	Damage grade	D

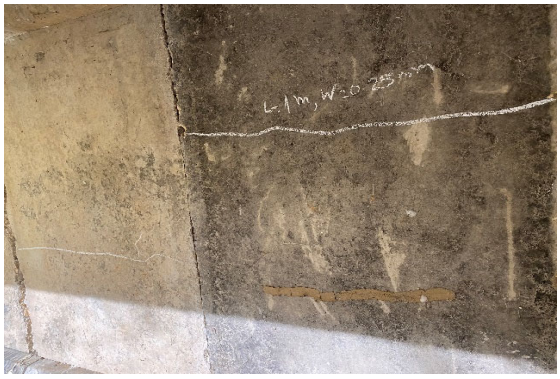
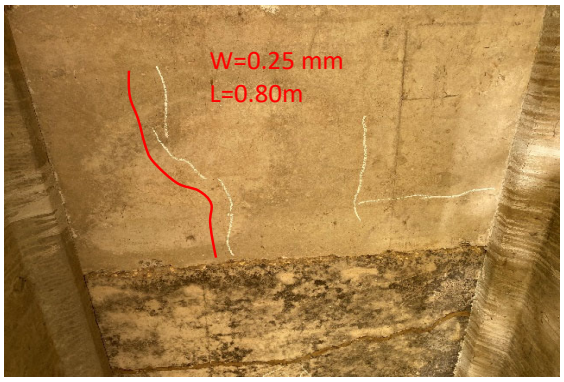


Photo No.	041	Component	Superstructure	Photo No.	042	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	E



Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	043	Component	Superstructure	Photo No.	044	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	E	Damage type	11	Damage grade	D

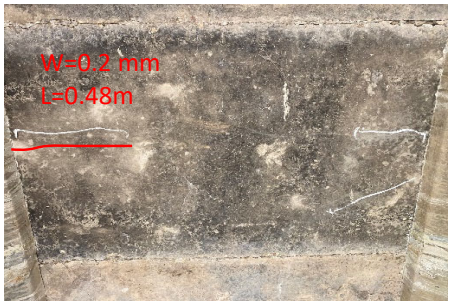


Photo No.	045	Component	Superstructure	Photo No.	046	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	D

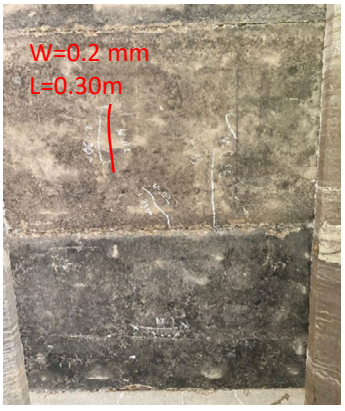


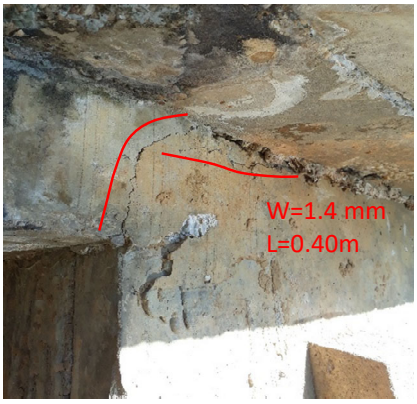
Photo No.	047	Component	Superstructure	Photo No.	048	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	E	Damage type	11	Damage grade	D

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	049	Component	Superstructure	Photo No.	050	Component	Superstructure
Element name	Deck			Element name	Deck		
Damage type	11	Damage grade	D	Damage type	11	Damage grade	E

Photo No.	051	Component	Superstructure	Photo No.	052	Component	Superstructure
Element name	Main structure (Girder)			Element name	Deck		
Damage type	06	Damage grade	D	Damage type	11	Damage grade	E



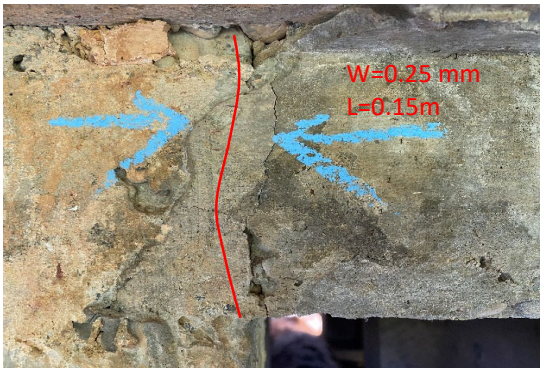


Photo No.	053	Component	Superstructure	Photo No.	054	Component	Substructure
Element name	Deck			Element name	Abutment A1		
Damage type	11	Damage grade	E	Damage type	20	Damage grade	E

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	055	Component	Substructure	Photo No.	056	Component	Substructure
Element name	Abutment A1			Element name	Stop block at pier P1		
Damage type	24	Damage grade	E	Damage type	06	Damage grade	E

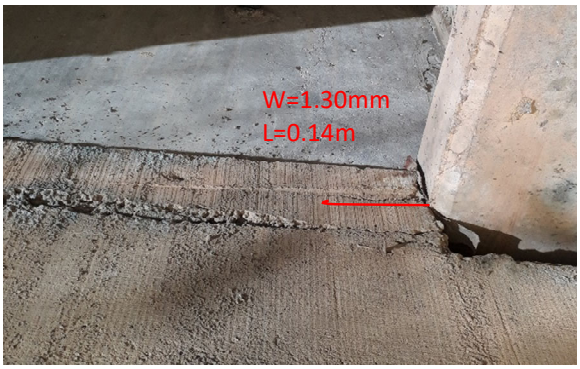


Photo No.	057	Component	Substructure	Photo No.	058	Component	Substructure
Element name	Construction joint between stop block and P1 pier cap			Element name	Top surface of P1 pier cap		
Damage type	07	Damage grade	C	Damage type	24	Damage grade	E

Photo No.	059	Component	Substructure	Photo No.	060	Component	Substructure
Element name	Abutment A2			Element name	Abutment A2		
Damage type	20	Damage grade	E	Damage type	24	Damage grade	E

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	061	Component	On the road	Photo No.	062	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	01	Damage grade	C	Damage type	01	Damage grade	C

Photo No.	063	Component	On the road	Photo No.	064	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	01	Damage grade	C	Damage type	01	Damage grade	C

Photo No.	065	Component	On the road	Photo No.	066	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	01	Damage grade	C	Damage type	01	Damage grade	C

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	067	Component	On the road	Photo No.	68	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E



Photo No.	069	Component	On the road	Photo No.	070	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E


Photo No.	071	Component	On the road	Photo No.	072	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E


Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	073	Component	On the road	Photo No.	074	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E

Photo No.	075	Component	On the road	Photo No.	076	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E

Photo No.	077	Component	On the road	Photo No.	078	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	04	Damage grade	E	Damage type	04	Damage grade	E

Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	079	Component	On the road	Photo No.	080	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	06	Damage grade	E	Damage type	06	Damage grade	E



Photo No.	081	Component	On the road	Photo No.	082	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	06	Damage grade	E	Damage type	06	Damage grade	E


Photo No.	083	Component	On the road	Photo No.	084	Component	On the road
Element name	Railling Column			Element name	Wheel Guard		
Damage type	06	Damage grade	E	Damage type	06	Damage grade	E


Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	085	Component	On the road	Photo No.	086	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	07	Damage grade	E	Damage type	07	Damage grade	E




Photo No.	087	Component	On the road	Photo No.	088	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	07	Damage grade	E	Damage type	07	Damage grade	E



Photo No.	089	Component	On the road	Photo No.	090	Component	On the road
Element name	Railling Column			Element name	Railling Column		
Damage type	07	Damage grade	E	Damage type	07	Damage grade	E




Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	091	Component	On the road	Photo No.	092	Component	On the road
Element name	Wheel Guard			Element name	Wheel Guard		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C




Photo No.	093	Component	On the road	Photo No.	094	Component	On the road
Element name	Wheel Guard			Element name	Wheel Guard		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C


Photo No.	095	Component	On the road	Photo No.	096	Component	On the road
Element name	Wheel Guard			Element name	Wheel Guard		
Damage type	07	Damage grade	C	Damage type	07	Damage grade	C


Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	097	Component	On the road	Photo No.	098	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	23	Damage grade	C	Damage type	23	Damage grade	C

Photo No.	099	Component	On the road	Photo No.	100	Component	On the road
Element name	Railling			Element name	Railling		
Damage type	23	Damage grade	E	Damage type	23	Damage grade	E

Photo No.		Component		Photo No.		Component	
Element name				Element name			
Damage type		Damage grade		Damage type		Damage grade	

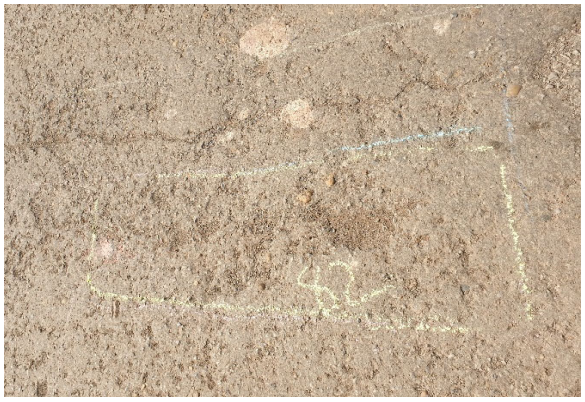
Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	101	Component	Road surface	Photo No.	102	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	14	Damage grade	C	Damage type	14	Damage grade	C

Photo No.	103	Component	Road surface	Photo No.	104	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	14	Damage grade	C	Damage type	14	Damage grade	C

Photo No.	105	Component	Road surface	Photo No.	106	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	14	Damage grade	C	Damage type	14	Damage grade	C



Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	107	Component	Road surface	Photo No.	108	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	15	Damage grade	C	Damage type	15	Damage grade	C

Photo No.	109	Component	Road surface	Photo No.	110	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	15	Damage grade	C	Damage type	15	Damage grade	C

Photo No.	111	Component	Road surface	Photo No.	112	Component	Road surface
Element name	Pavement			Element name	Pavement		
Damage type	15	Damage grade	E	Damage type	15	Damage grade	E

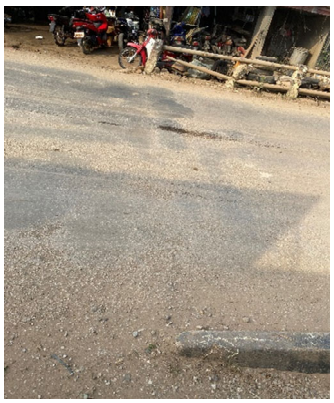
Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

Photo No.	113	Component	Road surface	Photo No.	114	Component	Road surface
Element name	Expansion Joint			Element name	Expansion Joint		
Damage type	17	Damage grade	E	Damage type	17	Damage grade	E

Photo No.	115	Component	Road surface	Photo No.	116	Component	Road surface
Element name	Expansion Joint			Element name	Expansion Joint		
Damage type	17	Damage grade	E	Damage type	17	Damage grade	E

Photo No.	117	Component	Road surface	Photo No.	118	Component	Road surface
Element name	Expansion Joint			Element name	Expansion Joint		
Damage type	17	Damage grade	E	Damage type	17	Damage grade	E



Damage Photo Data

		Inspection date	26-01-22
Road No.	13N	Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North	Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown	Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone	Coordinates (Longitude)	102° 31' 45.14"

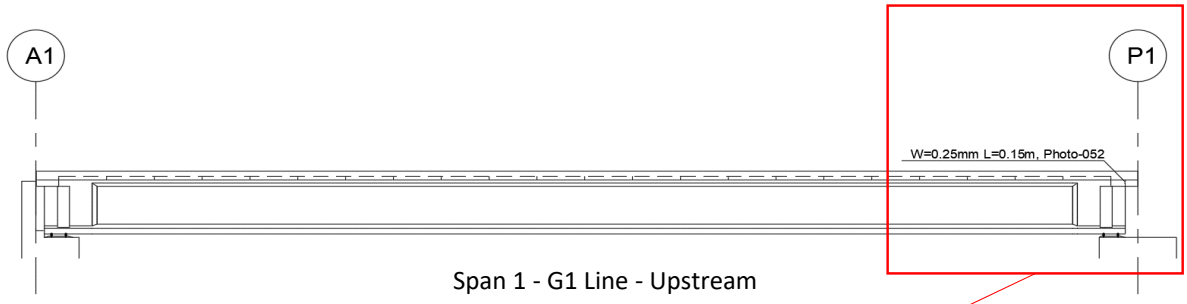
Photo No.	119	Component	Road surface	Photo No.	120	Component	Road surface
Element name	Sediment clogging (Drainage prblems)			Element name	Sediment clogging (Drainage prblems)		
Damage type	24	Damage grade	E	Damage type	24	Damage grade	E

Photo No.	121	Component	Road surface	Photo No.	122	Component	Road surface
Element name	Sediment clogging (Drainage prblems)			Element name	Sediment clogging (Drainage prblems)		
Damage type	24	Damage grade	E	Damage type	24	Damage grade	E

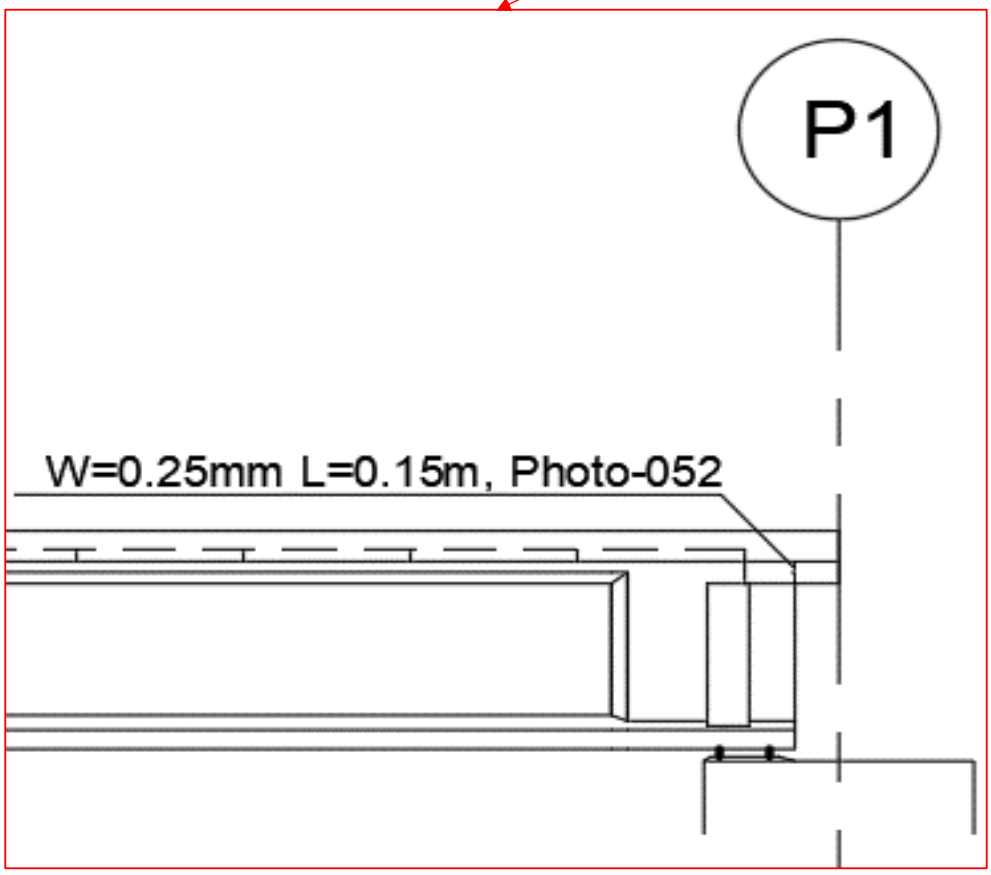
Photo No.	123	Component	Road surface	Photo No.	124	Component	Road surface
Element name	Sediment clogging (Drainage prblems)			Element name	Sediment clogging (Drainage prblems)		
Damage type	24	Damage grade	E	Damage type	24	Damage grade	E

Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	1/2	1/4 (G1)	Damage sketch No.	1/7

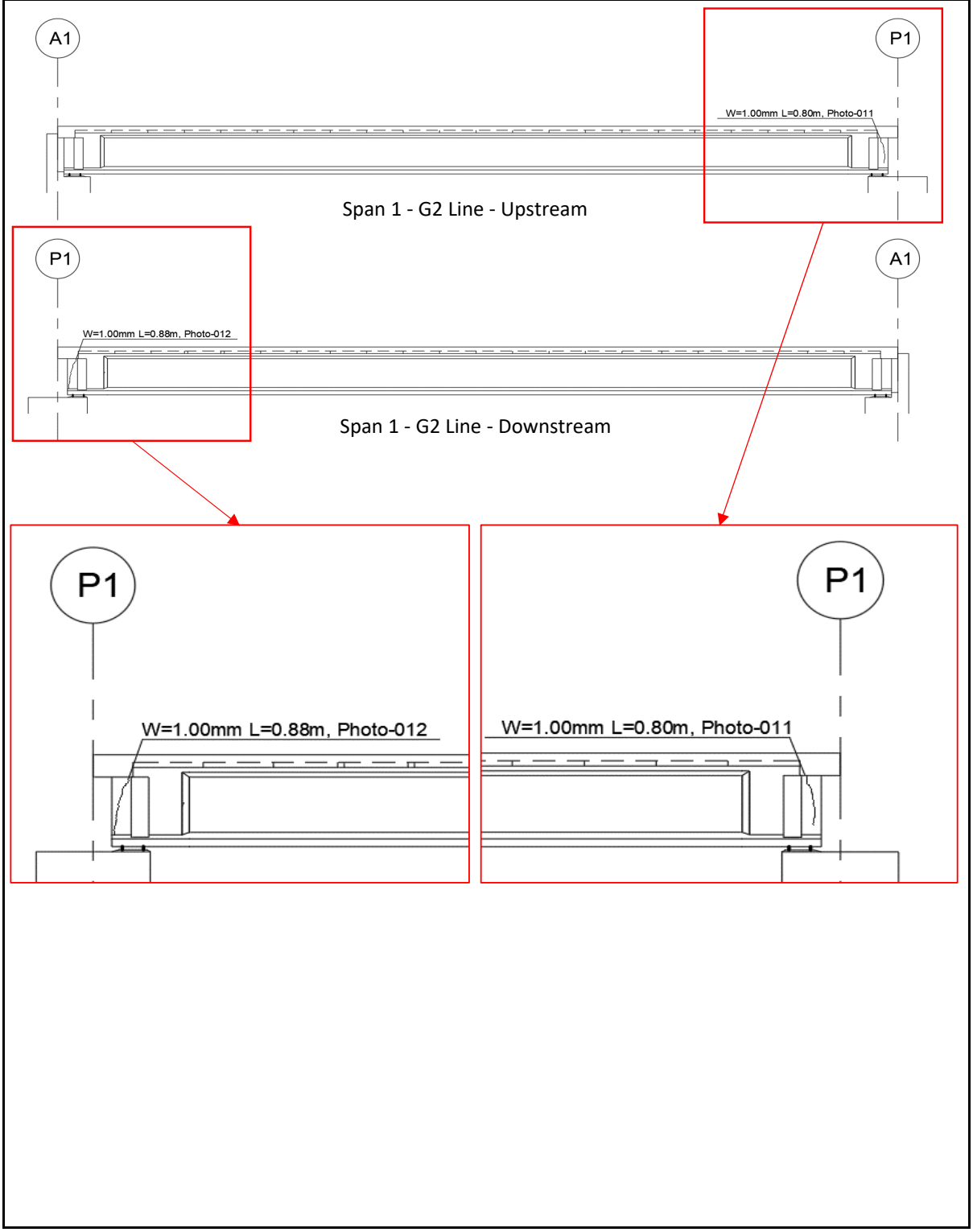


Span 1 - G1 Line - Upstream



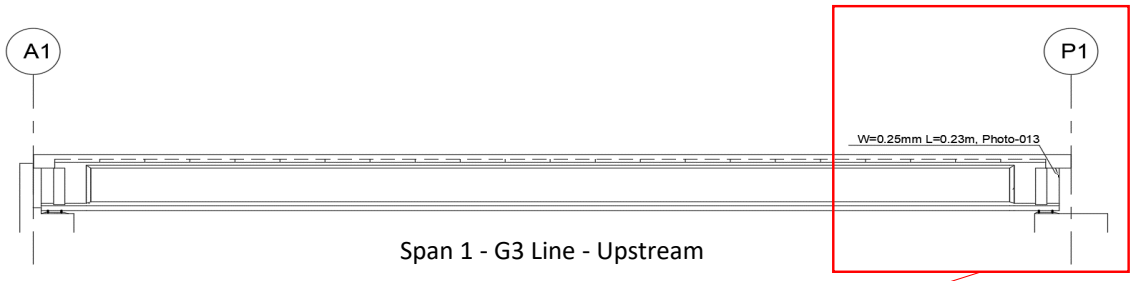
Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	1/2	2/4 (G2)	Damage sketch No.	2/7

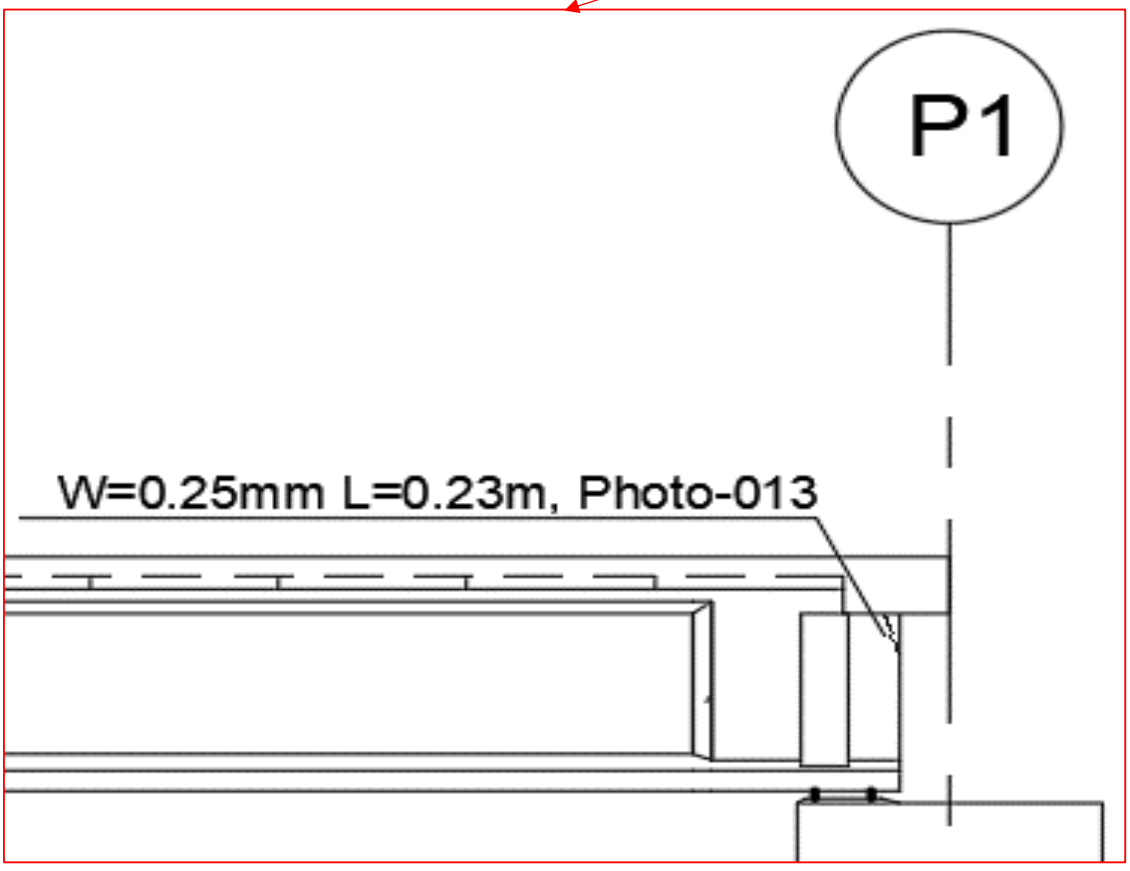


Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	1/2	3/4 (G3)	Damage sketch No.	3/7

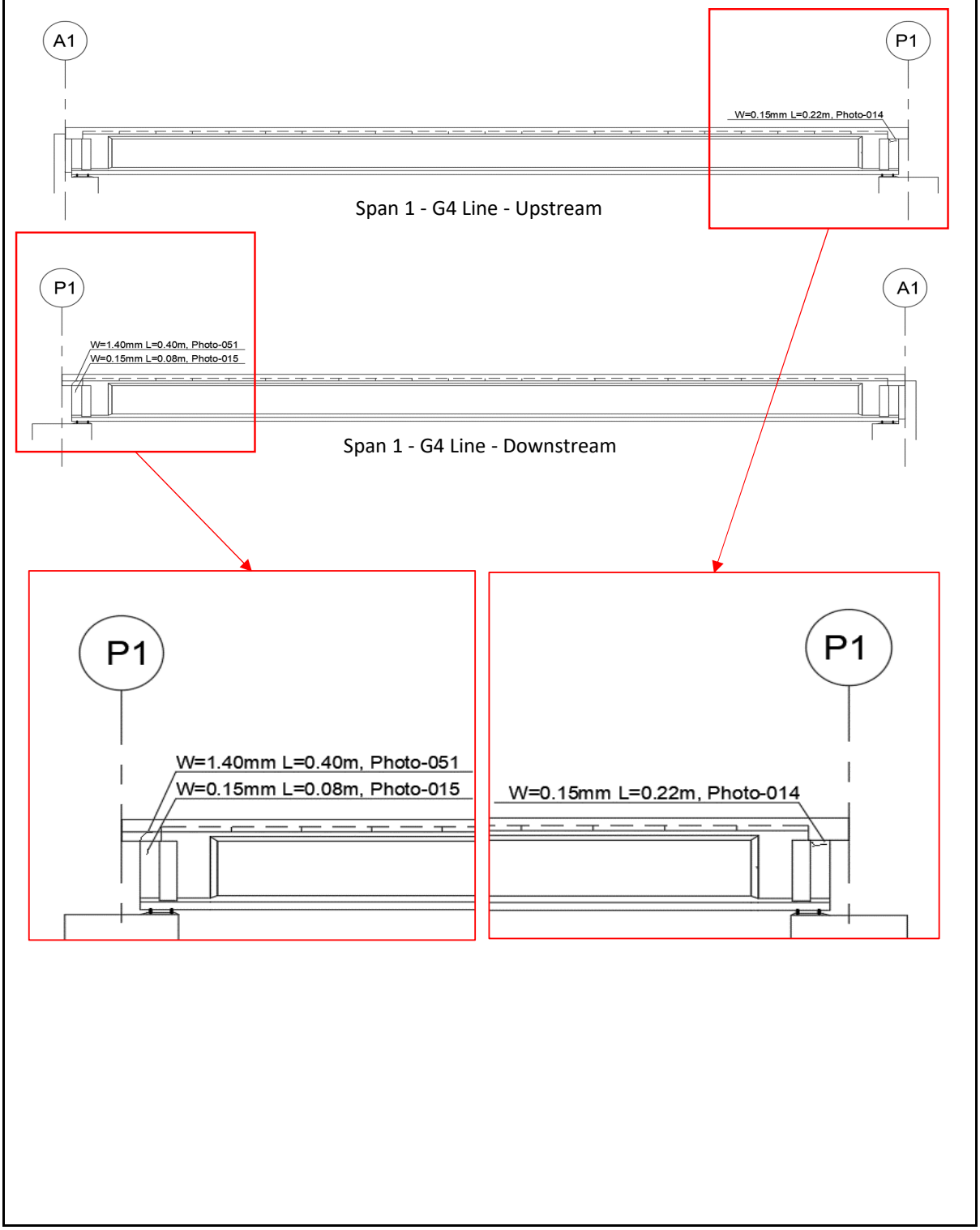


Span 1 - G3 Line - Upstream



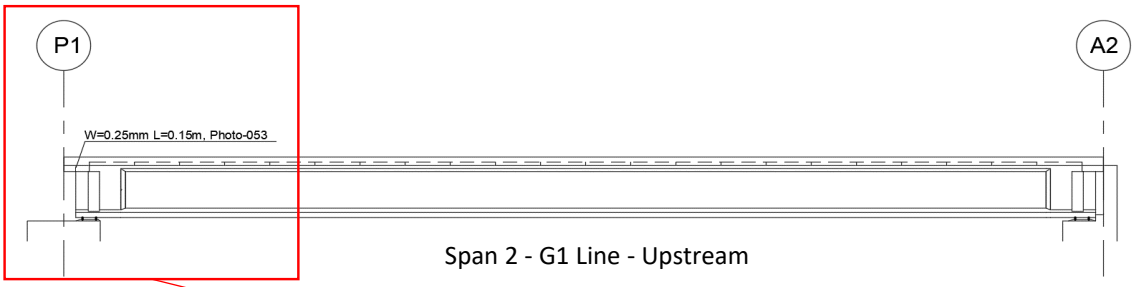
Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	1/2	4/4 (G4)	Damage sketch No.	4/7

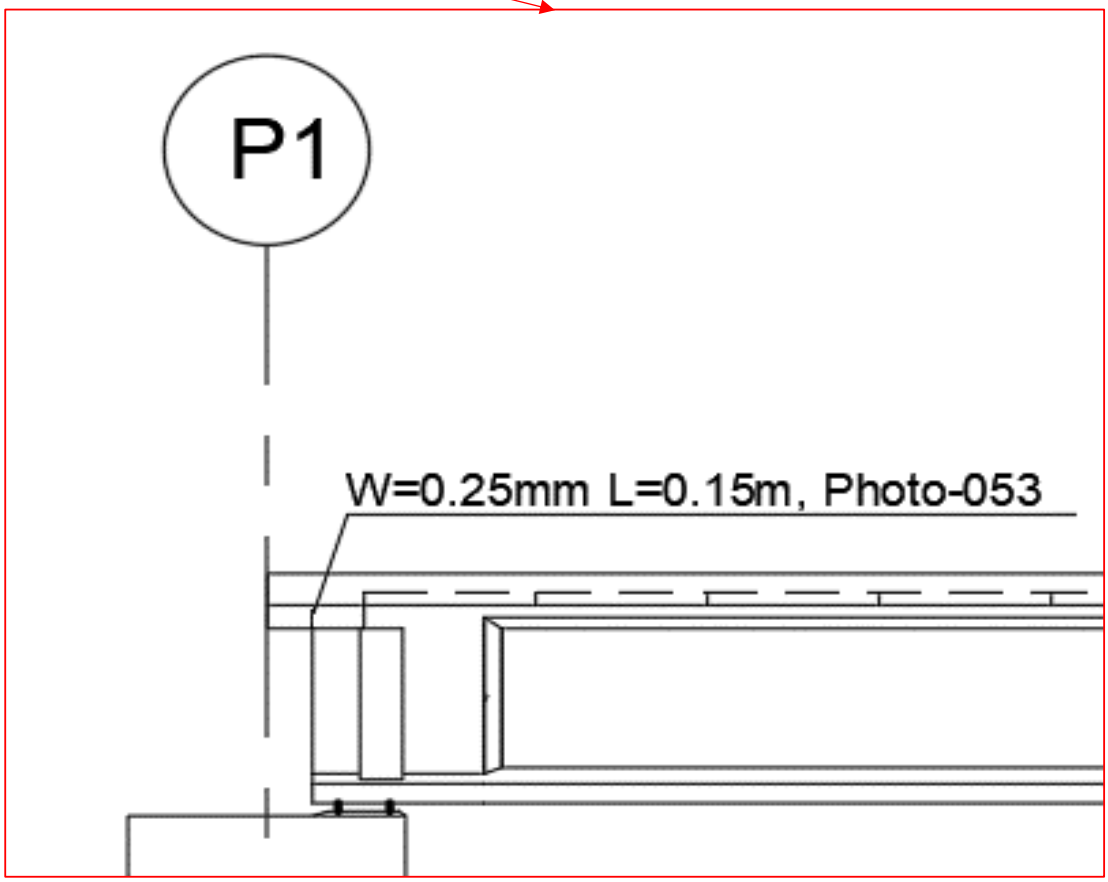


Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	2/2	1/4 (G1)	Damage sketch No.	5/7

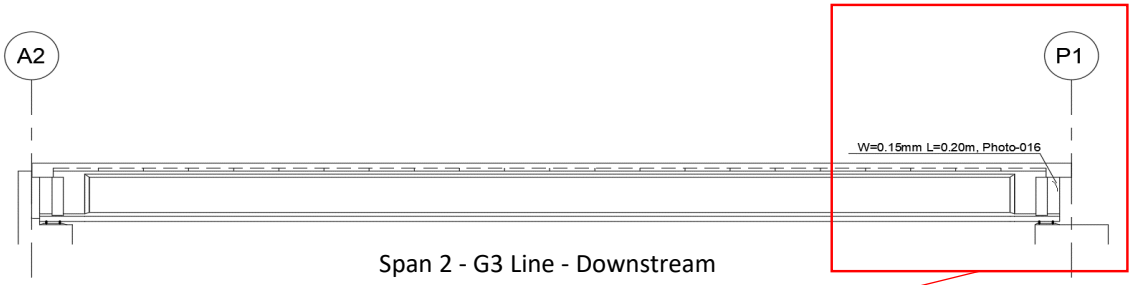


Span 2 - G1 Line - Upstream

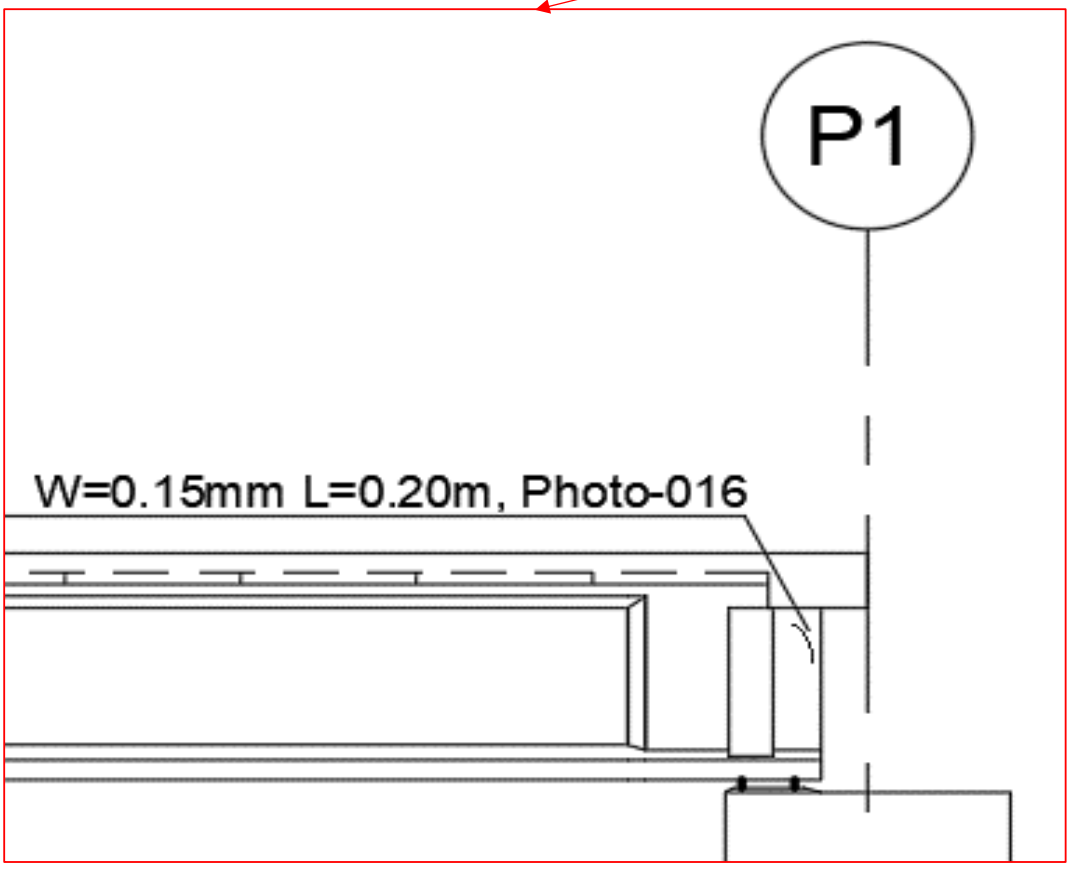


Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	2/2	3/4 (G3)	Damage sketch No.	6/7

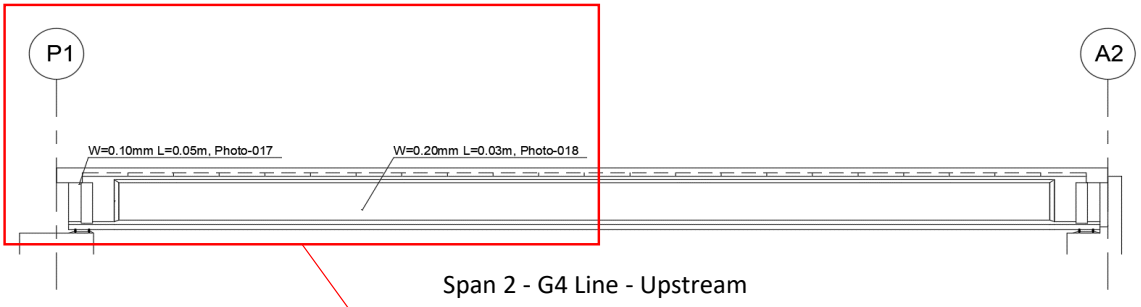


Span 2 - G3 Line - Downstream

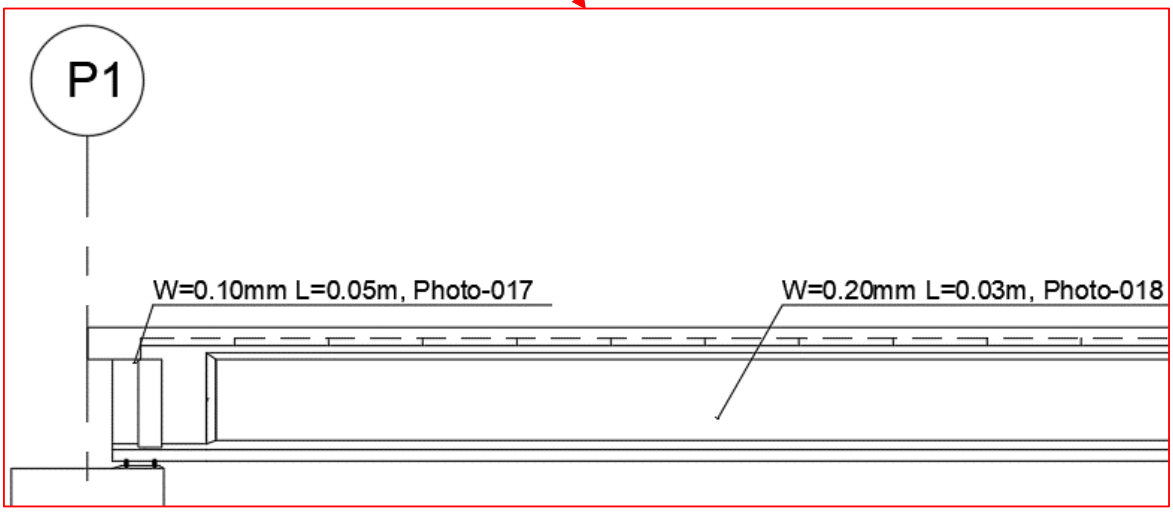


Damage Sketch (Superstructure)

Road No.	13N		Bridge location (Chainage)	142 Km + 300 m
Road name	NR No.13 North		Bridge location (Province)	Vientiane
Bridge ID/No.	Unknown		Coordinates (Latitude)	18° 51' 22.67"
Bridge name	Namone		Coordinates (Longitude)	102° 31' 45.14"
Span No., Girder No.	2/2	4/4 (G4)	Damage sketch No.	7/7



Span 2 - G4 Line - Upstream



Appendix 1: Nam Mone Bridge

Appendix 1-d: Quantity of Damage

Summary of damages for Nam Mone Bridge

Item	Type of damages	Unit	Quatity	Remark
1	**Component:** Superstructure			
1.1	**Element:** Deck; **Material:** Reinforce Concrete			
1.1.1	07: Peeling/Exposure of Rebar	m^2	5.0113	
1.1.2	08: Leaching/Free lime	m^2	0.00	None
1.1.3	11: Cracks on Slab			
1.1.3.1	width ≤ 0.2mm	m	137.80	
1.1.3.2	0.2mm < width < 1.0mm	m	17.96	
1.1.3.3	width ≥ 1.0mm	m	0.00	None
1.2	**Element:** Girder; **Material:** Post-tensioned concrete			
1.2.1	06: Cracks			
1.2.1.1	width ≤ 0.2mm	m	0.58	
1.2.1.2	0.2mm < width < 1.0mm	m	0.23	
1.2.1.3	width ≥ 1.0mm	m	2.08	
1.2.2	07: Peeling/Exposure of Rebar	m^2	0.128	
1.2.3	08: Leaching/Free lime	m^2	0.00	None
2	**Component:** Substructure			
2.1	**Element:** Body; **Material:** Reinforce Concrete			
2.1.1	06: Cracks			
2.1.1.1	width ≤ 0.2mm	m	0.00	None
2.1.1.2	0.2mm < width < 1.0mm	m	0.00	None
2.1.1.3	width ≥ 1.0mm	m	0.14	
2.1.2	07: Peeling/Exposure of Rebar	m^2	0.025	
2.1.3	08: Leaching/Free lime	m^2	0.00	None
2.2	**Element:** Foundation; **Material:** Reinforce Concrete			
2.2.1	26: Scouring	m	0.00	None
3	**Component:** Bearing			
3.1	**Element:** Bearing body			
3.1.1	Severely corroded	m^2	0.00	None
3.1.2	Some part are missing	Nos	0	None
3.1.3	Rubber is damaged	m^3	0.00	None
3.1.4	Rubber is hardened	m^3	0.00	None
3.1.5	Lost	Nos	0	None
3.2	**Element:** Shoe seat, Mortar			
3.2.1	Sediment accumulate	Nos	3	At Abutment A1, A2 and Pier P1
3.2.2	Water is pooled	Nos	0	None
3.2.3	Mortar is cracked and partially lost	Nos	0	None
4	**Component:** On the Road			
4.1	**Element:** Railing; **Material:** Steel Pipe with Reinforce Concrete Column			
4.1.1	01: Corrosion	m^2	7.00	
4.1.2	04: Fracture	Nos	16	
4.1.3	06: Cracks			
4.1.3.1	width ≤ 0.2mm	m	2.00	
4.1.3.2	0.2mm < width < 1.0mm	m	3.00	
4.1.3.3	width ≥ 1.0mm	m	5.00	
4.1.4	07: Peeling/Exposure of Rebar	m^2	6.00	
4.1.5	23: Deformation /Loss	Nos	6.00	
4.2	**Element:** Wheel Guard; **Material:** Reinforce Concrete Column			
4.2.1	06: Cracks			
4.2.1.1	width ≤ 0.2mm	m	0.50	
4.2.1.2	0.2mm < width < 1.0mm	m	1.30	
4.2.1.3	width ≥ 1.0mm	m	4.50	
4.2.2	07: Peeling/Exposure of Rebar	m^2	1.00	

Summary of damages for Nam Mone Bridge

Item	Type of damages	Unit	Quatity	Remark
5	**Component:** Road Surface			
5.1	**Element:** Pavement			
5.1.1	14: Rough Road Surface			
5.1.1.1	Potholes depth ≥ 10mm	m^2	51.80	
5.1.1.2	Bumps height ≥ 10mm	m^2	4.00	
5.1.2	15: Abnormal Surface (Pavement Cracks)			
5.1.2.1	width < 5mm	m^2	17.50	
5.1.2.2	width ≥ 5mm	m^2	9.00	
5.2	**Element:** Expansion Joint			
5.2.1	14: Rough Road Surface (Step)	m	0.00	None
5.2.2	24: Sediment clogging (pavement overlay)	m	22.80	
5.3	**Element:** Drainage Facility			
5.3.1	24: Sediment clogging	Nos	52.00	95m Long, Area =95x0.6=57 m^2

Summary of damages for Nam Mone Bridge

Item	Type of damages	Unit	Quatity	Remark
1	**Component:** Superstructure			
1.1	**Element:** Deck; **Material:** Reinforce Concrete			
1.1.1	07: Peeling/Exposure of Rebar	m^2	5.0113	
	Photo-003	m^2	0.1125	
	Photo-004	m^2	0.1125	
	Photo-005	m^2	0.4063	
	Photo-007	m^2	0.1125	
	Photo-008	m^2	0.1500	
	Photo-010	m^2	0.3375	
	Peeling at area between each pre-cast slab	m^2	3.78	
1.1.2	08: Leaching/Free lime	m^2	0.00	None
1.1.3	11: Cracks on Slab			
1.1.3.1	width ≤ 0.2mm	m	137.80	
	Photo-022, W=0.10mm	m	3.3	Span 1
	Photo-023, W=0.10-0.15mm	m	10.7	Span 1
	Photo-024, W=0.10-0.20mm	m	3.40	Span 1
	Photo-025, W=0.15mm	m	0.70	Span 1
	Photo-026, W=0.10mm	m	1.65	Span 1
	Photo-027, W=0.10mm	m	0.50	Span 1
	Photo-028, W=0.15mm	m	2.25	Span 1
	Photo-029, W=0.20mm	m	0.55	Span 1
	Photo-030, W=0.10-0.20mm	m	4.15	Span 1
	Photo-031, W=0.10mm	m	1.35	Span 1
	Photo-032, W=0.20mm	m	0.40	Span 1
	Photo-033, W=0.10-0.20mm	m	1.55	Span 1
	Photo-034, W=0.20mm	m	1.20	Span 2
	Photo-035, W=0.20mm	m	0.30	Span 2
	Photo-036, W=0.20mm	m	1.00	Span 2
	Photo-037, W=0.20mm	m	2.00	Span 2
	Photo-038, W=0.15-0.20mm	m	3.25	Span 2
	Photo-039, W=0.10mm	m	1.00	Span 2
	Photo-040, W=0.15-0.20mm	m	7.70	Span 2
	Photo-041, W=0.20mm	m	1.05	Span 2
	Photo-042, W=0.20mm	m	1.05	Span 2
	Photo-043, W=0.20mm	m	2.80	Span 2
	Photo-044, W=0.20mm	m	0.85	Span 2
	Photo-045, W=0.20mm	m	0.90	Span 2
	Photo-046, W=0.15-0.20mm	m	6.35	Span 2
	Photo-047, W=0.10-0.20mm	m	1.10	Span 2
	Photo-048, W=0.10-0.20mm	m	4.15	Span 2
	Photo-049, W=0.15-0.20mm	m	2.00	Span 2
	Photo-050, W=0.10mm	m	1.70	Span 2
	Cracks on pre-cast slab No.4 to No.18	m	53.38	Span 1 asummed by multiplying a average cracks length in one precast slab by cracks unrecoded precast slab number.
	Cracks on pre-cast slab No.25 to No.33	m	15.52	Span 2 average cracks length in one precast slab = total crack length / cracks recoded precast slab number
1.1.3.2	0.2mm < width < 1.0mm	m	17.96	
	Photo-027, W=0.25mm	m	1.00	Span 1
	Photo-031, W=0.25mm	m	5.00	Span 1
	Photo-038, W=0.25mm	m	3.13	Span 2

	Photo-039, W=0.25mm	m	1.00	Span 2
	Photo-042, W=0.25mm	m	0.80	Span 2
	Photo-043, W=0.25mm	m	4.41	Span 2
	Photo-044, W=0.25mm	m	0.40	Span 2
	Photo-045, W=0.25mm	m	0.55	Span 2
	Photo-047, W=0.25-0.30mm	m	0.37	Span 2
	Photo-050, W=0.25-0.35mm	m	1.00	Span 2
	Photo-052, W=0.25mm	m	0.15	Span 1
	Photo-053, W=0.25mm	m	0.15	Span 2
1.1.3.3	width ≥ 1.0mm	m	0.00	None
1.2	**Element:** Girder; **Material:** Post-tensioned concrete			
1.2.1	06: Cracks			
1.2.1.1	width ≤ 0.2mm	m	0.58	
	Photo-014, W=0.15mm	m	0.22	
	Photo-015, W=0.15mm	m	0.08	
	Photo-016, W=0.15mm	m	0.20	
	Photo-017, W=0.10mm	m	0.05	
	Photo-018, W=0.20mm	m	0.03	
1.2.1.2	0.2mm < width < 1.0mm	m	0.23	
	Photo-013, W=0.25mm	m	0.23	
1.2.1.3	width ≥ 1.0mm	m	2.08	
	Photo-011, W=1.00mm	m	0.80	
	Photo-012, W=1.00mm	m	0.88	
	Photo-051, W=1.40mm	m	0.40	
1.2.2	07: Peeling/Exposure of Rebar	m^2	0.128	
	Photo-001	m^2	0.0293	
	Photo-002	m^2	0.0193	
	Photo-006	m^2	0.0195	
	Photo-009	m^2	0.06	
1.2.3	08: Leaching/Free lime	m^2	0.00	None
2	**Component:** Substructure			
2.1	**Element:** Body; **Material:** Reinforce Concrete			
2.1.1	06: Cracks			
2.1.1.1	width ≤ 0.2mm	m	0.00	None
2.1.1.2	0.2mm < width < 1.0mm	m	0.00	None
2.1.1.3	width ≥ 1.0mm	m	0.14	
	Photo-056			On stop block at pier P1
2.1.2	07: Peeling/Exposure of Rebar	m^2	0.025	
	Photo-057			On stop block at pier P1
2.1.3	08: Leaching/Free lime	m^2	0.00	None
2.2	**Element:** Foundation; **Material:** Reinforce Concrete			
2.2.1	26: Scouring	m	0.00	None
3	**Component:** Bearing			
3.1	**Element:** Bearing body			
3.1.1	Severely corroded	m^2	0.00	None
3.1.2	Some part are missing	Nos	0	None
3.1.3	Rubber is damaged	m^3	0.00	None
3.1.4	Rubber is hardened	m^3	0.00	None
3.1.5	Lost	Nos	0	None
3.2	**Element:** Shoe seat, Mortar			
3.2.1	Sediment accumulate	Nos	3	At Abutment A1, A2 and Pier P1
3.2.2	Water is pooled	Nos	0	None
3.2.3	Mortar is cracked and partially lost	Nos	0	None
4	**Component:** On the Road			
4.1	**Element:** Railing; **Material:** Steel Pipe with Reinforce Concrete Column			
4.1.1	01: Corrosion	m^2	7.00	
	Span-1 (A1-P1), Downstream	m^2	1.50	
	Span-2 (P1-A2), Downstream	m^2	1.50	

	Span-1 (A1-P1), Upstream	m^2	1.50	
	Span-2 (P1-A2), Upstream	m^2	2.50	
4.1.2	04: Fracture	Nos	16	
	Span-1 (A1-P1), Downstream	Nos	8.00	
	Span-2 (P1-A2), Downstream	Nos	5.00	
	Span-1 (A1-P1), Upstream	Nos	3.00	
4.1.3	06: Cracks			
4.1.3.1	width ≤ 0.2mm	m	2.00	
	Span-1 (A1-P1), Upstream	m	1.00	
	Span-2 (P1-A2), Upstream	m	1.00	
4.1.3.2	0.2mm < width < 1.0mm	m	3.00	
	Span-1 (A1-P1), Downstream	m	1.20	
	Span-2 (P1-A2), Downstream	m	1.80	
4.1.3.3	width ≥ 1.0mm	m	5.00	
	Span-1 (A1-P1), Downstream	m	2.00	
	Span-2 (P1-A2), Downstream	m	3.00	
4.1.4	07: Peeling/Exposure of Rebar	m^2	6.00	
	Span-1 (A1-P1), Downstream side	m^2	4.00	
	Span-2 (P1-A2), Downstream side	m^2	2.00	
4.1.5	23: Deformation /Loss	Nos	6.00	
	Span-1 (A1-P1), Downstream	Nos	3.00	
	Span-2 (P1-A2), Downstream	Nos	2.00	
	Span-1 (A1-P1), Upstream	Nos	1.00	
4.2	**Element:** Wheel Guard; **Material:** Reinforce Concrete Column			
4.2.1	06: Cracks			
4.2.1.1	width ≤ 0.2mm	m	0.50	
	Span-1 & 2, Downstream	m	0.50	
4.2.1.2	0.2mm < width < 1.0mm	m	1.30	
	Span-1 (A1-P1), Upstream	m	1.30	
4.2.1.3	width ≥ 1.0mm	m	4.50	
	Span-2 (P1-A2), Upstream	m	4.50	
4.2.2	07: Peeling/Exposure of Rebar	m^2	1.00	

Summary of damages for Nam Mone Bridge

Item	Type of damages	Unit	Quatity	Remark
5	**Component:** Road Surface			
5.1	**Element:** Pavement			
5.1.1	14: Rough Road Surface			
5.1.1.1	Potholes depth ≥ 10mm	m^2	51.80	
	Span 1 (A1-P1)	m^2	51.80	
5.1.1.2	Bumps height ≥ 10mm	m^2	4.00	
	Span 1 (A1-P1)	m^2	4.00	
5.1.2	15: Abnormal Surface (Pavement Cracks)			
5.1.2.1	width < 5mm	m^2	17.50	
	Span 1 (A1-P1)	m^2	14.50	
	Span 2 (P1-A2)	m^2	3.00	
5.1.2.2	width ≥ 5mm	m^2	9.00	
	Span 2 (P1-A2)	m^2	9.00	
5.2	**Element:** Expansion Joint			
5.2.1	14: Rough Road Surface (Step)	m	0.00	None
5.2.2	24: Sediment clogging (pavement overlay)	m	22.80	
	On the Abutement A1	m	7.60	
	On the Pier P1	m	7.60	
	On the Abutement A2	m	7.60	
5.3	**Element:** Drainage Facility			
5.3.1	24: Sediment clogging	Nos	52.00	95m Long, Area =95x0.6=57 m^2
	Span-1 (A1-P1), Downstream	Nos	13.00	14.25 m^2

	Span-1 (A1-P1), Upstream	Nos	13.00	14.25 m^2
	Span-2 (P1-A2), Downstream	Nos	13.00	14.25 m^2
	Span-2 (P1-A2), Upstream	Nos	13.00	14.25 m^2

Appendix 1: Nam Mone Bridge

Appendix 1-e: Inspection Sheet

Bridge Inspection Sheet (Superstructure - Span1, A1 to P1)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Super-structure	Deck	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
		Concrete	☑ 07	Peeling, Rebar exposure	97.5		2.5		0.0	007 & 021
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	-
			☐ 09	Fall off						
			☐ 10	Deterioration of repair/ reinforcement material						
			☑ 11	Cracks on slab	55.0	0.0	30.0	10.0	5.0	022 - 033
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
	Main structure	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 13	Extraordinal gap						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	95.5	0.0	1.5	3.0	0.0	011 - 015
			☑ 07	Peeling, Rebar exposure	97.0		3.0		0.0	006 & 009
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	-
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 13	Extraordinal gap						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Superstructure - Span2, P1 to A2)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Super-structure	Deck	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
		Concrete	☑ 07	Peeling, Rebar exposure	97.0		3.0		0.0	005 & 010
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	-
			☐ 09	Fall off						
			☐ 10	Deterioration of repair/						
			☑ 11	Cracks on slab	46.0	0.0	9.0	35.0	10.0	034 - 050
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
	Main structure	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 13	Extraordinal gap						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	98.0	0.0	1.5	0.5	0.0	016 - 017
			☑ 07	Peeling, Rebar exposure	99.0		1.0		0.0	006 & 009
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	-
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 13	Extraordinal gap						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Other than deck & main structure - All Span)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2 & 2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element		Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Super-structure	Other than deck and main structure	Main members	Steel	☐ 01	Corrosion						
				☐ 02	Cracks						
				☐ 03	Loose, Drop off						
				☐ 04	Fracture						
				☐ 05	Degradation of anticorrosion performance						
				☐ 10	Deterioration of repair/ reinforcement material						
				☐ 17	Others						
				☐ 20	Water leakage, Surface ponding						
				☐ 21	Extraordinal sound/ vibration						
				☐ 22	Extraordinal deflection						
				☐ 23	Deformation, Loss						
			Concrete	☐ 06	Cracks						
				☐ 07	Peeling, Rebar exposure						
				☐ 08	Leaching, Free lime						
				☐ 10	Deterioration of repair/ reinforcement material						
				☐ 12	Spalling						
				☐ 17	Others						
				☐ 18	Extraordinal anchorage						
				☐ 19	Discoloration, Degradation						
				☐ 20	Water leakage, Surface ponding						
				☐ 21	Extraordinal sound/ vibration						
				☐ 22	Extraordinal deflection						
				☐ 23	Deformation, Loss						
		Non-main members (Diaphragm)	Steel	☐ 01	Corrosion						
				☐ 02	Cracks						
				☐ 03	Loose, Drop off						
				☐ 04	Fracture						
				☐ 05	Degradation of anticorrosion performance						
				☐ 10	Deterioration of repair/ reinforcement material						
				☐ 17	Others						
				☐ 20	Water leakage, Surface ponding						
				☐ 21	Extraordinal sound/ vibration						
				☐ 22	Extraordinal deflection						
				☐ 23	Deformation, Loss						
			Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
				☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
				☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
				☐ 10	Deterioration of repair/ reinforcement material						
				☐ 12	Spalling						
				☐ 17	Others						
				☐ 19	Discoloration, Degradation						
				☐ 20	Water leakage, Surface ponding						
				☐ 22	Extraordinal deflection						
				☐ 23	Deformation, Loss						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Substructure - Abutment A1)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Sub-structure	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☑ 20	Water leakage, Surface ponding	0.0				100.0	054
			☐ 23	Deformation, Loss						
	Foundation	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, displacement, Inclining						
			☐ 26	Scouring						
		Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface ponding						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, Displacement, Inclining						
			☑ 26	Scouring	100.0		0.0		0.0	

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Substructure - Pier P1)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2 & 2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Sub-structure	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	99.5	0.0	0.0	0.0	0.5	056
			☑ 07	Peeling, Rebar exposure	99.5		0.0		0.5	057
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface ponding						
			☐ 23	Deformation, Loss						
	Foundation	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, displacement, Inclining						
			☐ 26	Scouring						
		Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface ponding						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, Displacement, Inclining						
			☑ 26	Scouring	100.0		0.0		0.0	

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Substructure - Abutment A2)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Sub-structure	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☑ 20	Water leakage, Surface ponding	0.0				100.0	059
			☐ 23	Deformation, Loss						
	Foundation	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 22	Extraordinal deflection						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, displacement, Inclining						
			☐ 26	Scouring						
		Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 18	Extraordinal anchorage						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface ponding						
			☐ 23	Deformation, Loss						
			☐ 25	Subsidence, Displacement, Inclining						
			☑ 26	Scouring	100.0		0.0		0.0	

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Bearings - at Abutment A1)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Bearings	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 16	Lack of bearing function						
			☐ 17	Others						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						
			☐ 25	Subsidence, Displacement,						
		Rubber	☑ 16	Lack of bearing function	100.0				0.0	
			☐ 17	Others						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☑ 24	Sediment clogging	25.0				75.0	055
			☐ 25	Subsidence, Displacement,						
	Shoe seat mortar, pedestal concrete	Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☐ 12	Spalling						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
	Bridge fall prevention device	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
		Concrete	☐ 06	Cracks						
			☐ 07	Peeling, Rebar exposure						
			☐ 08	Leaching, Free lime						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Bearings - at Pier P1)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2 & 2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Bearings	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 16	Lack of bearing function						
			☐ 17	Others						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						
			☐ 25	Subsidence, Displacement,						
		Rubber	☑ 16	Lack of bearing function	100.0				0.0	
			☐ 17	Others						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☑ 24	Sediment clogging	15.0				85.0	058
			☐ 25	Subsidence, Displacement,						
	Shoe seat mortar, pedestal concrete	Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☐ 12	Spalling						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
	Bridge fall prevention device	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
		Concrete	☐ 06	Cracks						
			☐ 07	Peeling, Rebar exposure						
			☐ 08	Leaching, Free lime						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Bearings - at Abutment A2)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Bearings	Body	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 16	Lack of bearing function						
			☐ 17	Others						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						
			☐ 25	Subsidence, Displacement,						
		Rubber	☑ 16	Lack of bearing function	100.0				0.0	
			☐ 17	Others						
			☐ 19	Discoloration, Degradation						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
			☑ 24	Sediment clogging	25.0				75.0	060
			☐ 25	Subsidence, Displacement,						
	Shoe seat mortar, pedestal concrete	Concrete	☑ 06	Cracks	100.0	0.0	0.0	0.0	0.0	
			☑ 07	Peeling, Rebar exposure	100.0		0.0		0.0	
			☐ 12	Spalling						
			☐ 20	Water leakage, Surface						
			☐ 23	Deformation, Loss						
	Bridge fall prevention device	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
		Concrete	☐ 06	Cracks						
			☐ 07	Peeling, Rebar exposure						
			☐ 08	Leaching, Free lime						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						

Legend : Target for "Periodic Inspection A" and deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (On the road - All Span)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2 & 2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
On the road	Railing/ Guard fence	Steel	☑ 01	Corrosion	85.0	0.0	15.0	0.0	0.0	061 - 066
			☑ 02	Cracks	100.0		0.0		0.0	
			☐ 03	Loose, Drop off						
			☑ 04	Fracture	90.0				10.0	067 - 078
			☐ 05	Degradation of anticorrosion performance						
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 17	Others						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	90.0	0.0	0.0	0.0	10.0	079 - 083
			☑ 07	Peeling, Rebar exposure	83.0		0.0		17.0	085 - 090
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 19	Discoloration, Degradation						
			☑ 23	Deformation, Loss	85.0		0.0		15.0	097 - 100
	Noise barrier	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
	Lights, Traffic signs	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 17	Others						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
	Pavement	Concrete	☐ 14	Rough road surface						
			☐ 15	Extraordinal pavement						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
		Asphalt	☐ 14	Rough road surface						
			☐ 15	Extraordinal pavement						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						

Legend : Target for "Periodic Inspection A" but not for deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]

Bridge Inspection Sheet (Road surface - All Span)

Road No.	13N
Road name	NR No.13 North
Bridge ID/No.	Unknown
Bridge name	Namone

Inspection date	26-01-22
Inspection type	Detailed Inspection
Span No.	1/2 & 2/2
Bridge type	Girder Bridge
Span length (m)	22.00

Component	Element	Material	Damage type		Damage state (%) A	B	C	D	E	Photo No.
Road surface	Wheel guard	Steel	☐ 01	Corrosion						
			☐ 02	Cracks						
			☐ 03	Loose, Drop off						
			☐ 04	Fracture						
			☐ 05	Degradation of anticorrosion performance						
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 17	Others						
			☐ 23	Deformation, Loss						
		Concrete	☑ 06	Cracks	94.0	0.0	0.0	0.0	6.0	084
			☑ 07	Peeling, Rebar exposure	91.0		9.0		0.0	091 - 096
			☑ 08	Leaching, Free lime	100.0		0.0	0.0	0.0	
			☐ 10	Deterioration of repair/ reinforcement material						
			☐ 12	Spalling						
			☐ 17	Others						
			☐ 19	Discoloration, Degradation						
			☐ 23	Deformation, Loss						
	Pavement	Concrete	☐ 14	Rough road surface						
			☐ 15	Extraordinal pavement						
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
		Asphalt	☑ 14	Rough road surface	50.0		30.0		20.0	101 - 106
			☑ 15	Extraordinal pavement	85.0		0.0		15.0	107 - 112
			☐ 17	Others						
			☐ 20	Water leakage, Surface ponding						
	Expansion joint	Steel	☑ 01	Corrosion	100.0	0.0	0.0	0.0	0.0	
			☑ 02	Cracks	100.0		0.0		0.0	
			☐ 03	Loose, Drop off						
			☑ 04	Fracture	100.0				0.0	
			☐ 05	Degradation of anticorrosion performance						
			☐ 13	Extraordinal gap						
			☐ 14	Rough road surface						
			☑ 17	Others	20.0				80.0	113 - 118
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						
		Concrete	☐ 06	Cracks						
			☐ 12	Spalling						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						
		Rubber	☐ 13	Extraordinal gap						
			☐ 14	Rough road surface						
			☐ 17	Others						
			☐ 19	Descoloration, degradation						
			☐ 20	Water leakage, Surface ponding						
			☐ 21	Extraordinal sound/ vibration						
			☐ 23	Deformation, Loss						
			☐ 24	Sediment clogging						

Legend : Target for "Periodic Inspection A" but not for deterioaration prediction

: Not Applicable

Steel : 05, [Coating: A,C,D,E], [Plating, Metalic spraying: A,C,E], [Weathering steel: A,B,C,D,E]