



**IMPROVEMENT OF QUALITY MANAGEMENT FOR
HIGHWAY AND BRIDGE CONSTRUCTION AND
MAINTENANCE, PHASE II**

**BRIDGE INSPECTION MANUAL
FOR
CABLE STAYED BRIDGE
(SPECIAL BRIDGE)**

2014

Department of Public Works and Highways
Japan International Cooperation Agency



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SEPTEMBER 2014

**DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
JAPAN INTERNATIONAL COOPERATION AGENCY**



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila



FOREWORD

Bridges support sustainable economic growth by facilitating the transport of goods and services.

With the assistance from Japan International Cooperation Agency (JICA), the production of this Manual on bridge inspection for cable stayed bridges incorporating latest technology trends is necessary in ensuring the structural integrity of these special kinds of bridges.

Fittingly titled, **Bridge Inspection Manual for Cable Stayed Bridge** classified as Special Bridge includes consistent and proper bridge inspection procedures warranting properly prepared inspection reports unique for this type of bridge.

This Manual will undoubtedly improve our engineers' knowledge by providing guidelines and procedures to undertake effective inspections of cable stayed bridge structures to determine the presence of deterioration and defects.

I view this Manual beneficial in prolonging the service life of our bridges at its paramount usability towards efficient management of government infrastructure assets.

Our sincerest gratitude to JICA for their technical and funding assistance and the dedicated DPWH personnel who both worked hard in the realization of this Manual.

I enjoin all those concerned to use this as easy reference and proper guide in conducting inspection of cable stayed bridges.


ROGELIO L. SINGSON
Secretary



ACKNOWLEDGEMENT

The Special Bridge Inspection Manual for Cable Stayed Bridge is one of several manuals improved by the Japan International Cooperation Agency (JICA) with the Department of Public Works and Highways (DPWH) in the implementation of the Technical Cooperation Project for the Improvement of Quality Management for Highways and Bridge Construction and Maintenance, Phase II (2011-2014).

The JICA Expert Team would like to express its appreciation its heartfelt thanks to the Technical Working Group and Counterpart Working Group members designated for the Project and to the staff of Region II, III VIII and Region XIII who have rendered utmost support to complete this undertaking.

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GLOSSARY OF TERMS

AADT	Annual Average Daily Traffic
API	Agency Performance Indicator
AWP	Annual Works Program
B/C	Benefit/Cost Ratio
BOC	Bureau of Construction
BOD	Bureau of Design
BOE	Bureau of Equipment
BOM	Bureau of Maintenance
BMC	Bridge Maintenance Costs
BMS	Bridge Management System
BIM	Bridge Inspection Manual
BNR	Bridge Needs Ratio
BRF	Bridge Route Factor
COE	Certificate of Exemption
CRF	Capital Recovery Factor
DEO	District Engineering Office
DPD	Development Planning Division
DPWH	Department of Public Works and Highways
ECC	Environmental Compliance Certificate
EMK	Equivalent Maintenance Kilometer
FAP	Foreign Assisted Project
FS	Feasibility Study
GAA	General Appropriations Act



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GIS	Geographic Information System
ICC	Investment Coordination Committee
IPRSD	Infrastructure Planning Research and Statistics Division
IQL	Information Quality Level
IRR	Internal Rate of Return
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KPI	Key Performance Indicator
LFP	Locally Funded Project
LRM	Locational Referencing Method
LRP	Locational Reference Point
LRS	Locational Referencing System
MIS	Monitoring & Information Service
MM	Major Maintenance
MPS	Maintenance Priority Score
MTIDP	Medium Term Infrastructure Development Plan
MTPDP	Medium Term Philippine Development Plan
MTPIP	Medium Term Public Investment Program
MVUC	Motor Vehicle User Charge
MWP	Multi-year Work Program
MYPS	Multi-Year Programming and Scheduling
ND	Network Development
NMPS	Normalized Maintenance Priority Score
NPV	Net Present Value
NPV/C	Net Present Value - Cost Ratio
OIC	Officer In Charge
PMO	Project Management Office
PPI	Process Performance Indicator
PS	Planning Service
PWF	Present Worth Factor
QA	Quality Assurance
QC	Quality Control
RBIA	Road and Bridge Information Application
RDBL	Road Diagram and Bridge List
RIMSS	Road Information and Management Support System
RMMS	Routine Maintenance Management System
RO	Regional Office
ROPDD	Regional Office Planning & Design Division
ROMD	Regional Office Maintenance Division
RPO	Road Program Office
SQL	Standard Query Language
SRSF	Special Road Support Fund



INSPECTION MANUAL FOR CABLE STAYED BRIDGE

1. INTRODUCTION

1.1. Background

The Bridge Inspection Manual for Cable Stayed Bridge is one of the manuals developed under the implementation of the DPWH program entitled “Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase II” of the JICA Technical Cooperation Project (JICA-TCP).

This Manual is designed to establish/formulate inspection procedures, criteria and guidelines specifically for Cable Stayed Bridge which is considered as a special/long span bridge wherein the conduct of inspection activities and/or requirements are not covered in the Bridge Management System (BMS) Manual.

In order to provide the DPWH personnel and other users with the standard method for the assessment and uniform inspection practices throughout the Philippines, Diosdado Macapagal Cable Stayed Bridge located in Region XIII is selected as a pilot bridge for this purpose. The details of the drawings and prescribed forms in this manual are designed for the above mentioned pilot bridge. In case that other Cable Stayed Bridges are inspected, all applicable provisions in this manual should be adopted and other drawings and forms should be adjusted for each bridge.

In comparison, the common features/differences between the BMS Manual and the Bridge Inspection Manual for Cable Stayed Bridge are as follows:

- This Manual uses the same procedures established in the present BMS Manual pertaining to the type of material, type of damage, bridge rating criteria, etc., except for special materials and devices (i.e., weathering steel, stayed cables and its related devices).
- Descriptions of special materials and devices are added in this manual.
- All descriptions in the BMS Manual originally intended for standard bridges but are also applicable for Cable Stayed Bridges.
- Specific description and drawings applicable for Cable Stayed Bridge but not indicated in the BMS Manual are incorporated herein.

Since this manual is designed with the information or data pertaining to Diosdado Macapagal Bridge, the following has been developed:



- Drawings concerning the Inventory, Routine and Condition Inspections are related to Diosdado Macapagal Bridge.
- Inspection Routes for the Routine and Condition Inspections pertain only to Diosdado Macapagal Bridge.
- Check Points on Routine and Condition Inspections to specific bridge members of Cable Stayed Bridge.
- Inventory information pertains to Diosdado Macapagal Bridge.

On the scope of Routine Inspection for standard bridges, the said activity is conducted in accordance with the Department Order (DO) Nos. 179 series of 1997 and 81 series of 2005. However, Cable Stayed Bridge is classified as a special/long span bridge and as such, there are aspects on the Routine Inspection criteria which are not covered by the aforementioned DOs. Considering the higher degree of importance of special/long span bridge which demands that proper maintenance should be instituted, the development of the Bridge Inspection Manual for Cable Stayed Bridge therefore is essential as it provides the appropriate inspection procedure which is a prerequisite of its routine maintenance needs and addresses the following issues:

- Necessity of early detection of defects as a preventive approach through Routine Inspection
- To avoid loss of lives and properties due to the collapse of the bridge or failure of attributes, etc.
- Be able to interpret some of the complicated behavior of the bridge.
- Avoid the high cost of a major repair and replacement of the bridge.

1.2. Scope of this Manual

The basis in the proper maintenance and management of special/long span bridges initially relies on the availability of its inventory and annual condition information which will provide reference data and track previously reported deterioration of the bridge.

Therefore, along with such intention, the manual presents a guideline in the actual conduct of the Inventory Inspection, Routine Inspection, Condition Inspection and Geometrical Inspection whose purpose is to obtain an accurate inventory and condition data which will lead to the formulation of appropriate maintenance measures needed to ensure efficient and sound operation for management of special/long span bridges.

Since special/long span bridge has unique design and type of structure, it should be managed separately from standard bridges, with medium term management (next 5 years). Likewise, it could not be inspected and repaired by lump sum budget like standard bridge. The duration and cost of inspection and maintenance are also different among special type of bridges.

The specific maintenance management plan includes but not limited to the following:



1. Inspection schedule
2. Planning for Repair Work
3. Budget Estimation
4. Implementation Schedule

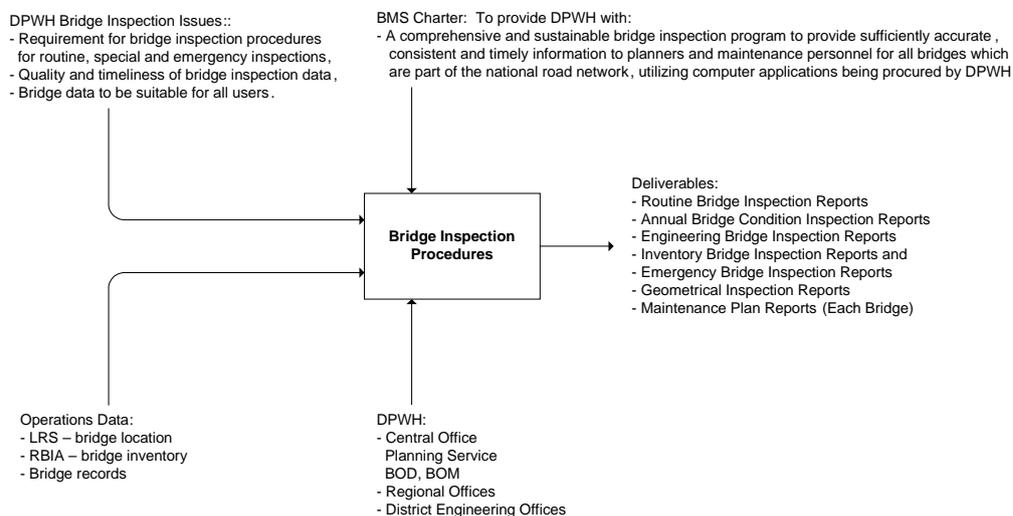
The contents of this manual depict a consistent and proper bridge inspection procedures to ensure that inspection reports for all types of bridge inspections are properly prepared.

The main focus of this bridge inspection manual are; Routine Inspection (Type 1), Condition Inspection (Type 2), Inventory Inspection (Type 5), and Geometrical Inspection (Type 6). These inspections will provide the basic bridge data required to be stored and managed properly. Database is introduced in this manual for the management of Special Bridge Inventory Data.

1.3. Bridge Inspection Requirements

The bridge inspection procedures and requirements are shown in Figure 1-1.

Figure 1-1
Bridge Inspection Procedures and Requirements





The types of special bridge inspections undertaken by the DPWH are listed in Table 1.1. Scheduled bridge inspections are those inspections required to be undertaken on a set frequency (e.g. annually, quarterly) to supply data for DPWH functions. Non-scheduled inspections are those inspections undertaken only when required (e.g. an addition of new national bridges or during calamities).

Table 1-1
Types of Special Bridge Inspections

TYPE	NAME	FREQUENCY	METHOD	REMARKS
1	Routine	Quarterly	Visual inspection from ground level	
2	Condition	Annually	Close visual inspection by boat and Bridge Inspection Vehicle (BIV)	Recommended: Inspection by BIV at least once in every three years
3	Engineering	As required	Detail inspection by skilled engineers for bridge repair work	Refer to Bridge Engineering Inspection Manual
4	Emergency	As required	Emergency inspection by skilled engineers for emergency action	
5	Inventory	Once after construction and after every modification	Data collection from As Built Drawings and construction documents	As Built Drawings data should be collected and attached to Special Bridge Inventory Database
6	Geometrical	Once every three years and as the need arises (after earthquake, typhoon, etc.)	Measurement by surveying instrument	Current data should be analyzed with past 3 time data.



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The responsible offices tasked to undertake special bridge inspections are summarized in Table 1-2. The specific requirements for those personnel assigned to undertake the bridge inspections are given in Table 1-3.

Table 1-2
Bridge Inspection Responsibility

TYPE	NAME	RESPONSIBILITY	REPORTING
1	Routine	Regional Office BMS Coordinator to be assisted by DEO Accredited Bridge Inspector	Report to PS-CO
2	Condition	Regional Office BMS Coordinator to be assisted by DEO-Accredited Bridge Inspector	Report to PS-CO
3	Engineering	DEO / RO / BOD / BRS / BMS Team and other Entities	Report to PS-CO
4	Emergency	Regional Office to be assisted by DEO maintenance personnel	Report to BOM-CO
5	Inventory	Regional Office to be assisted by DEO-Accredited BI	Report to PS-CO
6	Geometrical	Regional Office to be assisted by DEO-Accredited BI	Report to PS-CO

Table 1-3
Requirements for Bridge Inspection Personnel

TYPE	NAME	PERSONNEL
1	Routine	Accredited Bridge Inspector
2	Condition	Accredited Bridge Inspector
3	Engineering	Accredited Bridge Inspector / Bridge Engineer / Materials Engineer or outsourcing to Private Consultant Company or Entities
4	Emergency	Bridge Engineer and Accredited Bridge Inspector
5	Inventory	Accredited Bridge Inspector
6	Geometrical	Bridge Engineer and Accredited Bridge Inspector

An Accredited Bridge Inspector should meet the following qualifications: (1) be permanent in Status of Appointment, (2) has an experience in design, construction, maintenance and inspection of bridges, and (3) has successfully completed the BMS training course and received accreditation.

The Accredited Bridge Inspector is trained in assessment of the condition of bridge structures through visual inspection defects. However, the Accredited Bridge Inspector can get support and assistance from Bridge Engineers in the Regional and District Engineering Offices concerned in making decision/s or recommendation/s.

Bridge Inspection Type 1 and 2 shall be undertaken by the Regional Office BMS Coordinator to be assisted by DEO Accredited Bridge Inspector because of the complication of structure of Special/long span bridge. They should be Accredited Bridge Inspector.

Bridge Inspection Type 3 of Special Bridge requires a high level of bridge engineering knowledge and will be undertaken by experienced bridge design engineers with the assistance of an Accredited Bridge Inspector and Materials Engineer or be outsourced to Private Consultant Company or Entities.



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Bridge Inspection Type 4 shall be undertaken by the Regional Office Bridge Engineer and Accredited Bridge Inspector to be assisted by the Maintenance Engineers from the District Engineering Offices concerned.

Bridge Inspection Type 5 shall be undertaken by the Accredited Bridge Inspector in RO and DEO.

Bridge Inspection Type 6 will require surveying instruments (i.e., Total Station and Level), to be conducted by the Accredited Bridge Inspector and Bridge Engineer in RO and DEO.

The classification of bridges to be categorized into Special Bridge is given in Table 1-4.

Table 1-4
Classification of Special Bridge

BRIDGE TYPE	REQUIREMENT
Prestressed Concrete Extradosed Bridge	Every bridge
Prestressed Concrete Box Girder Bridge	Longest span >60m
Steel Truss Bridge	Longest span >60m
Steel Arch Bridge	Every bridge
Cable-stayed Bridge	Every bridge
Suspension Bridge	Every bridge

These bridges should be inspected with Special Bridge Inspection Manual and be managed separately from standard bridges by a Medium Term Management Plan (5-10years). The special/long span bridge List in each region should be collected and be listed for management in the Special Bridge Inventory Database.

List of Special/long Span Bridges in Regions II, III, VIII and XIII is attached in Appendix A.



2. GENERAL REQUIREMENTS FOR BRIDGE INSPECTION

2.1. Accuracy

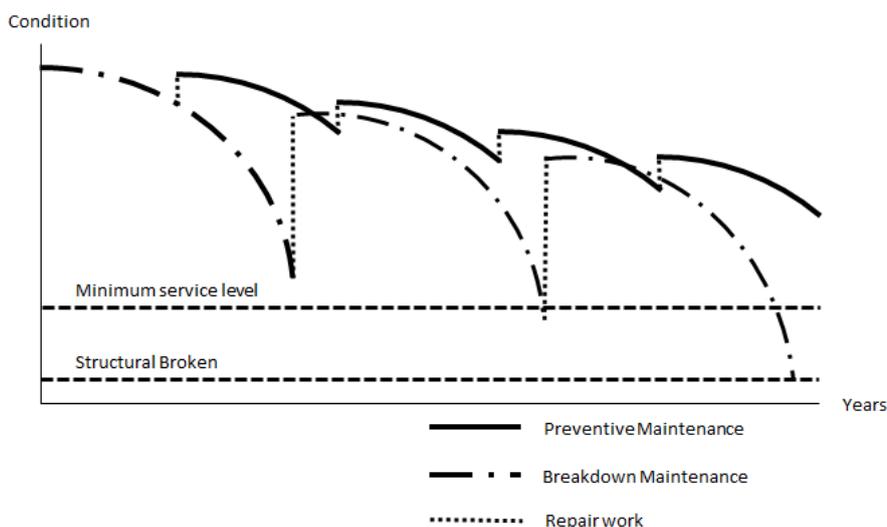
It is important that bridge inspection is thoroughly completed with accuracy as a primary goal. Bridge inspectors should allow sufficient time in undertaking the bridge inspection to collect all data required correctly.

2.2. Proactive Approach to Bridge Inspections

Inspections should not be confined in searching for defects that are clearly visible in the bridges. Inspections should also include anticipating problems and recognizing where these are likely to occur, in order that deterioration of the bridges is prevented. This approach is known as preventive inspection rather than corrective inspection.

There are two views in the maintenance method. One is Breakdown Maintenance. Another is Preventive Maintenance. Structure has been deteriorated during their service period and finally it would be broken. In case of Breakdown Maintenance, structure will be repaired after broken. Therefore, repair cost would be increased and long durability of structure would not be expected. On the other hand, in case of preventive maintenance, defects on structure should be found on the early stage and they will be repaired as the proactive approach. As a result of quick action to defects, repair cost would be hold down and long durability would be expected. Bridge should be properly maintained by the preventive maintenance. In this process, inspection plays the most important role to find defects on the early stage.

Figure 2-1
Deterioration of structure



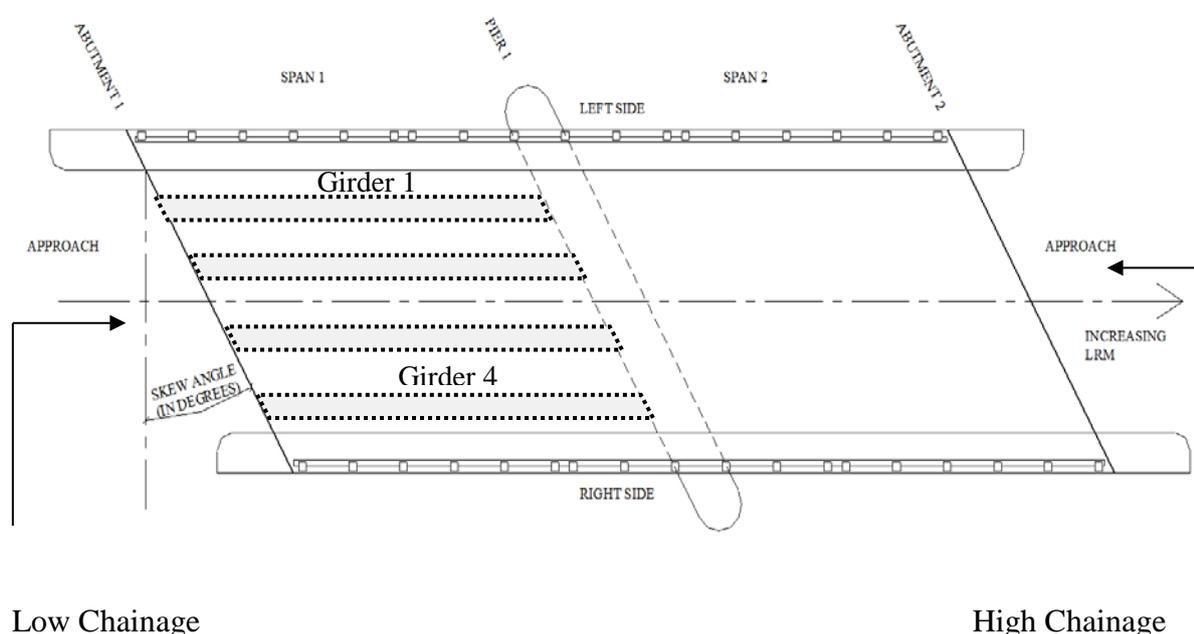


2.3. Bridge Geometry Definition

The standardized geometrical definition in the BMS Manual has been adopted by this Manual which is based on the Local Referencing System (LRS) used by the DPWH. The bridge is assessed in the direction of increasing chainage. Refer to Figure 2-2.

2.3.1. General

Figure 2-2
Bridge Geometry Definition



The following standard abbreviations are adopted to describe a bridge:

HC	-	High Chainage
LC	-	Low Chainage
S	-	Span
P	-	Pier
A	-	Abutment
G	-	Girder

Example, a three (3) span bridge with 4 girders in each span:

- Abutment 1 (A1) is at the low chainage end of the bridge and Abutment 2 (A2) is at the high chainage end.
- Spans 1 (S1), 2 (S2) and 3 (S3) numbered from the low chainage end of the bridge.
- Piers 1 (P1) and 2 (P2) numbered from the low chainage end of the bridge.
- The first girder on the extreme right hand side (looking in increasing chainage) in Span 1 is designated as Span 1- Girder 4 (S1G4).
- The girder on the extreme left in span 2 is designated as Span 2- Girder 1 (S2G1).



Abutments 1 and 2 may be named Abutment A and B respectively in DPWH bridge drawings.

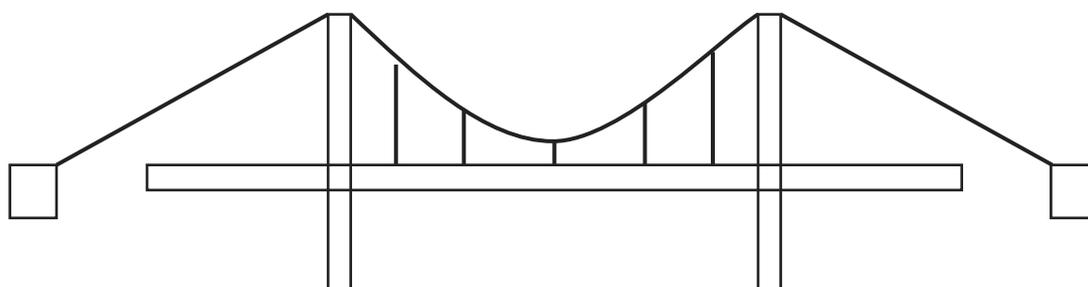
2.3.2. Cable Stayed Bridge

Cable Stayed Bridge is a bridge which supports girders by stay cables suspended diagonally from the tower to the girder. The typical Cable Stayed Bridge is a continuous girder with one or two towers erected in the middle of the span. Cable Stayed Bridge design is suitable between 150m and 800m long span. In comparison to suspension bridges, Cable Stayed Bridge require less cable, constructed at a shorter time and cost-effective.

Cable Stayed Bridge is similar to Suspension Bridge that support girders by cables and likewise have high tower. However, these two bridges support the load of the deck in different ways. The difference is how the cables are connected to the towers. In suspension bridges, the cables are installed across the towers, transmitting the load from deck to the towers down to the anchorages. In cable-stayed bridges, the cables are attached only to the towers to support the load.

There are two cable arrangements in Cable Stayed Bridge. Firstly, a fan design, cables are extended from several points on the girder to a single point at the top of the tower. Secondly, a harp design, cables are attached at different heights along the tower, running parallel to one another. Diosdado Macapagal Bridge is a harp design cable arrangement.

**Figure 2-3
Suspension Bridge**



**Figure 2-4
Cable Stayed Bridge (Fan Design)**

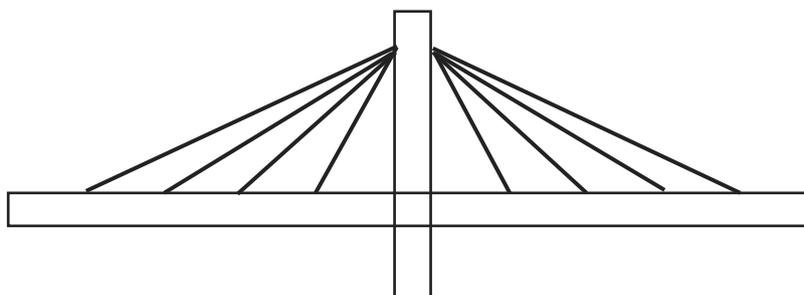
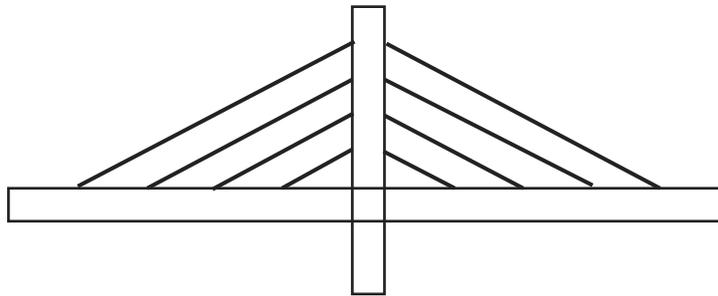




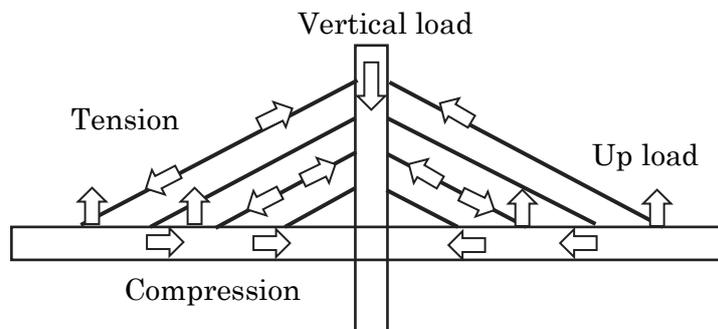
Figure 2-5
Cable Stayed Bridge (Harp Design)



For the support of girder, a cantilever approach is often used near the tower, but lengths further from the tower are supported by stay cables. All horizontal forces from Stay Cables are balanced at the tower, and no anchorage needed to resist a horizontal tension from the main suspension cables.

Due to the diagonally tensioned stay cables, compressive forces and bending moments are imposed on the girder and the tower. The towers are the load-bearing structures which transmit vertical loads to the ground. The bridge girder should be stronger to resist the resulting axial compression loads, so greater stiffness is necessary. At the same time, it reduces the deformation of the girder, and the bridge could resist wind load.

Figure 2-6
Load Distribution System in Cable Stayed Bridge



Shown in Figure 2-7, 2-8, 2-9 and 2-10 are the General Views of Diosdado Macapagal Bridge.



**Figure 2-7 General View of Diosdado Macapagal Bridge
(1 of 4)**

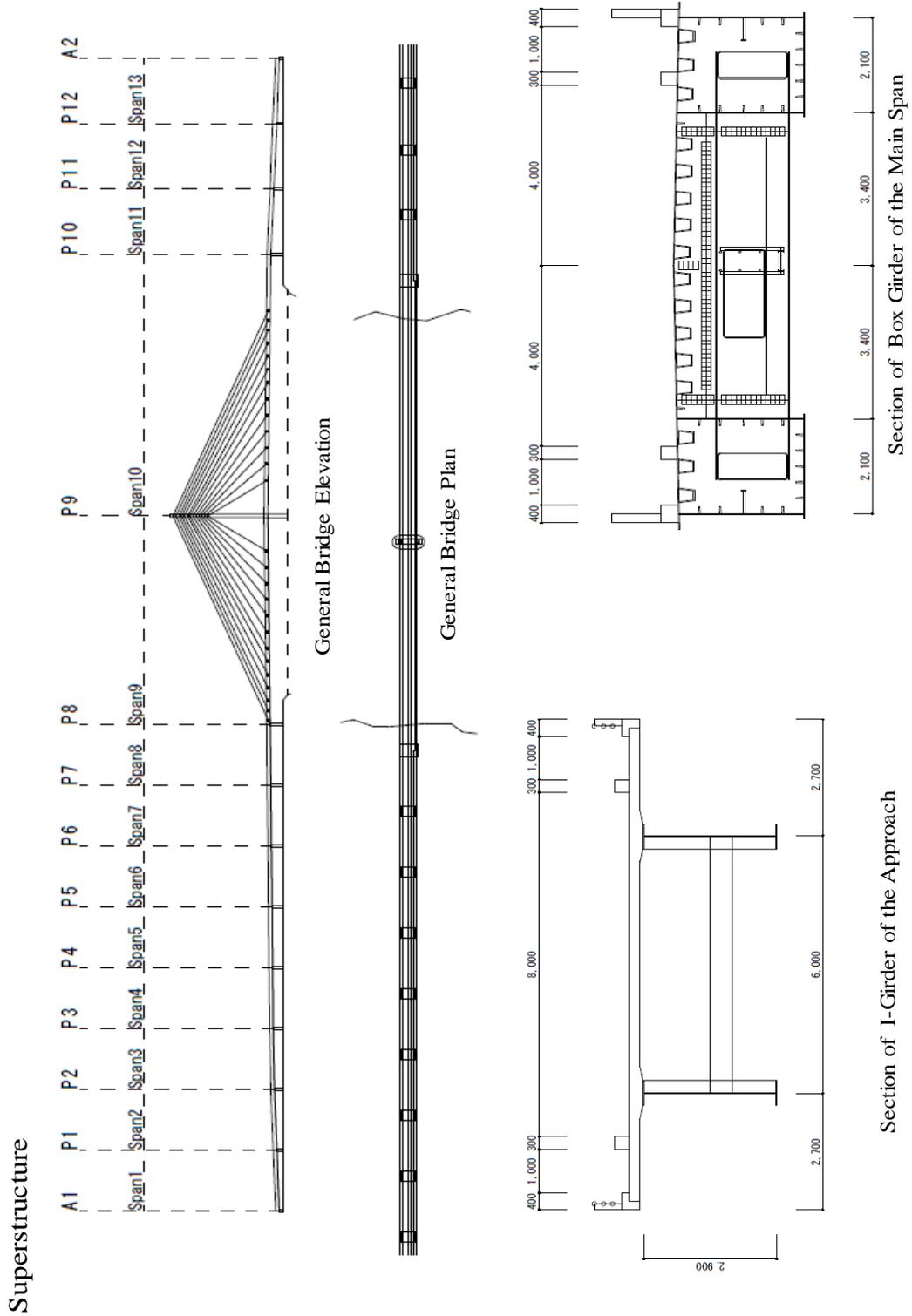
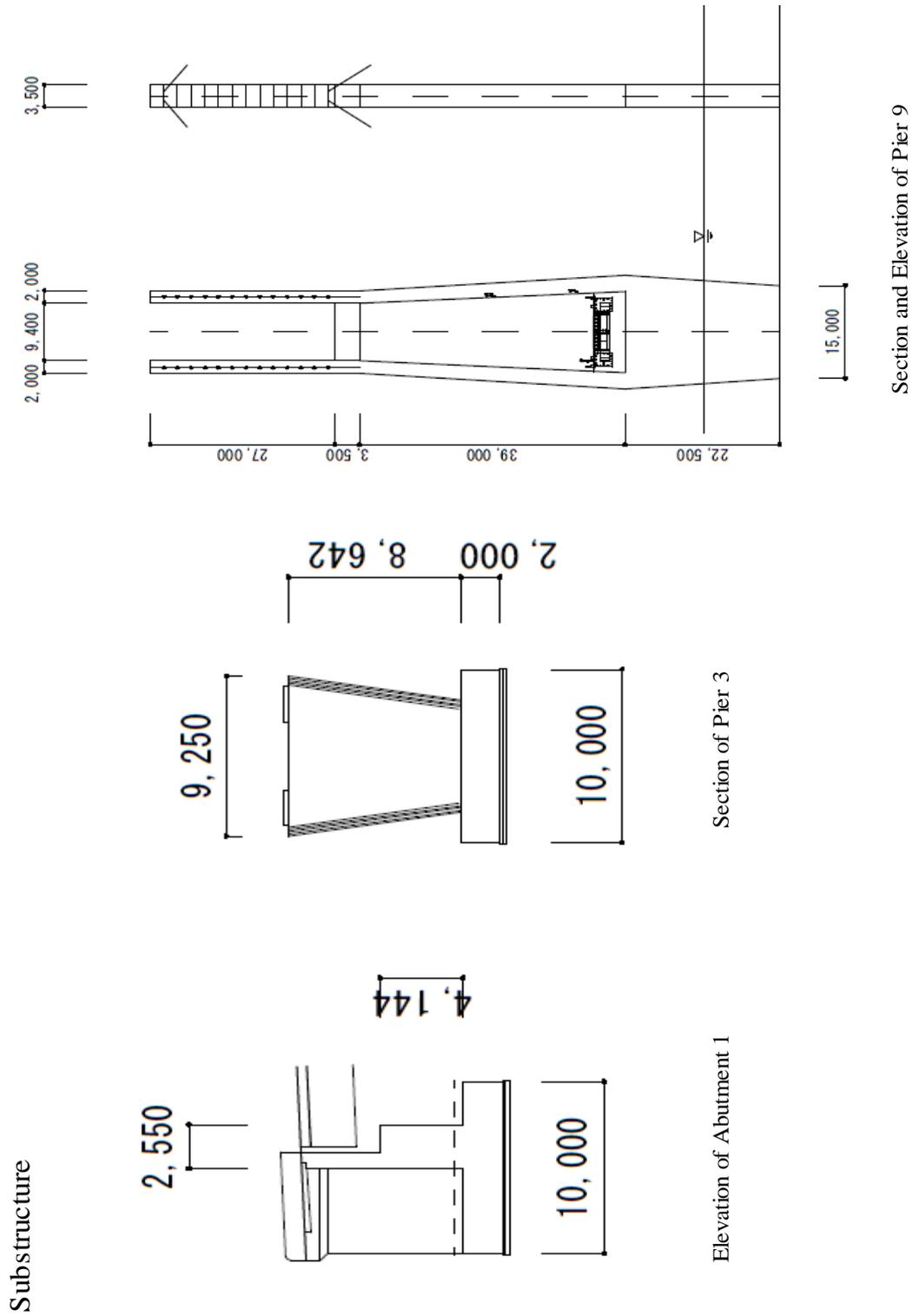




Figure 2-8 General View of Diosdado Macapagal Bridge
(2 of 4)

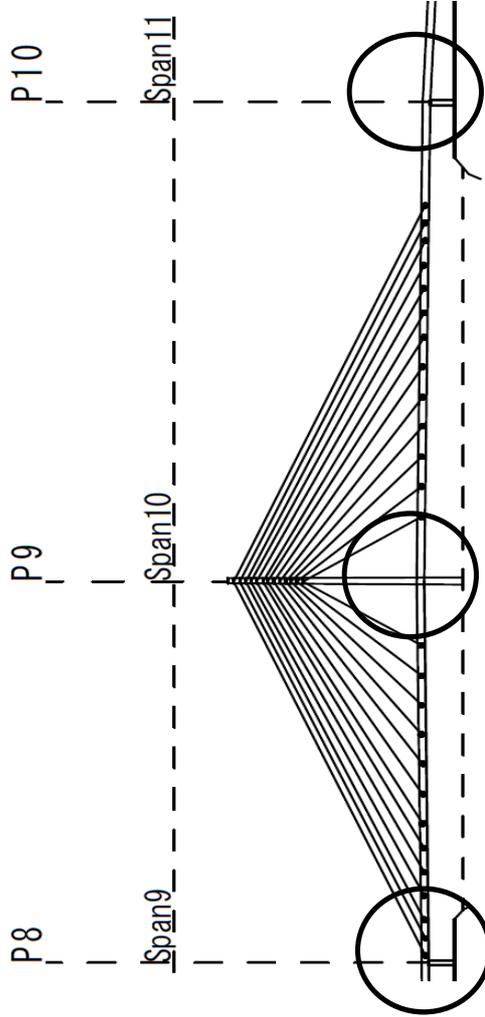
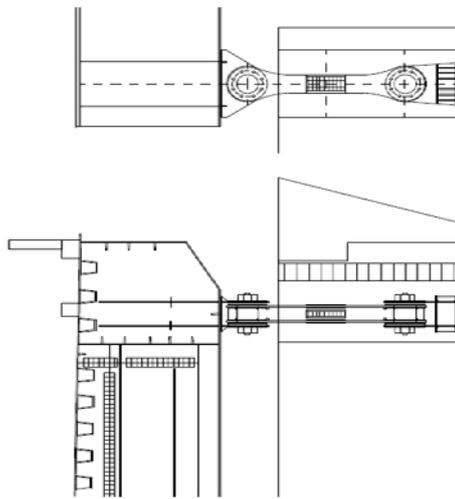




**Figure 2-9 General View of Diosdado Macapagal Bridge
(3 of 4)**

Bearings in the Main Span and Approach Viaduct

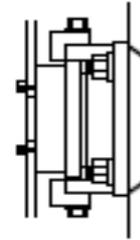
Pendulum Bearing (P8)



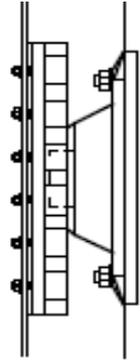
Seismic Isolation Bearing (P8, 9, 10)



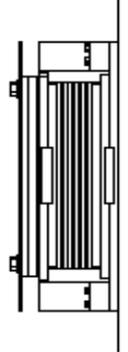
Steel Vertical Bearing (P9, 10)



Steel Lateral Bearing (P8, 9, 10)

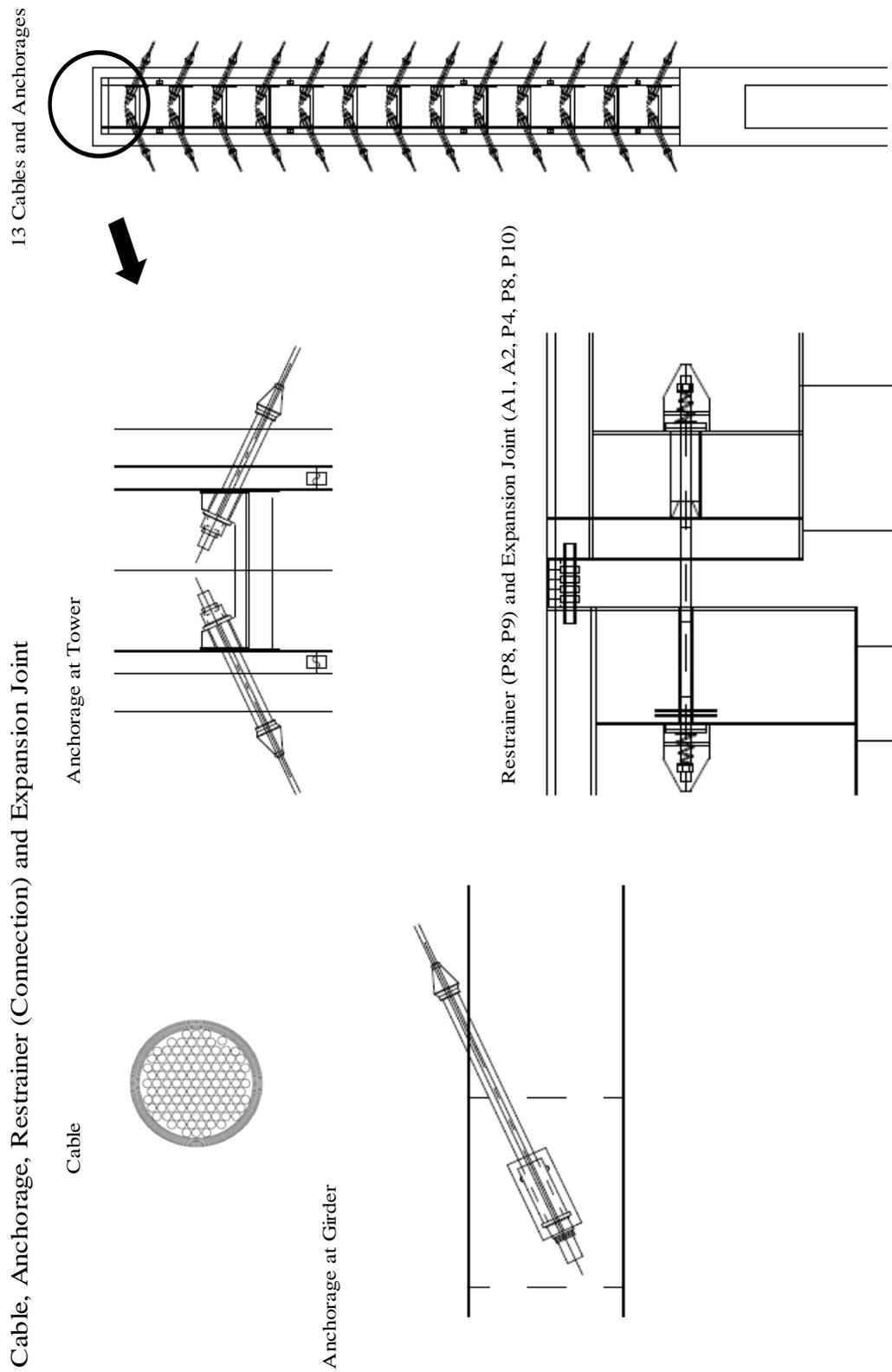


Laminated Rubber Bearing (Approach Viaduct)





**Figure 2-10 General View of Diosdado Macapagal Bridge
(4 of 4)**





2.4. Inspection Planning

2.4.1. General

Regular and thorough inspection is essential to develop appropriate programs. Without proper preparation and resources, an inspection can be hampered.

Careful planning is required for the smooth implementation of any inspection program, to get an accurate and complete assessment of the bridge structures, and to ensure cost efficient inspections.

2.4.2. Inspection Program

The first step in planning is to develop an inspection program. This program contains the list of all bridges to be inspected in the Regional or District Engineering jurisdiction and the time frame for the completion. Hence, appropriate resources can be determined to suit the program. Throughout the inspection program, activity should be monitored so that budget and time constraints are met.

Special/long span bridge is a complex structure with complicated design. There are inspection ways, box shape members or attributes which should be inspected inside, climbable tower and so on. Before going to bridge site, the inspection route and schedule should be planned. Proper numbering of elements and attributes to avoid misinterpretation on the location of the defects is necessary.

When developing an inspection program, external factors should also be considered.

These include:

- Traffic restrictions
- Access difficulties (e.g., waterways, terrain, buildings, built-up areas, combined bridges)
- Safety of personnel undertaking the inspection
- Specialized equipment or personnel such as divers that may be needed
- Water level restrictions(i.e., tide level)

If the inspector is not familiar with the site and other external factors, a site visit is important.



2.4.3. Bridge Details and History

Prior to the inspection, the inspector should review all available information relative to :

1. Type of bridge
2. Maintenance history
3. As Built Drawings
4. Previous inspection reports
5. Photographs

Copies of the above-listed information for the bridge should be properly managed and stored in the Regional Office.

In particular, As Built Drawings is important for the understanding of the special/long span bridge. Each bridge has its own unique structure. There is no standard drawing in the special/long span bridge. Before the arrangement of inspection, “As Built Drawing” should be collected and electronic data should be installed in Special Bridge Inventory Database.

Inspectors should check the As Built Drawings to confirm the details of the structure and to make check points sheets before the implementation of bridge inspection.

In the absence of “As Built Drawings”, it is recommended to collect bridge data from “Contract Drawings” or from documents of past rehabilitation works. In case that there is no available bridge data, measurement survey on site for collecting basic bridge data and general drawings for inventory should be done.

Example drawings by measurement survey in Biliran and Liloan Bridge which were no As Built Drawings, are attached in Appendix B.

The information mentioned above shall be reviewed prior to the inspection, so that the inspector who undertakes the inspection is aware of critical areas, previously encountered problems or unusual features.

A copy of the previous inspection reports and any other relevant information shall be brought to the bridge site for reference during the inspection.

2.4.4. Resource Requirements

In order to perform proper and efficient inspection, appropriate equipment and manpower should be readily available. List of equipment required is included in Table 2-2 and this should be carefully considered prior to inspection. It may also be necessary to arrange specialized equipment on a case-to-case basis. These include scaffolding, bridge inspection vehicle, boats, testing equipment, etc.



Table 2-1
Equipment for Visual Inspection (Routine and Condition Inspection)

1. Safety Vest
2. Safety Shoes
3. Shirt with long sleeves and Pants
4. Hard hat with Flashlight
5. Hand Gloves
6. Hand Mirror for viewing behind bearings, etc.
7. Geologist's Hammer
8. 40-Meter Measuring Tape
9. 3-Meter Measuring Tape
10. Binoculars
11. Crayon and Chalk for marking and for blackboard
12. 35-70 MM Zoom Digital Camera with date feature
13. Inspection Forms
14. Sketch Drawing Forms
15. Copy of previous report
16. First-Aid Kit
17. Bridge Inspection Vehicle (BIV)
18. Shovel and Broom
19. Extension Ladder
20. Boat or Barge
21. Crack Gauge
22. Wire Brush
23. Scotch Tape (inspection for weathering steel)
24. Oxygen Detector

2.4.5. RBIA and Special Bridge Inventory Database

The RBIA is the main depository of DPWH for the information of the inventory and condition data on standard bridges located along national roads. The data inputted in the RBIA should always be assessed for current inventory and condition reports and other relevant data by the inspector who undertakes the inspection. However, it is intended mainly for standard bridges, and not for special/long span bridges. The Inventory information and inspection data of special /long span bridge should be collected and uploaded to the Special Bridge Inventory Database. DPWH Central Office and every Regional Office should manage this database and update it regularly.

Flowchart for the Special Bridge Inventory Database is shown in Appendix C.

In some cases, there are discrepancies between the data in the Database and the actual data of bridges due to modification made (e.g., provision of alternative railings, construction of replacement bridges). The responsible BMS Regional Coordinators shall ensure that all special/long span bridges are included in the Database and update, if necessary.



2.4.6. Inspection and Sketch Drawings Forms

Inspection for special/long span bridge (e.g., Cable Stayed Bridge, Suspension Bridge and so on) is individually arranged, because it has unique design compared to standard bridges.

Prior to the conduct of the inspection, the Inspection and Sketch Drawing Forms will be prepared in advance. All available information relative to the bridge can be viewed and printed out from the database. Also data gathered will be uploaded in the database by inspectors and/or coordinators.

The initial data shown shall be checked for correctness during the bridge inspections, and corrections made or missing information added as necessary.

2.5. Safety

2.5.1. General

For the protection and safety of workmen, public and environment, safe work practices are essential on every work site.

The following safety aspects apply to bridge inspection work and must be considered prior to commencement of any inspection:

- Road safety
- Work safety
- Public safety

Health and safety have a high priority at all times during field operations. All statutory rules and regulations and recommended safety practices given in this manual are for general guidance in planning for safety at all the worksites. Common sense should be used in anticipating the particular safety requirements for each and every project to be undertaken.

2.5.2. Road Safety

Working on or near roads is extremely hazardous. The following rules must be explained to, and observed by, all personnel working on or near the roadways:

1. Before commencing inspection at the site ensure that:
 - All personnel are wearing high visibility vests;
 - Every worker knows the direction of traffic running on all the lanes;
 - Every worker knows where to take refuge if a vehicle approaches;
 - Unprotected or unsafe areas and roads are identified to all personnel.



2. Always walk in the direction facing oncoming vehicles. (The vehicles should not come from behind you.)
3. Whenever crossing roads (whether single lane or many), make sure that all the lanes are clear before crossing.
4. When operating any plant or machines on or near a road:
 - Before commencing work make yourself aware of potential hazards such as adjacent roads, overhead power lines, other workers, etc. Always anticipate danger.
 - Never step backwards without looking. Under the noise of your machine, you may not hear the sound of approaching vehicles.
 - Never climb out of a machine without looking in both directions.
 - Never climb out of a machine onto a road or non-protected area.

2.5.3. Work Safety

Work safety must be planned ahead. Before commencing work, the inspector shall observe the following:

1. Be familiar with the full requirements of the inspection work including scaffoldings and access equipment.
2. Ensure that all tools and equipment/machine are available and in good working condition.
3. Prepare any required safety devices and paraphernalia (harnesses, mountain shoes, gloves, earmuffs, eye protection glasses, masks, hard hat, and other related items) necessary for safety of the inspectors.
4. Plan and arrange road closures and suitable traffic management procedures.
5. Identify and locate all the utilities existing at site (e.g. water pipelines, electricity, communication lines, gas pipelines, etc.). If any utilities are affected by inspection process, take measures in advance to protect or relocate it through proper authorities as necessary.
6. Ensure that first aid kit is available at site and that at least one of the personnel is knowledgeable in giving first aid treatment.
7. In the case of very risky situations (i.e. high structures, inside box girder, etc.), inspection is always conducted by pairs.
8. All inspections are carried out in well-ventilated/lighted areas. When inspection is conducted in closed areas, inspection gates should be opened for



ventilation beforehand. Also, density of oxygen and detection of harmful gas should be measured. If necessary, prior arrangements for exhaust fans and artificial lighting should be conducted.

General information about Asphyxia and low oxygen is shown in Appendix D.

9. When inspectors climb ladder, leap gap or walk inspection way in height, safety belt should be tied to rigid frame. Also, inspectors should not climb ladder up behind another person who is climbing ladder forward.
10. Do not allow personnel under the influence of alcohol or any medication which impairs alertness or causes drowsiness to work at site or operate any mechanical equipment.
11. Do not allow any person who is not qualified to carry out a particular task or to operate particular equipment.
12. Generally, all the work should be carried out in compliance with the existing industry's normal standards practice.

2.5.4. Public safety

There are obligations to take all necessary precautions and adequate measures for safety of public in and around the working area. The following steps should be taken to safeguard the public against any injury, loss of life or damage to property:

1. Attend immediately to any damage and deterioration that may cause loss of strength and stability of a structure and thereby may result in injury, loss of life or damage to property.
2. Take steps to support damaged structures against instability and collapse, as well as protect the adjacent properties, plant and utilities from possible damage.
3. Until damaged structures are made safe, close off all access and prohibit their use by the public by setting up suitable fences and barriers. With the assistance of the District Engineering Office, and the police if necessary, arrange to divert the pedestrian and vehicular traffic by alternative routes. Provide warning signs and hazard lights as necessary to caution the public of danger.
4. At the completion of the inspection, clean up all dirt and debris, remove all plant, equipment and materials and restore the facility to public.



2.6. Sketches and Photographic Record

2.6.1. General

An appropriate photographic and sketch record must be compiled for Routine and Condition Inspection Report.

1. Mandatory inventory photographs (front view, side view, and underside).
2. Deficient components and major defects.
3. Undefined components.

The Accredited Bridge Inspector is required to prepare a photographic/sketch record of each structure. All photographs and sketches must be given a reference and details of the subject matter recorded in the Bridge Inspection Report.

2.6.2. Sketches Record

Sketches of the damage can be made on Sketch Drawing Forms. The sketch should show the necessary plan and elevation views of the attribute to which they pertain. All damages should be located on the sketches by dimensioning their location in reference to the beginning or end of each attribute. For each damage, the accredited bridge inspector should indicate dimensions showing its length, width, depth (if applicable) and also severity of defects. In particular, Sketch Drawing on the Condition Inspection should record the detail of defects, in order to monitor the deterioration of defects in the future. Forms of Sketches Drawing for Diosdado Macapagal Bridge are attached in this manual.

2.6.3. Photographic Record

The result of an inspection must be reported to the District Engineering Office concerned. The Accredited Bridge Inspector should take photograph any major defects and append photographic prints to the report.

1. The prints should be annotated in accordance with the bridge component designations previously described.
2. Accredited Bridge Inspector must exactly take the photo of entire condition and defects condition on the bridges.



3. During the inspection, inspector must use the blackboard as well as ribbon rods/measuring tape for getting the detailed information.
4. The blackboard should be included in the photograph.
5. The Accredited Bridge Inspector should take photographs to obtain as much information as possible.
6. Photograph of defects must be taken for the worst condition rating.

The information required for Mandatory Inventory Photographs are as follows:

1. Photographic Record
2. Front View (low chainage): One general photograph from top of deck showing alignment, carriageway width, curbs and gutter, and railings.
3. Side View (each span) from upstream: One photograph from side of bridge showing piers, abutments and waterway or roadway.
4. Under the bridge (each span) from upstream: One photograph from under of bridge showing piers, abutments and waterway or roadway.
5. Representative photographs of main superstructure components (i.e. girders), from underneath or side of the structure, used in:
 - The original structure.
 - Any modifications (i.e. widening, lengthening, etc.)

2.7. Inspection Reports and Management of Special Bridge Inspection

2.7.1. Inspection Reports

After the completion of inspection, various reports should be submitted and stored in Bridge Inventory Condition (BIC) Stand Alone Program and Special Bridge inventory Database. The details of deliverables of reports are shown in the chapter of each inspection.

- File the inspection report: Inspection forms, summary sheet, repair record and inspection result.
- Sketch drawings sheet
- Photo record sheet: Assemble photo data and match with sketch drawing sheet



2.7.2. Management of Special Bridge

Special/long span bridges should be managed separately from standard bridges which could be inspected and repaired by lump sum budget. Regional office and District Engineering Office should make the Medium Term Management Plan(next 5years); include Budget Estimation, Inspection Schedule, Planning of Routine and Major Maintenance and Implementation Schedule.

Management of Special/Long Span Bridges:

- Special/long span bridge should be managed properly by Medium Term Management Plan (next 5 years)
- Analysis of the result of inspections (Inventory, Routine, Condition, etc.)
- Preparation of the maintenance management plan for each specific bridge
- Estimation of the cost of inspection, routine and major maintenance works, etc.)



3. ROUTINE INSPECTION (TYPE 1)

3.1. Purpose

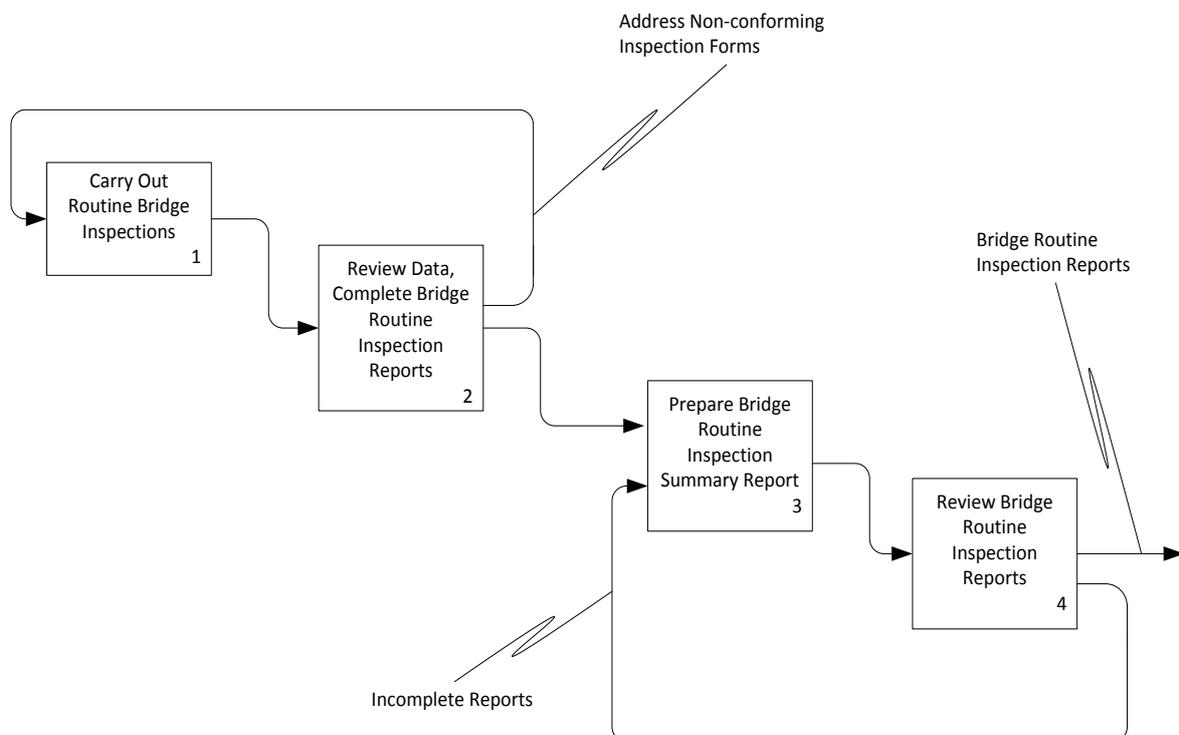
Routine Inspection is essentially a visual inspection that requires assessment of obvious defects on the special/long span bridge.

This inspection is necessary to ensure that regular routine maintenance work is being planned and undertaken in accordance to the needs of the bridge. Routine inspection should also detect severe defects that may cause loss of stability of the structure and may result to injury or loss of life and damage to property. Routine inspection is important for taking emergency works to avoid collapse of the bridge and damage to a third party.

3.2. Process

The process for conducting Routine Inspection (Type 1) is shown in Figure 3-1.

Figure 3-1
Routine Inspections (Type 1)





3.3. Procedure

The procedure in accomplishing Routine Inspection Forms and Sketch Drawings by the District Engineering/Regional Office should be straightforward. It involves visual inspection to address several standard items listed on the Inspection Results in Bridge Routine Inspection Form (Type 1).

As a reference, the Bridge Routine Inspection Routes are shown in Figures 3-2 and 3-3 while the Check Points of Routine Inspection are shown in Figures 3-4, 3-5 and 3-6. Routine Inspection Forms and Sketch Drawings of Diosdado Macapagal Bridge are shown in Appendix E. The copy of above mentioned documents and the latest routine inspection report should be brought to the site as reference.

In the case of Routine Inspection, inspectors walk through upper level on pavement and ground level around piers and abutments. Inspectors should find common defects for Routine Maintenance according to the sheet of check points and also severe damage for Emergency Work. Check points of Routine Inspection show typical defects on each attributes which are limited compared with Condition Inspection.

One of the check point is the abnormal condition of the cable. It should be investigated carefully corresponding to the shape, alignment, proportion and color even in the time of Routine Inspection, because it is one of the most important attributes for the stability of structure.

The Bridge Inspector should check the defects and draw them on Sketch Drawings Forms and photographs should be used to document any major defects.

Upon return to office, inspectors select Condition Rating and Required Maintenance Action Plan based on the severity of defects. The result of inspection should be compiled as a deliverable and submitted to concerned offices. If there are any defects that need Emergency Action (EA) as a required maintenance actions, it must be reported immediately to the head of office without waiting for the completion of the written report.

Any changes to the routine maintenance report should be made by amending the copy in RED ink. Should there be any doubt in relation to the bridge condition and required major maintenance, a Condition Inspection of the structure or Emergency Inspection should be immediately undertaken.

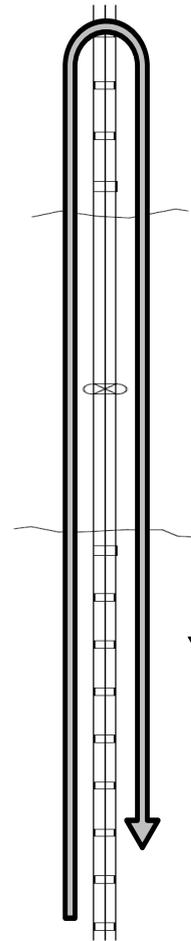
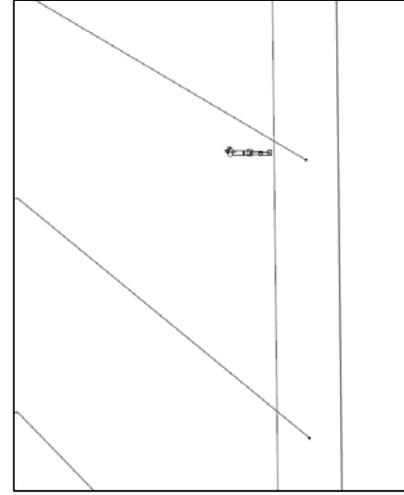
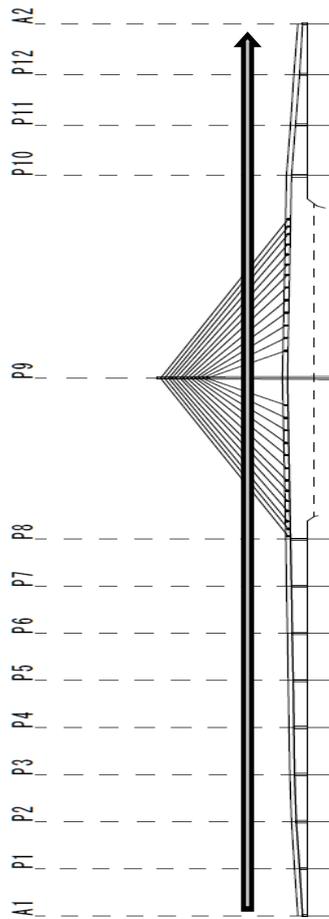
Condition Rating for Routine Inspection and Required Maintenance Actions for each defect are shown in Tables 3-1 and 3-2.



**Figure 3-1 Routine Inspection Route of Diosdado Macapagal Bridge
(1 of 2)**

Inspection of Upperside

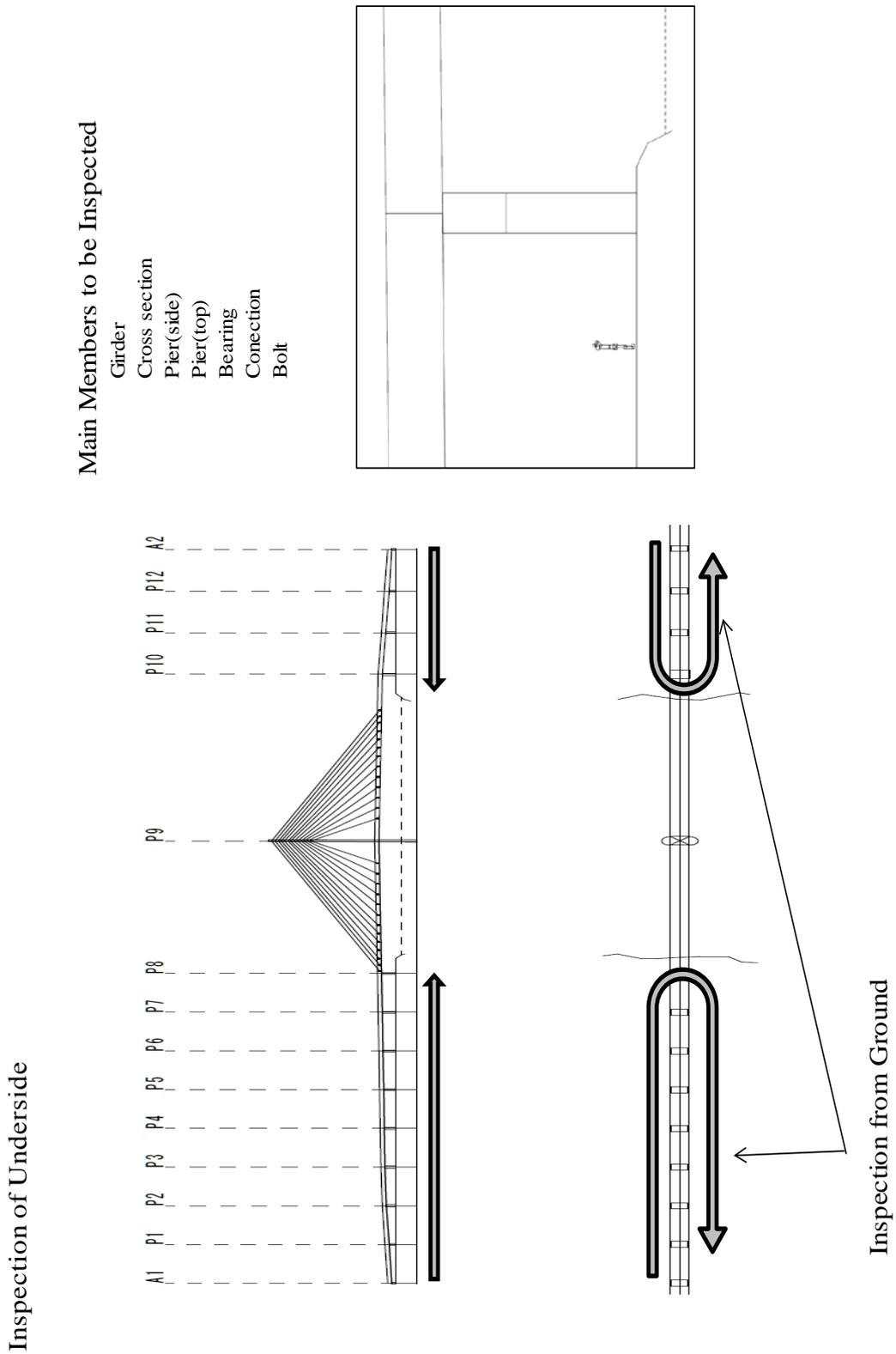
Main Members to be Inspected
 Cable
 Cable Cover, Socket, Anchorage
 Tower
 Railing
 Curb
 Stabilizer
 Pavement
 Drainage
 Expansion Joint



Inspection from Upperdeck

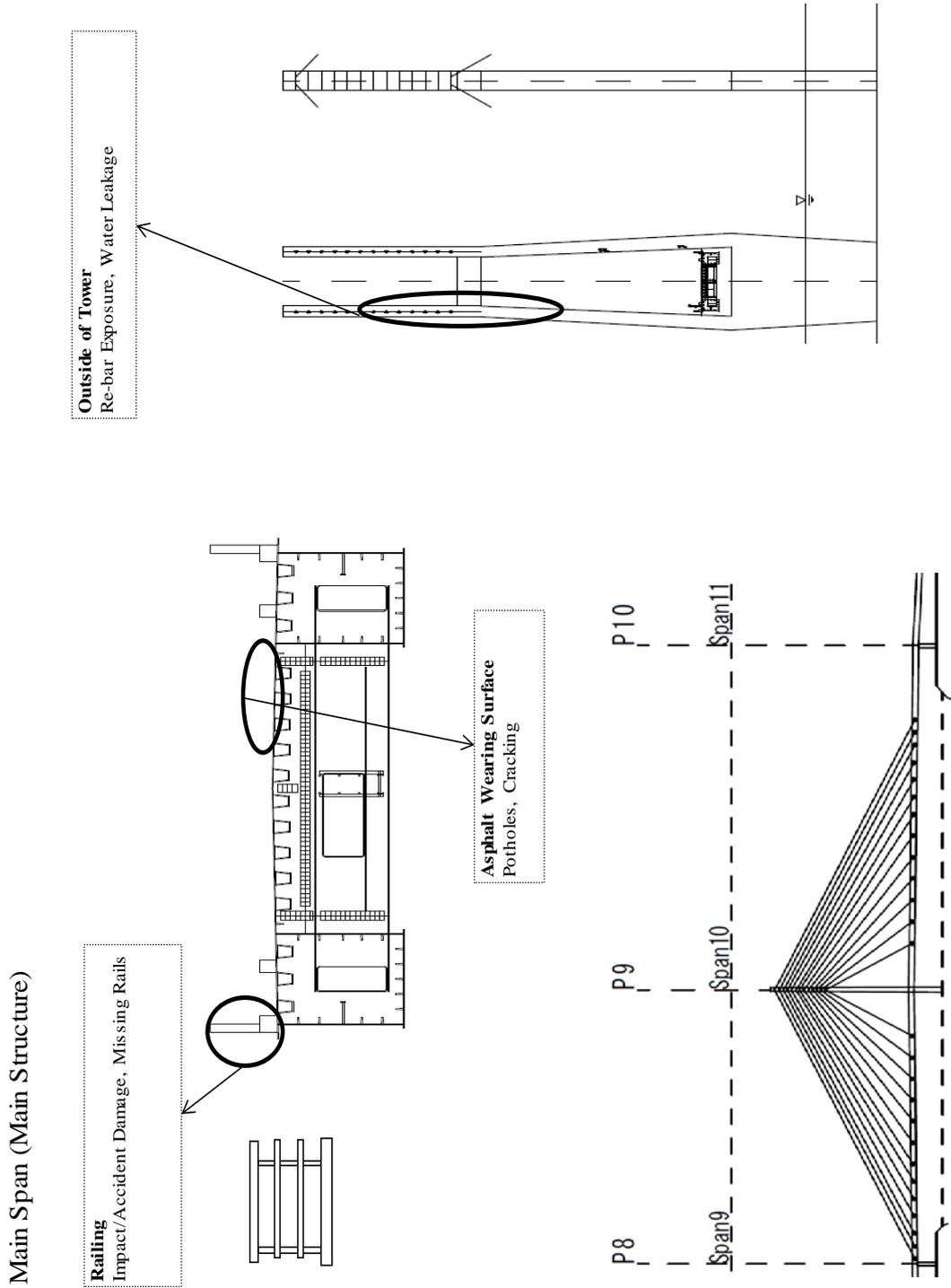


**Figure 3-3 Routine Inspection Route of Diosdado Macapagal Bridge
(2 of 2)**





**Figure 3-4 Check Points of Routine Inspection of Diosdado Macapagal Bridge
(1 of 3)**





**Figure 3-5 Check Points of Routine Inspection of Diosdado Macapagal Bridge
(2 of 3)**

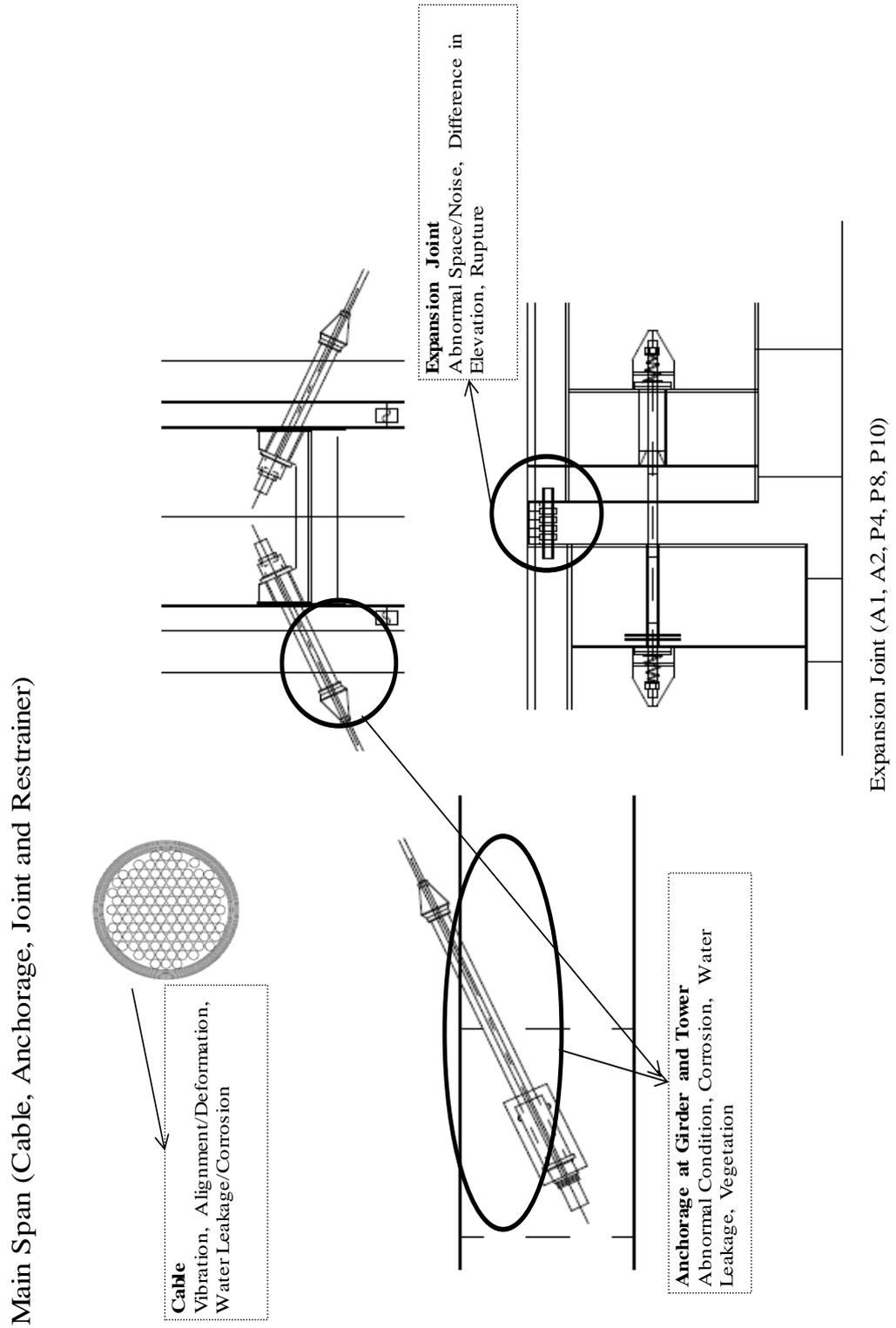




Figure 3-6 Check Points of Routine Inspection of Diosdado Macapagal Bridge
(3 of 3)

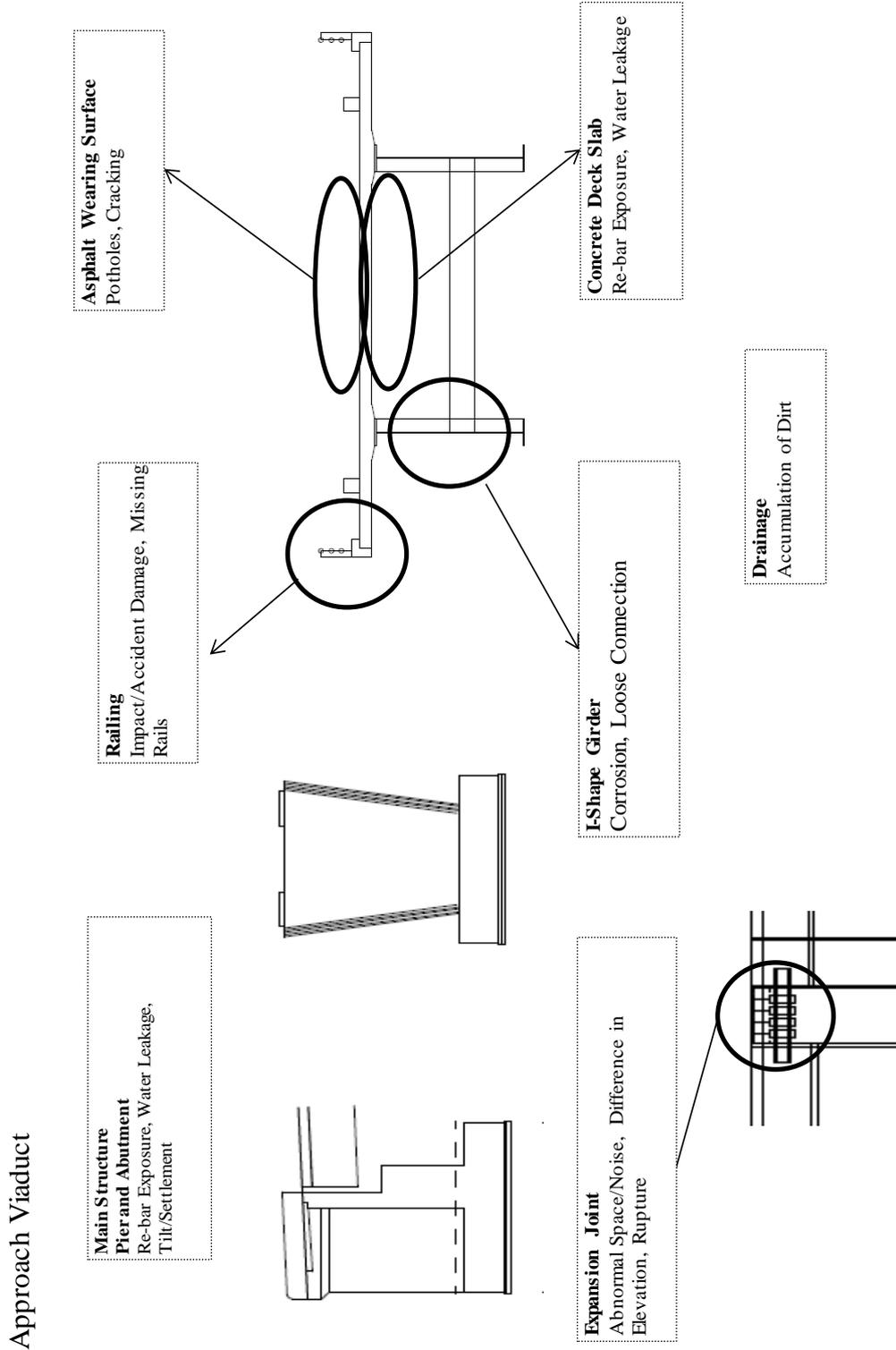




Table 3-1
Condition Rating for Routine Inspection

Rating	Condition
Good	No damage
Fair	Minor damage(s) not affecting the stability of the structure
Poor	Deteriorating damage(s) which should be repaired, as a preventive action
Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party

Table 3-2
Required Maintenance Actions

Required Actions	Condition
M- Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
RM- Routine Maintenance	Should be maintained by Routine Maintenance
MM- Major Maintenance	Should be repaired by Major Maintenance
EA- Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party

3.4. Deliverables

The deliverables of Routine Inspection Report are as follows:

- Routine Inspection Report
 - Bridge Routine Inspection Form(Type1)
 - Summary of Routine Inspection Results
 - Repair Record
 - Inspection Results sheet
- Sketch Drawings sheet
- Photo record sheet (Pictorial Report)

The Bridge Routine Inspection Reports shall be prepared by the Bridge Inspectors. The report shall be checked and reviewed by the Regional Office for completeness and accuracy prior to finalization.

When the Bridge Routine Inspection Report would be complete, accurate and accepted, all the data shall be stored in Special Bridge Inventory Database.



4. CONDITION INSPECTION (TYPE 2)

4.1. Purpose

The purpose of the Condition Inspection is to record defects and rate the condition of special/ long span bridge as a basis for identifying its current maintenance needs, forecasting its future intervention measures and estimating its future funding requirements. Also, the result of Condition Inspection should be used to monitor the deterioration of defects.

4.2. Scope of the Inspection

The Condition Inspection includes:

- Reviewing the existing inventory data of the bridge structure for accuracy.
- Visually inspecting the bridge attributes and record their defects to assess their condition using a standard condition rating system.
- Sketch drawings to monitor the progress and deterioration of defects
- Reporting the condition of each bridge attribute.
- Providing a general condition rating for the structure as a whole.
- Identifying bridges that require an Engineering Inspection (those with an overall condition state of 2 or 3).
- A photographic record of defects.

In Condition Inspection, the inspector should record all details of defects for the assessment of bridge condition using a standard condition rating system and also for the monitoring of progress and deterioration of defects. Therefore, each attribute of the bridge shall be inspected at a distance at least three (3) meters from the surface of the attributes or its equivalent, using binocular as much as possible.

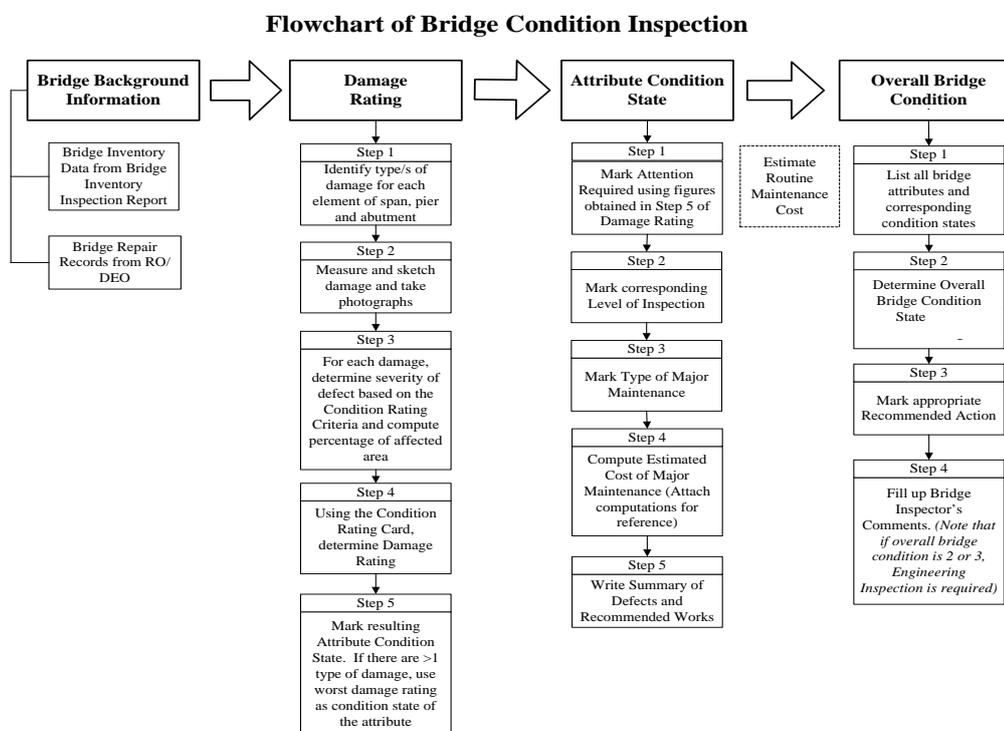
All surfaces of the attributes shall be exposed in good natural or artificial light during the inspection, sufficient to observe fine cracks and other defects on the surfaces. Bearings at the abutments and piers shall be inspected at eye level. The inside of both box girder and tower shall also be inspected closely. The bridge inspection is done visually to cover all parts of the bridge above the ground and water level.

Sketch drawings in Condition Inspection is very important for the analysis of bridge condition and for the monitoring of deterioration of defects. Inspector should sketch carefully the details of defects. Sketch drawing of defects should include the range, length, area and severity of defect as much as possible. When inspectors cannot possibly measure the defects, they can roughly estimate measurement through their engineering judgment.



The step-by-step procedure for conducting the Condition Inspection is illustrated in the following flowchart.

Figure 4-2



4.4. Procedure

4.4.1. Condition Inspection Form

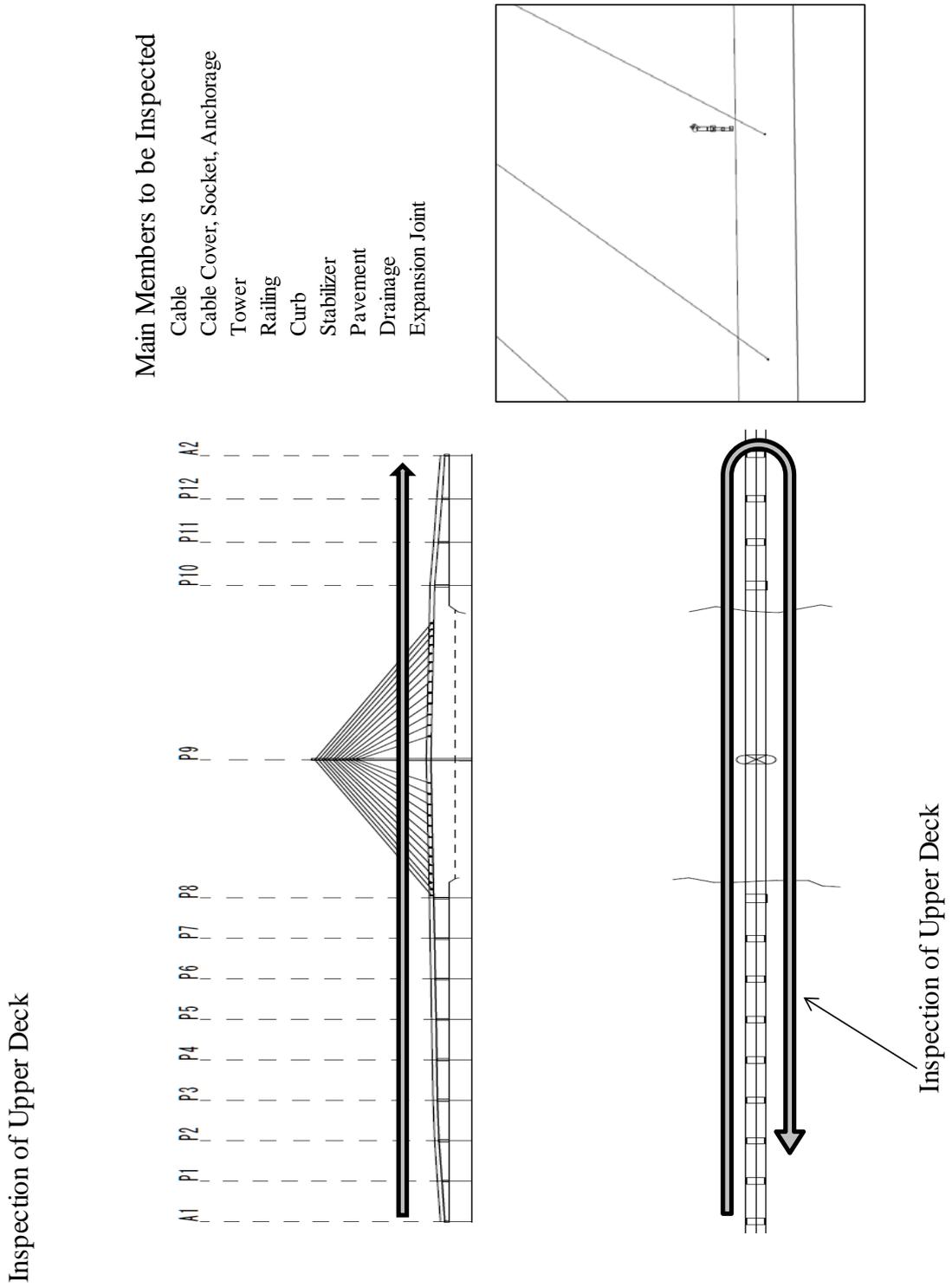
As a reference, Condition Inspection Forms (CIF) and Sketch Drawings of Diosdado Macapagal Bridge (Pilot Bridge) are shown in Appendix F.

The Bridge Condition Inspection Routes of Diosdado Macapagal Bridge are shown in Figures 4-3, 4-4, 4-5, 4-6 and 4-7 and the Check Points of the Condition Inspection are shown in Figures 4-8, 4-9, 4-10 and 4-11. As a breakdown, the CIF is composed of forms shown in Table 4-1.

Special/long span bridges are complex structures. Before conducting inspection, proper numbering of elements and attributes on the forms should be considered to avoid misinterpretation on its location. During inspection, each attributes shall be numbered/marked for easy identification. Numbering and marking of attributes are shown in Figures 4-12 and 4-13.

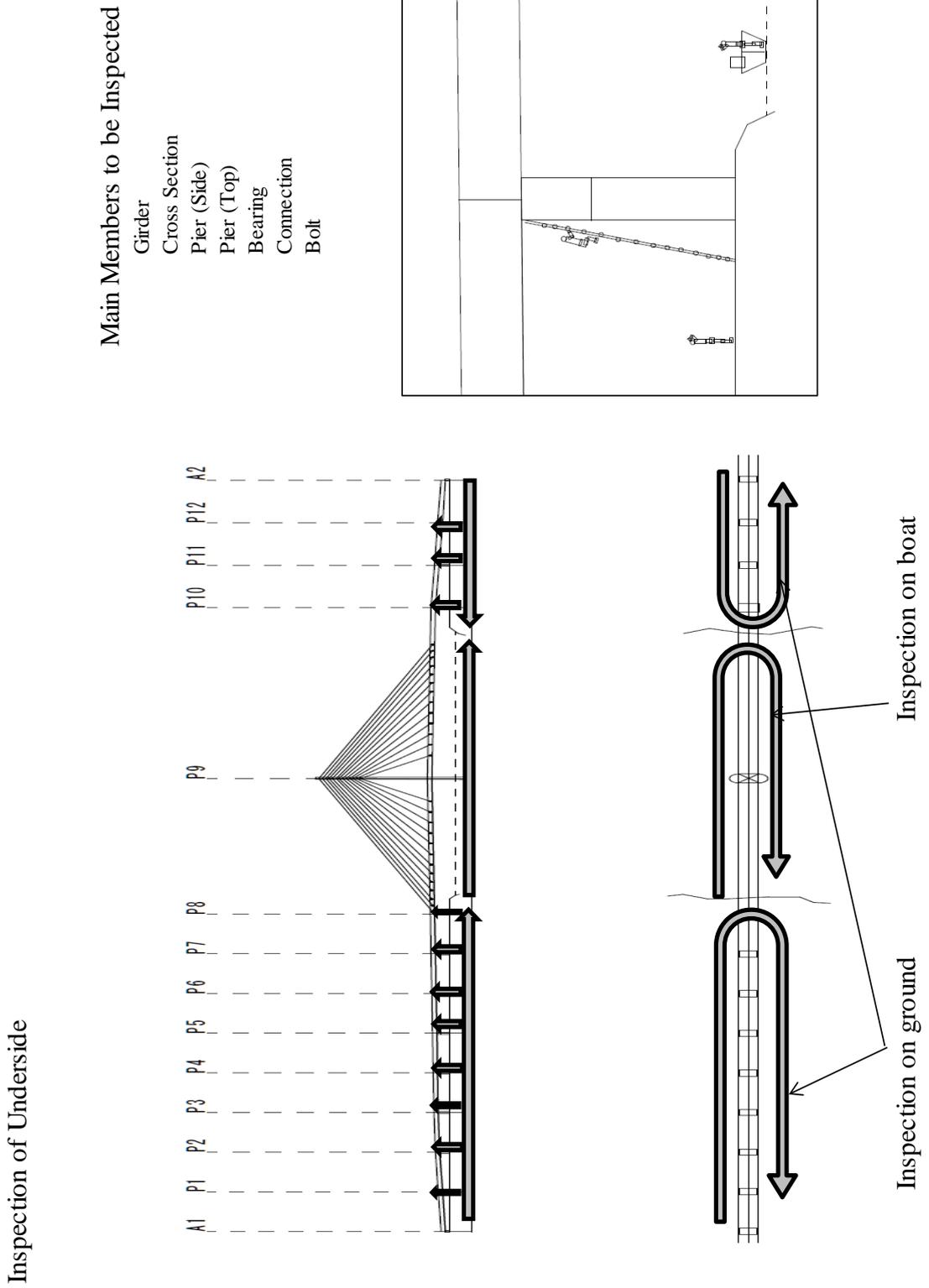


**Figure 4-3 Condition Inspection Route of Diosdado Macapagal Bridge
(1 of 5)**



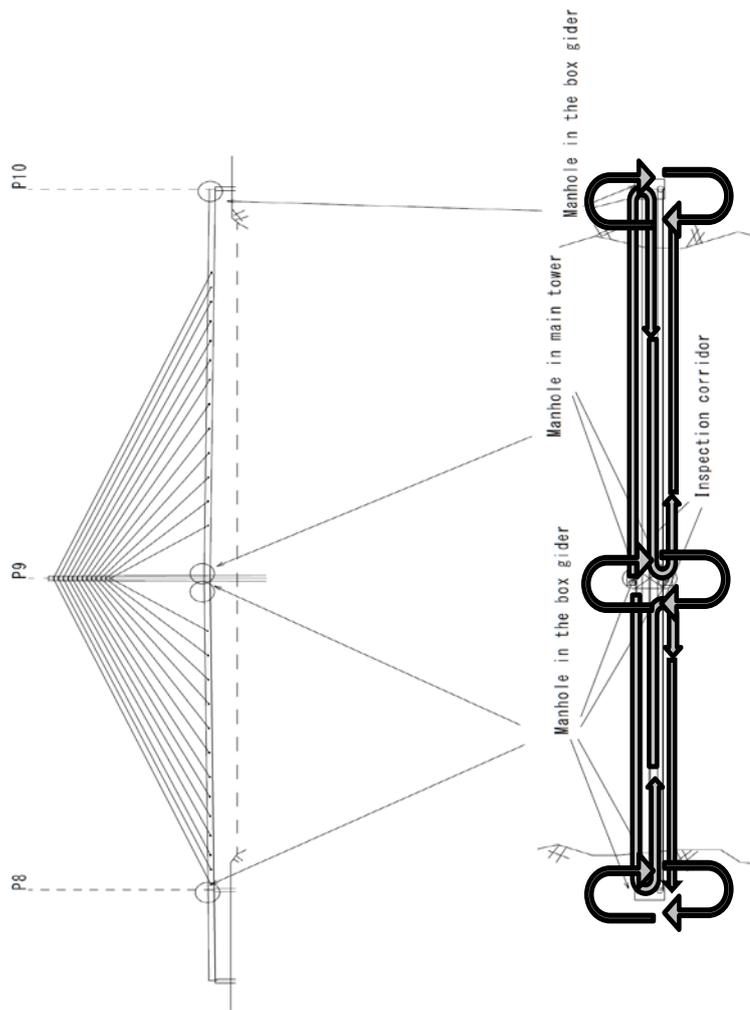


**Figure 4-4 Condition Inspection Route of Diosdado Macapagal Bridge
(2 of 5)**



**Figure 4-5 Condition Inspection Route of Diosdado Macapagal Bridge
(3 of 5)**

Inspection on Corridor and Inside Box Girder

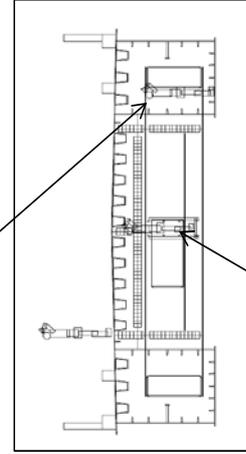


Inspection on corridor and inside the box girder
Inspection around the top of piers

Main Members to be Inspected

- Deck
- Rib (L, U and Transverse)
- Diaphragm
- Cross Beam
- Girder (Web, Flange)
- Connection
- Bolt
- Inspection Corridor
- Bearing (Pendulum)
- Bearing (Lateral)
- Bearing (Vertical)
- Bearing (Seismic Isolation)
- Restraimer

Inspection inside box girder

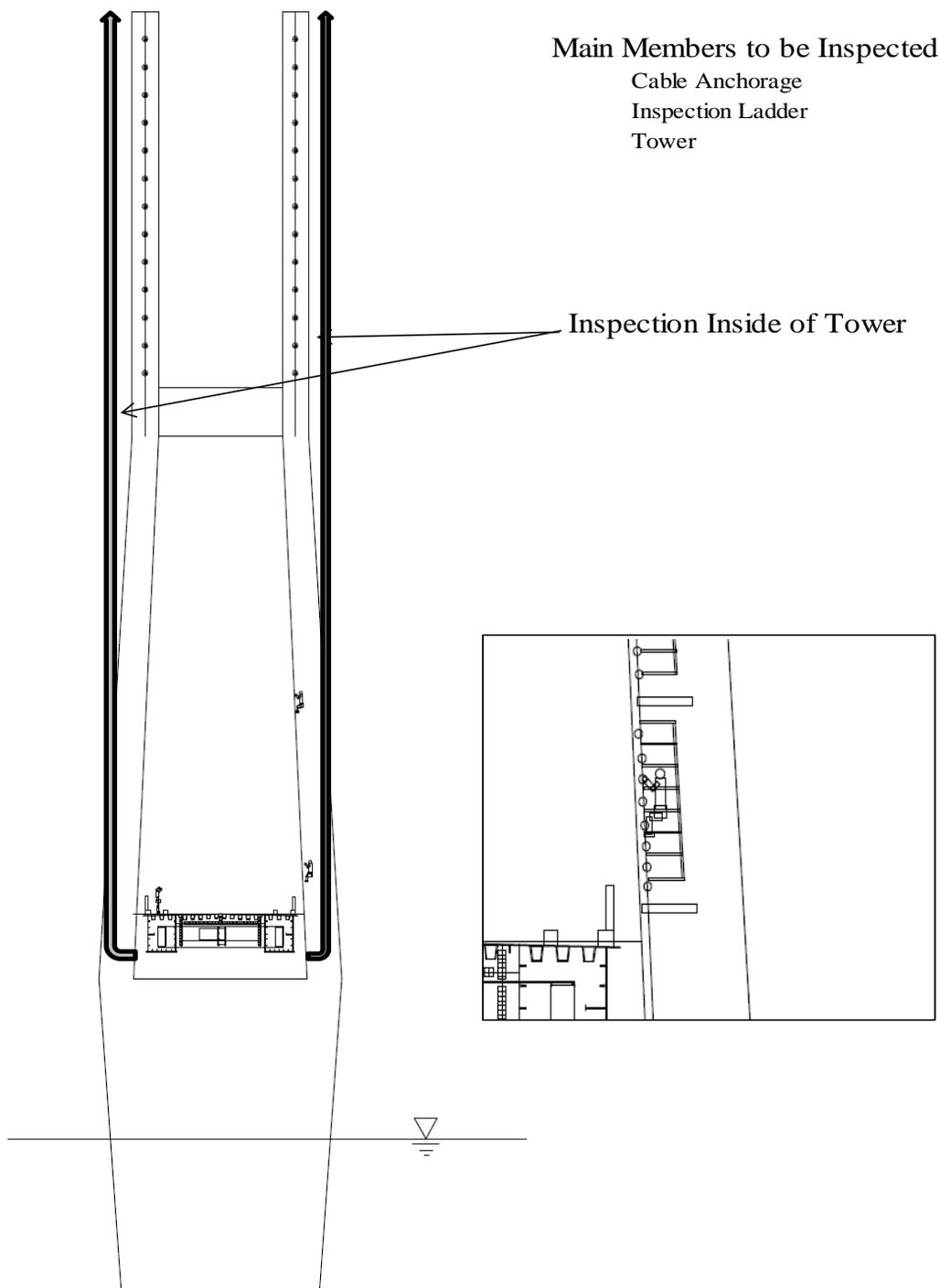


Inspection on corridor



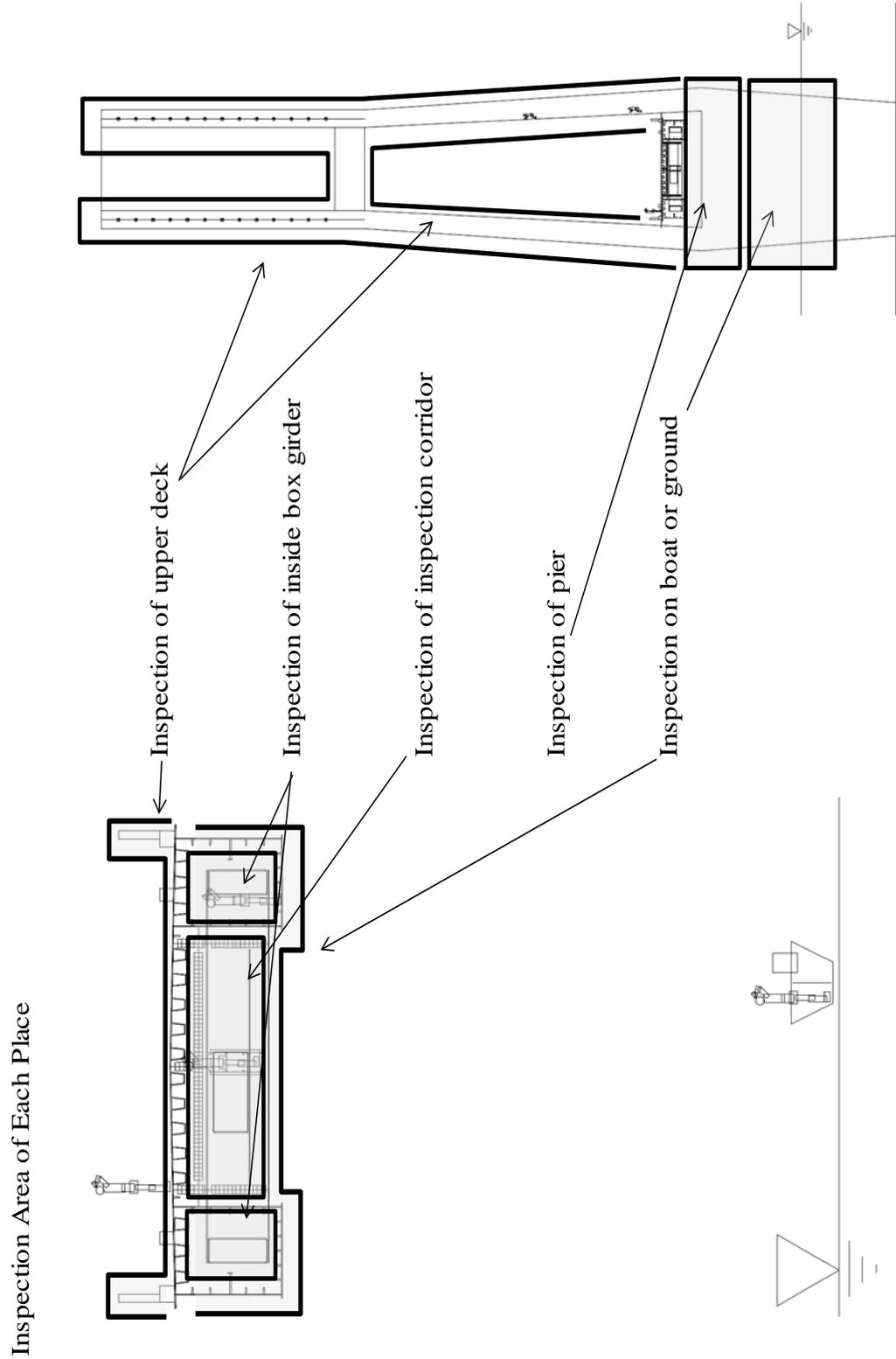
**Figure 4-6 Condition Inspection Route of Diosdado Macapagal Bridge
(4 of 5)**

Inspection Inside of Tower



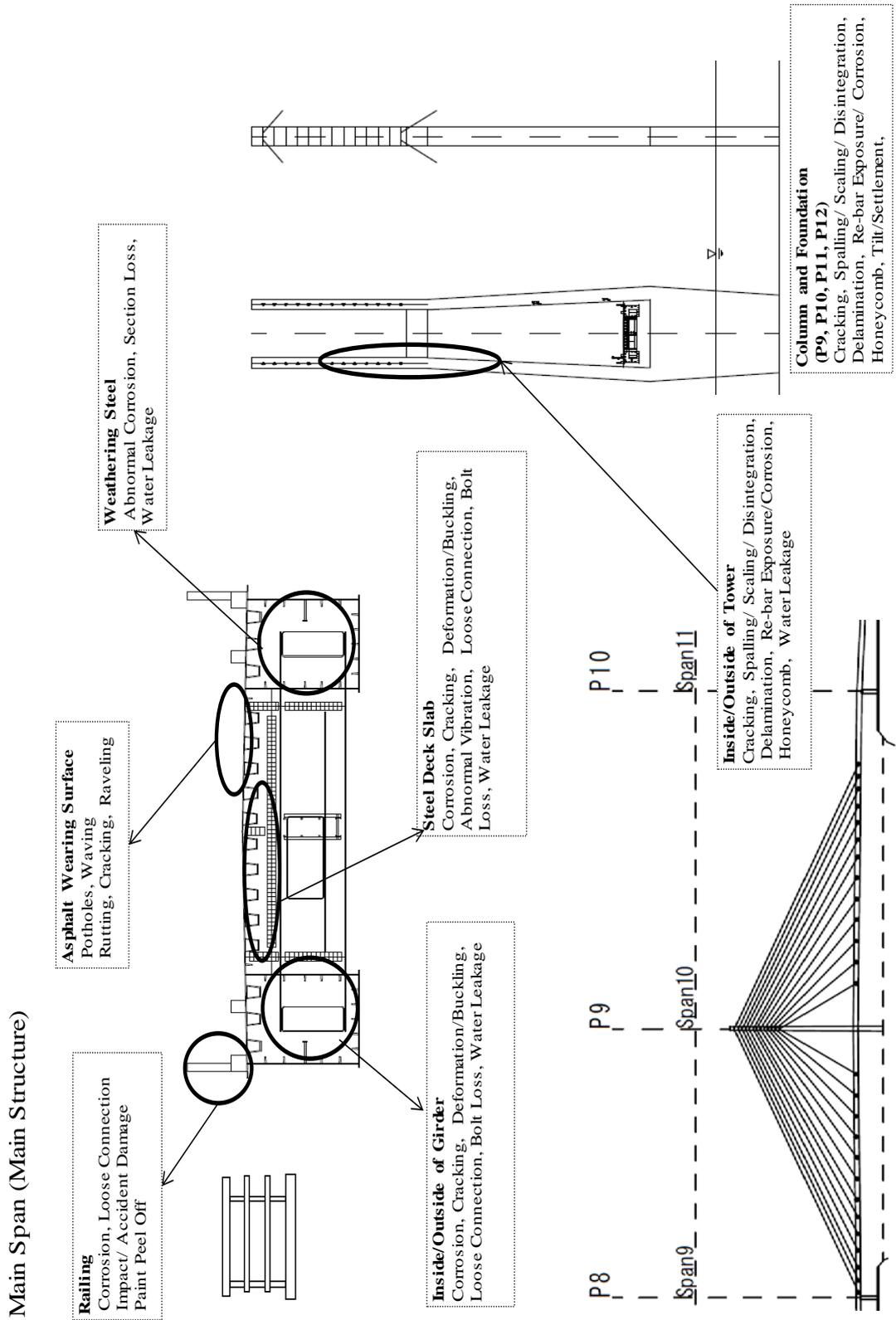


**Figure 4-7 Condition Inspection Route of Diosdado Macapagal Bridge
(5 of 5)**





**Figure 4-8 Check Points of Condition Inspection - Diosdado Macapagal Bridge
(1 of 4)**



**Figure 4-9 Check Points of Condition Inspection - Diosdado Macapagal Bridge
(2 of 4)**

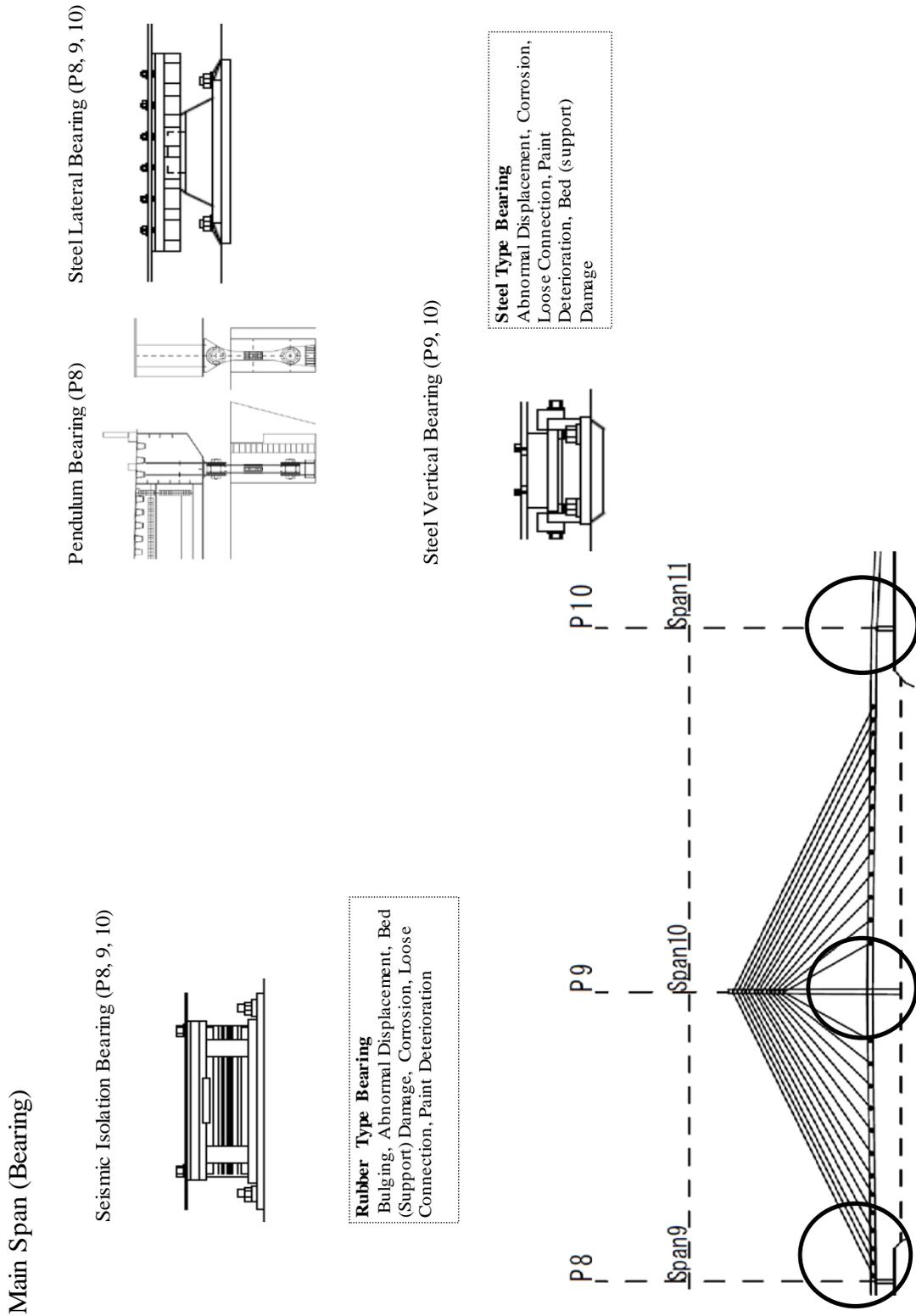


Figure 4-10 Check Points of Condition Inspection - Diosdado Macapagal Bridge
(3 of 4)

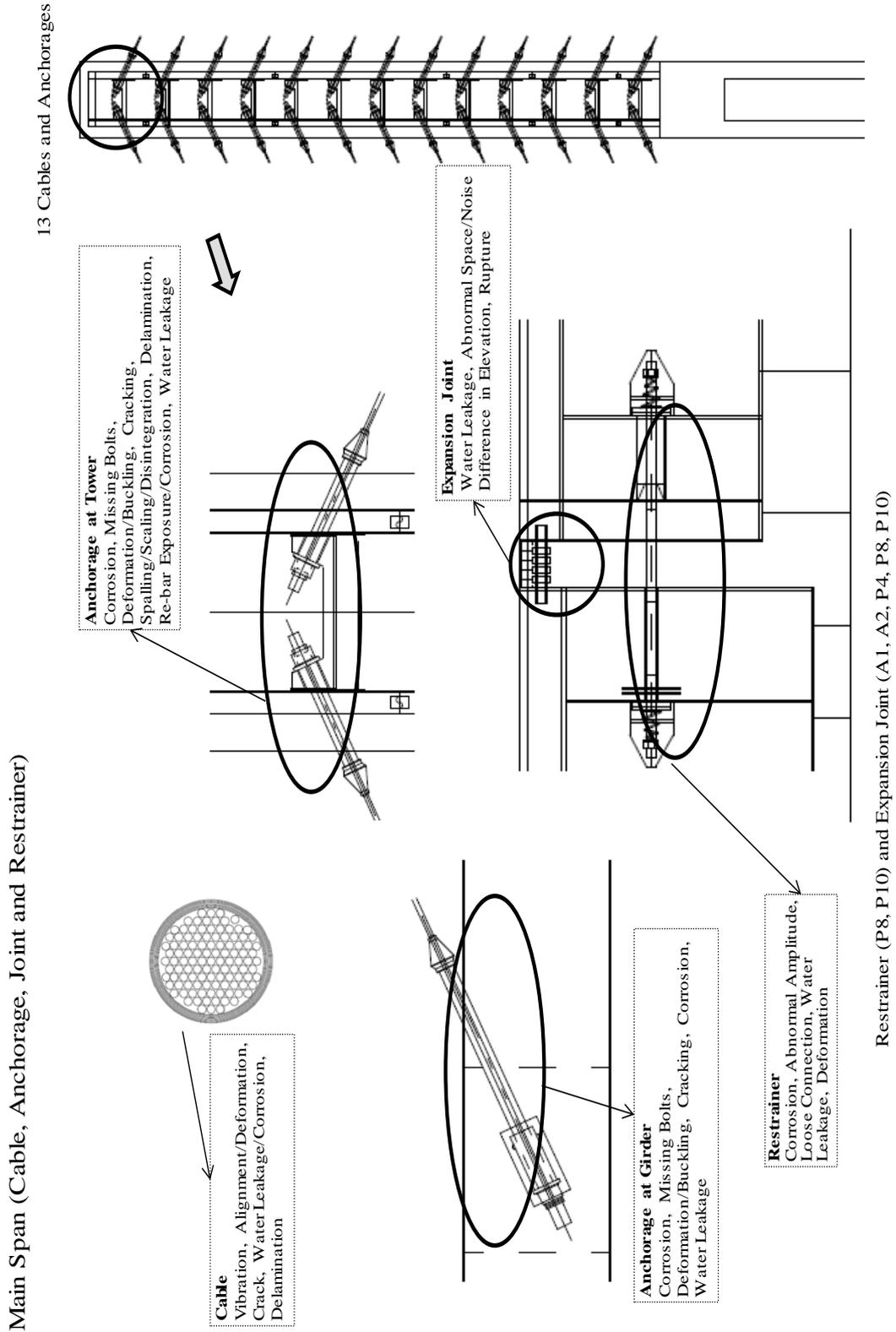




Figure 4-11 Check Points of Condition Inspection - Diosdado Macapagal Bridge
(4 of 4)

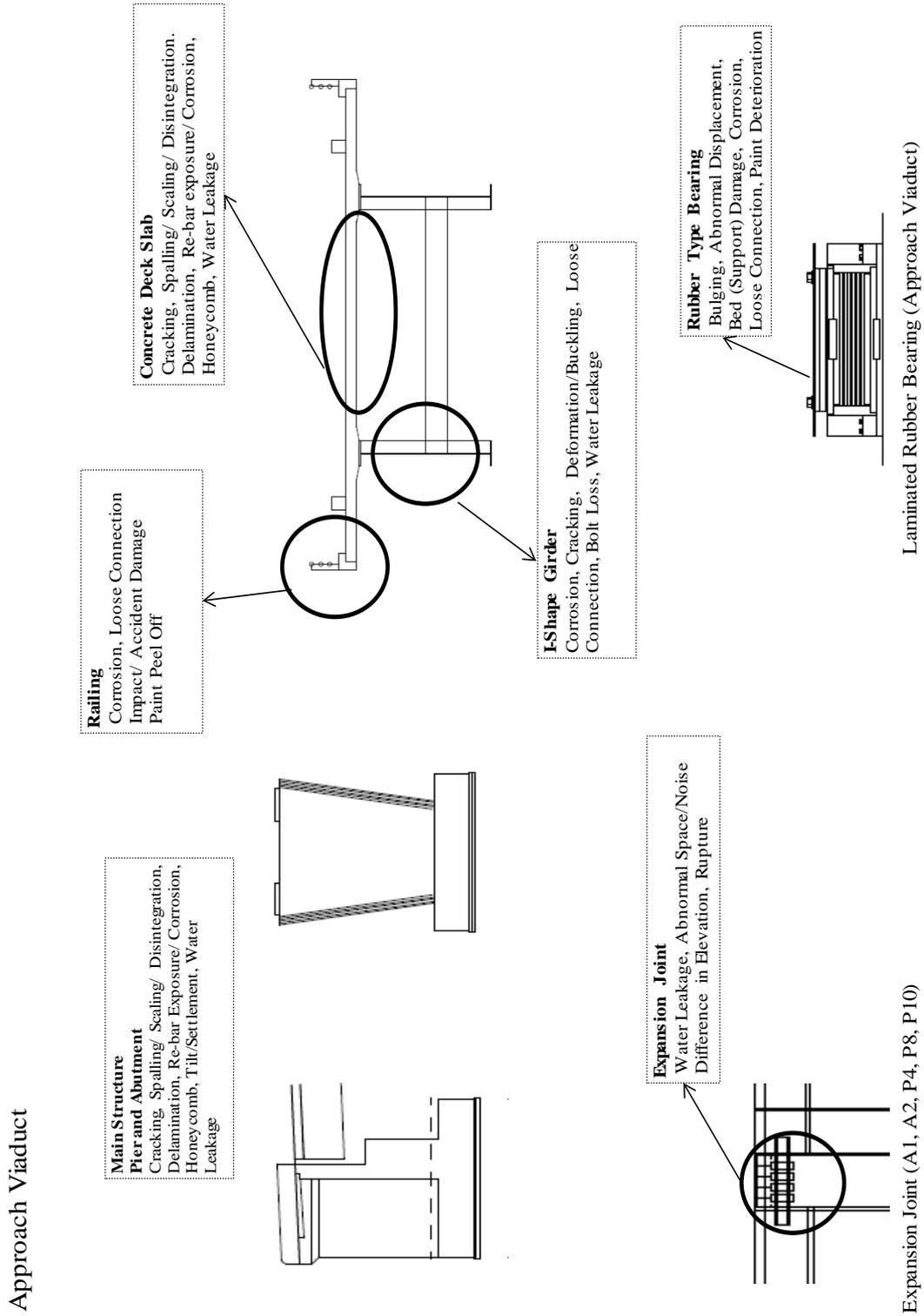


Figure 4-12 Numbering of Members - Diosdado Macapagal Bridge

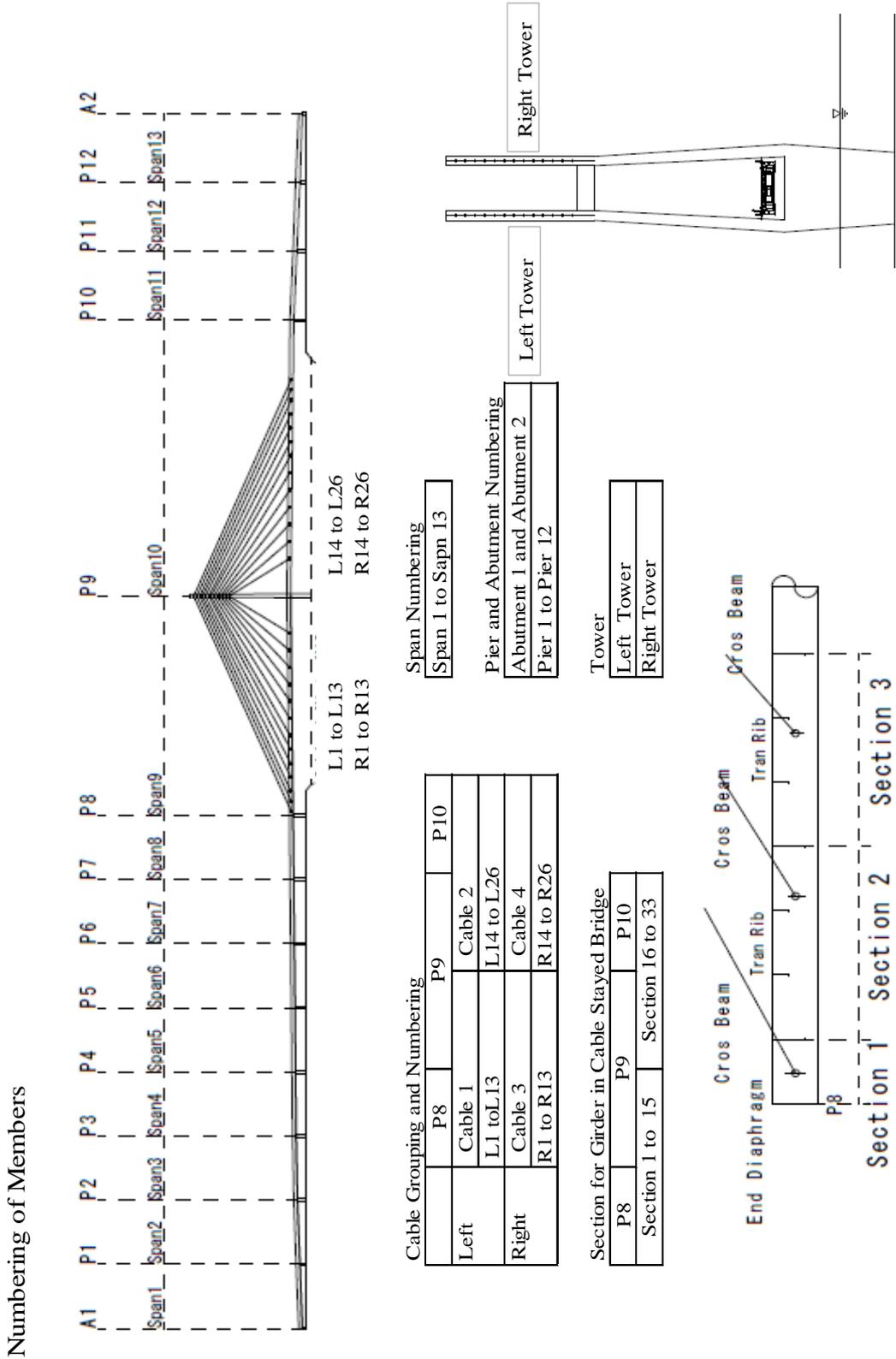




Figure 4-13 Marking of the Numbers of Members - Diosdado Macapagal Bridge

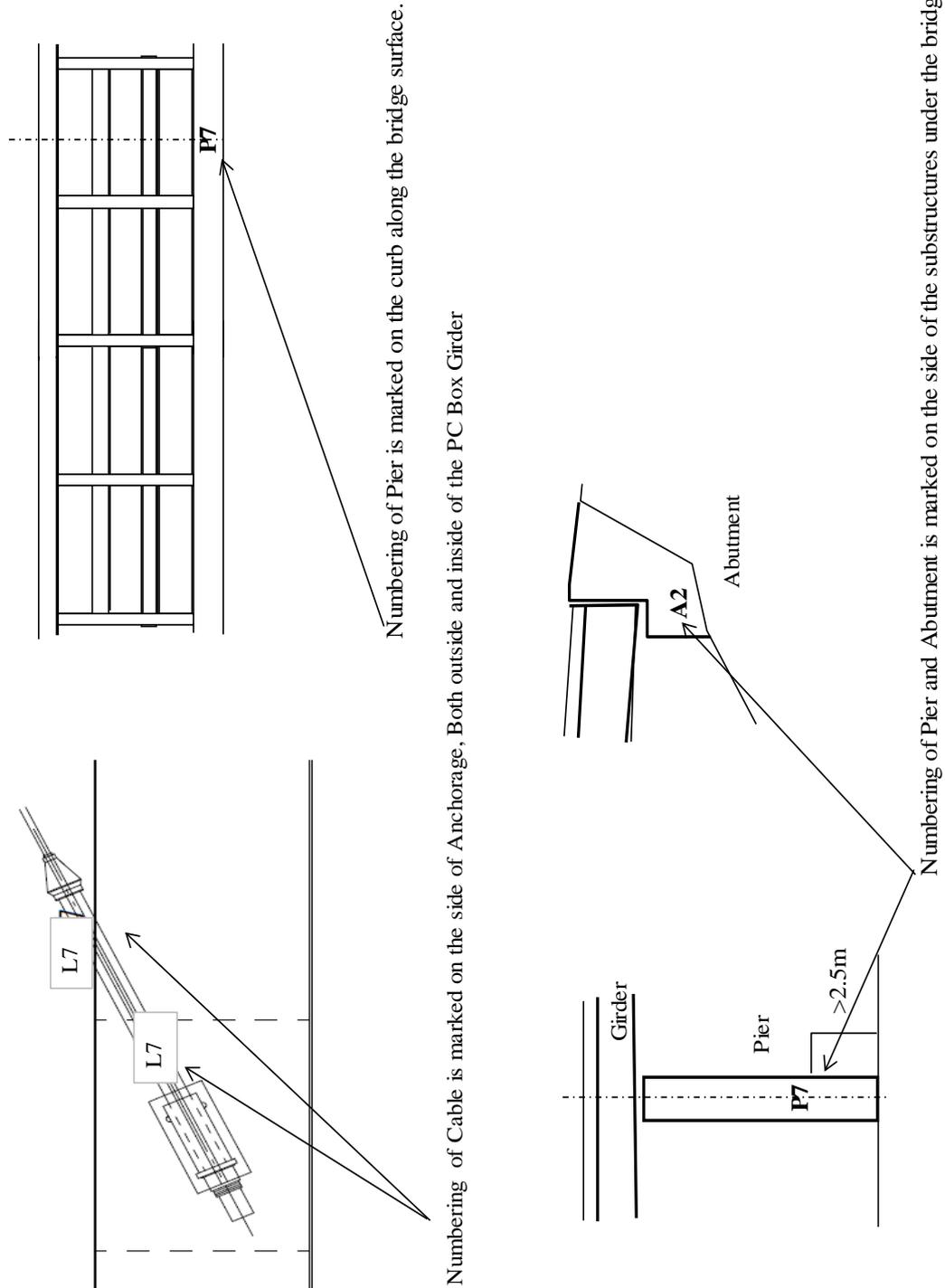




Table 4-1
Composition of Condition Inspection Forms
(Diosdado Macapagal Bridge)

Title of Form	Number of Form
(1) Cover	1
(2) Bridge Location and General Description with Signature	1
(3) Repair Records	1
(4) Summary of Findings/Recommendation	1
(5) Estimated cost of Major Maintenance	1
(6) Span Element - Condition	13
(7) Cable Element - Condition	4
(8) Pier Element - Condition	8
(9) Abutment Element - Condition	4
(10) Span Element - Damage Rating	8
(11) Cable Element – Damage Rating	2
(12) Pier Element - Damage Rating	5
(13) Abutment Element - Damage Rating	2
Total	51

4.4.2. Level of Inspection

The bridge inspector shall indicate the level of inspection undertaken as shown in Table 4-2.

Table 4-2
Level of Inspection

Full complete inspection	<input type="checkbox"/>
Partial inspection only as bridge inspection vehicle not available	<input type="checkbox"/>
Partial inspection for other reason	<input type="checkbox"/>

It is practical to use Bridge Inspection Vehicle at least once in every three years, due to the limited number of such vehicle in DPWH. Bridge Inspector should consider the arrangement of BIV when they make a maintenance plan for special bridges. If a complete inspection is not undertaken, then revisit the bridge and inspect with a Bridge Inspection Vehicle or other required equipment. A countrywide program for the use of the available Bridge Inspection Vehicles should be utilized to ensure optimum result of the inspection.

4.4.2.1 Bridge Inspection Vehicle

Bridge Inspection Vehicle (BIV) is one of the most important inspection equipment used to provide temporary access for inspectors to approach inaccessible area for close inspection, such as high tower, chord, cable and under bridge.



Generally, two types of BIV are used in the inspection of bridges. One type is Bucket Type BIV which is also called Aerial Work Platform. This type of BIV is widely used for maintenance and construction of bridge and also for power and telecommunications industries. They can lift inspectors up to high level to inspect tower, cable band chord and etc. Figure 4-14 shows the picture of the Bucket Type BIV.

Figure 4-14
Photos of Bucket Type BIV



Another type of BIV is Telescoping Articulated Platform. This type can carry the inspector underneath the bridge to check girders, bottom of slab and etc. Figure 4-15 shows the picture of Telescoping Articulated Platform Type BIV.

Figure 4-15
Photos of Telescoping Articulated Platform Type BIV



When BIV is used, a designated vehicle operator should accompany the inspection and operate the vehicle. Inspectors should be tied to the rigid frame by safety belt during lifting.



4.4.3. Location and Inventory Data

The bridge inspector shall inspect the bridge and review the location data included in the CIF. Data required are described in Table 4-3.

Table 4-3
Bridge Location Data

Data Description	Comment
Bridge ID	Unique identification number assigned by the RBIA for each bridge
Bridge Name	The name given to the bridge
Road Name	The name of the road on which the bridge is located.
Road ID	Unique identification number assigned by the RBIA for the road on which the bridge is located
Section ID	The unique identification number assigned by the RBIA to the specific road section containing the bridge
Location	The location (chainage) of the bridge within the road section based on the LRS
Region	Region in which the bridge is located
Engineering District	Engineering District which is responsible for the management and maintenance of the bridge
Province, Congressional District, Municipality and Barangay	The administrative area in which the bridge (i.e. the first abutment) is located.
River Name	The name of the stream crossed by the bridge (where appropriate)

4.4.4. Estimation of Routine Maintenance Costs

The bridge inspector is required to prepare the estimated costs of routine maintenance for the next fiscal year.

The estimated costs of routine maintenance to a bridge shall be based on a review of the actual routine maintenance costs to the bridge in the previous year adjusted based on the inspection of the bridge. The historical costs will be compiled and supplied by the District Engineering Office in which the bridge is located on request. The inspection will be used to determine if the same or different routine maintenance will be required in the next budget year.

The estimated costs for routine maintenance will be used in the planning of the Annual Infrastructure Program for the coming fiscal year.

The definition for routine maintenance is presented in Table 4-4.



Table 4-4
Definition of Routine Maintenance

Definition	Routine Maintenance Activities
All routine and periodic maintenance of bridges undertaken using DPWH routine maintenance funds as defined by RMMS	Works that are urgent to safeguard the bridge and the public; Works not requiring formal design and documentation; and Works that can be undertaken with a maximum MBA allocation of 10 crew days per bridge per year.

Routine Maintenance covers minor works to the entire bridge, and includes cleaning, painting, minor repairs and etc. The standard Routine Maintenance Activities are listed in Table 4-5.

Table 4-5
Routine Maintenance Activities

Act. No.	Description	Unit	Method
60.01	Sweeping and cleaning of bridge deck	sq. m	MBA/MBC
60.02	Patching concrete deck	sq. m	MBA/MBC
60.03	Repairs to concrete bridge elements	crew days	MBA
60.04	Repairs to steel bridge elements	crew days	MBA
60.05	Repairs to Bailey bridge	crew days	MBA
60.06	Repairs to timber bridge	crew days	MBA
60.07	Clearing of bridge waterway	crew days	MBA

4.4.5. Repair Record

The Bridge Inspector is required to report the routine and major maintenance activities undertaken to a bridge after the conduct of the last condition inspection that will include the type, scope and status of maintenance activities. The bridge inspector shall also record observations whether the works undertaken are effective and sufficient.

4.4.6. Condition Data Collection

Special bridges like Cable Stayed Bridge have unique attributes and materials which are not defined in the BMS Manual for standard bridges. Bridge Inspectors/Engineers should understand the characteristic and function beforehand by reviewing the As Built Drawings and other related documents.

As a reference, some special attributes of Diosdado Macapagal Bridge (Pilot Bridge) are listed in Table 4-6. All other applicable descriptions in the BMS Manual for standard bridge are adopted in this Manual. General pattern of defects in bridges are shown in Figures 4-16, 4-17, 4-18, 4-19, 4-20 and 4-21.

Figure 4-16 General Patterns of Defects (1 of 7)

General Patterns of Crack Defects on Abutment and Pier

Number	Pattern
1	Crack by regular interval
2	Crack on the concrete casting joint
3	Crack around the changing point of density of reinforcement bar
4	Crack like mesh
5	Crack on top side of overhang beam(coping)
6	Vertical crack on pier center
7	Crack on bottom side of overhang beam(coping)
8	Crack on upper and bottom part of column
9	Crack on column
10	Crack on haunch
11	Bending crack on the span center of beam
12	Horizontal crack on beam

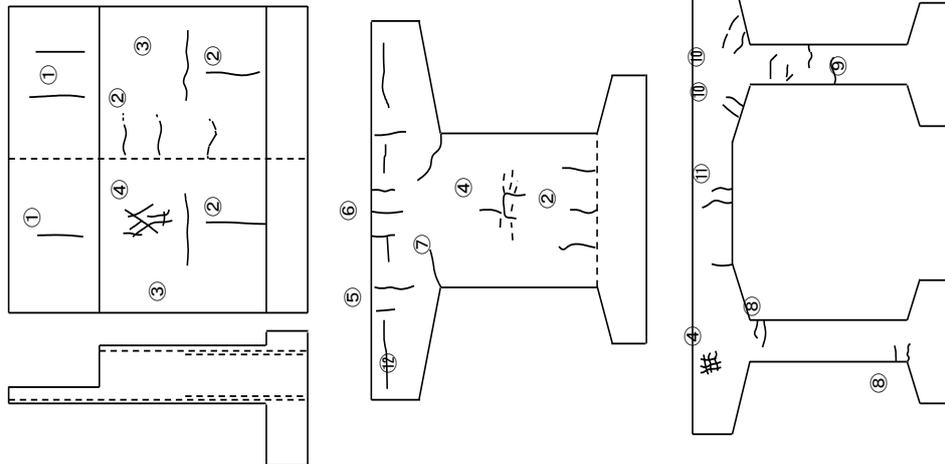
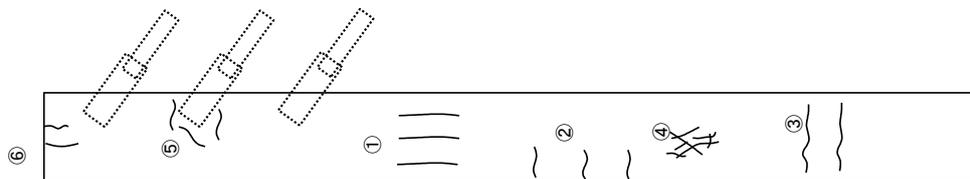




Figure 4-17 General Patterns of Defects (2 of 7)

General Patterns of Crack Defects on Tower



Number	Pattern
1	Crack by regular interval
2	Crack on the concrete casting joint
3	Crack around the changing point of density of reinforcement bar
4	Crack like mesh
5	Crack around anchorage
6	Vertical crack on pier center



Figure 4-18 General Patterns of Defects (3 of 7)

General Patterns of Crack Defects on Steel Bridge

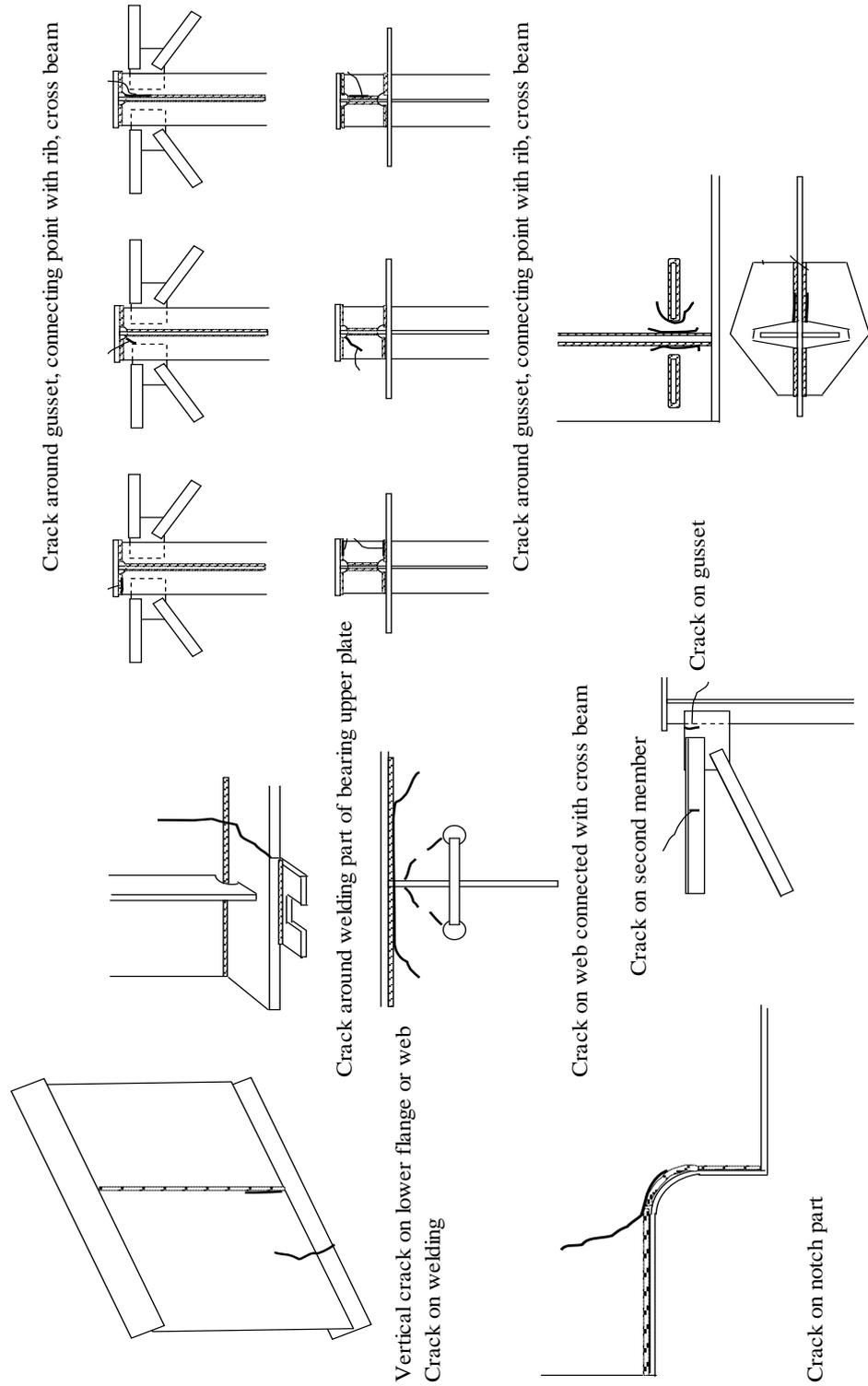


Figure 4-19 General Patterns of Defects (4 of 7)

General Patterns of Crack Defects on Steel Deck Plate

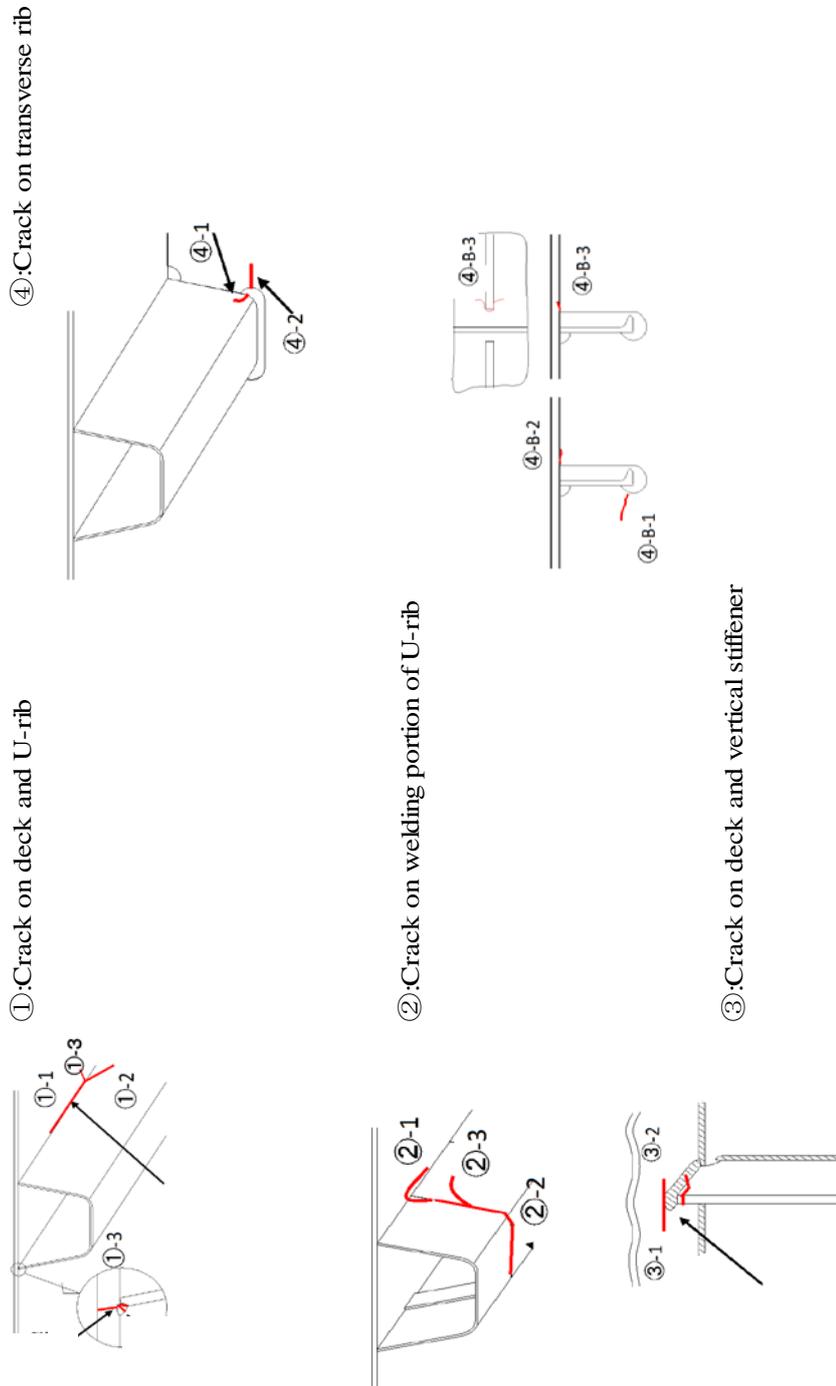




Figure 4-20 General Patterns of Defects (5 of 7)

General Patterns of Crack Defects on Concrete Deck

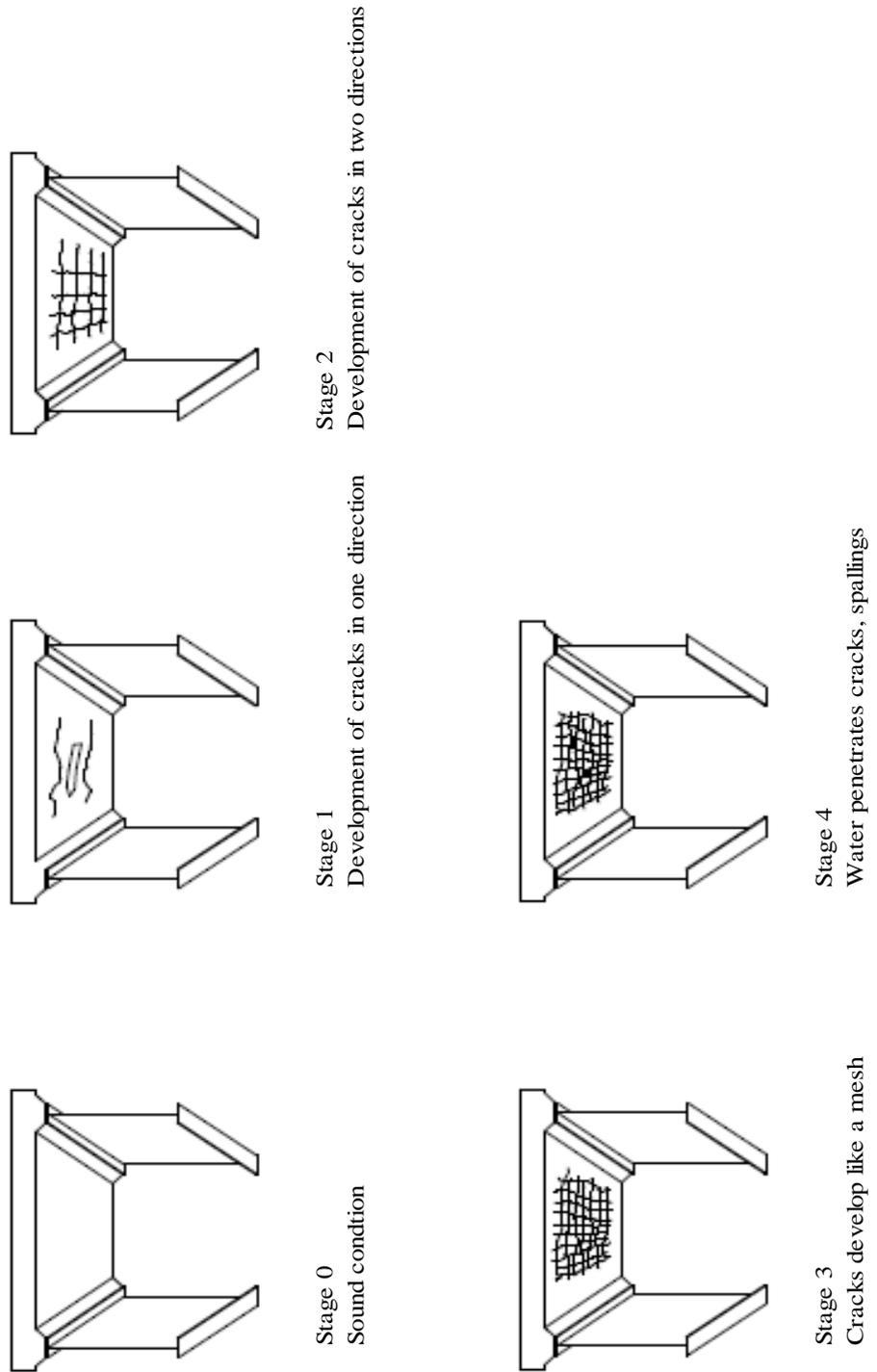




Figure 4-21 General Patterns of Defects (6 of 7)

General Patterns of Defects of Rubber Bearing

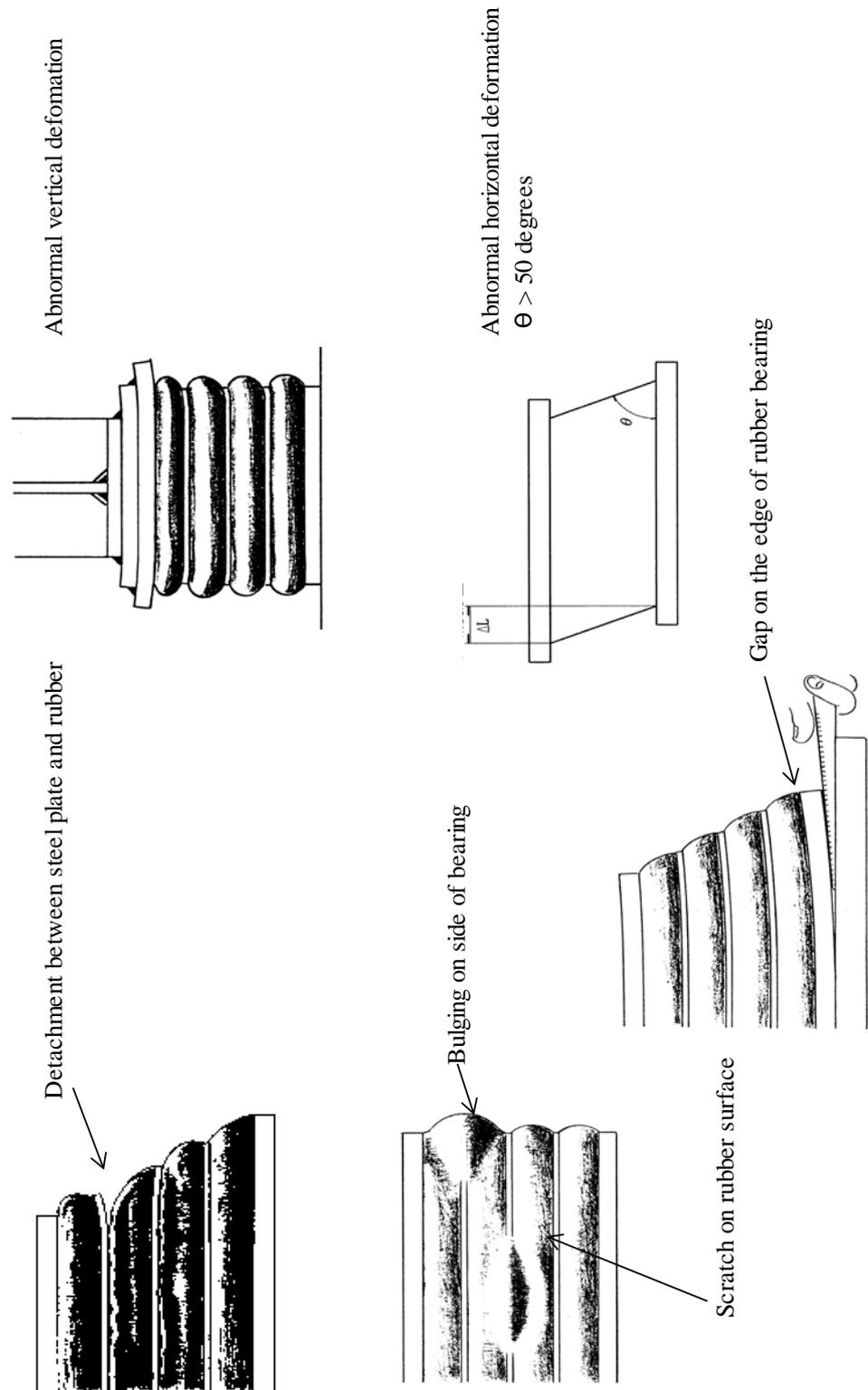
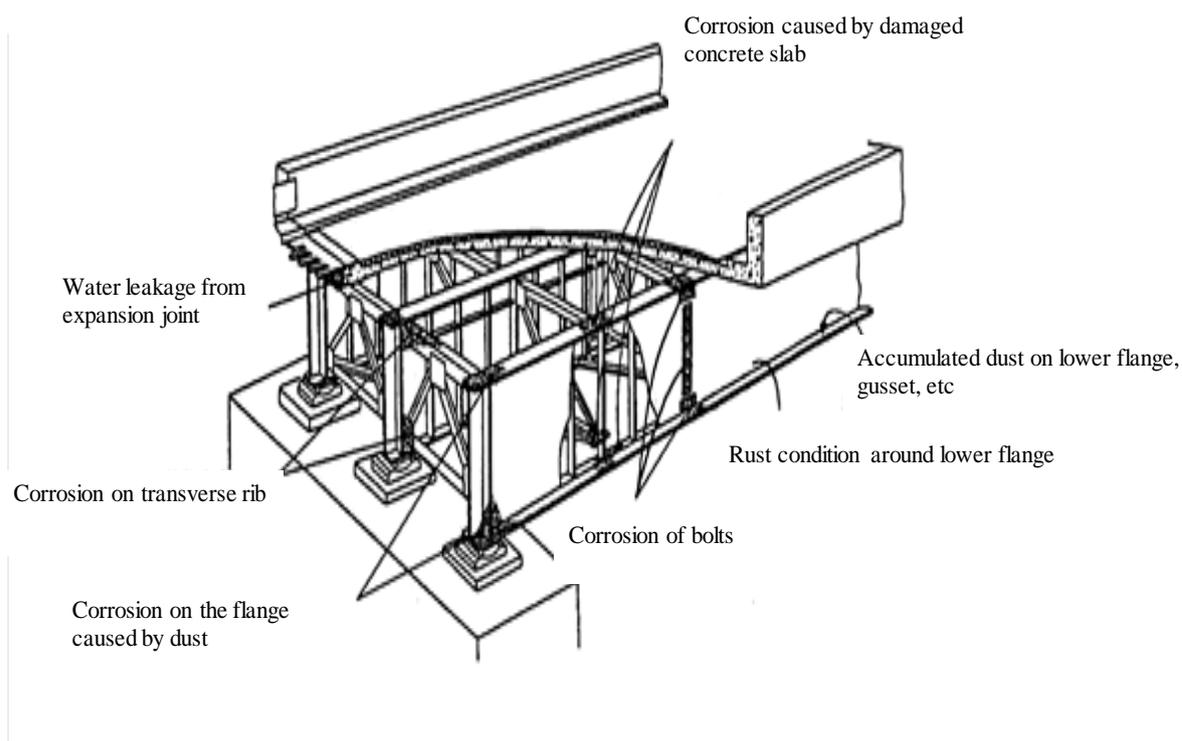




Figure 4-22 General Patterns of Defects (7 of 7)

Important Inspection Points for Bridges Using Weathering Steel



1	Slab (Concrete, Steel), in particular damaged area where there is water leakage
2	Area around drainage
3	Area around Girder end and middle pier
4	Area with accumulated dust like upperside on lower flange, gusset and so on
5	Joint area and bolts



Table 4-6
Special Attributes of Diosdado Macapagal Bridge

Element	Attribute	Description
Span	Asphalt Wearing Surface	The asphalt wearing surface is the surface on which vehicle traffic and pedestrian travels. In the Diosdado Macapagal bridge, there are two layers and each layer has 40 mm thickness. Base and top layers adopt Stone Mastic Asphalt and Dense Graded Bituminous Concrete Asphalt, respectively. Asphalt wearing surface plays an important role to protect the deck slab.
	Stone Mastic Asphalt (SMA)	SMA is used for the base layer of pavement; which has rut resistance, water proofing ability, bearable against repeated bending force of steel deck and long term durability. Coarse aggregate skeleton stone portion provide a stone and stone contact to prevent rutting and provide skid resistance. The mix is held together with sufficient specialized mortar (filler, asphalt cement and stabilizer, such as polymer or fibers) to have water proofing ability.
	Water Proofing Layer	Water proofing on steel deck slab is very important to protect steel deck from any corrosion. Water easily penetrates asphalt wearing surface and reach steel deck slab. It causes corrosion of steel deck. Water proofing should be installed on the steel deck slab before casting asphalt layer.
	Steel Deck Slab	Steel deck slab can support long span compared with concrete slab, however it has bending force and is vibrated by traffic load. Crack in welding and border of U shape rib and deck slab easily happens. Also, it is quite weak against water. Crack and water leakage should be inspected carefully.
	Weathering Steel	In the proper environment, weathering steel does not require painting and develops a stable rust layer on the surface of steel, as a protective barrier; which impedes further corrosion by prevention of access of oxygen and moisture. However, under severe condition, it is possible that stable protective layer is not stabilized, but instead continues to be corroded.
Pier	Special Bearing	There are five types of bearings in the Diosdado Macapagal Bridge; Pendulum Bearing, Seismic Isolation Bearing, Steel Vertical Bearing, Steel Lateral Bearing and Laminated Rubber Bearing. Each bearing has different role for the support of bridge. In particular, Pendulum bearing support for negative reaction, so the damage is directly related with bridge collapse.
Cable	Anchorage at Tower and Girder	Anchorage is to keep the stay cable's tension force for support of bridge. They are quite important parts for the Cable Stayed Bridge. Corrosion and damage of anchorage are contributory to bridge collapse.
	Cable	The cable is the most important attribute for the Cable Stayed Bridge. They suspend girders and put external pre-stressing into the girder. They have coating made of high density polyethylene and cover duct which prevents deterioration of cable. Corrosion and damage of cable are contributory to bridge collapse

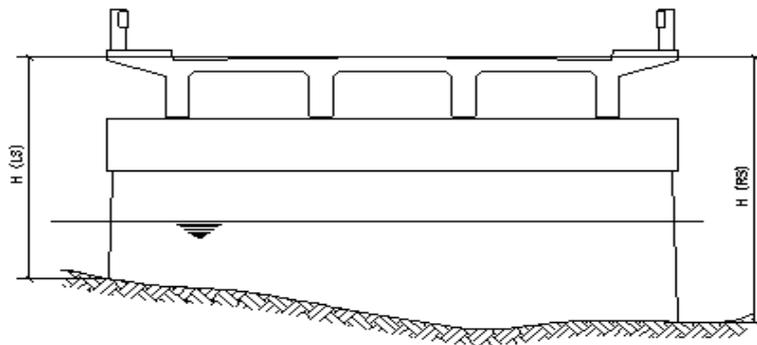


4.4.7. Pier and Abutment Scour Check

Scour checks are made at the piers and abutments in each annual condition survey. These record the level of the ground surface at the piers and abutments. This data will be available to monitor changes in surface levels under bridges over a longer period and therefore will indicate whether erosion or accretion is taking place.

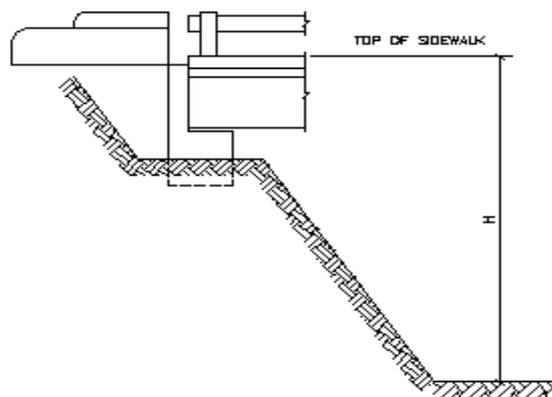
The scour check at a pier is undertaken as shown in Figure 4-22. The Bridge Inspector is required to measure the height from the top of the concrete deck or parapet to the ground or stream bed level on each side of the bridge on the centerline of each pier.

Figure 4-22
Measurement of Pier Scour Check



The scour check at an abutment is undertaken as shown in Figure 4-23. The bridge inspector is required to measure the height from the top of the concrete deck or parapet to the ground or streambed level on each side of the bridge to the natural surface immediately adjacent to the abutment.

Figure 4-23
Measurement of Abutment Scour Check





4.4.8. Condition Rating of Bridge Attributes

The material defect descriptions and the condition rating criteria in BMS will be utilized by the Bridge Inspectors (BI) to assess the defects identified in bridge elements. On the other hand, the Condition Inspection for the stay cable, anchorage, weathering steel and the asphalt wearing surface will be undertaken using this Manual.

The condition rating of the bridge attributes will be conducted following the BMS Manual. Additional material defects are specifically described in Appendix G while the corresponding condition rating criteria concerning the same is included in Appendix H.

- Asphalt Wearing Surface
- Cable Element
- Weathering Steel

The affected area, length or number will be roughly estimated and using the Condition Rating Card, the attribute damage rating can be obtained. The condition state of the attribute is the worst damage rating. The descriptions cannot possibly cover every situation, and the BIs must rely on their engineering knowledge and judgment to evaluate which condition should apply to the bridge elements inspected.

The BIs shall also compare the defects observed in the attribute with the previous sketch drawings and photograph records to check the progress.

The condition states have been developed to describe the following conditions listed in Table 4-7.

For each defined attribute in the bridge, the Condition Inspection Forms includes a separate section covering that attribute and which is to be completed by the BI. Each section shall be completed to include:

- The condition state of the attribute (see Table 4-7)
- The type of repair required for each attribute
- The estimated cost to undertake the required repair (major maintenance)

All repairs to attributes are classified as major maintenance.

The standard descriptions of major maintenance that may be undertaken for each attribute are:

- Repair damage
- Protective measures
- Strengthen
- Replace
- Other



Only one type of maintenance can be listed for each attribute. When two (2) or more types of maintenance are required to an attribute, all work shall be listed under the type of maintenance with the highest estimated cost.

The BI shall describe in detail the recommended repair works each identified defect in any attribute, providing sketch drawings if necessary.

Table 4-7
Bridge Attribute Condition States

Condition State	Description	Action
0	Attribute is in good condition with little or no deterioration	Keep inspection
1	Attribute shows deterioration of a minor nature to the primary supporting material and is showing first signs of being affected	Keep monitoring
2	Attribute shows advancing deterioration and loss of protection to the supporting material, minor loss of section	Major maintenance is required within 2 years
3	Attribute shows advanced deterioration, loss of effective section to the primary supporting material, and is acting differently to design or is showing signs of overstress	Immediate major maintenance is required

The condition state of each bridge attribute will be used by the BMS to calculate the overall need of the bridge for intervention.

4.4.9. Not Applicable Attributes

There are many instances when the Condition Inspection Forms (CIF) is not completely filled out by the bridge inspector due to uncertainties in identifying or locating some attributes of the special bridge.

The Bridge Inspector may feel that an attribute cannot be completed because there is no attribute in the bridge, he/she cannot recognize or find the attributes in the bridge. In this case, the bridge inspector should mark the attributes as not applicable.



4.4.10. Estimation of Major Maintenance Costs

The Bridge Inspector is required to prepare estimated costs of Major Maintenance to correct the defects identified in each bridge for those attributes assessed as having a condition state of 2 or 3.

The estimated costs for Major Maintenance will be used to plan programs of major maintenance, upgrading and replacement for all national bridges. It is important that reasonable accuracy cost estimates are prepared, as they will be used to assess if a bridge will be maintained, upgraded or replaced. Even when the Bridge Engineer is confident that the correct action is to replace a bridge, cost estimates to repair the assessed defects must be prepared. The definition for major maintenance is explained in Table 4-8.

Table 4-8
Definition of Major Maintenance

Definition	Major Maintenance
All bridge maintenance undertaken using a specific allocation of funds	All repair works to bridges that are outside the scope of work handled under routine maintenance and which requires a separate allocation of funds. This category would include all works to bridges to prevent deterioration, to address existing damage and to overcome conditions that may impact on the bridges. It would not include any work that would improve the level of service provided by the bridges.

The Bridge Inspector shall prepare an estimated cost for each listed Major Maintenance repair. Separate work sheets shall be used to give details of the recommended major maintenance and the estimated cost of this Major Maintenance for each defined attribute.

These cost estimates shall be prepared as follows:

- For each defect prepare a list of the major activities required for the repair. This list could include items such as scaffolding, removal of damaged concrete, excavation, traffic control, reinforced concrete construction, and the like.
- Costs are estimated for each major activity based on using the material, equipment and labor requirement costs or contract rates. The estimated cost for each activity may be a lump sum.

Each estimated cost must include a reference record on the Condition Inspection Forms (CIF) for easy access to the supporting work sheets. Reference work sheets shall be designated as R-1, R-2, etc. and will be attached to the CIF.

Any bridges where the defects recorded needs some intervention, it will be subjected Engineering Inspection to define the type of intervention required, determine the scope of work and provide accurate cost estimation.



4.5. Sample of Attribute Inspection Forms

For example, the concrete deck slab has 1.20mm wide cracks spaced at an average of 150mm in two directions covering an area of about 10 square meters at Span 1. Span 1 has a dimension of 7 meters width and 10meters span length. Also, Span 1 has 40cm wide water leakage.

In Figure 4-24, the CIF for damage rating of span element, the type of material for the deck attribute is concrete and the defects identified are cracking and water leakage. The severity of cracking is 3-Bad since 1.20mm with an average spacing of 150mm in two directions falls under the criteria of more than 1 mm cracking in two directions spaced at less than 200 mm. The severity of water leakage is 2-Poor since 40cm is under the criteria of more than 20cm wide.

For cracking of concrete of primary components such as deck slab, the severity of damage will be the damage rating, which in this case is **3** regardless of the size of affected area. In the CIF, the damage rating for cracking will then be **Bad**.

For water leakage where the total calculated affected area is 26%, the Condition Rating Card (see Figure 4-26) is used to determine the damage rating. The damage rating is 2-Poor since the area affected is within 20~30% of a primary component.

When all the ratings of the observed types of defects for the deck in Span 1 are compared, the worst rating will be the condition state of the deck attribute. The attribute condition state of the deck will then be “**3**” or **Bad** since cracking has the worst rating.

Figure 4-24
Sample Attribute Form (Damage Rating)

Bridge Element: Span 1
Bridge Attribute: Deck

Type of Material: Concrete
Type of Damage: Cracking and Water Leakage

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	<input checked="" type="checkbox"/> Cracking	3	-	-	Bad	3
	<input type="checkbox"/> Spalling/Scaling/Disinteg.					
	<input type="checkbox"/> Rebar exposure/corrosion					
	<input type="checkbox"/> Honeycomb					
	<input checked="" type="checkbox"/> Water leakage	2	Area	26	Poor	

The attribute condition state determined will then be specified in the CIF. For example, the condition state of “**3**” (Attention Required – Immediate) for deck attribute can be marked as shown in Figure 4-25.

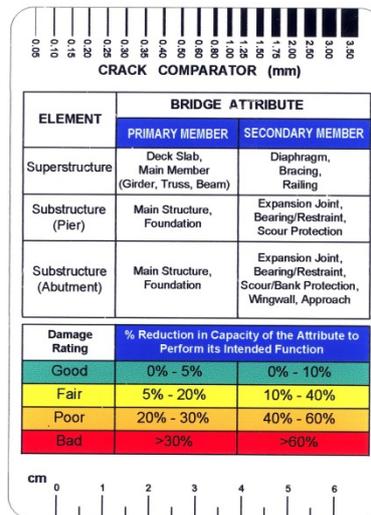
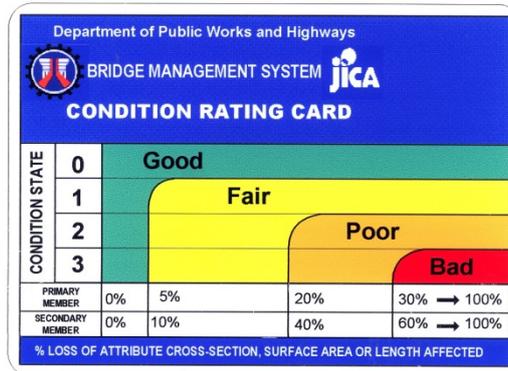


Figure 4-25
Sample Attribute Form (Condition)

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	REFERENCE	
DECK	Immediate	<input checked="" type="checkbox"/> 3	Fully assessed	Repair damage	<input checked="" type="checkbox"/> 100,000.00	S1
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures		
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen		
	None	<input type="checkbox"/> 0	assessed	Replace		
	Not Applicable	<input type="checkbox"/>	Not assessed	Other		
			Total Estimated Cost	100,000.00		
SECONDARY MEMBER	Immediate	<input type="checkbox"/> 3	Fully assessed	Repair damage		
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures		
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen		
	None	<input type="checkbox"/> 0	assessed	Replace		
	Not Applicable	<input checked="" type="checkbox"/> X	Not assessed	Other		
			Total Estimated Cost			

In this case, there are no secondary members attribute for the bridge therefore the box for “Not Applicable” will be marked.

Figure 4-26 Condition Rating Card





4.6. Bridge Condition Assessment

The bridge inspector is required to assess the overall condition of the bridge based on the condition of the bridge components. The summary sheet of the CIF will be completed for the overall condition of the bridge. Data needed for this section are described below:

- **Overall Condition of the Bridge** refers to the rating given by the bridge inspector to a certain bridge. The bridge can be evaluated as good, fair, poor or bad. Note that the bridge inspector must rely on his/her engineering knowledge and judgment for the evaluation of the bridges' condition.

In general, structures described as **Good** condition shall be free of defects affecting structural performance, integrity and durability; those described in **Fair** condition may have defects which affect the durability; and those described as **Poor** condition may have defects which affect the performance and structural integrity of the structure. Those structures described as **Bad** shall have major defects and are considered to be beyond repair.

The bridge inspector shall determine the overall condition of the bridge based on the result of the condition rating of the bridge primary components/attributes and secondary component/attributes that affects structural performance such as bearings/restraints. In general, the worst condition state of any primary component and secondary component that affects structural performance will be the overall condition state of the bridge. Guidelines for assistance are included in Table 4.9.

Table 4-9
Guidelines in Assessment of Bridge Condition

Bridge Condition	Assessment Indicators
	Primary Components and Secondary Components that Affects Structural Performance (Attribute Condition State)
Good	0
Fair	1
Poor	2
Bad	3

Bridge Condition	Recommended Countermeasures	Remarks
Good	Routine Maintenance	-
Fair	Major Maintenance (Repair, Protective Works, Strengthening)	Total of Bridge Component
Poor	Major Maintenance or Upgrading	Total of Bridge Component
Bad	Upgrading or Replacement	Total of Bridge Component



- ***Recommended Action to the Bridge*** refers to the level of rehabilitation works needed for the bridge. The recommended measures will be generally based on the overall bridge condition as shown above.
- ***Bridge Inspectors' comment on recommendation.*** The bridge inspector shall indicate his comments on the recommended activity for the bridge.
- ***Major reasons for recommendation.*** The bridge inspector shall indicate the reason(s) for the recommended activity to the bridge. Up to three (3) reasons can be selected.
- ***Estimated Remaining Bridge Life*** refers to the remaining length of time for which the bridge will remain serviceable.

4.7. Deliverables

The deliverables of Condition Inspection Report are as follows:

- Condition Inspection Report
 - Bridge Condition Inspection Form (Type 2)
 - Summary of Condition Inspection Results
 - Repair Record
 - Inspection Results sheet (condition)
 - Inspection Results sheet (damage rating)
- Sketch drawings sheet
- Photo record sheet(Pictorial Report)
- Supporting information for proposed major maintenance
- Cost estimates for major maintenance

The Bridge Condition Inspection Reports shall be prepared in the respective Regional Office where the bridge inspectors are based. The reports shall be checked and reviewed in the Central Office for completeness and accuracy prior to finalization.

When the Bridge Condition Inspection Report would be completed, accurate and accepted, all the data shall be stored in Special Bridge Inventory Database.



5. ENGINEERING INSPECTIONS (TYPE 3)

5.1. Purpose

Bridge Engineering Inspection is undertaken as a follow-up to Bridge Condition Inspection when the condition state of 2 or 3 are recorded in any primary component/attribute or in any secondary component that has detrimental effect on the structural performance of the bridge. The purposes of a Bridge Engineering Inspection for Cable Stayed Bridge are as follows:

- 1) To confirm the results of the Bridge Condition Inspection;
- 2) To undertake additional investigations in order to evaluate thoroughly noted defects which may include physical testing and/or structural analysis; and also to prepare a documentary record of the observed defects for future design of required major maintenance works;
- 3) To assess the current bridge structural condition, behavior and capacity;
- 4) To assess the rate of deterioration and residual life expectancy of the bridge.

5.2. Recommendation

In the Engineering Inspection for standard materials, attributes and so on, “Bridge Engineering Inspection Manual 2014 developed by JICA” should be referred to. However, there is no standard method in the Engineering Inspection for special materials, attributes and so on, like cable, rope and anchorage.

For example, in case of abnormal vibration of the stay cable, the extent of vibration should be measured using video and other amplitude measuring instruments. Aside from the vibration amplitude, the tensile strength of the Stay Cable should also be determined. Also when water leakage and discoloration of cable element is observed, there is a possibility that the inside of cable is already corroded and should be thoroughly inspected. In both instances, determining the vibration amplitude and tensile strength of the Stay Cables is difficult for the Regional Office.

It is recommended that the Regional Office engage the services of engineering inspection/investigation firms specializing on Cable Stayed Bridge



6. EMERGENCY INSPECTION (TYPE 4)

6.1. Purpose

Emergency Inspection will be undertaken in response to calamities or occurrence of severe damages that may tend to cause substantial damage to any part of the structure. This inspection is required to confirm that the bridge remain safe to commuters following a calamity or any man-made disasters and to determine the necessary work that is required to ensure the safety of the bridge and to restore the function of the bridge.

6.2. Process

There is no general process for emergency inspections as these inspections are ad-hoc inspections undertaken in difficult conditions.

6.3. Procedure

No standard procedure is required for this type of inspection.

6.4. Deliverables

The deliverable will be an Emergency Inspection Report. This will be the form appropriate for the required emergency action.



7. BRIDGE INVENTORY INSPECTIONS (TYPE 5)

7.1. Purpose

The purpose of the Inventory Inspection for Cable Stayed Bridge is to obtain its inventory data primarily for inclusion in the Special Bridge Inventory Database. Bridge inventory data is a standardized series of information that describe the geometry, construction and current function of a bridge.

7.2. Process

The Inventory Inspection for the Special Bridge, is similar to the inventory inspection of standard bridges.

7.3. Procedure

All information collected during the bridge inventory inspection is recorded using the Inventory Inspection Forms (IIF). A sample IIF of Diosdado Macapagal Bridge is included in Appendix G

The IIF is composed of two parts for the Special Bridge Inventory:

- Standard inventory sheet is the same sheet with ordinary bridges in BMS.
 - Inventory Inspection Form (Type5)
 - The special requirements for inspection.
 - The general bridge data, clearances, geometry, traffic direction, type of bridge, year of construction, public utilities carried by the bridge and detail, if there is lighting provided on the bridge, the type of terrain where the bridge is located, comments if the bridge is unusual, type of construction, substructure type, deck material, wearing surface, drainage, design load and the available drawings.
 - The Bridge Modification Sheet describes the types and materials of any modifications to the bridge.
 - The span/s of the bridge.
 - The pier/s of the bridge.
 - The bridge abutments.
- Additional geometrical data sheet for Special Bridge
 - Measurement of bridge structure (superstructure and substructure)



As Built Drawing are very important for special bridges. There is no standard drawing in special bridge. Each bridge has its own unique structure. “As Built Drawing” should be collected and electronic copy should be installed in the Special Bridge Inventory Database, as one of Inventory Inspection data. In case that there is no available bridge data, measurement survey on site for collecting basic bridge data and general drawings for inventory should be done. All documents pertaining to the past repair works and useful information are also important for future reference, especially when the bridge is due for retrofitting.

7.3.1. Description

Figure 7-1
Photo of Diosdado Macapagal Bridge



It was during the Presidency of Joseph Estrada that the project was approved which was lobbied by the city government way back President Fidel Ramos' time to decongest the traffic of the more than 50-year-old Magsaysay Bridge and create an alternate route. However, it was President Gloria Macapagal Arroyo who approved and implemented the project. The bridge was funded through a Special Yen Loan Package from Japan Bank for International Cooperation (JBIC). The project was started on May 6, 2004 and completed in May 2007.

The Diosdado Macapagal Bridge is the longest bridge in Mindanao, which is 3 kilometers upstream of the old Magsaysay Bridge and provides an alternate route across the Agusan River to connect the Philippine-Japan Friendship Highway (Surigao-Agusan-Davao road) and the Butuan City-Cagayan-Iligan road. The bridge is gaining popularity as the only cable stayed bridge with steel deck and single tower in Mindanao.

The Diosdado Macapagal Bridge connected the Mayor Democrito O. Plaza II Avenue Circumferential Road which is 13.124 kilometer road connecting Brgy. Bancasi and the main highway in Baan Km.3 and in Brgy. Antongalon the southern part of Butuan city, of which length is considered the longest in Asia.



The Diosdado Macapagal Bridge is an 882 meters long Cable Stayed Bridge and second of only two kinds in the Philippines. An 84- meter high tower divides the bridge into two spans: 200 meter at the West (longest in the Philippines) and 160 meters at the East.

7.3.2. Inspection Form

The Bridge Inventory Inspection Form (IIF) and attached drawings are prepared specifically for Diosdado Macapagal Bridge as shown in Appendix I.

7.3.3 Location and Inventory Data Collection

The bridge inspector shall inspect the bridge and complete the Location and Inventory Sections of the IIF. This can generally be completed by checking the appropriate box and by inserting the required names and numbers.

Several parts of the IIF can be completed even without having to go to the bridge site. Note however, that all data shall be verified on site.

Data needed for Location and Geographic Information are described in Table 7-1.

Table 7-1
Bridge Location Data

Data Description	Comment
Bridge ID	Unique identification number assigned by the RBIA for each bridge
Bridge Name	The name given to the bridge
Road Name	The name of the road on which the bridge is located.
Road ID	Unique identification number assigned by the RBIA for the road on which the bridge is located
Section ID	The unique identification number assigned to the specific road section containing the bridge
Location	The location of the bridge within the road section based on the LRS
Region	Region in which the bridge is located
Engineering District	Engineering District which is responsible for the management and maintenance of the bridge
Province, Congressional District, Municipality and Barangay	The administrative area in which the bridge (i.e. the first abutment) is located.
River Name	The name of the stream crossed by the bridge (where appropriate)



The Bridge Inspector shall take note of any particular requirements to gain access or to inspect all parts of the bridge for use in planning future bridge condition inspections. Check the appropriate boxes in *Special Inspection Requirements*, of the CIF for items such as ladders, inspection vehicles, boats, etc.

A bridge is made up of various inventory elements:

- General
- Modifications
- Spans
- Piers
- Abutments.

7.4 Deliverables

The deliverables of Inventory Inspection Report are as follows:

- The Bridge Inventory Inspection Reports
 - A fully completed Inventory Inspection Form (IIF).
 - Geometrical data sheet for Special Bridge
- As Built Drawings
- Data of repair history
- Inventory photographs

The Bridge Inventory Inspection Reports shall be prepared by the bridge inspectors. The reports shall be checked and reviewed in the Regional Office for completeness and accuracy prior to finalization.

When the Bridge Inventory Inspection Report would be complete, accurate and accepted, all the data shall be stored in Special Bridge Inventory Database.



8. BRIDGE GEOMETRICAL INSPECTION (TYPE 6)

8.1. Purpose

The purpose of the Geometrical Inspection for Special Bridge is to obtain data primarily of a basic information of special/long span bridge. Bridge would be moved or deformed by impermissible loading from heavy vehicles or deformed due to a disaster. Deformation, movement, change of alignment of members should be measured regularly. It is useful information for analysis of bridge deformation.

8.2. Procedure

Geometric dimensions of special/long span bridges should be measured every three years using measuring survey equipment, like Total Station.

When severe disasters occurred, like earthquake, typhoon and ship or car collision, Geometrical Inspection should be undertaken in order to confirm the degree of deformation.

Geometrical Inspection methods are shown in Figure 8-1,8-2 and 8-3. As a reference, forms of Geometrical Inspection of Diosdado Macapagal Bridge are shown in Appendix J.

The Geometrical Inspection is composed of a three-part measurement survey:

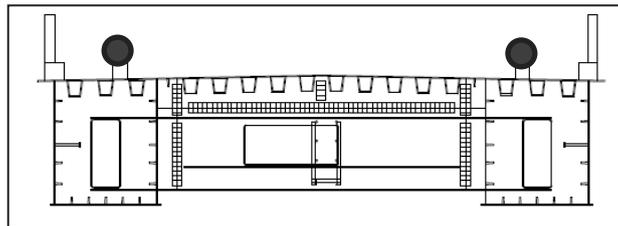
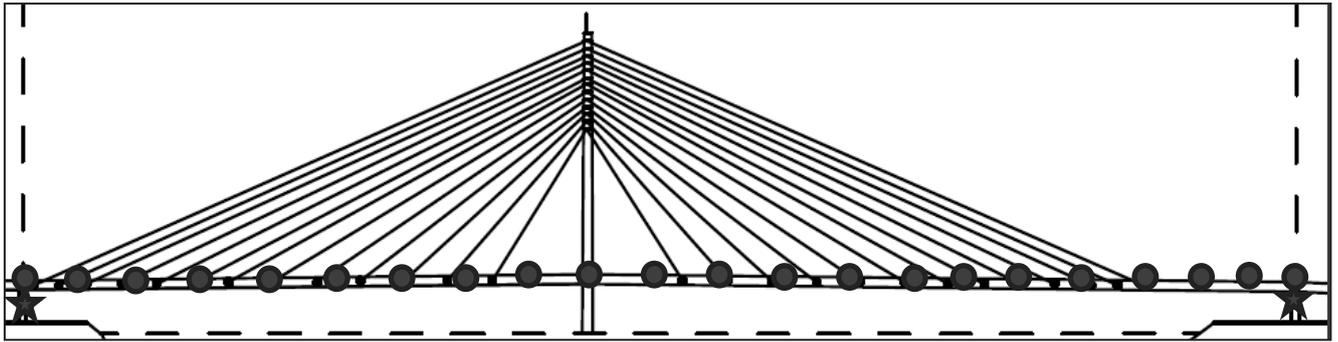
- Leveling of super structure and substructure
 - Elevation of longitudinal alignment of deck surface
 - Elevation of piers and abutments
- Slope of tower and top chord
- Movement of bearing and expansion joint

In case there is an official bench mark that is close to the bridge, it should be used for the leveling of bridge. Likewise, additional bench mark should be established around the bridge during the inspection

The result of Geometrical Inspection should be stored in the Special Bridge Inventory Database. After Geometrical Inspection, Bridge Inspector and Bridge Engineer should analyze and compare the previous year's result. If excessive movement was observed, further investigation such as Engineering Inspection should be conducted in order to determine the appropriate corrective measure to be undertaken.



Figure 8-1
Geometrical Inspection:
Leveling of Abutments and longitudinal alignment of deck surface

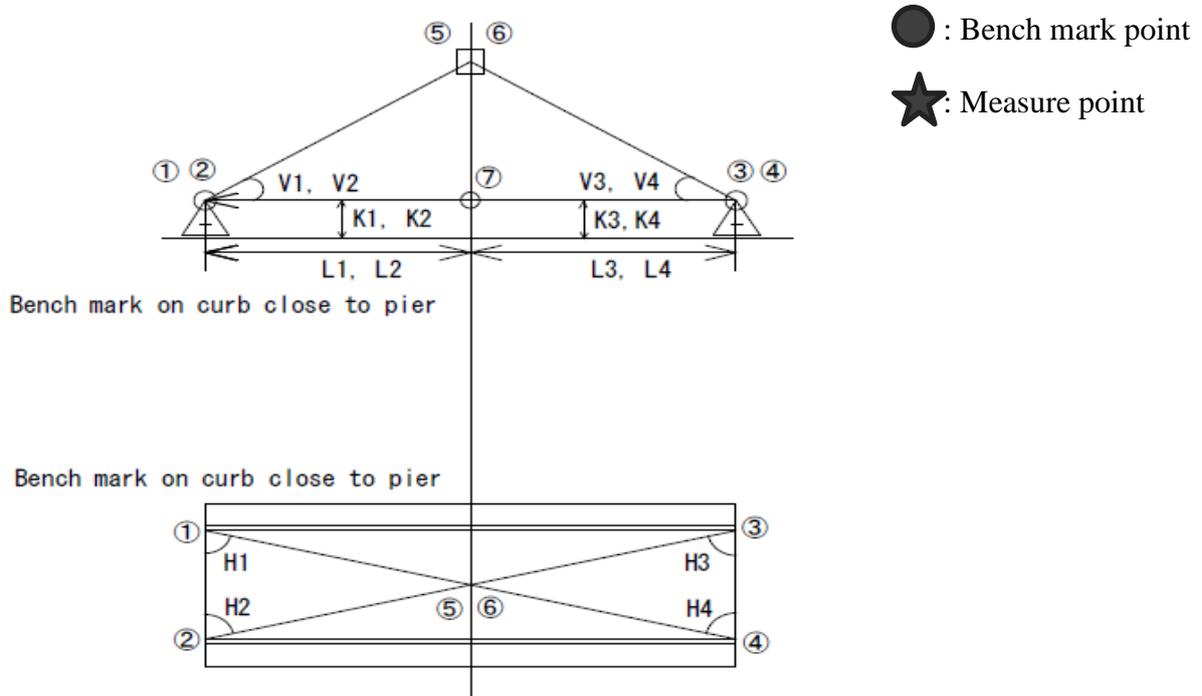
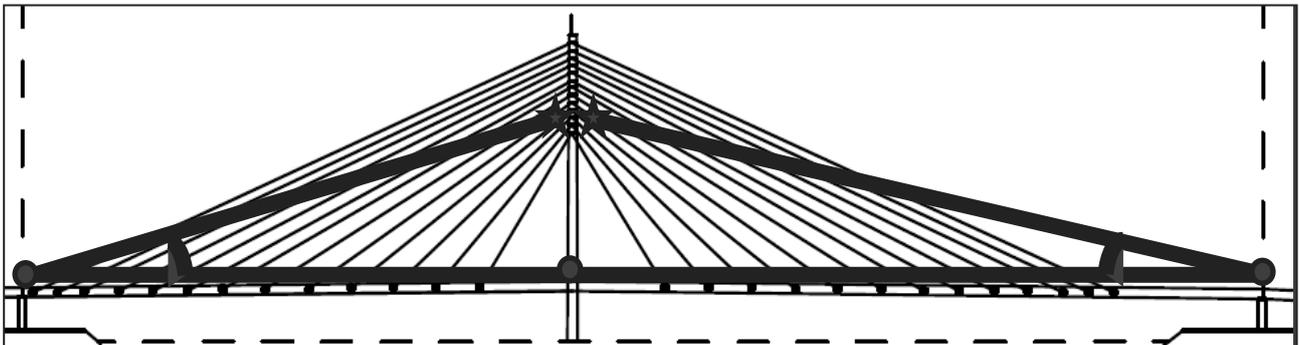


● : Leveling measure point for deck surface

★ : Leveling measure point for deck surface



Figure 8-2
Geometrical Inspection:
Slope of Vertical Alignment of Arch Chord

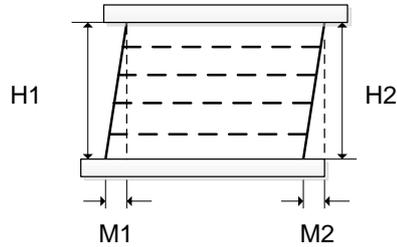


Measure: Angle (Vertical): $V1', V2', V3', V4'$
 Angle(Horizontal): $H1', H2', H3', H4'$
 Length: $L1', L2', L3', L4'$
 Height: $K1', K2', K3', K4'$

Raise:	$K1' + \tan V1' * L1'$	Slope:	$L1' / \tan H1'$
	$K2' + \tan V2' * L2'$		$L2' / \tan H2'$
	$K3' + \tan V3' * L3'$		$L3' / \tan H3'$
	$K4' + \tan V4' * L4'$		$L4' / \tan H4'$

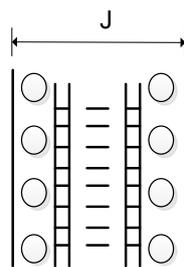


Figure 8-3
Geometrical Inspection: Movement of Bearing and Expansion Joint

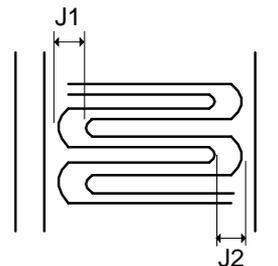


Bearing

Measure every bearing (every time use same marking point)



Rubber Type



Steel Finger Type

$$J = (J1 + J2) / 2$$

Expansion Joints

Measure 5 selected points in each joint and average (everytime use same marking point)



8.3. Deliverables

The deliverables of Geometrical Inspection Report are as follows:

- The Geometrical Inspection Reports
A fully completed Geometrical Inspection Form (IIF).
- Updated Geometrical Inspection (past 3times data)
- Inventory photographs

The Bridge Geometrical Inspection Report shall be prepared by the Bridge Inspector. The report shall be checked and reviewed in the Regional Office for completeness and accuracy prior to finalization.

When the Bridge Geometrical Inspection Report would be completed, accurate and accepted, all the data shall be stored in Special Bridge Inventory Database.

APPENDIX A

LIST OF SPECIAL BRIDGES IN REGION II, III, VIII AND XIII

List of Special Bridges in Region II

DPWH.R.O. II

Bridge ID No.	Name of Bridge	Km. Station	Road Section (I.D. No./Name)	L O C A T I O N				D E S C R I P T I O N						Remarks		
				Mun./City	Province	Region	District	No. of Span	Total Length (m)	Center Span (m)	Width (m)	Type	Construction Year		As Built Drawings	
B011131Z	Magsabit Suspension Bridge	K0714+1.272	S006681Z	Lal-Lo	Cagayan	II	CFDEO	3	346.66	256.60	7.315	Suspension	1976	Available	Rehabilitated 2012	
B01086LZ	Piggatan Bridge	K0525+831	S006571Z	Acala	Cagayan	II	CFDEO	1	74.70	74.70	7.32	Steel Truss	Post 1970	Not known	Strengthened 2005	
B01084LZ	Tupang Bridge	K0520+510	S006571Z	Acala	Cagayan	II	CFDEO	1	61.80	60.00	7.32	Steel Truss	2008	Not known	-	
B02053LZ	Ba.ua Bridge No. 2	K0619+82	S046631Z	Gonzaga	Cagayan	II	CFDEO	1	129.60	129.00	7.32	Steel Truss	1987	Not known	-	
B02040LZ	Pateng Bridge No.2	K0602+616	S046631Z	Gonzaga	Cagayan	II	CFDEO	1	129.60	129.00	7.32	Steel Truss	1989	Not known	-	
B01926LZ	Burrun Bridge	K0486+280	S041701Z	Tuguegarao City	Cagayan	II	CTDEO	17	1102.65	74.00	6.3	Steel Truss	1970	Not known	-	
B01168LZ	Gamu Bridge	K0391+796	S007811Z	Gamu	Isabela	II	ISDEO	11	443.21	73.88	7.32	Steel Truss	1964	None	-	
B01409LZ	Naguilan Bridge	K0382+-1741	S007821Z	Naguilan	Isabela	II	ISDEO	13	689.60	85.00	7.7	PCBG	1999	None	-	
B01200LZ	Ippil Bridge	K0335+867.5	S00812LZ	Echague	Isabela	II	IFDEO	3	124.20	74.15	7.33	Steel Truss	1974	Not known	-	
B01204LZ	Jones Bridge	K0355+27	S00821LZ	Jones	Isabela	II	IFDEO	6	362.00	62.50	7.32	Steel Truss	2007	Not known	UK Assisted Bridge	
B03367LZ	Disimungal Bridge No. 2	K0391+78	S04745LZ	Nagtipunan	Quirino	II	ODEO	1	62.00	62.00	7.24	Steel Truss	2009	Not known	UK Assisted Bridge	
B03368LZ	Gawagan Bridge	K0405+900	S04755LZ	Nagtipunan	Quirino	II	ODEO	1	62.40	60.40	7.28	Steel Truss	2006	None	UK Assisted Bridge	

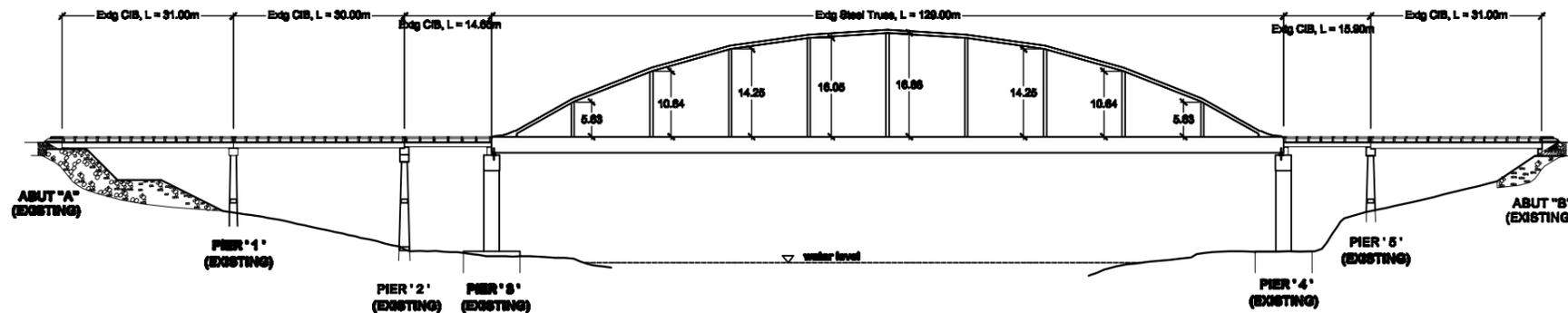
List of Special Bridges in Region VIII

DPWH R.O. VIII		L O C A T I O N						D E S C R I P T I O N						Remarks	
Bridge ID No.	Name of Bridge	Km. Station	Road Section/D. No./Name	Mun./City	Province	Region	District	No. of Span	Total Length (m)	Center Span (m)	Width (m)	Type	Construction Year	As Built Drawings	Remarks
B00025BR	Ananabag Br.	1066+100	S00002BR Biliran Circum. Rd.	Mun. of Culaba	Biliran	VIII	Biliran DEO	1	60.00	60.00	8.80	Steel	2005	None	Single Span
B00057BR	Biliran Br.	1006+1092	S00001BR Leyte-Biliran Rd.	Mun. of Biliran	Biliran	VIII	Biliran DEO	6	252.00	128.80	8.76	Steel	1976	None	SKS Span: 31.00-30.00-15.00-128.80-16.00-31.00
B00093LT	Galangise Br.	989+007	S00113LT Samarawan Act. Calabran Cabbaran Rd.	Mun. of Villaba	Leyte	VIII	3rdLEDO	3	219.00	73.00	10.10	Steel	-	None	Three Span: 73.00-73.00-73.00
B00551LT	Layog Br.	1000+905	S00166LT Daang Maharika (LT)	Mun. of Mahaplag	Leyte	VIII	5thLEDO	2	148.11	-	-	Steel	1976	None	Two Span: 74.21-73.90
B00552LT	Baliacaw Br.	1002+852	S00166LT Daang Maharika (LT)	Mun. of Mahaplag	Leyte	VIII	5thLEDO	1	74.26	74.26	-	Steel	1976	None	Single Span
B00237SM	Palanit Br.	685+813	S00001SM Daang Maharika (SM) (San Isidro-San Juanico Br)	Mun. of San Isidro	N. Samar	VIII	NSEED 1st	3	123.00	25.00	9.35	Steel	-	None	Three Span: 73.00-25.00-25.00
B00246SM	Mawo Br.	688+740	S00002SM Daang Maharika (SM) (San Isidro-San Juanico BR)	Mun. of San Isidro	N. Samar	VIII	NSEED 1st	2	260.00	-	-	Steel	-	None	Two Span: 130.00-130.00
B00359SM	Gandara Br.	763+526	S00062SM Daang Maharika (SM) (San Isidro-San Juanico Br)	Mun. of Gandara	Samar	VIII	Samar 1	5	168.00	59.00	-	Steel	1970	None	Five Span: 31.00-31.00-59.00-31.00-16.00
B00387SM	Calbiga Br.	-	S00095SM Daang Maharika (SM) (San Isidro-San Juanico Br)	Mun. of Calbiga	Samar	VIII	Samar 2	3	105.36	59.00	-	Steel	1970	None	Three Span: 16.18-79.00-10.18
B00386LT	Marcusa Br.	1069+157	S00210LT Jet Hinny-angon-Silago-Abyog Rd	Mun. of San Juan	So. Leyte	VIII	SLED	1	66.80	66.80	-	Concrete	2005	None	Single Span
B00475LT	Mang Br.	1120+176	S00240LT Jet Hinny-angon-Silago-Abyog Rd	Mun. of Silago	So. Leyte	VIII	SLED	1	61.25	61.25	-	Steel	2005	None	Single Span
B00586LT	Dampoy Br.	1015+687	S00231LT Daang Maharika (LT)	Mun. of Sagod	So. Leyte	VIII	SLED	3	101.00	74.00	-	Steel	1976	None	Three Span: 15.00-74.00-12.00
B00616LT	Lilo-an Br.	1054+509	S00231LT Daang Maharika (LT)	Mun. of Lilo-an	So. Leyte	VIII	SLED	3	129.30	-	-	Steel	1977	None	Main Span
B00622LT	Agas-Agas Br.	1006+0977	S00231LT Daang Maharika (LT)	Mun. of Sagod	So. Leyte	VIII	SLED	3	350.00	150.00	9.52	Concrete	2009	None	Three Span: 100.00-150.00-100.00
B00018LT	San Juanico Br.	-	S00013LT Daang Maharika (San Juanico North-South Backbone)	City of Tacloban	Leyte	VIII	Taclob. Engrg. Office	-	2100.00	-	-	Steel	-	None	

APPENDIX B

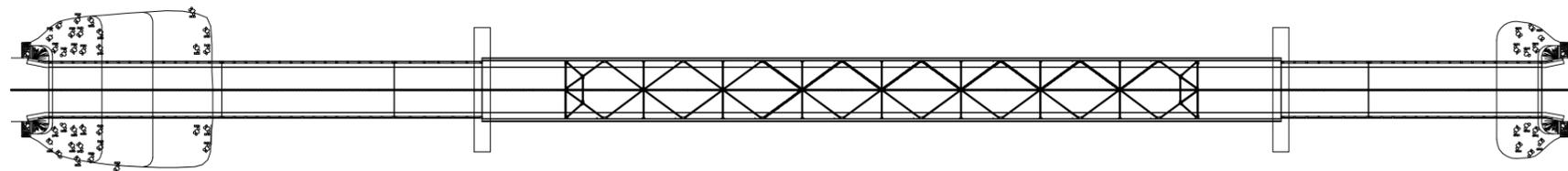
EXAMPLE DRAWINGS BY MEASURE SURVEY IN BILIRAN BRIDGE AND LILOAN BRIDGE

MEASURE SURVEY OF BILIRAN BRIDGE



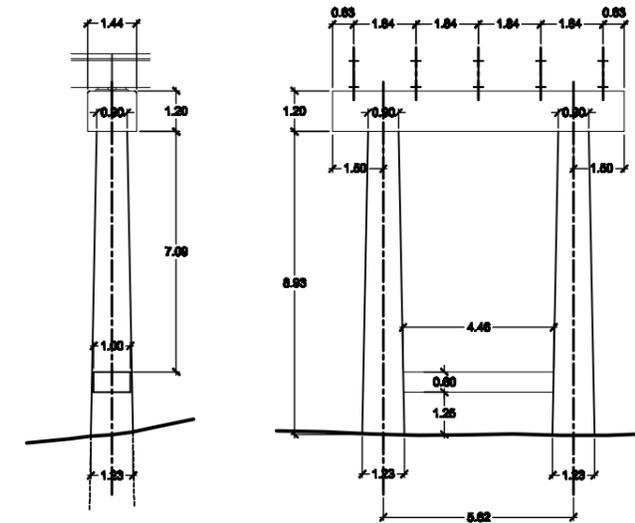
GENERAL ELEVATION

SCALE: 1:500 m



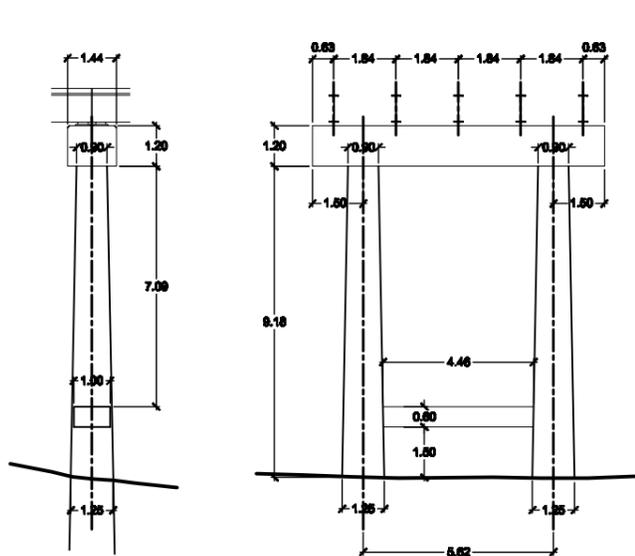
GENERAL PLAN

SCALE: 1:500 m



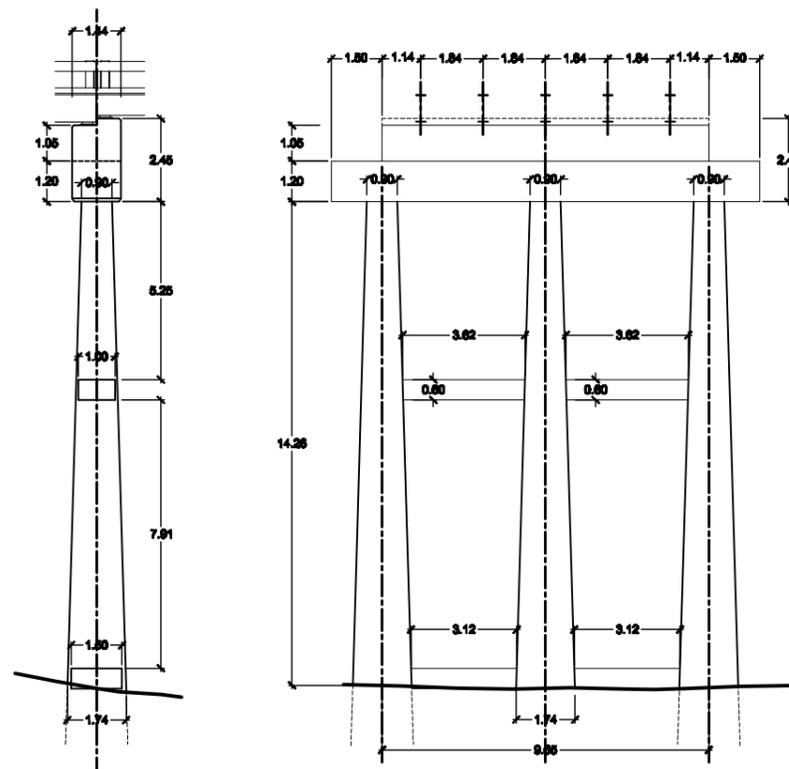
DETAIL OF PIER 5

Scale 1:100 mts



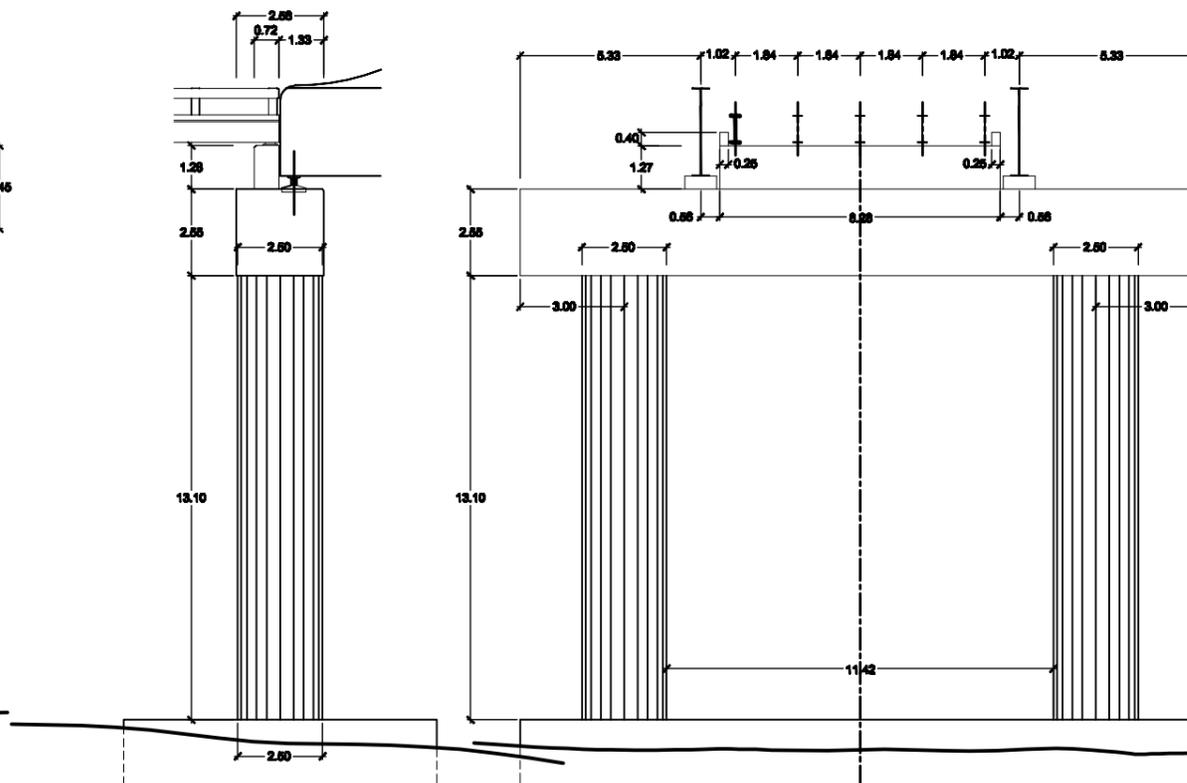
DETAIL OF PIER 1

Scale 1:100 mts



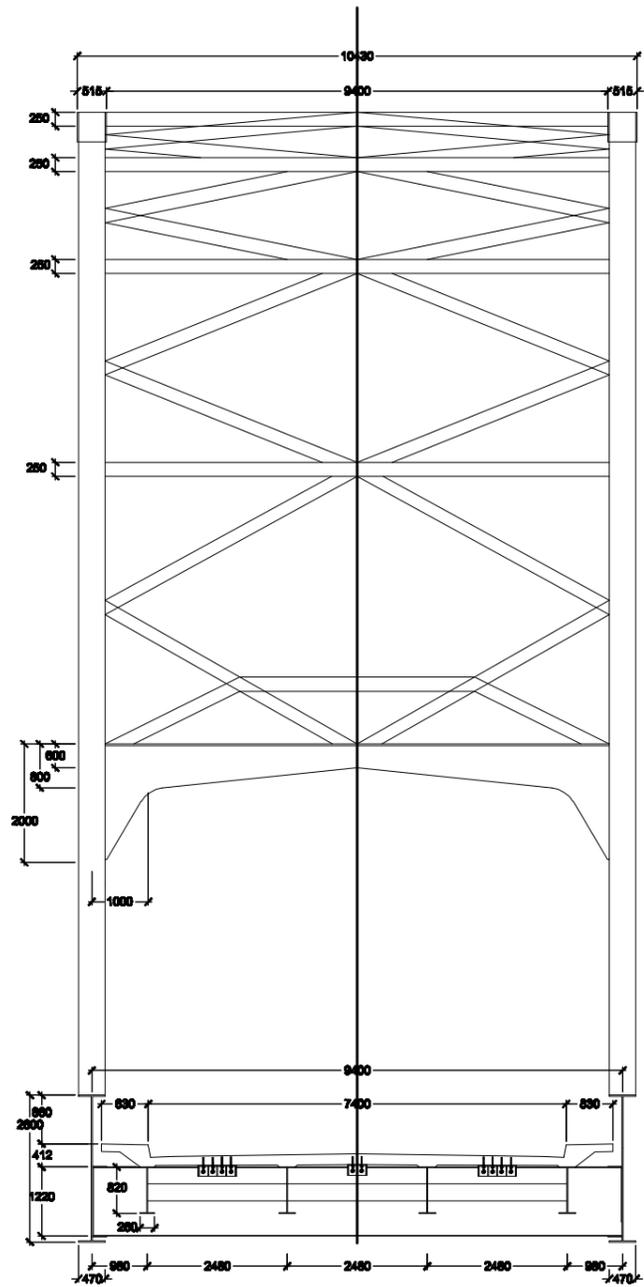
DETAIL OF PIER 2

Scale 1:100 mts

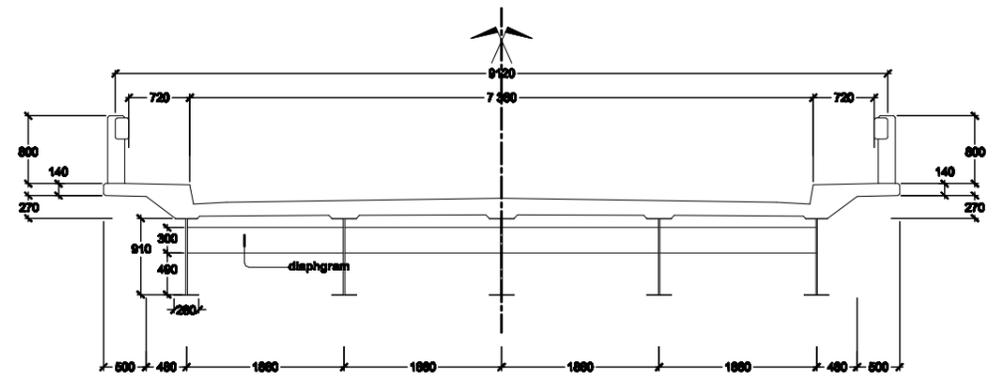


DETAIL OF PIER 3 & 4

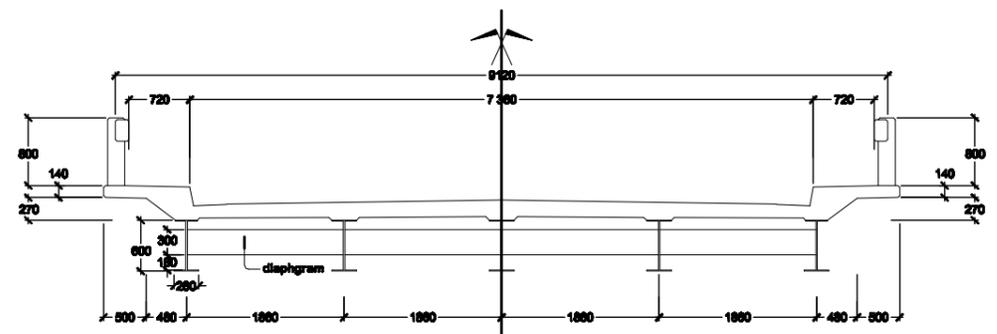
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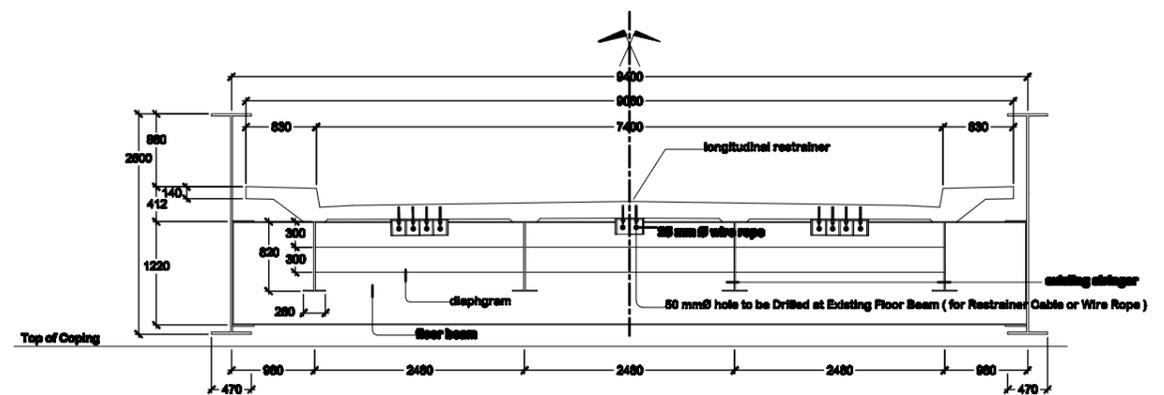
SECTION STEEL TRUSS SPAN
Scale 1:40 mtr



SECTION of SPAN 1 & SPAN 2 & SPAN 6
Scale 1:40 mtr

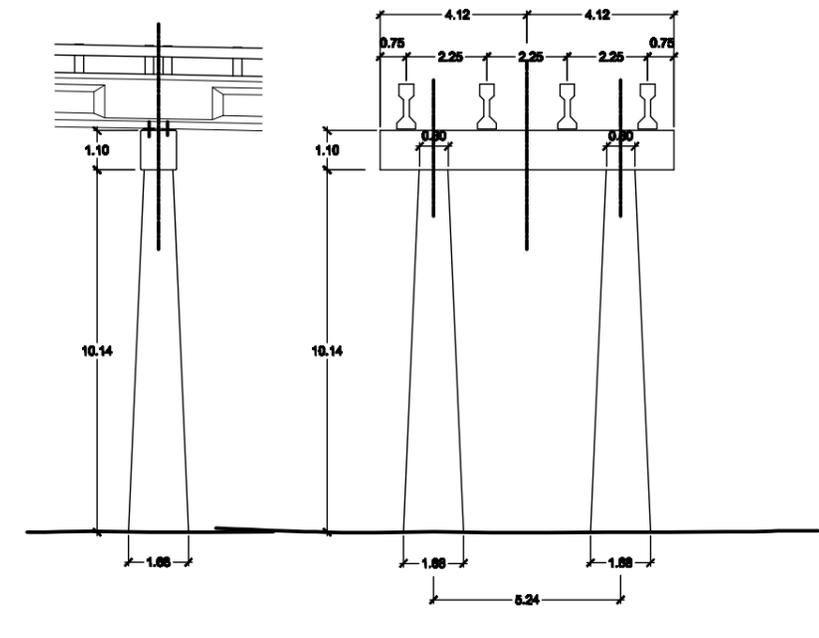
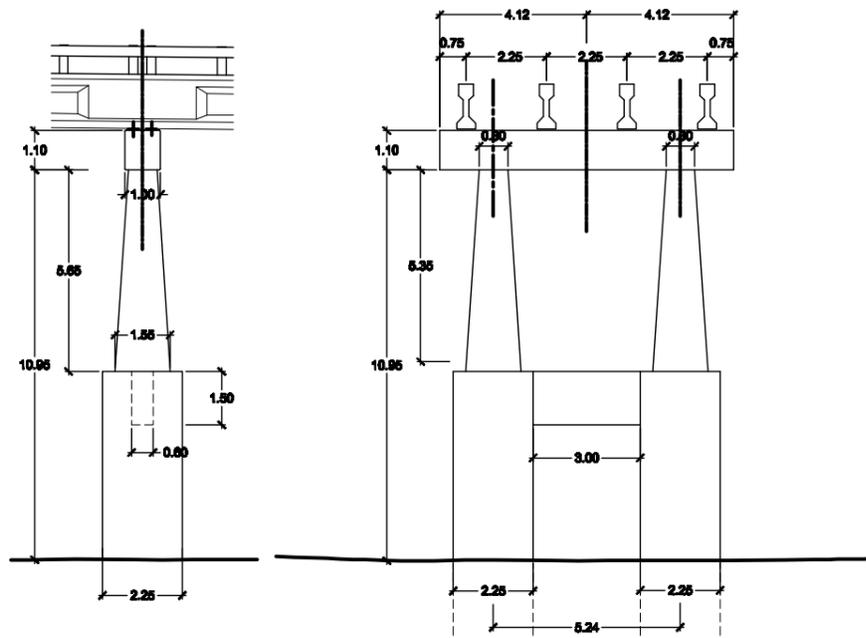
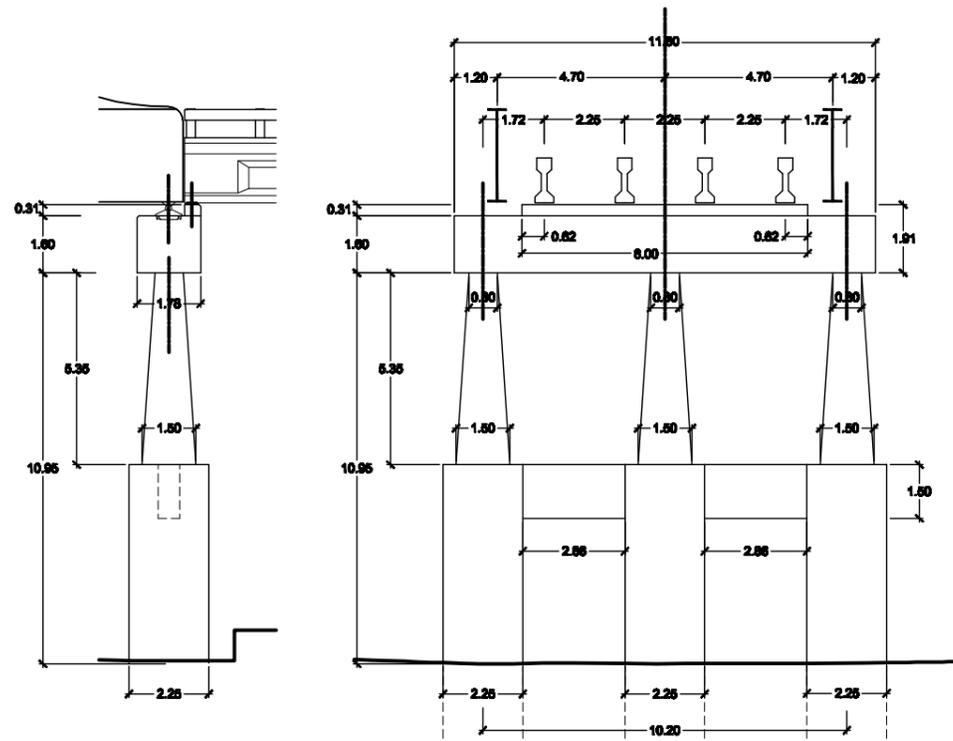
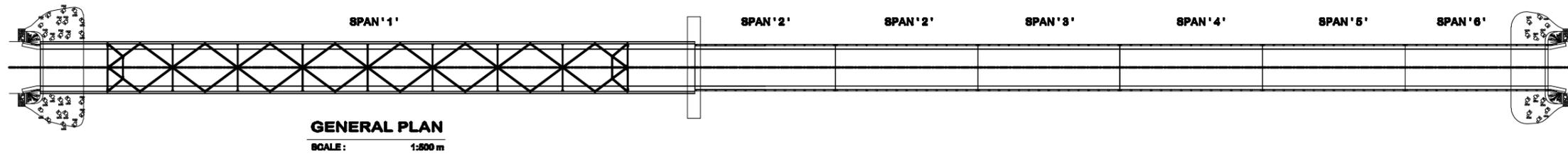
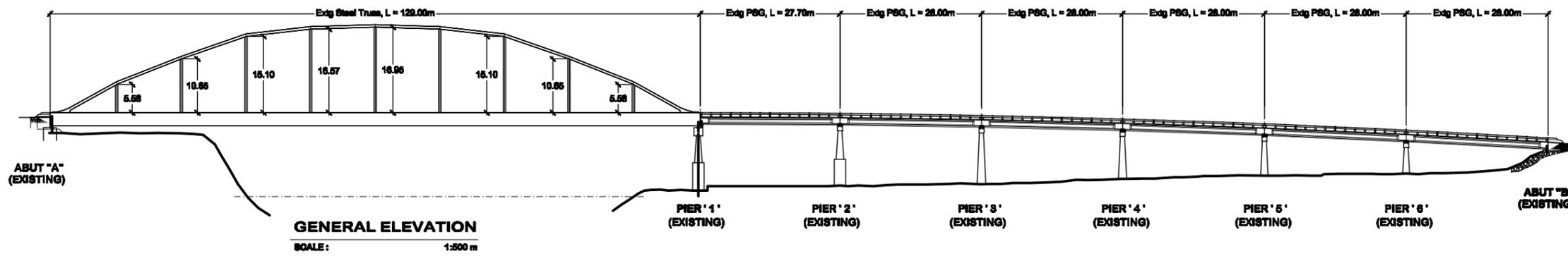


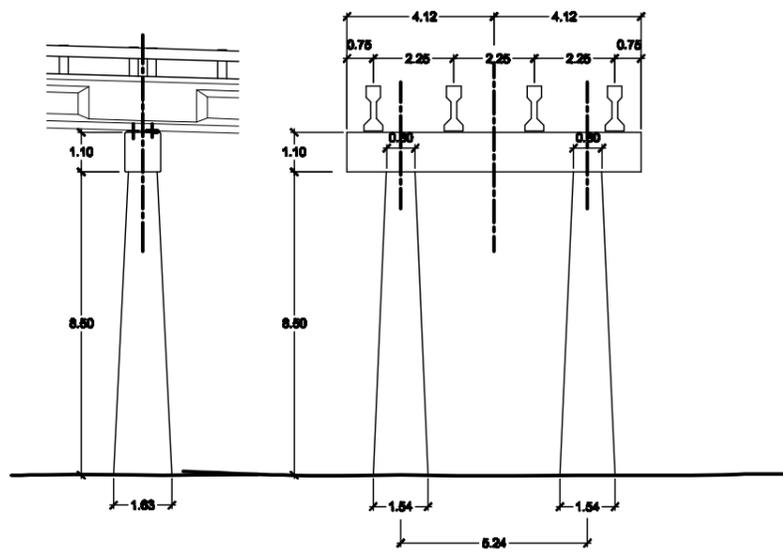
SECTION of SPAN 3 & SPAN 5
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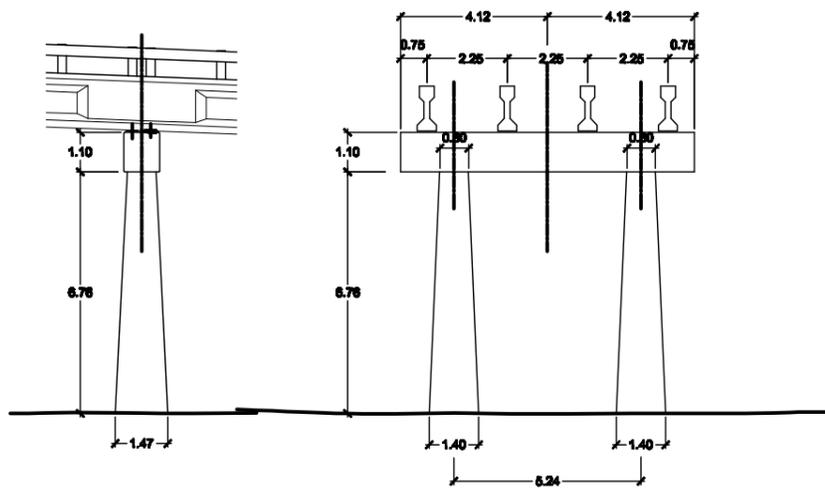
SECTION STEEL TRUSS SPAN
Scale 1:40 mtr

MEASURE SURVEY OF LILOAN BRIDGE

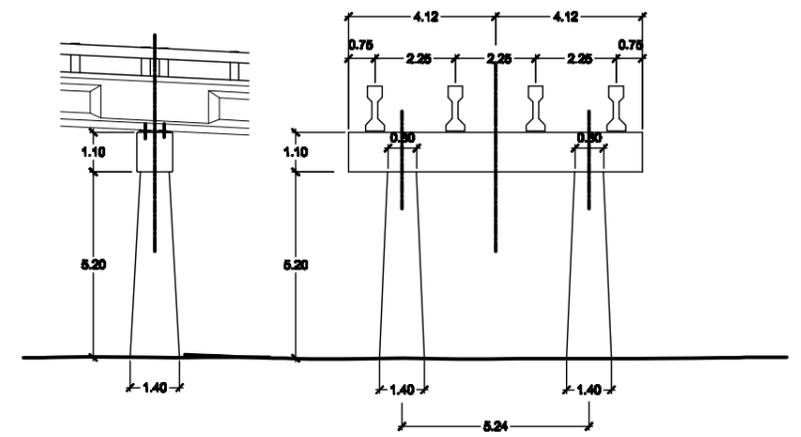




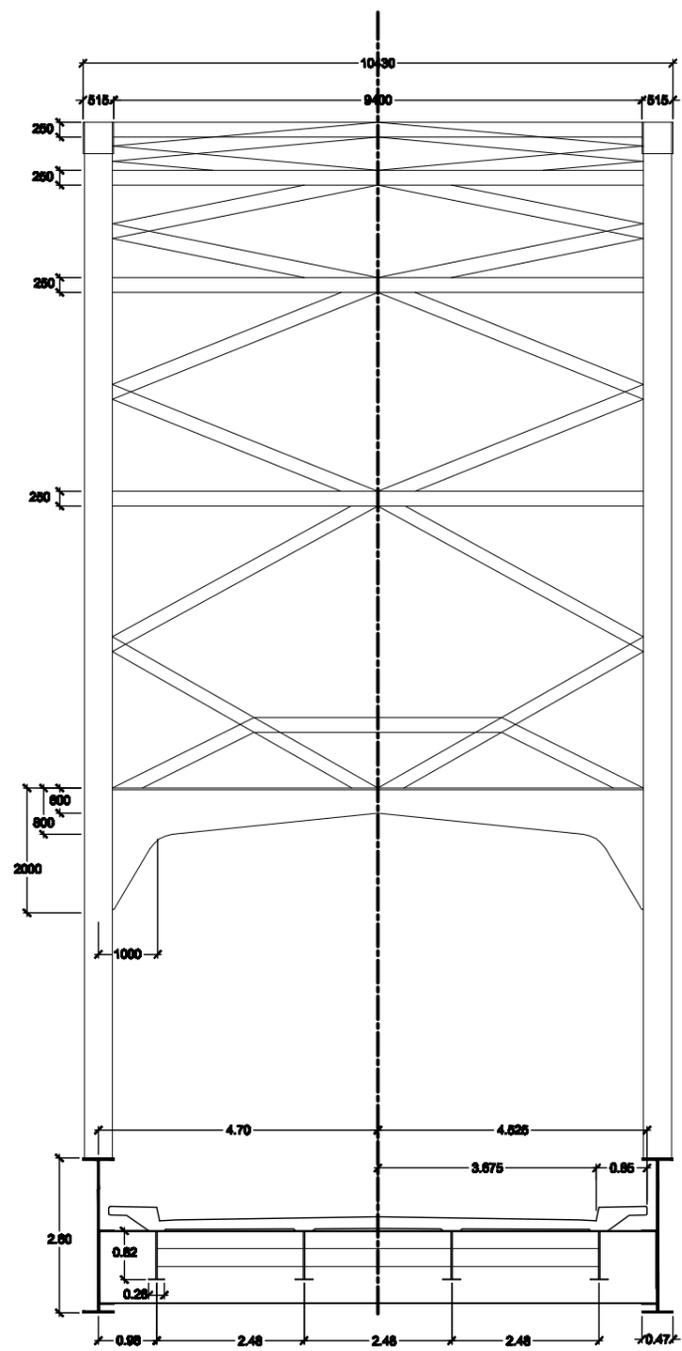
DETAIL OF PIER 4
Scale 1:100 mts



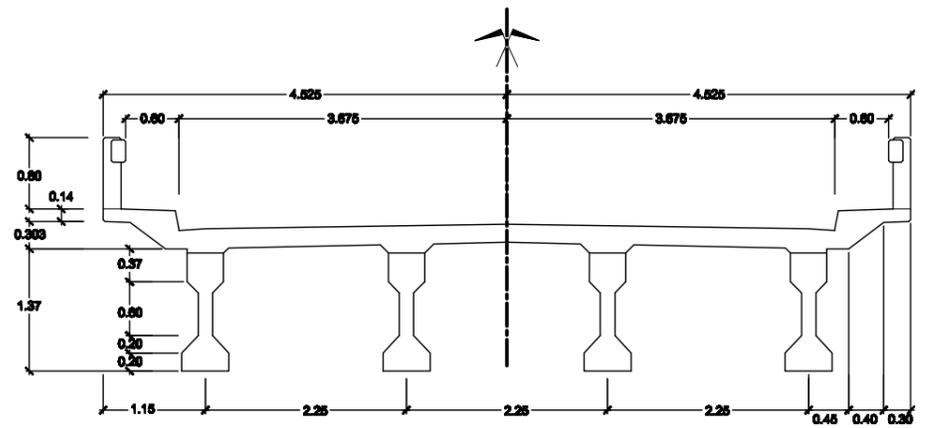
DETAIL OF PIER 5
Scale 1:100 mts



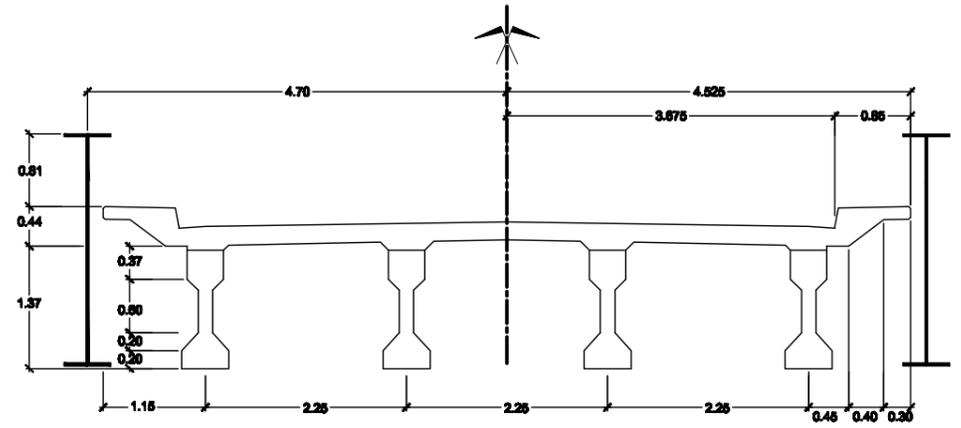
DETAIL OF PIER 6
Scale 1:100 mts



SECTION STEEL TRUSS SPAN
Scale 1:50 mtr



SECTION of SPAN 2 to SPAN 7
Scale 1:40 mtr



SECTION of MAIN SPAN
Scale 1:40 mtr

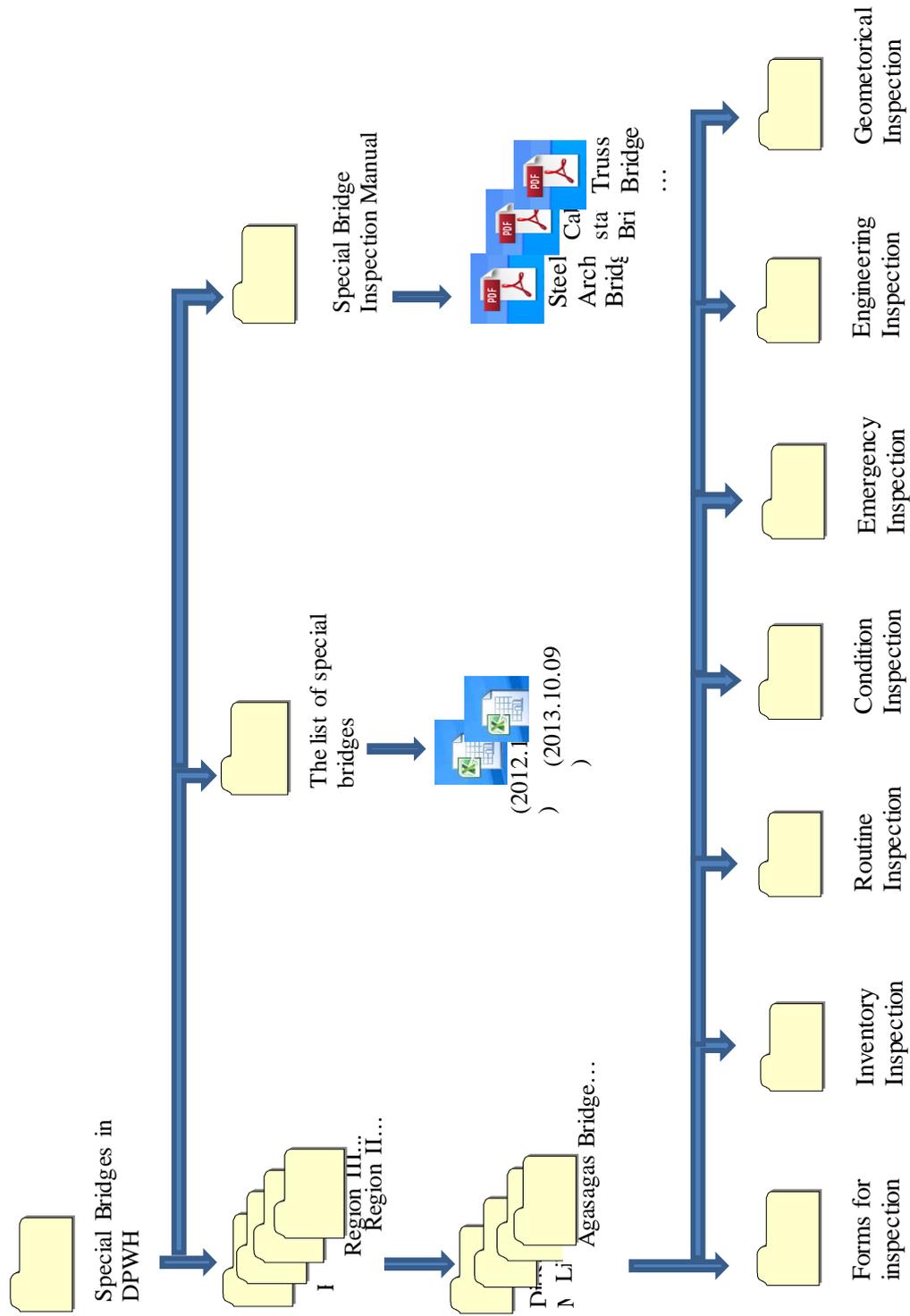
APPENDIX C

FLOWCHART

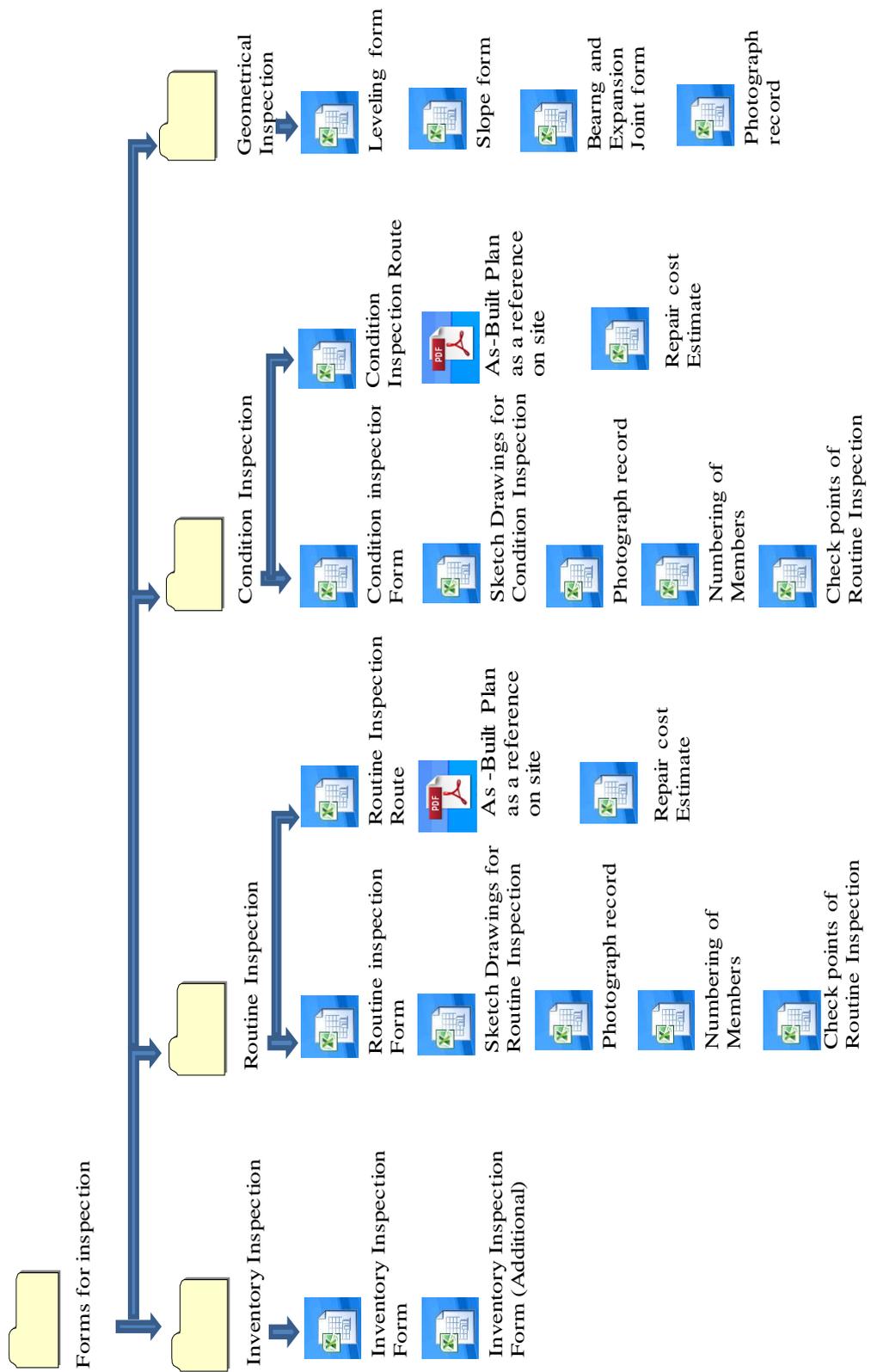
FOR SPECIAL BRIDGE

INVENTORY DATABASE

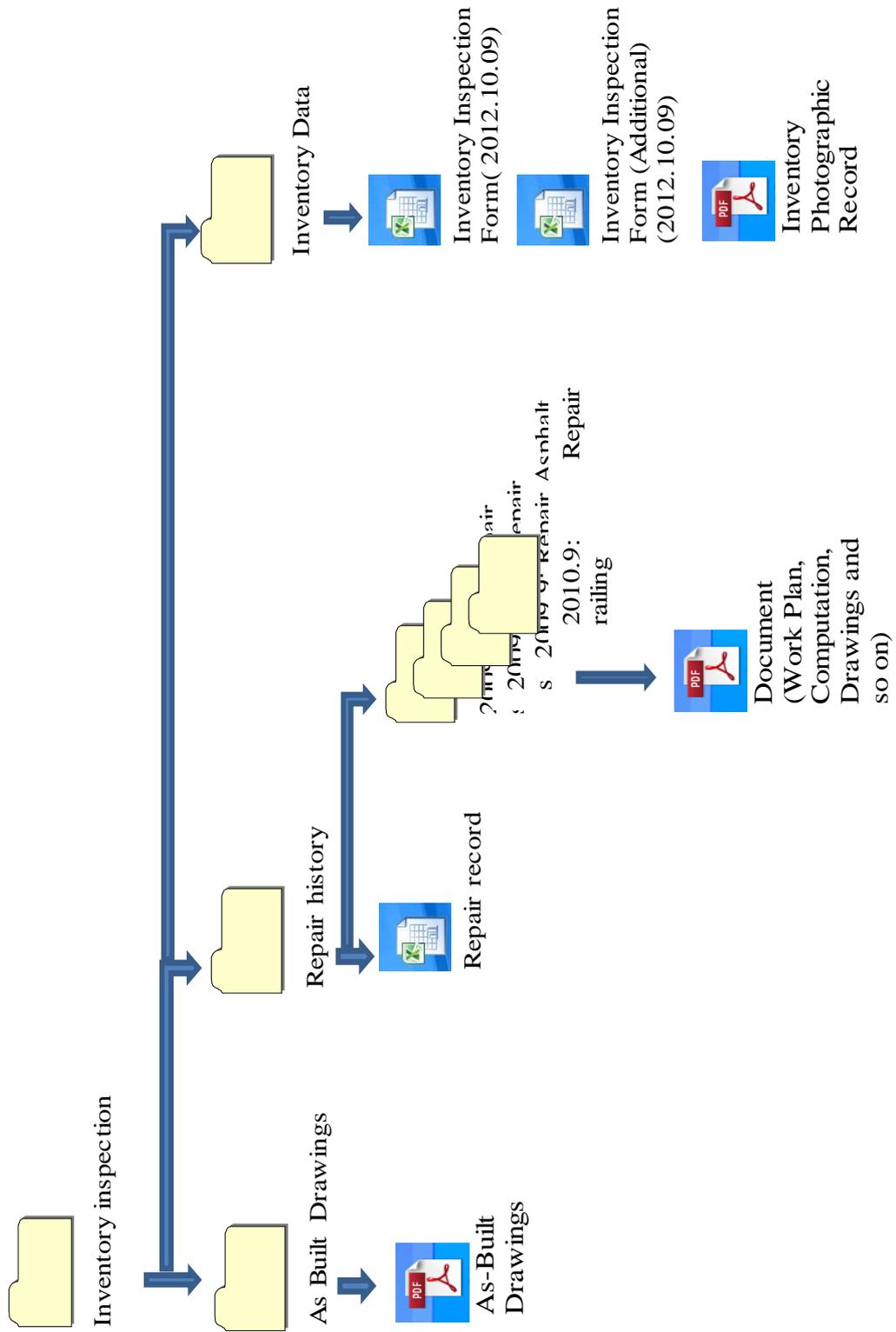
Appendix C
Special Bridge Inventory Database (1 of 5)



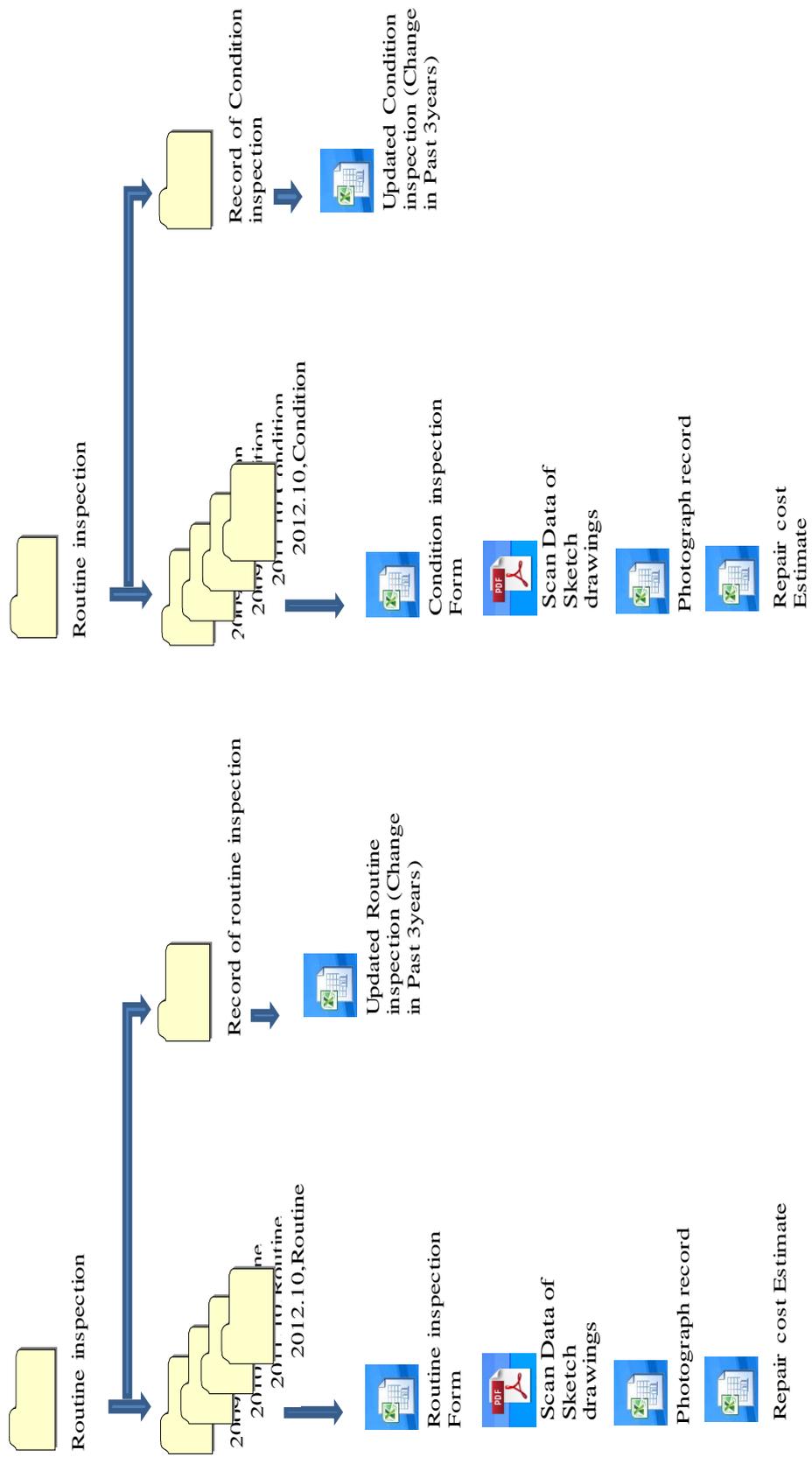
Appendix C Special Bridge Inventory Database (2 of 5)



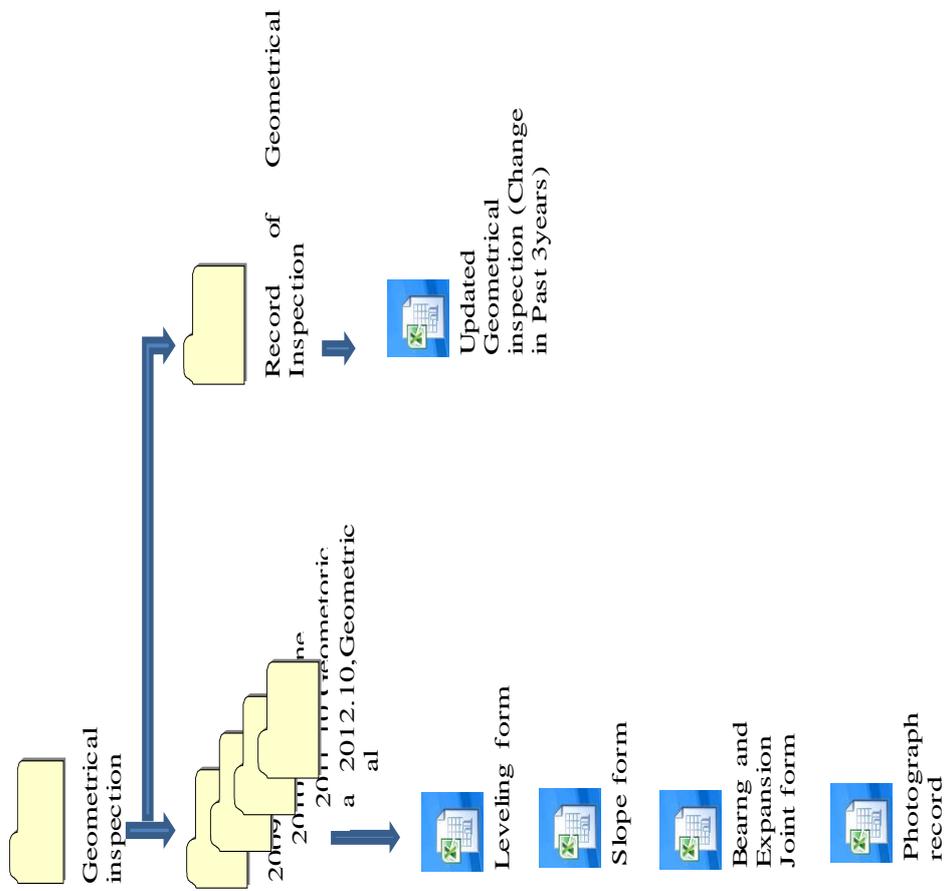
**Appendix C
Special Bridge Inventory Database (3 of 5)**



Appendix C Special Bridge Inventory Database (4 of 5)



**Appendix C
Special Bridge Inventory Database (5 of 5)**



APPENDIX D

ASPHYXIA AND LOW OXYGEN



APPENDIX D

ASPHYXIA AND LOW OXYGEN

When inspectors enter into a hollow portion of a bridge member like box girder, tower, box shape chord and so on, oxygen density in these members should be detected first. Normally, the volume of oxygen level in the air is 20.90%. Any depletion of this normal oxygen level in the air must be treated with concern. As a minimum, 19.50% concentration should be maintained and be defined as workable oxygen level. Atmosphere containing less than 18% oxygen level on the other hand should be defined as potentially dangerous for humans.

Asphyxia or asphyxiation as a result of oxygen depletion can take place on a gradual or sudden basis. It is a little known fact that inhalation of a gas containing low oxygen can result in immediate unconsciousness or rapid death.

Table D-1
Signs and Symptoms of Asphyxia

Oxygen Content of Air	Signs and Symptoms of Asphyxia
18-19.5%	May affect physical and intellectual performance without person's knowledge
15-18%	Decreased ability to work strenuously. May impair coordination and induce early symptoms in persons with coronary pulmonary or circulatory problem.
12-15%	Respiration and pulse increase, impaired coordination, perception and judgment occur.
10-12%	Respiration further increases in rate and depth, poor judgment and bluish lips occur.
8-10%	Mental failure, nausea, vomiting, fainting, unconscious, an ash-colored face, blue lips.
6-8%	Loss of consciousness within a few minutes, resuscitation possible if carried out immediately
0-6%	Loss of consciousness almost immediate, death ensues, brain damage even if rescued

Usually there is little risk of low oxygen in the areas inside bridge members. However, some situations like accumulation of dirty water, vegetation, carcass of animals, dropping of birds, cause depletion of oxygen inside bridge members. Therefore, inspector should prepare gas detector before inspection and be trained correct in the use of detection equipment. A typical oxygen depletion detector should be calibrated in air so that 20.9 % volume oxygen is displayed in clean air environments. And usually, the detector has an alarm system when oxygen is below 19.5% and 18%. Inspectors in an area where an oxygen depletion risk exists should evacuate immediately once device emit a low oxygen alarm. When oxygen density is low inside the members, windows should be kept opened for more than one day and measured again. When oxygen density is still low, another solution like installation of ventilation by fan should be considered.

APPENDIX E

BRIDGE ROUTINE INSPECTION FORM AND SKETCH DRAWINGS

**Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM**

BRIDGE ROUTINE INSPECTION FORM (TYPE 1)

DIOSDADO MACAPAGAL BRIDGE

Deptment of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
FOR
DIOSDADO MACAPAGAL BRIDGE (CABLE STAYED BRIDGE)
BRIDGE ROUTINE INSPECTION FORM (TYPE 1)

LOCATION		BRIDGE DESCRIPTION															
BRIDGE ID		Type of Bridge															
Bridge Name	Diosdado Macapagal Bridge	Superstructure															
Road Name		Substructure															
Road ID		Foundation															
Section ID		Total Number of Span															
Location		Total Number of Abutment															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 25%; padding: 5px;">Region</td><td></td></tr> <tr><td style="padding: 5px;">Province</td><td></td></tr> <tr><td style="padding: 5px;">Congressional District</td><td></td></tr> <tr><td style="padding: 5px;">Engineering District</td><td></td></tr> <tr><td style="padding: 5px;">Municipality</td><td></td></tr> <tr><td style="padding: 5px;">Barangay</td><td></td></tr> <tr><td style="padding: 5px;">River Name</td><td></td></tr> </table>		Region		Province		Congressional District		Engineering District		Municipality		Barangay		River Name		Total Number of Pier	
Region																	
Province																	
Congressional District																	
Engineering District																	
Municipality																	
Barangay																	
River Name																	
		Date of Routine Inspection															
		ACCOMPLISHED BY:															
		SUBMITTED BY:															

Insert Name, Position, Signature and Date of Signing
Initial all other pages

Summary of Routine Inspection Results

Bridge ID.

Bridge Name

Main Bridge (Cable Stayed Bridge)

Bridge members	Feb 2015		May 2015		Aug 2015		Nov 2015	
	Routine Rating	Required Action						
Stay Cable								
Tower								
Steel Box Girder								
Steel Deck Slab								
Asphalt Wearing Surface								
Expansion Joint								
Railing								
Drainage System								
Signage								
Abutment								
Pier								

Approach Viaduct

Bridge members	Feb 2015		May 2015		Aug 2015		Nov 2015	
	Routine Rating	Required Action						
Steel I Girder								
Concrete Deck Slab								
Asphalt Wearing Surface								
Expansion Joint								
Railing								
Drainage System								
Signage								
Abutment								
Pier								

Note: The worst condition rating should be selected and its corresponding action for each bridge member as shown in the Inspection Results in pages from 5 of 13 to 13 of 13.

REPAIR RECORD

Bridge ID.

Bridge Name

ROUTINE MAINTENANCE

DATE	ROUTINE MAINTENANCE			IMPLEMENTATION				INSPECTOR COMMENTS
	TYPE	SCOPE	COST	START	COMPLETION	DURATION	STATUS	
Low Chainage Approach Viaduct A1 to P8 Davao city side								
Main Bridge Cable Stay P8 to P10								
High Chainage Approach Viaduct P10 to A2 Butuan Airport side								

LEGEND:	TYPE OF MAINTENANCE A - Repair damage B - Protective measures C - Strengthen D - Replace E - None	ROUTINE MAINTENANCE ACTIVITY A - Sweeping and cleaning B - Repairs to Pavement C - Repairs to concrete component D - Repairs to steel component E - Painting bridge components F - Replace/install bolts G - Others (Specify)
----------------	--	--

Bridge ID.

Inspection Results

Bridge Name

From Bridge Roadway Level (1) S1~S2 (A1~P2)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Asphalt Wearing Surface	Potholes					Patching and Cleaning		
	Shoving							
	Rutting							
	Cracking							
	Raveling							
	Others							
Expansion Joint	Accumulation of Dirt					Sweeping and Cleaning of Expansion Joint at the Bridge Deck		
	Abnormal space/noise, Rupture							
Sidewalk	Unevenness					Patching and Cleaning		
	Cracking							
	Others							
Railing	Impact/Accident Damage					Repairs to steel component Cleaning of steel component Repainting		
	Missing Railings							
	Corrosion							
	Paint Peel off							
	Others							
Drainage System	Accumulation of Dirt					Sweeping and Cleaning of Drainage		
Signage	Improper Signage					Cleaning, correction, replacement/transfer of signages.		
	Incorrect Location Visibility							
	Not Good Condition							
	Unclear Lettering							

Routine Maintenance Rating	
Routine Rating	Condition
Good	No damage
Fair	Minor damage(s) not affecting the stability of the structure
Poor	Deteriorating damage(s) which should be repaired, as a preventive action
Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party

Required Maintenance Actions	
Routine Maintenance Action Required	Condition
M: Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
RM: Routine Maintenance	Should be maintained by Routine Maintenance
MM: Major Maintenance	Should be repaired by Major Maintenance
EA: Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party

Note: The Defect item defined as "Others" refers to the presence of trash, soil debris, graffiti, posters and lush vegetation.

Note: EA should be written with Red ink

From Ground Level under the bridge (1) S1~S2 (A1~P2)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Abutment	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Pier	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Deck Slab	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
Steel I Girder	Corrosion					Repairs to Steel component		
	Weathering steel							
	Loose connection/Bolt loss							
	Water Leakage							

Remarks

Note: Attach sketch of the defects.

Bridge ID.

Bridge Name

Inspection Results

Diosdado Macapagal

From Bridge Roadway Level (1) S3~S5 (P2~P5)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Asphalt Wearing Surface	Potholes					Patching and Cleaning		
	Shoving							
	Rutting							
	Cracking							
	Raveling							
	Others							
Expansion Joint	Accumulation of Dirt					Sweeping and Cleaning of Expansion Joint at the Bridge Deck		
	Abnormal space/noise, Rupture							
Sidewalk	Unevenness					Patching and Cleaning		
	Cracking							
	Others							
Railing	Impact/Accident Damage					Repairs to steel component Cleaning of steel component Repainting		
	Missing Railings							
	Corrosion							
	Paint Peel off							
	Others							
Drainage System	Accumulation of Dirt					Sweeping and Cleaning of Drainage		
Signage	Improper Signage					Cleaning, correction , replacement/transfer of signages.		
	Incorrect Location Visibility							
	Not Good Condition							
	Unclear Lettering							

Note: The Defect item defined as "Others" refers to the presence of trash, soil debris, graffiti, posters and lush vegetation.

Routine Maintenance Rating	
Routine Rating	Condition
Good	No damage
Fair	Minor damage(s) not affecting the stability of the structure
Poor	Deteriorating damage(s) which should be repaired, as a preventive action
Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party

Required Maintenance Actions	
Routine Maintenance Action Required	Condition
M: Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
RM: Routine Maintenance	Should be maintained by Routine Maintenance
MM: Major Maintenance	Should be repaired by Major Maintenance
EA: Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party

Note: EA should be written by Red ink

From Ground Level under the bridge (1) S3~S5 (P2~P5)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Abutment	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Pier	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Deck Slab	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
Steel I Girder	Corrosion					Repairs to Steel component		
	Weathering steel							
	Loose connection/Bolt loss							
	Water Leakage							

Note: Attach sketch of the defects.

Remarks

Bridge ID.

Inspection Results

Bridge Name

Diosdado Macapagal

From Bridge Roadway Level (1) S6~S8 (P5~P8)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Asphalt Wearing Surface	Potholes					Patching and Cleaning		
	Shoving							
	Rutting							
	Cracking							
	Raveling							
	Others							
Expansion Joint	Accumulation of Dirt					Sweeping and Cleaning of Expansion Joint at the Bridge Deck		
	Abnormal space/noise, Rupture							
Sidewalk	Unevenness					Patching and Cleaning		
	Cracking							
	Others							
Railing	Impact/Accident Damage					Repairs to steel component Cleaning of steel component Repainting		
	Missing Railings							
	Corrosion							
	Paint Peel off							
	Others							
Drainage System	Accumulation of Dirt					Sweeping and Cleaning of Drainage		
Signage	Improper Signage					Cleaning, correction , replacement/transfer of signages.		
	Incorrect Location Visibility							
	Not Good Condition							
	Unclear Lettering							

Routine Maintenance Rating

Routine Rating	Condition
Good	No damage
Fair	Minor damage(s) not affecting the stability of the structure
Poor	Deteriorating damage(s) which should be repaired, as a preventive action
Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party

Required Maintenance Actions

Routine Maintenance Action Required	Condition
M: Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
RM: Routine Maintenance	Should be maintained by Routine Maintenance
MM: Major Maintenance	Should be repaired by Major Maintenance
EA: Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party

Note: The Defect item defined as "Others" refers to the presence of trash, soil debris, graffiti, posters and lush vegetation.

Note: EA should be written by Red ink

From Ground Level under the bridge (1) S6~S8 (P5~P8)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Abutment	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Pier	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Deck Slab	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
Steel I Girder	Corrosion					Repairs to Steel component		
	Weathering steel							
	Loose connection/Bolt loss							
	Water Leakage							

Remarks

Note: Attach sketch of the defects.

Inspection Results

Bridge ID.

Bridge Name

Diosdado Macapagal

From Bridge Roadway Level (4) S9~S10 (P8~P10)

Bridge members	Defects	Routine Rating				Action			Routine Maintenance Rating	
		Right		Left		Action	Right	Left	Routine Rating	Condition
		Number of defects	Rating	Number of defects	Rating					
Cable and Anchorage	Abnormal Condition					To proceed Engineering Inspection			Good	No damage
	Vegetation									
	Water Leakage									
Tower	Rebar Exposure					Repairs to steel component and To proceed Engineering Inspection			Fair	Minor damage(s) not affecting the stability of the structure
	Water Leakage									
Asphalt Wearing Surface	Potholes					Patching and Cleaning			Poor	Deteriorating damage(s) which should be repaired, as a preventive action
	Shoving									
	Rutting									
	Cracking								Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party
	Raveling									
	Others									
Expansion Joint	Accumulation of Dirt					Sweeping and Cleaning of Expansion Joint at the Bridge Deck			Required Maintenance Actions	
	Abnormal space/noise, Rupture								Routine Maintenance Action Required	Condition
Sidewalk	Unevenness					Patching and Cleaning			M: Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
	Cracking								RM: Routine Maintenance	Should be maintained by Routine Maintenance
	Others								MM: Major Maintenance	Should be repaired by Major Maintenance
Railing	Impact/Accident Damage					Repairs to steel component Cleaning of steel component Repainting			EA: Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party
	Missing Railings								Note: EA should be written by Red ink	
	Corrosion									
	Paint Peel off									
	Others									
Drainage System	Accumulation of Dirt					Sweeping and Cleaning of Bridge Deck			Remarks	
Signage	Improper Signage					Cleaning, correction, replacement/transfer of signages.				
	Incorrect Location Visibility									
	Not Good Condition									
	Unclear Lettering									

Note: The Defect item defined as "Others" refers to the presence of trash, soil debris, graffiti, posters and lush vegetation.

Note: Attach sketch of the defects.

Bridge ID.

Inspection Results

Bridge Name

From Bridge Roadway Level (1) S11~S13 (P10~A2)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Asphalt Wearing Surface	Potholes					Patching and Cleaning		
	Shoving							
	Rutting							
	Cracking							
	Raveling							
	Others							
Expansion Joint	Accumulation of Dirt					Sweeping and Cleaning of Expansion Joint at the Bridge Deck		
	Abnormal space/noise, Rupture							
Sidewalk	Unevenness					Patching and Cleaning		
	Cracking							
	Others							
Railing	Impact/Accident Damage					Repairs to steel component Cleaning of steel component Repainting		
	Missing Railings							
	Corrosion							
	Paint Peel off							
	Others							
Drainage System	Accumulation of Dirt					Sweeping and Cleaning of Drainage		
Signage	Improper Signage					Cleaning, correction, replacement/transfer of signages.		
	Incorrect Location Visibility							
	Not Good Condition							
	Unclear Lettering							

Routine Maintenance Rating	
Routine Rating	Condition
Good	No damage
Fair	Minor damage(s) not affecting the stability of the structure
Poor	Deteriorating damage(s) which should be repaired, as a preventive action
Bad	Severe damage(s) affecting the stability of the structure or has possibility to harm a third party

Required Maintenance Actions	
Routine Maintenance Action Required	Condition
M: Monitoring	No repair work and keep monitoring (Damage not progressing or very slow)
RM: Routine Maintenance	Should be maintained by Routine Maintenance
MM: Major Maintenance	Should be repaired by Major Maintenance
EA: Emergency Action	Need to take actions immediately to avoid bridge collapse or harm a third party

Note: The Defect item defined as "Others" refers to the presence of trash, soil debris, graffiti, posters and lush vegetation.

Note: EA should be written by Red ink

From Ground Level under the bridge (1) S11~S13 (P10~A2)

Bridge members	Defects	Routine Rating				Action		
		Right		Left		Action	Right	Left
		Number of defects	Rating	Number of defects	Rating			
Abutment	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Pier	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
	Settlement							
Deck Slab	Rebar Exposure					Repairs to concrete component		
	Water Leakage							
Steel I Girder	Corrosion					Repairs to Steel component		
	Weathering steel							
	Loose connection/Bolt loss							
	Water Leakage							

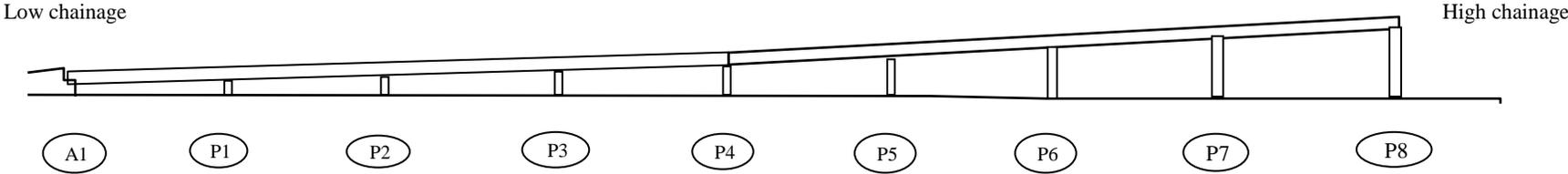
Remarks

Note: Attach sketch of the defects.

Sketch Drawings for Routine Inspection

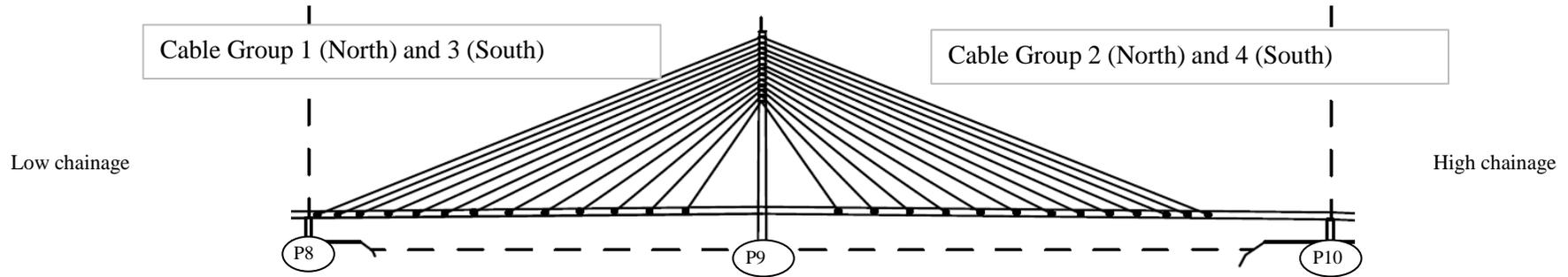
NOTE: Print in A3 size for usage at site

Sketch of Bridge Routine Inspection (1 of 8) Diosdado Macapagal Bridge



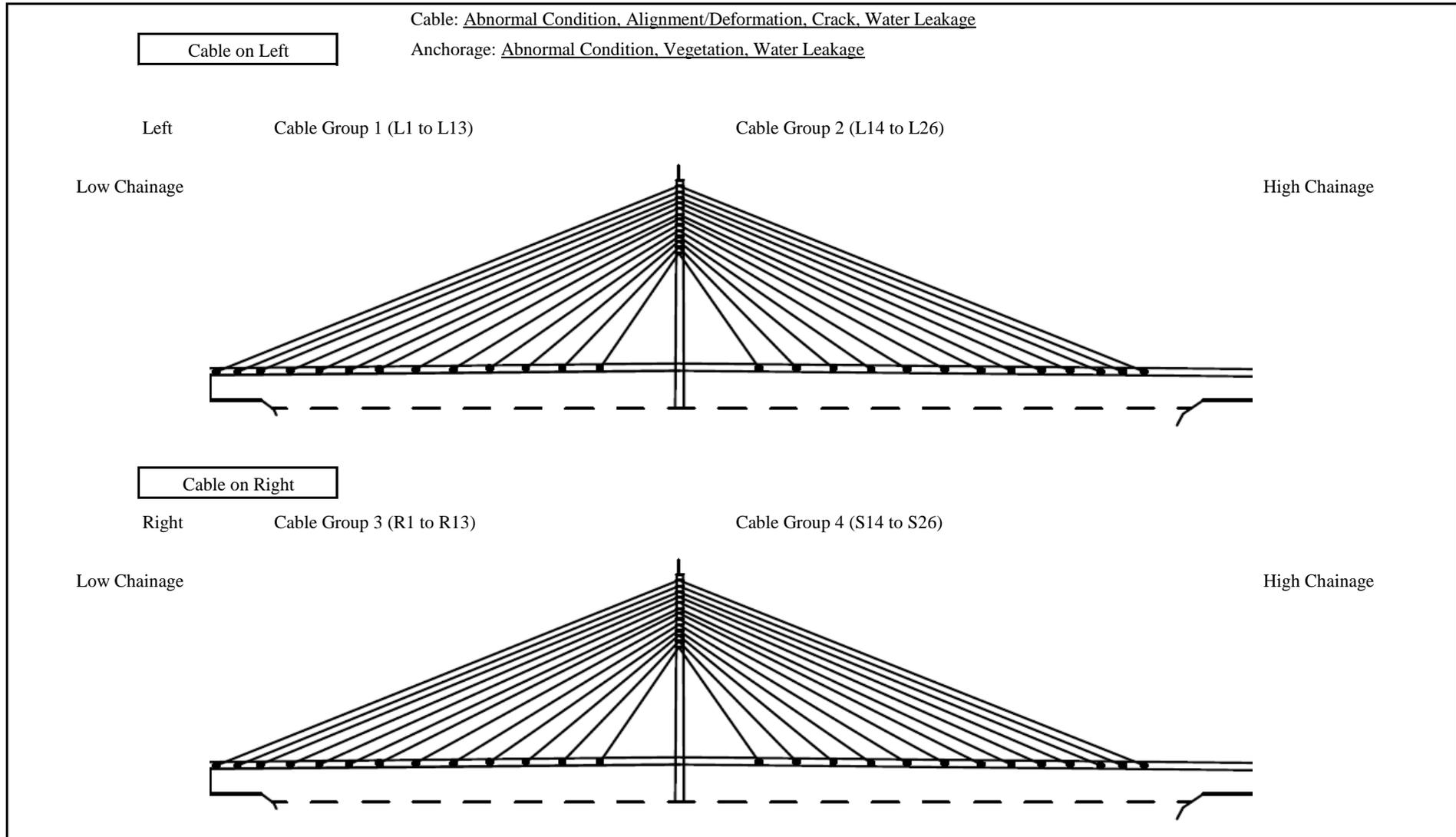
Railing	Impact/Accident Damage, Missing Railings, Paint Peel-off and Others (refers to the presence of trash, graffiti, posters and lush vegetation.)
Asphalt Wearing Surface, Drainage, Expansion Joint and Signage	Asphalt Wearing Surface: <u>Potholes, Cracking and Others</u> Sidewalk: <u>Unevenness, Cracking and Others</u> Drainage & Expansion Joint: <u>Accumulation of Dirt, Water Leakage, Abnormal Space/Noise</u> Signage: <u>Incorrect Location Visibility, Not Good Condition</u>
Route → Expansion Joint Route ←	
Railing	

Sketch of Bridge Routine Inspection (2 of 8) Diosdado Macapagal Bridge

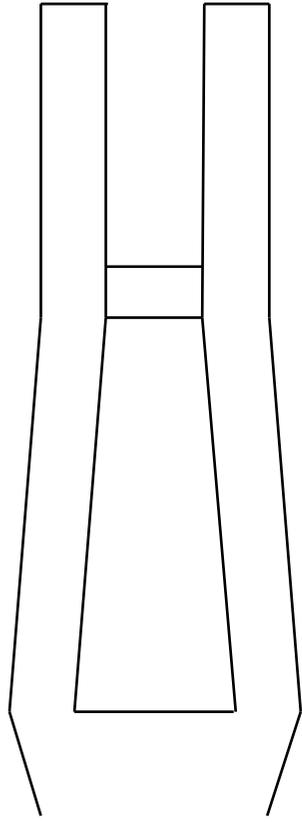
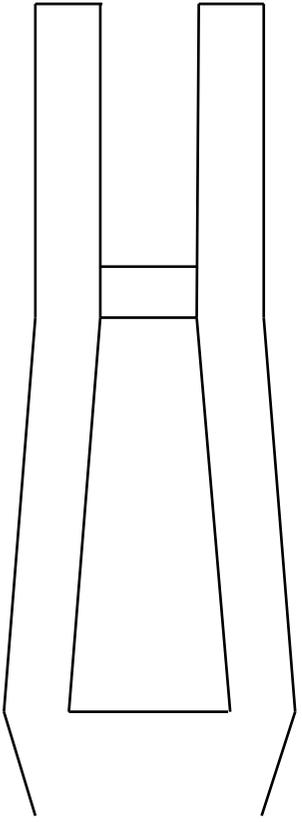
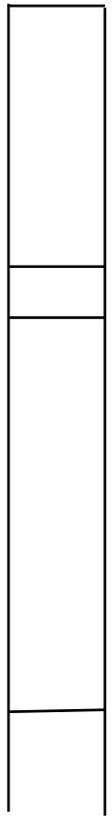
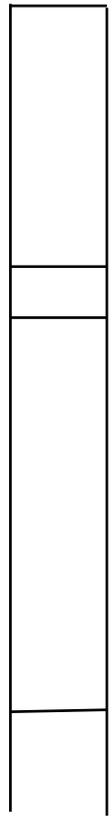
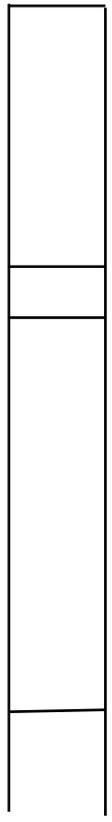
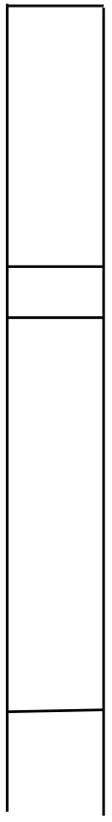


Railing	Impact/Accident Damage, Missing Railings, Paint Peel Off and Others (which refers to the presence of trash, graffiti, posters and lush vegetation.)
Asphalt Wearing Surface, Drainage, Expansion Joint and Signage	Asphalt Wearing Surface: <u>Potholes, Cracking and Others</u> Sidewalk: <u>Unevenness, Cracking and Others</u> Drainage & Expansion Joint: <u>Accumulation of dirt, Water leakage, Abnormal space/noise</u> Signage: <u>Incorrect Location Visibility, Not Good Condition</u>
Railing	

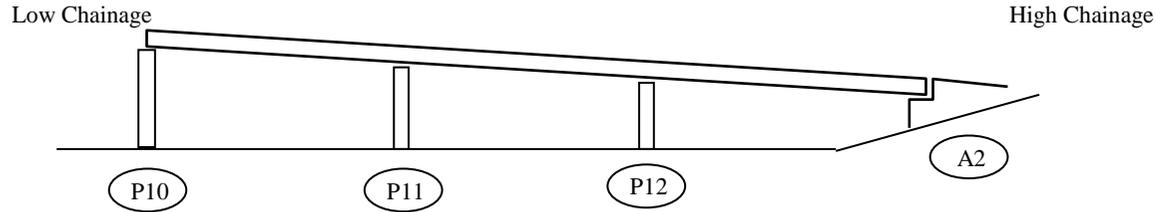
Sketch of Bridge Routine Inspection (3 of 8)
Diosdado Macapagal Bridge

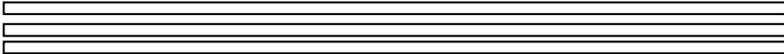
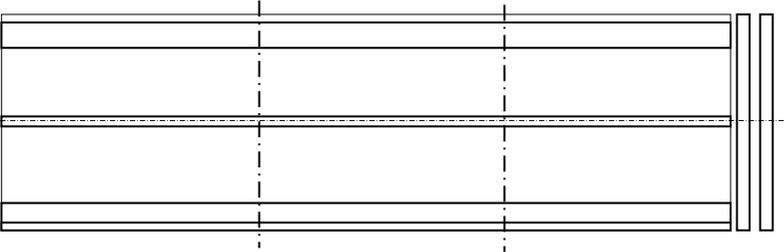


Sketch of Bridge Routine Inspection (4 of 8)
Diosdado Macapagal Bridge

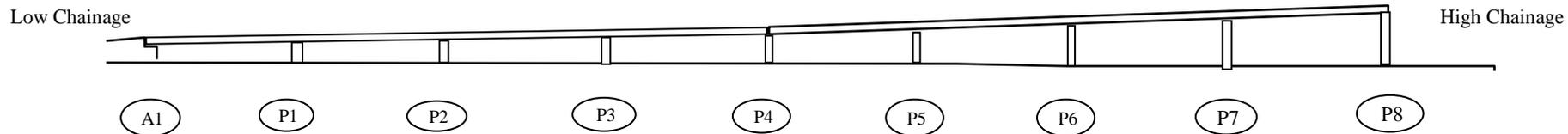
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Low Chainage	High Chainage	Right Tower		Left Tower	
		Right Side	Left Side	Right Side	Left Side
					

Sketch of Bridge Routine Inspection (5 of 8) Diosdado Macapagal Bridge



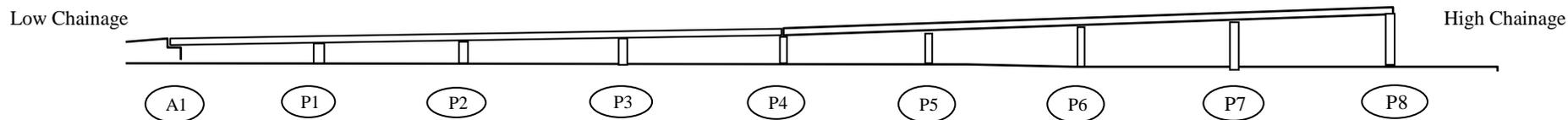
Railing	Impact/Accident Damage, Missing Railings, Paint Peel-off and Others (refers to the presence of trash, graffiti, posters and lush vegetation.)	
		
Asphalt Wearing Surface, Drainage, Expansion Joint and Signage	Asphalt Wearing Surface: <u>Potholes, Cracking and Others</u> Sidewalk: <u>Unevenness, Cracking and Others</u> Drainage & Expansion Joint: <u>Accumulation of Dirt, Water Leakage, Abnormal Space/Noise</u> Signage: <u>Incorrect Location Visibility, Not Good Condition</u>	
Expansion Joint		Expansion Joint
Railing		

Sketch of Bridge Routine Inspection (6 of 8) Diosdado Macapagal Bridge



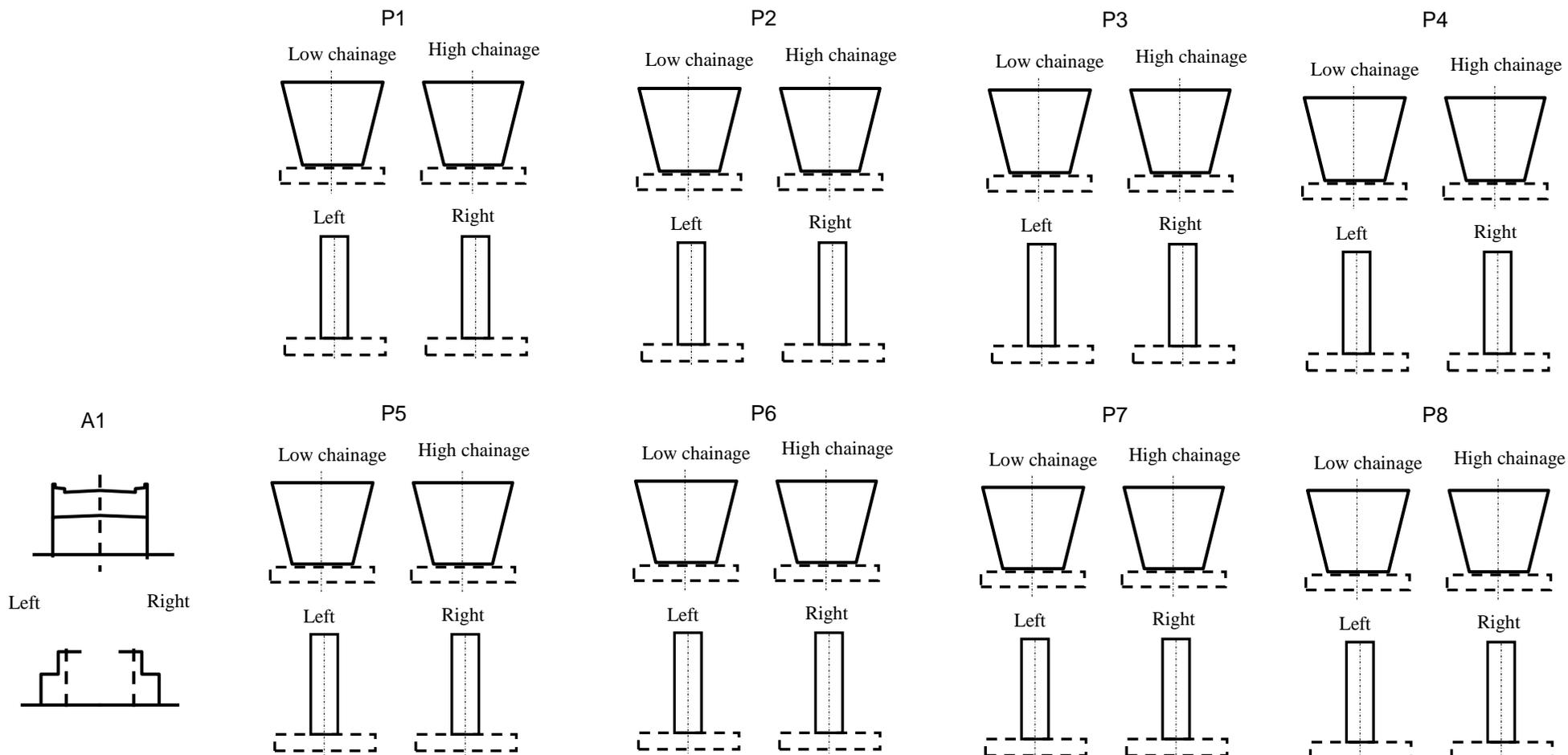
	A1	P1	P2	P3	P4	P5	P6	P7	P8
Deck Slab	Girder and Beam: <u>Corrosion, Weathering Steel, Loose Connection</u> Deck Slab: <u>Rebar Exposure, Water Leakage</u>								
Girder									
Beams									

Sketch of Bridge Routine Inspection (7 of 8) Diosdado Macapagal Bridge

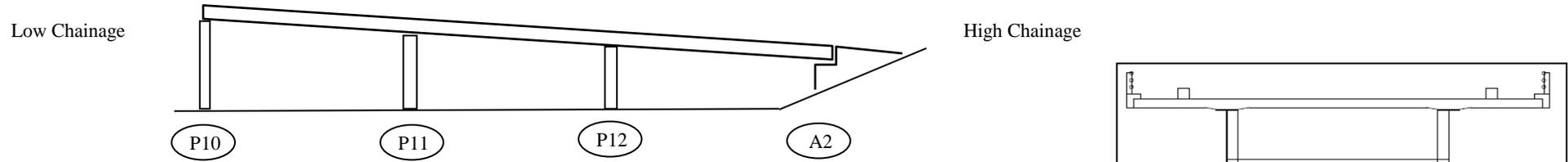


Pier and Abutment

Abutment and Pier: Rebar Exposure, Settlement and Water Leakage



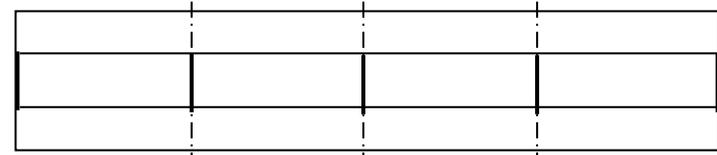
Sketch of Bridge Routine Inspection (8 of 8) Diosdado Macapagal Bridge



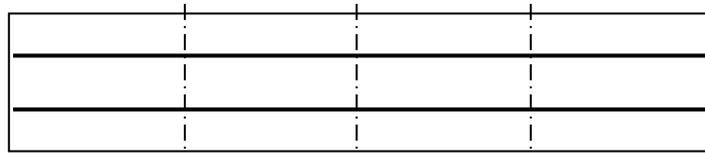
Girder and Beam: Corrosion, Weathering Steel, Loose Connection
 Deck Slab: Rebar Exposure, Water Leakage
 Abutment and Pier: Rebar Exposure, Settlement and Water Leakage

Deck Slab

Beam



Girder

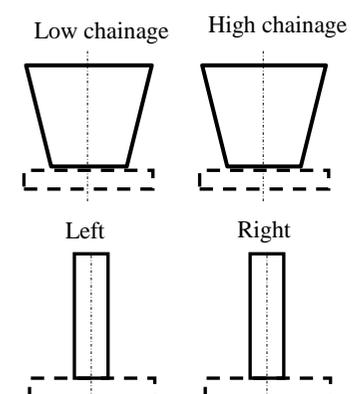
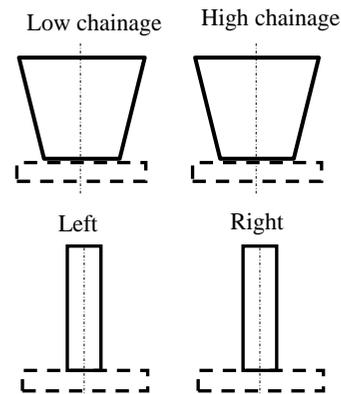
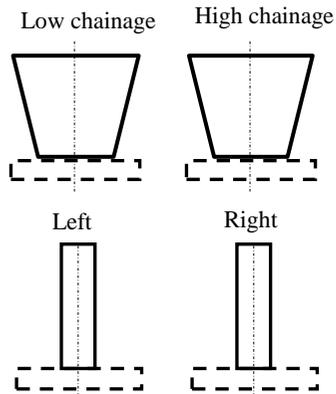
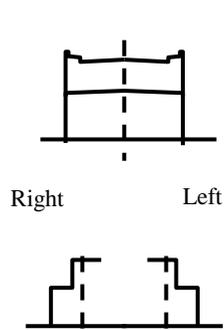


A2

P10

P11

P12



APPENDIX F

BRIDGE CONDITION INSPECTION FORM AND SKETCH DRAWINGS

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

BRIDGE CONDITION INSPECTION FORM (TYPE 2)

DIOSDADO MACAPAGAL BRIDGE

Deptment of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
FOR
DIOSDADO MACAPAGAL BRIDGE (CABLE STAYED BRIDGE)
BRIDGE CONDITION INSPECTION FORM (TYPE 2)

LOCATION	
BRIDGE ID	
Bridge Name	Diosdado Macapagal Bridge
Road Name	
Road ID	
Section ID	
Location	
Region	
Province	
Congressional District	
Engineering District	
Municipality	
Barangay	
River Name	

Insert Name, Position, Signature and Date of Signing
 Initial all other pages

BRIDGE DESCRIPTION	
Type of Bridge	
Superstructure	
Substructure	
Foundation	
Total Number of Span	
Total Number of Abutment	
Total Number of Pier	

Date of Routine Inspection	
ACCOMPLISHED BY:	
SUBMITTED BY:	

REPAIR RECORD

Bridge ID.

Bridge Name

MAJOR MAINTENANCE

DATE	MAJOR MAINTENANCE			IMPLEMENTATION				INSPECTOR COMMENTS
	TYPE	SCOPE	COST	START	COMPLETION	DURATION	STATUS	

ROUTINE MAINTENANCE

DATE	ROUTINE MAINTENANCE			IMPLEMENTATION				INSPECTOR COMMENTS
	TYPE	SCOPE	COST	START	COMPLETION	DURATION	STATUS	

LEGEND:	MAJOR MAINTENANCE TYPE A - Repair damage B - Protective measures C - Strengthen D - Replace E - None	ROUTINE MAINTENANCE ACTIVITY A - Sweeping and cleaning B - Repairs to pavement C - Repairs to concrete component D - Repairs to steel component E - Painting bridge components F - Replace/install bolts G - Others (Specify)
----------------	---	--

SUMMARY

Bridge ID.

Bridge Name

Diosdado Macapagal Bridge

BRIDGE CONDITION

OVERALL CONDITION

Good	
Fair	
Poor	
Bad	

REASONS FOR RECOMMENDATION

Bridge inadequate for traffic	
Bridge alignment	
Flooding	
Safety	
Bridge Deterioration	
Scour and erosion	
Excessive maintenance required	
Inadequate load capacity	
No bridge - bridge required	
Other	

RECOMMENDED ACTION

Routine maintenance only	
Major maintenance	
Upgrading	
Replacement	
Emergency repair work	

Up to three (3) options may be selected.

BRIDGE INSPECTOR COMMENT

TYPE OF BRIDGE

Special Bridge	
----------------	--

ESTIMATED REMAINING BRIDGE LIFE

Years	
-------	--

Remaining life of bridge shall be assessed in the range of 0-50 years

BRIDGE SURVEYED?

Yes		
No		

REASON FOR NO SURVEY

Bridgeworks in progress	
Access restricted	
Affected by natural disaster	
No reason	
Other, insert reason	

LEVEL OF INSPECTION

Complete inspection	
Partial inspection only:	
BIV not available	
Other reason	

ROUTINE MAINTENANCE

This section requires the bridge inspector to provide cost estimates for the routine maintenance of the entire bridge for the following budget year.

Routine maintenance activity	P	Estimated Cost
Sweeping and cleaning	P	
Repairs to pavement	P	
Repairs to concrete component	P	
Repairs to steel component	P	
Painting bridge components	P	
Re;lace/install bolts	P	
Others(Specify)	P	
Total Estimated Cost	P	

SUMMARY

Bridge ID.

Bridge Name

Diosdado Macapagal Bridge

MAJOR MAINTENANCE

This section requires the bridge inspector to provide cost estimates for the major maintenance of the entire bridge

Element	No.	place	Estimated cost	Type and recommended works
SPAN NO.	1	A1 - P1		
SPAN NO.	2	P1 - P2		
SPAN NO.	3	P2 - P3		
SPAN NO.	4	P3 - P4		
SPAN NO.	5	P4 - P5		
SPAN NO.	6	P5 - P6		
SPAN NO.	7	P6 - P7		
SPAN NO.	8	P7 - P8		
SPAN NO.	9	P8 - P9		
SPAN NO.	10	P9 - P10		
SPAN NO.	11	P10 - P11		
SPAN NO.	12	P11 - P12		
SPAN NO.	13	P12 - P13		
CABLE GROUP NO.	1	N1 - N13		
CABLE GROUP NO.	2	N14 - N26		
CABLE GROUP NO.	3	S1 - S13		
CABLE GROUP NO.	4	S14 - S26		

Element	No.	place	Estimated cost	Type and recommended works
PIER NO.	2	P2		
PIER NO.	3	P3		
PIER NO.	4	P4		
PIER NO.	5	P5		
PIER NO.	6	P6		
PIER NO.	7	P7		
PIER NO.	8	P8		
PIER NO.	9	P9		
PIER NO.	10	P10		
PIER NO.	11	P11		
PIER NO.	12	P12		
ABUTMENT	1	A1		
ABUTMENT	2	A2		

TOTAL ESTIMATED COST:

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Span Element-Condition

SPAN ELEMENT - CONDITION

SPAN No.	1	A1-P1
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	2	P1-P2
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	3	P2-P3
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	4	P3-P4
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	5	P4-P5
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	6	P5-P6
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	7	P6-P7
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	8	P7-P8
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	9	P8-P9
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	10	P9-P10
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	11	P10-P11
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	12	P11-P12
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

SPAN ELEMENT - CONDITION

SPAN No.	13	P12-P13
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
DECK	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
MAIN MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
SECONDARY MEMBER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
LEFT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
RIGHT RAILING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ASPHALT WEARING SURFACE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost:

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Cable Element-Condition

CABLE ELEMENT - CONDITION

Cable Group No. 1

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
CONCRETE PARTS AROUND ANCHORAGE INSIDE TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
CABLE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT GIRDER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

CABLE ELEMENT - CONDITION

Cable Group No. 2

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
CONCRETE PARTS AROUND ANCHORAGE INSIDE TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
CABLE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT GIRDER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

CABLE ELEMENT - CONDITION

Cable Group No. 3

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
CONCRETE PARTS AROUND ANCHORAGE INSIDE TOWER	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
CABLE	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
ANCHORAGE AT TOWER	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
ANCHORAGE AT GIRDER	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	

Total Cost: _____

CABLE ELEMENT - CONDITION

Cable Group No. 4

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
CONCRETE PARTS AROUND ANCHORAGE INSIDE TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
CABLE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT TOWER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
ANCHORAGE AT GIRDER	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Pier Element-Condition

PIER ELEMENT - CONDITION

PIER No.	P1
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	<input type="checkbox"/> 3	Fully assessed	Repair damage	
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures	
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen	
	None	<input type="checkbox"/> 0	assessed	Replace	
	Not Applicable	<input type="checkbox"/>	Not assessed	Other	
			Total Estimated Cost		
BEARING	Immediate	<input type="checkbox"/> 3	Fully assessed	Repair damage	
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures	
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen	
	None	<input type="checkbox"/> 0	assessed	Replace	
	Not Applicable	<input type="checkbox"/>	Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER No.	P2
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ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	<input type="checkbox"/> 3	Fully assessed	Repair damage	
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures	
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen	
	None	<input type="checkbox"/> 0	assessed	Replace	
	Not Applicable	<input type="checkbox"/>	Not assessed	Other	
			Total Estimated Cost		
BEARING	Immediate	<input type="checkbox"/> 3	Fully assessed	Repair damage	
	Within 2 years	<input type="checkbox"/> 2	assessed	Protective measures	
	Within 10 years	<input type="checkbox"/> 1	Partially assessed	Strengthen	
	None	<input type="checkbox"/> 0	assessed	Replace	
	Not Applicable	<input type="checkbox"/>	Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER ELEMENT - CONDITION

PIER No. P5

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER No. P6

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER ELEMENT - CONDITION

PIER No. P8

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
BEARING (Seismic isolation)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
BEARING (Steel Lateral)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
BEARING (Pendulum)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
RESTRAINT	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
EXPANSION JOINT	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	

Total Cost: _____

PIER ELEMENT - CONDITION

PIER No. P9

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING (Seismic isolation)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING (Steel Lateral)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING (Steel Vertical)	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER ELEMENT - CONDITION

PIER No. P10

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
BEARING (Seismic isolation)	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
BEARING (Steel Lateral)	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
BEARING (Pendulum)	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
RESTRAINT	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	
EXPANSION JOINT	Immediate	3	Fully <input type="checkbox"/>	Repair damage	
	Within 2 years	2	assessed <input type="checkbox"/>	Protective measures	
	Within 10 years	1	Partially <input type="checkbox"/>	Strengthen	
	None	0	assessed <input type="checkbox"/>	Replace	
	Not Applicable		Not <input type="checkbox"/>	Other	
			assessed <input type="checkbox"/>	Total Estimated Cost	

Total Cost: _____

PIER ELEMENT - CONDITION

PIER No. P11

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING/ RESTRAINT	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

PIER No. P12

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		
BEARING/ RESTRAINT	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
			Total Estimated Cost		

Total Cost: _____

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Abutment Element-Condition

ABUTMENT ELEMENT - CONDITION (1/4)

ABUTMENT No.	A1
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED		LEVEL OF INSPECTION		TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not	<input type="checkbox"/>	Other		
			assessed		Total Estimated Cost		
FOUNDATION	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not	<input type="checkbox"/>	Other		
			assessed		Total Estimated Cost		
EXPANSION JOINT	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not	<input type="checkbox"/>	Other		
			assessed		Total Estimated Cost		
BEARING	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not	<input type="checkbox"/>	Other		
			assessed		Total Estimated Cost		
LEFT WING WALL	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not	<input type="checkbox"/>	Other		
			assessed		Total Estimated Cost		

ABUTMENT ELEMENT - CONDITION (2/4)

ABUTMENT No. A1

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
RIGHT WING WALL	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
BRIDGE APPROACH	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	

ABUTMENT ELEMENT - CONDITION (3/4)

ABUTMENT No.	A2
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Bridge ID

Bridge Name

ATTRIBUTE	ATTENTION REQUIRED		LEVEL OF INSPECTION		TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
MAIN STRUCTURE	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not assessed	<input type="checkbox"/>	Other		
					Total Estimated Cost		
FOUNDATION	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not assessed	<input type="checkbox"/>	Other		
					Total Estimated Cost		
EXPANSION JOINT	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not assessed	<input type="checkbox"/>	Other		
					Total Estimated Cost		
BEARING	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not assessed	<input type="checkbox"/>	Other		
					Total Estimated Cost		
LEFT WING WALL	Immediate	3	Fully	<input type="checkbox"/>	Repair damage		
	Within 2 years	2	assessed	<input type="checkbox"/>	Protective measures		
	Within 10 years	1	Partially	<input type="checkbox"/>	Strengthen		
	None	0	assessed	<input type="checkbox"/>	Replace		
	Not Applicable		Not assessed	<input type="checkbox"/>	Other		
					Total Estimated Cost		

ABUTMENT ELEMENT - CONDITION (4/4)

ABUTMENT No. A2

Bridge ID

Bridge Name Diosdado Macapagal

ATTRIBUTE	ATTENTION REQUIRED	LEVEL OF INSPECTION	TYPE OF MAJOR MAINTENANCE	ESTIMATED COST (P)	DESCRIBE DEFECTS AND RECOMMENDED WORKS
RIGHT WING WALL	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	
BRIDGE APPROACH	Immediate	3	Fully	Repair damage	
	Within 2 years	2	assessed	Protective measures	
	Within 10 years	1	Partially	Strengthen	
	None	0	assessed	Replace	
	Not Applicable		Not assessed	Other	
				Total Estimated Cost	

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Span Element-Damage Rating

Bridge ID

Bridge Name

Span Element - Damage Rating

SPAN No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
DECK											
Concrete Slab	Cracking										
	Spalling/Scaling/Disinteg.										
	Delamination										
	Rebar exposure/corrosion										
	Honeycomb										
	Water leakage										
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)											
SM	OM	SM	OM	SM	OM	SM	OM	SM	OM	SM	OM
Steel	Corrosion										
	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
MAIN MEMBER											
Steel	Corrosion										
Steel	Cracking										
Girder	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										
LEFT RAILING (LR) / RIGHT RAILING (RR)											
LR	RR	LR	RR	LR	RR	LR	RR	LR	RR	LR	RR
Steel	Corrosion										
	Loose connection										
	Impact/Accident damage										
	Paint peel off										
ASPHALT WEARING SURFACE											
Asphalt	Potholes										
	Shoving										
	Rutting										
	Cracking										
	Raveling										

SPAN No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
DECK											
Concrete Slab	Cracking										
	Spalling/Scaling/Disinteg.										
	Delamination										
	Rebar exposure/corrosion										
	Honeycomb										
	Water leakage										
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)											
SM	OM	SM	OM	SM	OM	SM	OM	SM	OM	SM	OM
Steel	Corrosion										
	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
MAIN MEMBER											
Steel	Corrosion										
Steel	Cracking										
Girder	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										
LEFT RAILING (LR) / RIGHT RAILING (RR)											
LR	RR	LR	RR	LR	RR	LR	RR	LR	RR	LR	RR
Steel	Corrosion										
	Loose connection										
	Impact/Accident damage										
	Paint peel off										
ASPHALT WEARING SURFACE											
Asphalt	Potholes										
	Shoving										
	Rutting										
	Cracking										
	Raveling										

Bridge ID

Bridge Name **Diosdado Macapagal**

Span Element - Damage Rating

SPAN No. **3**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

SPAN No. **4**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

Bridge ID

Bridge Name **Diosdado Macapagal**

Span Element - Damage Rating

SPAN No. **5**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
DECK											
Concrete Slab	Cracking										
	Spalling/Scaling/Disinteg.										
	Delamination										
	Rebar exposure/corrosion										
	Honeycomb										
	Water leakage										
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)											
SM	OM	SM	OM	SM	OM	SM	OM	SM	OM	SM	OM
Steel	Corrosion										
	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
MAIN MEMBER											
Steel	Corrosion										
Steel Girder	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										
LEFT RAILING (LR) / RIGHT RAILING (RR)											
LR	RR	LR	RR	LR	RR	LR	RR	LR	RR	LR	RR
Steel	Corrosion										
	Loose connection										
	Impact/Accident damage										
	Paint peel off										
ASPHALT WEARING SURFACE											
Asphalt	Potholes										
	Shoving										
	Rutting										
	Cracking										
	Raveling										

SPAN No. **6**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
DECK											
Concrete Slab	Cracking										
	Spalling/Scaling/Disinteg.										
	Delamination										
	Rebar exposure/corrosion										
	Honeycomb										
	Water leakage										
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)											
SM	OM	SM	OM	SM	OM	SM	OM	SM	OM	SM	OM
Steel	Corrosion										
	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
MAIN MEMBER											
Steel	Corrosion										
Steel Girder	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										
LEFT RAILING (LR) / RIGHT RAILING (RR)											
LR	RR	LR	RR	LR	RR	LR	RR	LR	RR	LR	RR
Steel	Corrosion										
	Loose connection										
	Impact/Accident damage										
	Paint peel off										
ASPHALT WEARING SURFACE											
Asphalt	Potholes										
	Shoving										
	Rutting										
	Cracking										
	Raveling										

Bridge ID

Bridge Name **Diosdado Macapagal**

Span Element - Damage Rating

SPAN No. **7**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

SPAN No. **8**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

Bridge ID

Bridge Name

Span Element - Damage Rating

SPAN No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
<input type="checkbox"/> Steel	Cracking					
<input type="checkbox"/> Girder	Deformation/Buckling					
<input type="checkbox"/> Outside of Girder	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
Steel	Corrosion					
<input type="checkbox"/> Steel	Cracking					
<input type="checkbox"/> Girder	Deformation/Buckling					
<input type="checkbox"/> Inside of Girder	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
<input type="checkbox"/>	Paint peel off					
DECK						
<input type="checkbox"/> Steel	Corrosion					
<input type="checkbox"/> Slab	Cracking					
<input type="checkbox"/>	Deformation/Buckling					
<input type="checkbox"/>	loose connection					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Corrosion					
<input type="checkbox"/> Steel	Cracking					
<input type="checkbox"/>	Deformation/Buckling					
<input type="checkbox"/>	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/> Steel	Corrosion					
<input type="checkbox"/>	Loose connection					
<input type="checkbox"/>	Impact/Accident damage					
<input type="checkbox"/>	Paint peel off					
ASPHALT WEARING SURFACE						
<input type="checkbox"/>	Potholes					
<input type="checkbox"/> Asphalt	Shoving					
<input type="checkbox"/>	Rutting					
<input type="checkbox"/>	Cracking					
<input type="checkbox"/>	Raveling					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Bridge ID

Bridge Name

Span Element - Damage Rating

SPAN No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
<input type="checkbox"/> Steel	Cracking					
<input type="checkbox"/> Girder	Deformation/Buckling					
<input type="checkbox"/> Outside of Girder	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
Steel	Corrosion					
<input type="checkbox"/> Steel	Cracking					
<input type="checkbox"/> Girder	Deformation/Buckling					
<input type="checkbox"/> Inside of Girder	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
<input type="checkbox"/>	Paint peel off					
DECK						
<input type="checkbox"/> Steel	Corrosion					
<input type="checkbox"/> Slab	Cracking					
<input type="checkbox"/>	Deformation/Buckling					
<input type="checkbox"/>	loose connection					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
<input type="checkbox"/> SM	<input type="checkbox"/> OM	<input type="checkbox"/> SM	<input type="checkbox"/> OM	<input type="checkbox"/> SM	<input type="checkbox"/> OM	<input type="checkbox"/> SM
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Steel	Corrosion					
<input type="checkbox"/>	Cracking					
<input type="checkbox"/>	Deformation/Buckling					
<input type="checkbox"/>	Abnormal Vibration					
<input type="checkbox"/>	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
<input type="checkbox"/> LR	<input type="checkbox"/> RR	<input type="checkbox"/> LR	<input type="checkbox"/> RR	<input type="checkbox"/> LR	<input type="checkbox"/> RR	<input type="checkbox"/> LR
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Steel	Corrosion					
<input type="checkbox"/>	Loose connection					
<input type="checkbox"/>	Impact/Accident damage					
<input type="checkbox"/>	Paint peel off					
ASPHALT WEARING SURFACE						
<input type="checkbox"/>	Potholes					
<input type="checkbox"/> Asphalt	Shoving					
<input type="checkbox"/>	Rutting					
<input type="checkbox"/>	Cracking					
<input type="checkbox"/>	Raveling					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Bridge ID

Bridge Name **Diosdado Macapagal**

Span Element - Damage Rating

SPAN No. **11**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

SPAN No. **12**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
DECK						
Concrete Slab	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Water leakage					
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)						
SM	OM		SM	OM		
Steel	Corrosion					
	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel	Corrosion					
Steel Girder	Cracking					
	Deformation/Buckling					
	Abnormal Vibration					
	loose connection					
LEFT RAILING (LR) / RIGHT RAILING (RR)						
LR	RR		LR	RR		
Steel	Corrosion					
	Loose connection					
	Impact/Accident damage					
	Paint peel off					
ASPHALT WEARING SURFACE						
Asphalt	Potholes					
	Shoving					
	Rutting					
	Cracking					
	Raveling					

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Bridge ID

Bridge Name

Span Element - Damage Rating

SPAN No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
DECK											
Concrete Slab	Cracking										
	Spalling/Scaling/Disinteg.										
	Delamination										
	Rebar exposure/corrosion										
	Honeycomb										
	Water leakage										
SECONDARY MEMBER (SM) / OTHER MEMBER (OM)											
SM	OM	SM	OM	SM	OM	SM	OM	SM	OM	SM	OM
Steel	Corrosion										
	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										

Note: Defects of Weathering steel should be categorized into corrosion in main and secondary member

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State					
			Unit	%							
MAIN MEMBER											
Steel	Corrosion										
Steel Girder	Cracking										
	Deformation/Buckling										
	Abnormal Vibration										
	loose connection										
LEFT RAILING (LR) / RIGHT RAILING (RR)											
LR	RR	LR	RR	LR	RR	LR	RR	LR	RR	LR	RR
Steel	Corrosion										
	Loose connection										
	Impact/Accident damage										
	Paint peel off										
ASPHALT WEARING SURFACE											
Asphalt	Potholes										
	Shoving										
	Rutting										
	Cracking										
	Raveling										

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Cable Element-Damage Rating

Bridge ID

Bridge Name

Cable element - Damage Rating

CABLE GROUP No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Concrete Concrete parts around Anchorage Inside Tower	Cracking		---	---		
	Spalling/Scaling/Disinteg.		---	---		
	Delamination		---	---		
	Rebar exposure/corrosion		---	---		
	Honeycomb		---	---		
	Water leakage		---	---		
Cable	Vibration		---	---		
	Alignment/Deformation		---	---		
	Crack		---	---		
	Delamination		---	---		
	Water leakage		---	---		

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel Anchorage At tower	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					
Steel Anchorage At Girder	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					

CABLE GROUP No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Concrete Concrete parts around Anchorage Inside Tower	Cracking		---	---		
	Spalling/Scaling/Disinteg.		---	---		
	Delamination		---	---		
	Rebar exposure/corrosion		---	---		
	Honeycomb		---	---		
	Water leakage		---	---		
Cable	Vibration		---	---		
	Alignment/Deformation		---	---		
	Crack		---	---		
	Delamination		---	---		
	Water leakage		---	---		

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel Anchorage At tower	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					
Steel Anchorage At Girder	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					

Bridge ID

Bridge Name

Cable element - Damage Rating

CABLE GROUP No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Concrete Concrete parts around Anchorage Inside Tower	Cracking		---	---		
	Spalling/Scaling/Disinteg.		---	---		
	Delamination		---	---		
	Rebar exposure/corrosion		---	---		
	Honeycomb		---	---		
	Water leakage		---	---		
Cable	Vibration		---	---		
	Alignment/Deformation		---	---		
	Crack		---	---		
	Delamination		---	---		
	Water leakage		---	---		

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel Anchorage At tower	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					
Steel Anchorage At Girder	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					

CABLE GROUP No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Concrete Concrete parts around Anchorage Inside Tower	Cracking		---	---		
	Spalling/Scaling/Disinteg.		---	---		
	Delamination		---	---		
	Rebar exposure/corrosion		---	---		
	Honeycomb		---	---		
	Water leakage		---	---		
Cable	Vibration		---	---		
	Alignment/Deformation		---	---		
	Crack		---	---		
	Delamination		---	---		
	Water leakage		---	---		

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN MEMBER						
Steel Anchorage At tower	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					
Steel Anchorage At Girder	Corrosion					
	Missing bolts					
	Deformation/Buckling					
	Water leakage					

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Pier Element-Damage Rating

Bridge ID

Bridge Name

Pier Element - Damage Rating

PIER No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

PIER No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

PIER No.

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

Bridge ID

Bridge Name **Diosdado Macapagal**

Pier Element - Damage Rating

PIER No. **P4**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							EXPANSION JOINT						
Concrete	Cracking						Rubber	Water leakage					
	Spalling/Scaling/Disinteg.							Abnormal space/noise					
	Delamination							Difference in elevation					
	Rebar exposure/corrosion							Rupture					
	Honeycomb												
	Tilt/Settlement												
BEARING													
Rubber	Bulging												
	Abnormal displacement												
	Bed (support) damage												

PIER No. **P5**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

PIER No. **P6**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

Bridge ID

Bridge Name **Diosdado Macapagal**

Pier Element - Damage Rating

PIER No.		P7				
Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN STRUCTURE						
Concrete	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Tilt/Settlement					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
BEARING						
Rubber	Bulging					
	Abnormal displacement					
	Bed (support) damage					

PIER No.		P8				
Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
MAIN STRUCTURE						
Concrete	Cracking					
	Spalling/Scaling/Disinteg.					
	Delamination					
	Rebar exposure/corrosion					
	Honeycomb					
	Tilt/Settlement					
BEARING(seismic isolation bearing)						
Rubber	Bulging					
	Abnormal displacement					
	Bed (support) damage					
BEARING(Steel lateral bearing)						
Steel	Corrosion					
	Loose connection					
	Abnormal displacement					
	Paint deterioration					
	Bed (support) damage					

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%		
EXPANSION JOINT						
Rubber	Water leakage					
	Abnormal space/noise					
	Difference in elevation					
	Rupture					
RESTRAINT						
Steel	Corrosion					
	Abnormal amplitude					
	Loose connection					
	Water leakage					
BEARING(Pendulum bearing)						
Steel	Corrosion					
	Loose connection					
	Abnormal displacement					
	Paint deterioration					
	Bed (support) damage					

Bridge ID

Bridge Name **Diosdado Macapagal**

Pier Element - Damage Rating

PIER No. **P9**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING(Steel lateral bearing)						
Concrete	Cracking						Steel	Corrosion					
	Spalling/Scaling/Disinteg.							Loose connection					
	Delamination							Abnormal displacement					
	Rebar exposure/corrosion							Paint deterioration					
	Honeycomb							Bed (support) damage					
	Tilt/Settlement												
BEARING(seismic isolation bearing)							BEARING(Steel vertical bearing)						
Rubber	Bulging						Steel	Corrosion					
	Abnormal displacement							Loose connection					
	Bed (support) damage							Abnormal displacement					
								Paint deterioration					
								Bed (support) damage					

PIER No. **P10**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							EXPANSION JOINT						
Concrete	Cracking						Rubber	Water leakage					
	Spalling/Scaling/Disinteg.							Abnormal space/noise					
	Delamination							Difference in elevation					
	Rebar exposure/corrosion							Rupture					
	Honeycomb												
	Tilt/Settlement												
BEARING(Seismic isolation bearing)							RESTRAINT						
Rubber	Bulging						Steel	Corrosion					
	Abnormal displacement							Abnormal amplitude					
	Bed (support) damage							Loose connection					
BEARING(Steel lateral bearing)							BEARING(Steel vertical bearing)						
Steel	Corrosion						Steel	Corrosion					
	Loose connection							Loose connection					
	Abnormal displacement							Abnormal displacement					
	Paint deterioration							Paint deterioration					
	Bed (support) damage							Bed (support) damage					

Bridge ID

Bridge Name **Diosdado Macapagal**

Pier Element - Damage Rating

PIER No. **P11**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING/RESTRAINT						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

PIER No. **P12**

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State
			Unit	%						Unit	%		
MAIN STRUCTURE							BEARING/RESTRAINT						
Concrete	Cracking						Rubber	Bulging					
	Spalling/Scaling/Disinteg.							Abnormal displacement					
	Delamination							Bed (support) damage					
	Rebar exposure/corrosion												
	Honeycomb												
	Tilt/Settlement												

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

Abutment Element-Damage Rating

ABUTMENT No. **A1** (one set of forms for each abutment)

Bridge ID

Bridge Name **Diosdado Macapagal**

Abutment Element - Damage Rating

Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State						
			Unit	%						Unit	%								
MAIN STRUCTURE							EXPANSION JOINT												
Concrete	Cracking						Rubber	Water leakage											
	Spalling/Scaling/Disinteg.							Abnormal space/noise											
	Delamination							Difference in elevation											
	Rebar exposure/corrosion							Displacement											
	Honecomb							Rupture											
	Tilt/Settlement																		
FOUNDATION							LEFT WING WALL (LW) / RIGHT WING WALL (RW)												
Concrete	Cracking						LW	RW		LW	RW		LW	RW	LW	RW	LW	RW	
	Spalling/Scaling/Disinteg.						Concrete			Cracking									
	Delamination									Delamination/Disinteg.									
	Rebar exposure/corrosion									Rebar exposure/corrosion									
	Honecomb																		
	Tilt/Settlement																		
BEARING							BRIDGE APPROACH												
Rubber	Bulging						Embankment		Material loss										
	Abnormal displacement							Depression											
	Bed (support) damage							None											

Assessment of Bridge Approach will be limited to 6.0 meter length.

ABUTMENT No. **A2** (one set of forms for each abutment)

Bridge ID

Bridge Name **Diosdado Macapagal**

Abutment Element - Damage Rating

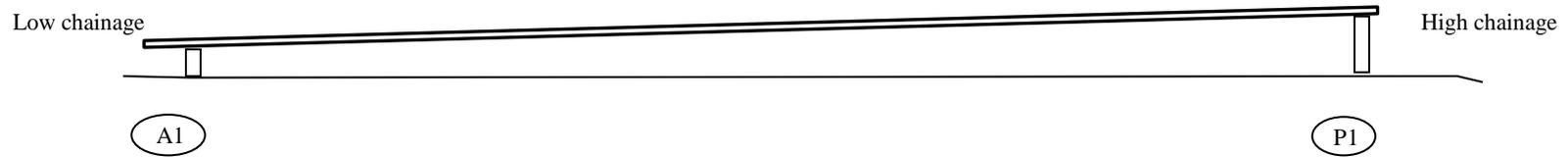
Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State	Type of Material	Type of Damage	Severity of Defect	Affected		Damage Rating	Attrib. Cond. State						
			Unit	%						Unit	%								
MAIN STRUCTURE							EXPANSION JOINT												
Concrete	Cracking						Rubber	Water leakage											
	Spalling/Scaling/Disinteg.							Abnormal space/noise											
	Delamination							Difference in elevation											
	Rebar exposure/corrosion							Displacement											
	Honecomb							Rupture											
	Tilt/Settlement																		
FOUNDATION							LEFT WING WALL (LW) / RIGHT WING WALL (RW)												
Concrete	Cracking						LW	RW		LW	RW		LW	RW	LW	RW	LW	RW	
	Spalling/Scaling/Disinteg.						Concrete			Cracking									
	Delamination									Delamination/Disinteg.									
	Rebar exposure/corrosion									Rebar exposure/corrosion									
	Honecomb																		
	Tilt/Settlement																		
BEARING							BRIDGE APPROACH												
Rubber	Bulging						Embankment	Material loss											
	Abnormal displacement							Depression											
	Bed (support) damage							None											

Assessment of Bridge Approach will be limited to 6.0 meter length.

Sketch Drawings for Condition Inspection

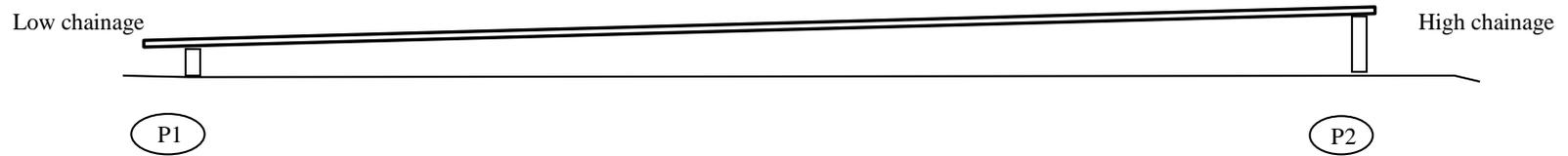
NOTE: Print in A3 size for usage at site

Sketch of Bridge Condition Inspection from Bridge Roadway Level (1 of 13)
Diosdado Macapagal Bridge



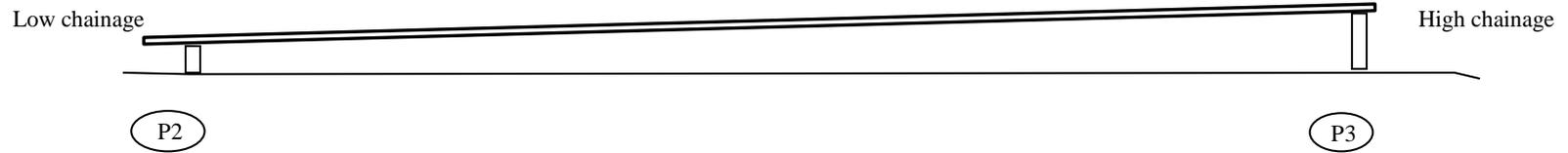
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Railing</div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px; text-align: center;">Expansion Joint and Asphalt Wearing Surface</div> <div style="display: flex; align-items: center;"><div style="border: 1px solid black; padding: 5px; writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 10px;">Expansion Joint</div><div style="display: flex; align-items: center;"><div style="border: 1px solid black; width: 15px; height: 100%; margin-right: 5px;"></div><div style="border: 1px solid black; width: 15px; height: 100%; margin-right: 5px;"></div><div style="border: 1px solid black; width: 80%; height: 40px; margin-right: 5px;"></div><div style="border: 1px solid black; width: 80%; height: 40px; margin-right: 5px;"></div><div style="border: 1px solid black; width: 80%; height: 20px; margin-right: 5px;"></div></div></div>
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Railing</div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

Sketch of Bridge Condition Inspection from Bridge Roadway Level (2 of 13)
Diosdado Macapagal Bridge



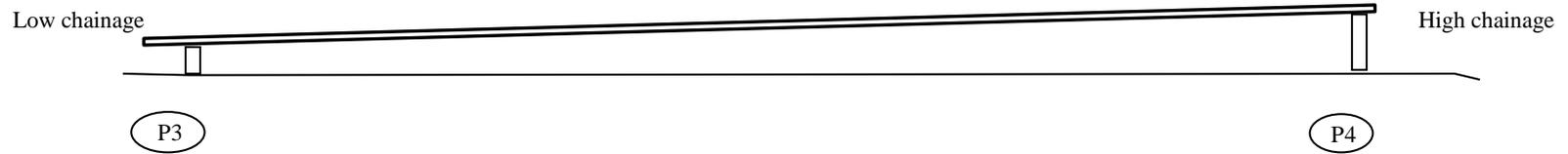
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Expansion Joint and Asphalt Wearing Surface	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>
Railing	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>

Sketch of Bridge Condition Inspection from Bridge Roadway Level (3 of 13)
Diosdado Macapagal Bridge



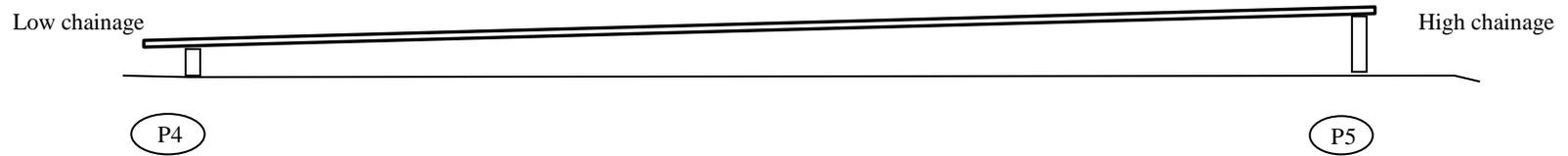
Railing	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>
Expansion Joint and Asphalt Wearing Surface	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>
Railing	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (4 of 13)
Diosdado Macapagal Bridge**



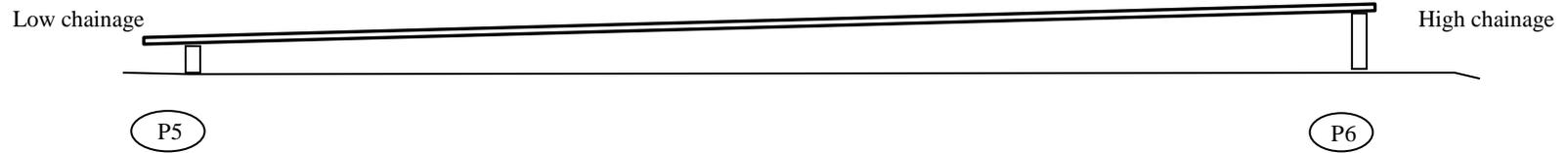
<p align="center">Railing</p>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
<p align="center">Expansion Joint and Asphalt Wearing Surface</p>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
<p align="center">Railing</p>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (5 of 13)
Diosdado Macapagal Bridge**



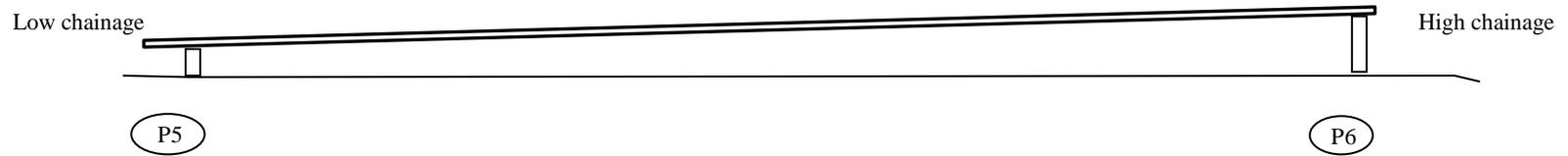
<p align="center">Railing</p> <hr/> <hr/> <hr/>	
<p align="center">Expansion Joint and Asphalt Wearing Surface</p>	
<p align="center">Expansion Joint</p>	<hr/> <hr/>
	<hr/> <hr/>
	<hr/> <hr/>
	<hr/> <hr/>
<p align="center">Railing</p> <hr/> <hr/> <hr/>	

Sketch of Bridge Condition Inspection from Bridge Roadway Level (6 of 13)
Diosdado Macapagal Bridge



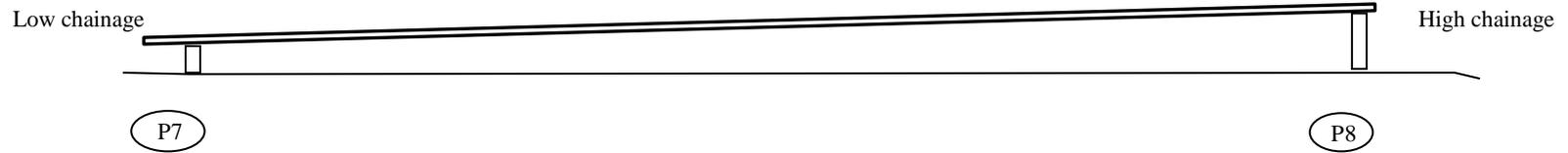
Railing	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>
Expansion Joint and Asphalt Wearing Surface	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 30px; width: 100%;"></div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
Railing	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level(7 of 13)
Diosdado Macapagal Bridge**



<p>Railing</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Expansion Joint and Asphalt Wearing Surface</p> <p>_____</p> <p>_____</p> <p>-----</p> <p>_____</p> <p>_____</p>
<p>Railing</p> <p>_____</p> <p>_____</p> <p>_____</p>

Sketch of Bridge Condition Inspection from Bridge Roadway Level (8 of 13)
Diosdado Macapagal Bridge



<div style="border: 1px solid black; padding: 2px; text-align: center;">Railing</div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
<div style="border: 1px solid black; padding: 2px; text-align: center;">Expansion Joint and Asphalt Wearing Surface</div>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
<div style="border: 1px solid black; padding: 2px; text-align: center;">Railing</div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (9 of 13)
Diosdado Macapagal Bridge**

Low chainage



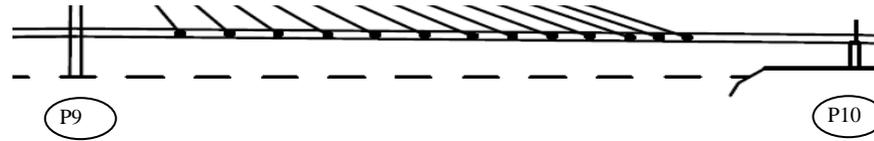
High chainage

	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Railing</div>	<div style="border: 1px solid black; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px;"></div>
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Expansion Joint and Asphalt Wearing Surface</div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block; transform: rotate(-90deg); transform-origin: left top;">Expansion Joint</div>	<div style="border: 1px solid black; width: 20px; height: 100%; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 100%; display: inline-block; margin-left: 5px;"></div>	<div style="border: 1px solid black; height: 40px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 100px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 100px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 40px;"></div>
<p>NOTE: Print</p>		
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Railing</div>	<div style="border: 1px solid black; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px;"></div>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (10 of 13)
Diosdado Macapagal Bridge**

Low chainage

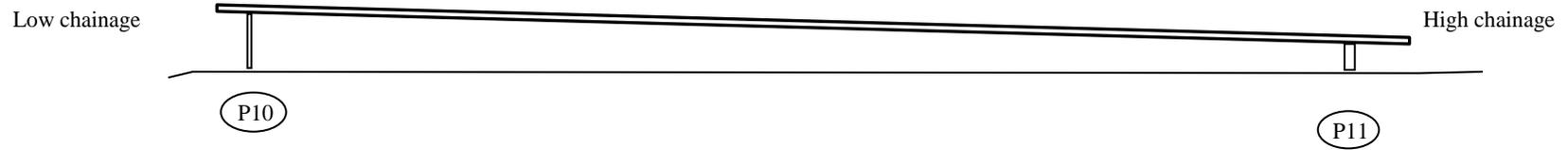
High chainage



	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Railing</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> </div>
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Expansion Joint and Asphalt Wearing Surface</p> <div style="border: 1px solid black; height: 30px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> </div> <hr style="border-top: 1px dashed black;"/> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> </div>
	<div style="border: 1px solid black; padding: 5px;"> <p>Railing</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-bottom: 2px;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> </div>

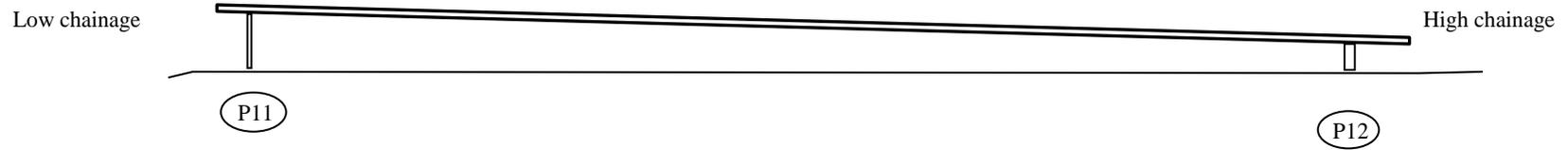
NOTE: Print

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (11 of 13)
Diosdado Macapagal Bridge**



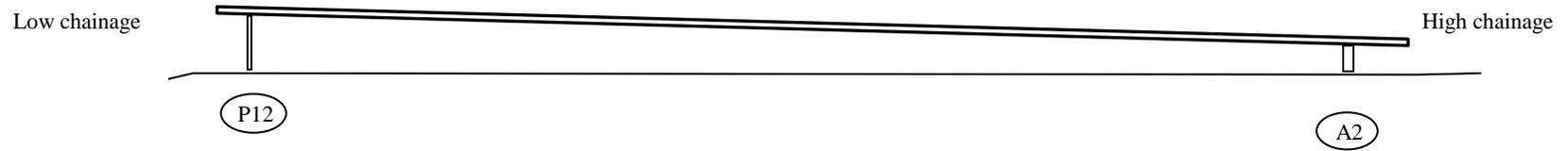
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<p>Expansion Joint</p>	<p>Expansion Joint and Asphalt Wearing Surface</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Railing</p> <p>_____</p> <p>_____</p> <p>_____</p>	

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (12 of 13)
Diosdado Macapagal Bridge**



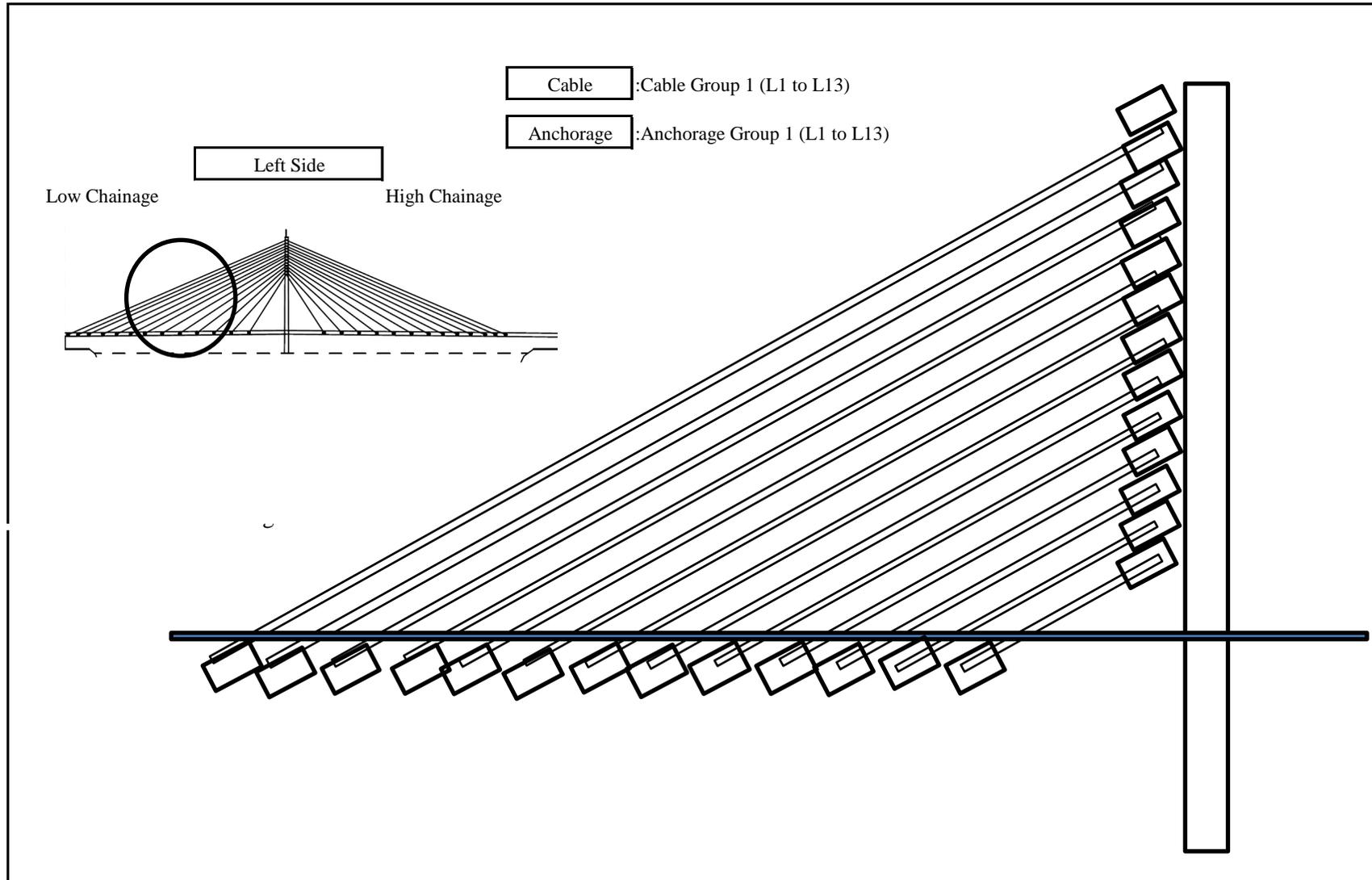
<p>Railing</p> <hr/> <hr/> <hr/>
<p>Expansion Joint and Asphalt Wearing Surface</p> <hr/>
<p>Railing</p> <hr/> <hr/> <hr/>

**Sketch of Bridge Condition Inspection from Bridge Roadway Level (14 of 14)
Diosdado Macapagal Bridge**

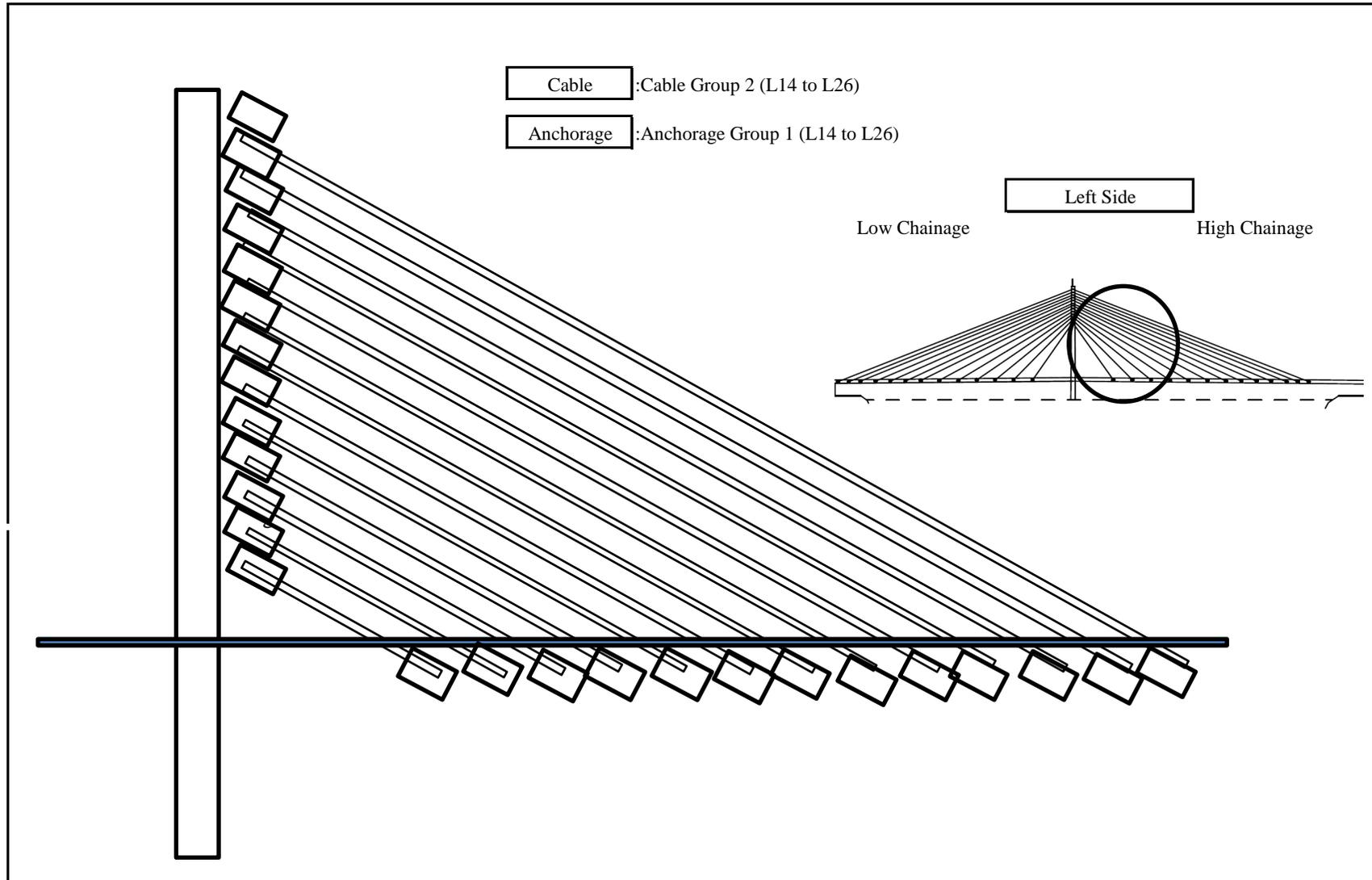


Railing	<hr/> <hr/> <hr/>												
Expansion Joint and Asphalt Wearing Surface	<table border="1"><tr><td data-bbox="548 726 1736 782"></td><td data-bbox="1758 726 1803 1204"></td><td data-bbox="1814 726 1859 1204"></td></tr><tr><td data-bbox="548 790 1736 949"></td><td></td><td></td></tr><tr><td data-bbox="548 981 1736 1149"></td><td></td><td></td></tr><tr><td data-bbox="548 1157 1736 1204"></td><td></td><td></td></tr></table> <p align="right">Expansion Joint</p>												
Railing	<hr/> <hr/> <hr/>												

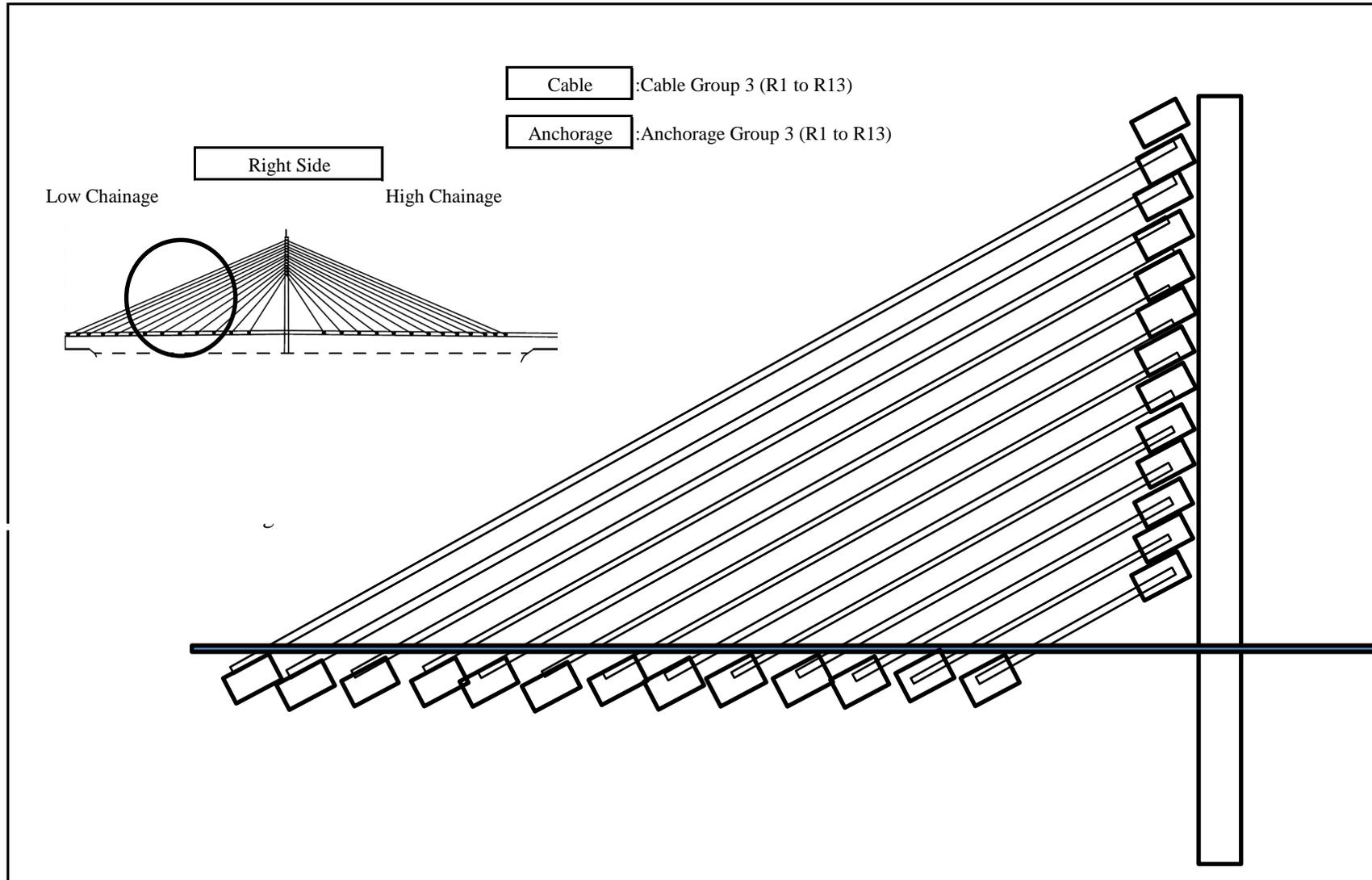
Sketch of Bridge Condition Inspection from Bridge Roadway Level (1 of 4)
Diosdado Macapagal Bridge



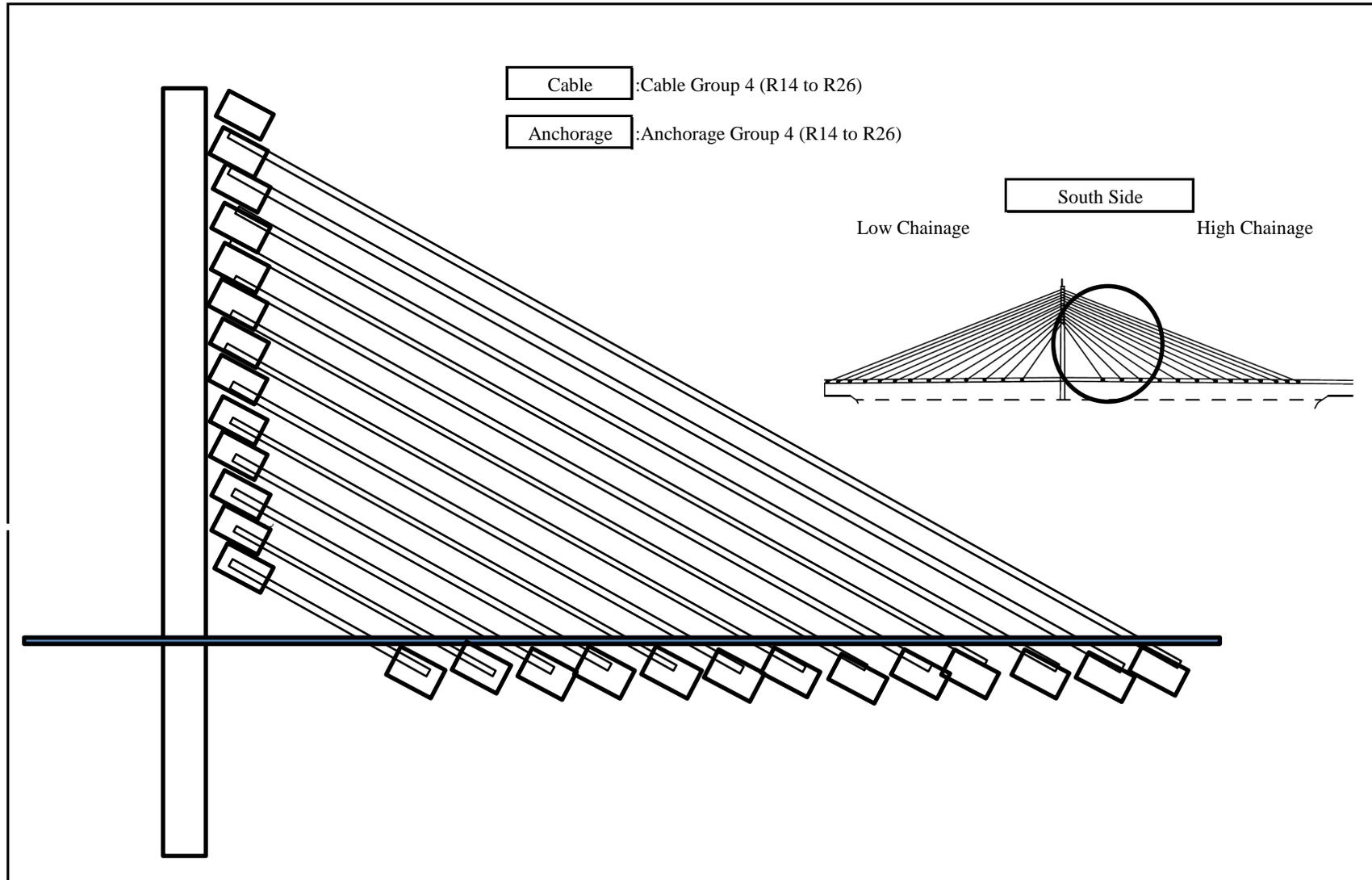
Sketch of Bridge Condition Inspection from Bridge Roadway Level (2 of 4)
Diosdado Macapagal Bridge



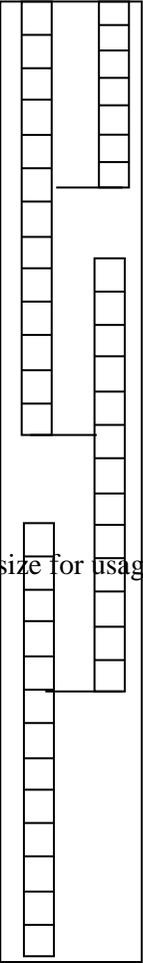
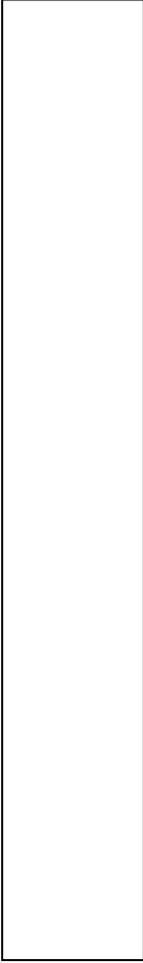
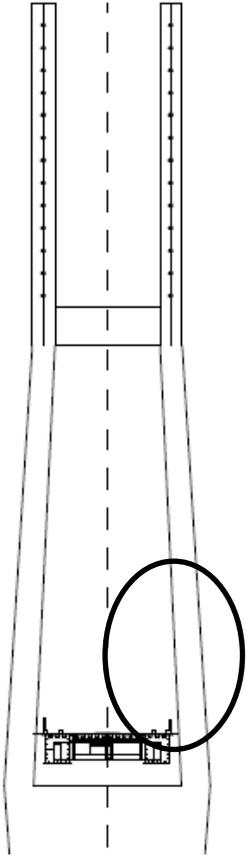
Sketch of Bridge Condition Inspection from Bridge Roadway Level (3 of 4)
Diosdado Macapagal Bridge



Sketch of Bridge Condition Inspection from Bridge Roadway Level (4 of 4)
Diosdado Macapagal Bridge

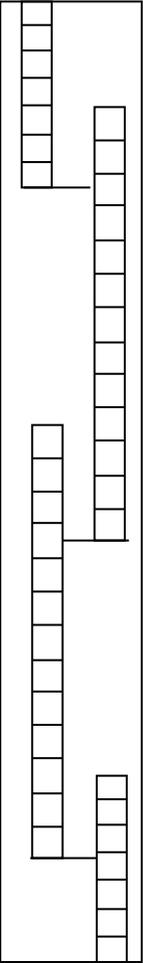
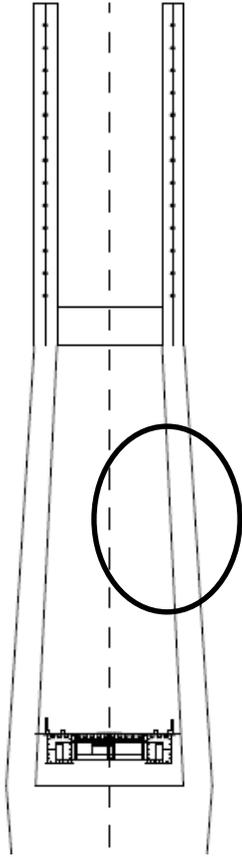


Sketch of Bridge Condition Inspection from Inside Tower (1 of 12)
Diosado Macapagal Bridge

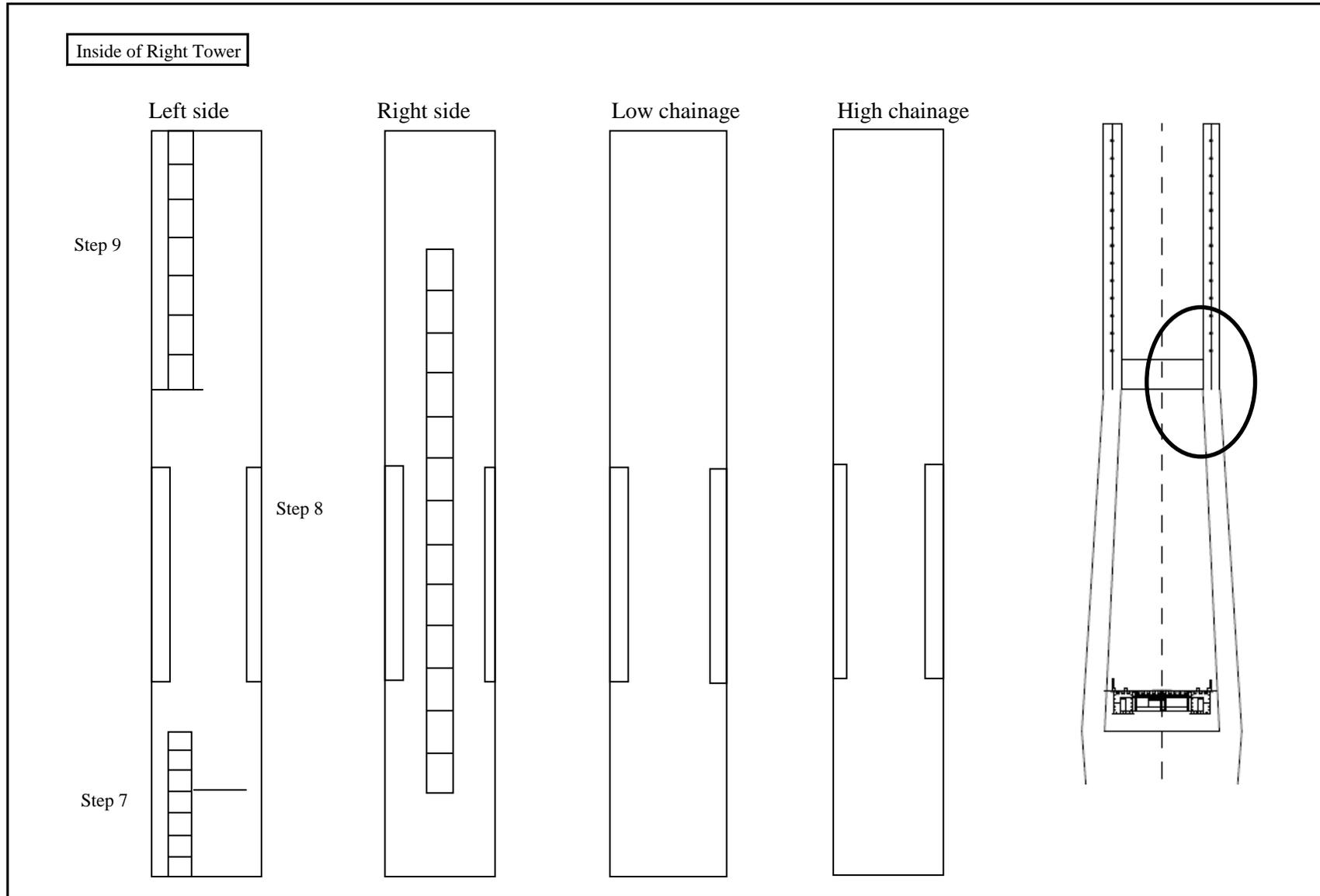
Inside of Right Tower		Left side	Right side	Low chainage	High chainage	
						

NOTE: Print in A3 size for usage at site

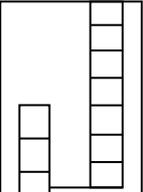
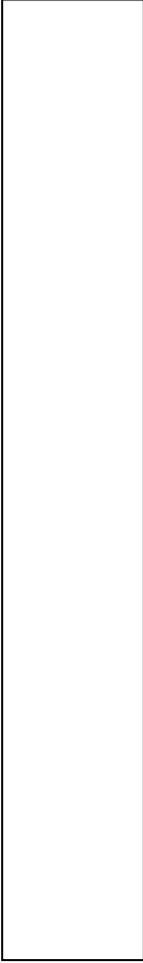
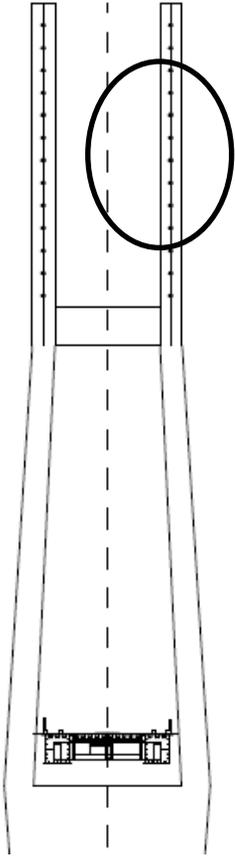
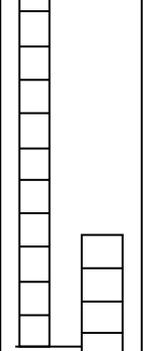
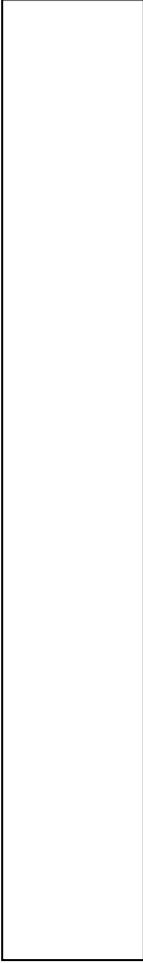
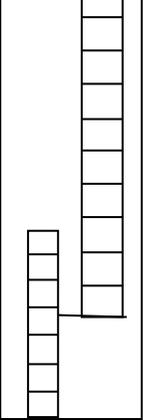
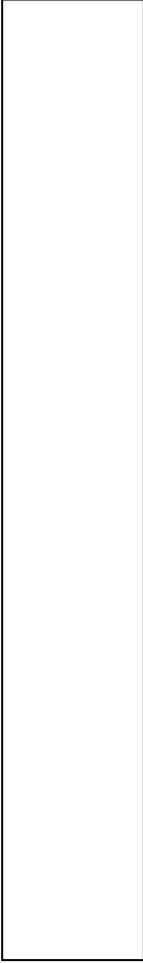
Sketch of Bridge Condition Inspection from Inside Tower (2 of 12)
Diosdado Macapagal Bridge

Inside of Right Tower		Left side	Right side	Low chainage	High chainage	
Step 7						
Step 5						
Step 4						

Sketch of Bridge Condition Inspection from Inside Tower (3 of 12)
Diosdado Macapagal Bridge

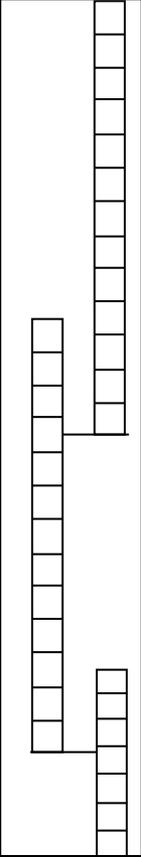
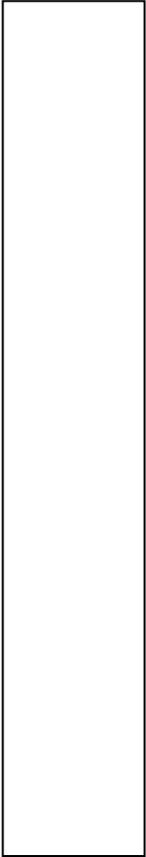
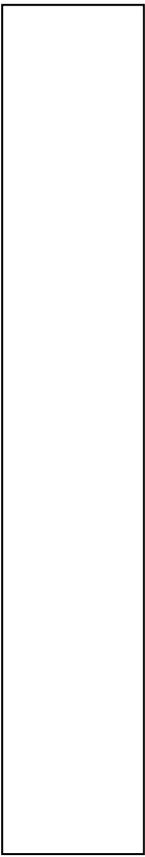
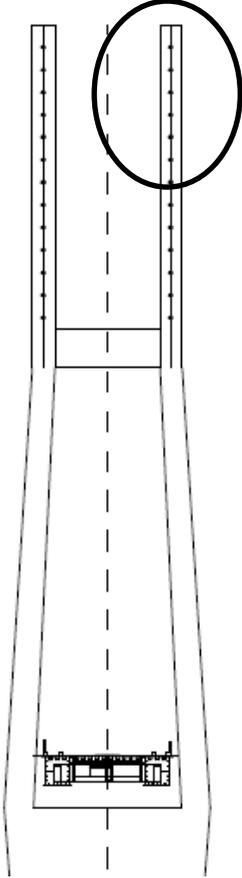


Sketch of Bridge Condition Inspection from Inside Tower (4 of 12)
Diosdado Macapagal Bridge

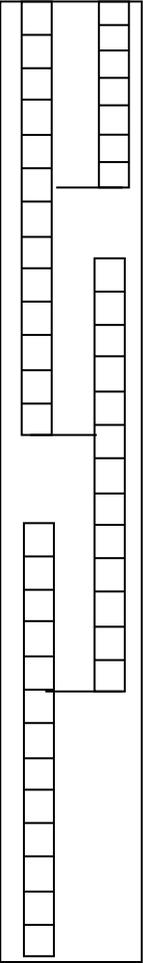
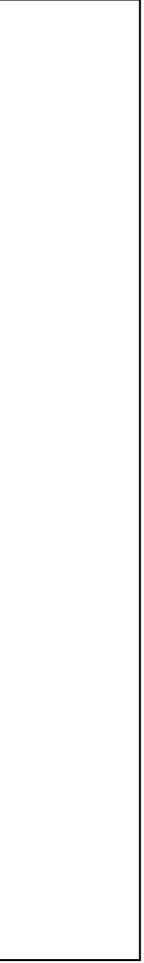
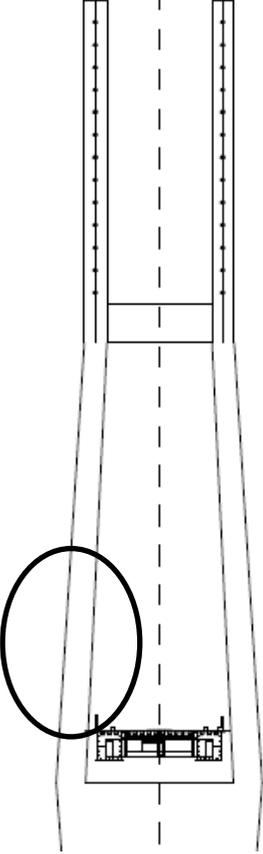
Inside of Right Tower					
	Left side	Right side	Low chainage	High chainage	
Step 12					
Step 11					
Step 9					

Sketch of Bridge Condition Inspection from Inside Tower (5 of 12)
Diosdado Macapagal Bridge

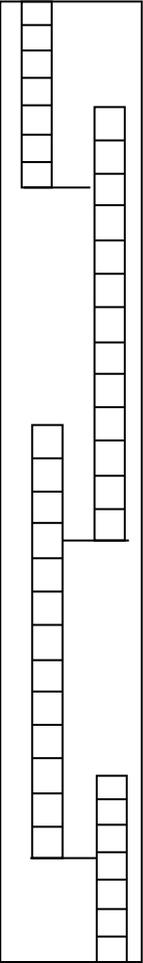
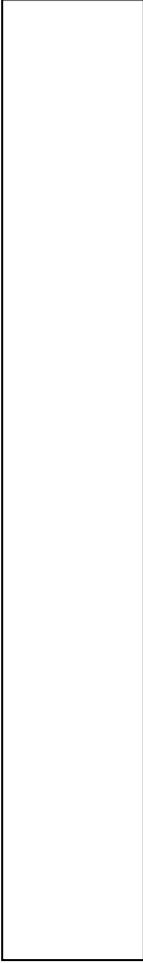
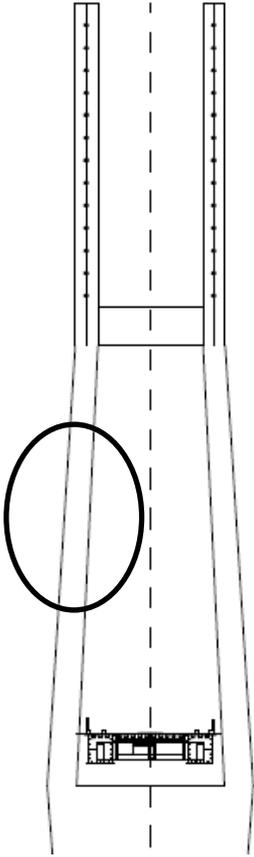
Inside of Right Tower

Left side	Right side	Low chainage	High chainage	
 <p>Step 14</p> <p>Step 13</p> <p>Step 12</p>				

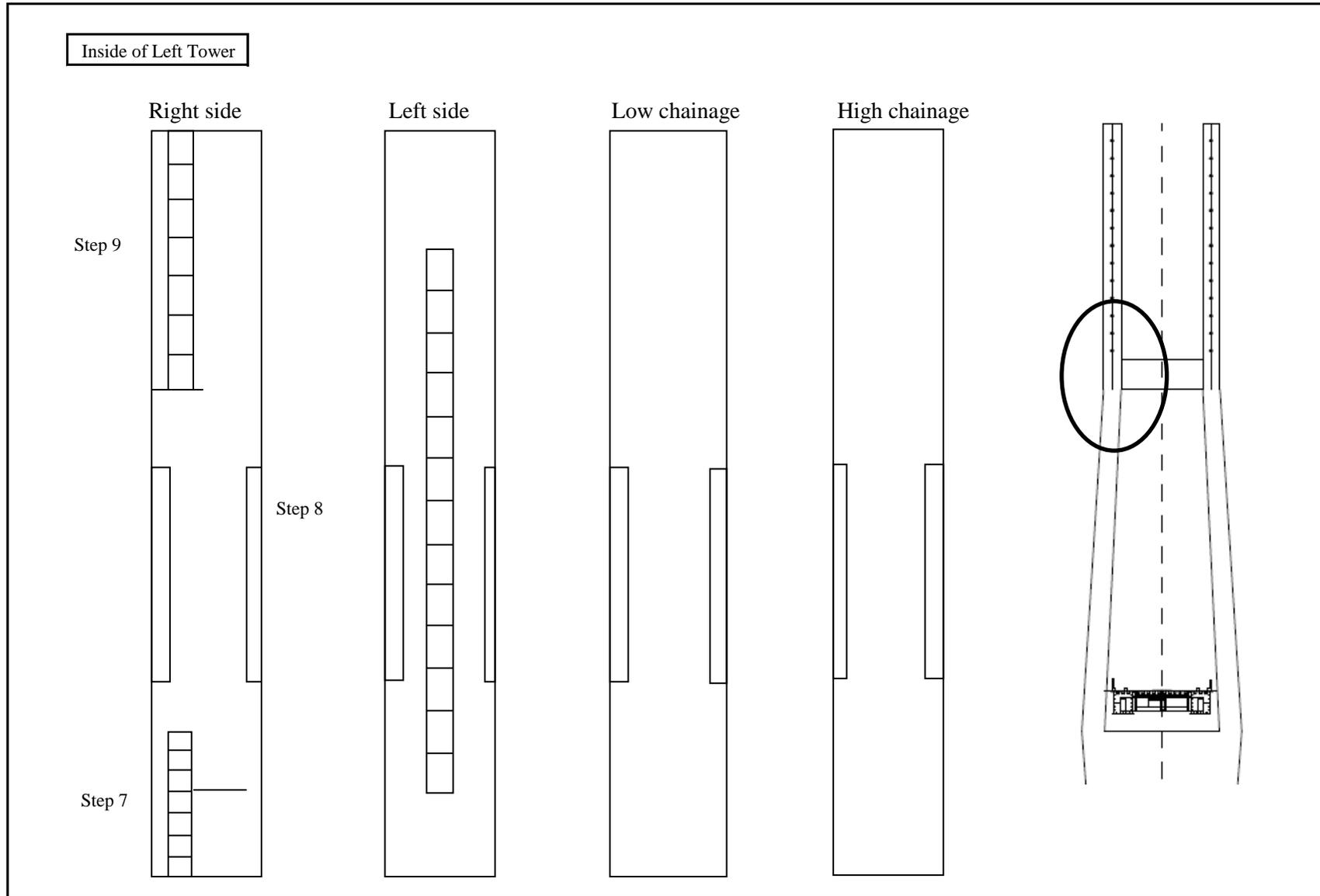
Sketch of Bridge Condition Inspection from Inside Tower (6 of 12)
Diosdado Macapagal Bridge

Inside of Left Tower		Right side	Left side	Low chainage	High chainage	
						

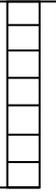
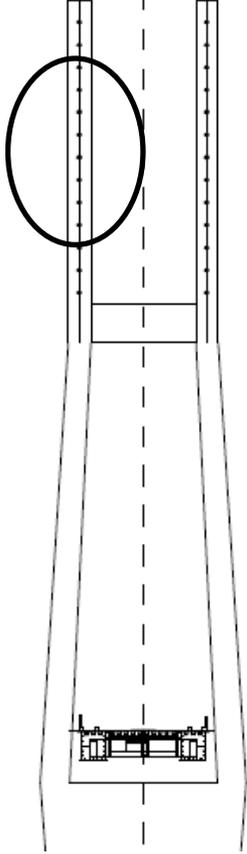
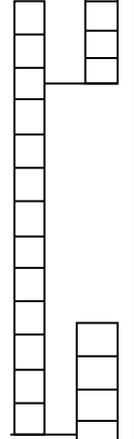
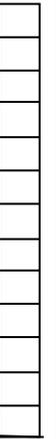
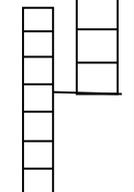
Sketch of Bridge Condition Inspection from Inside Tower (7 of 12)
Diosdado Macapagal Bridge

Inside of Left Tower		Right side	Left side	Low chainage	High chainage	
Step 7	Step 6					
Step 5	Step 4					

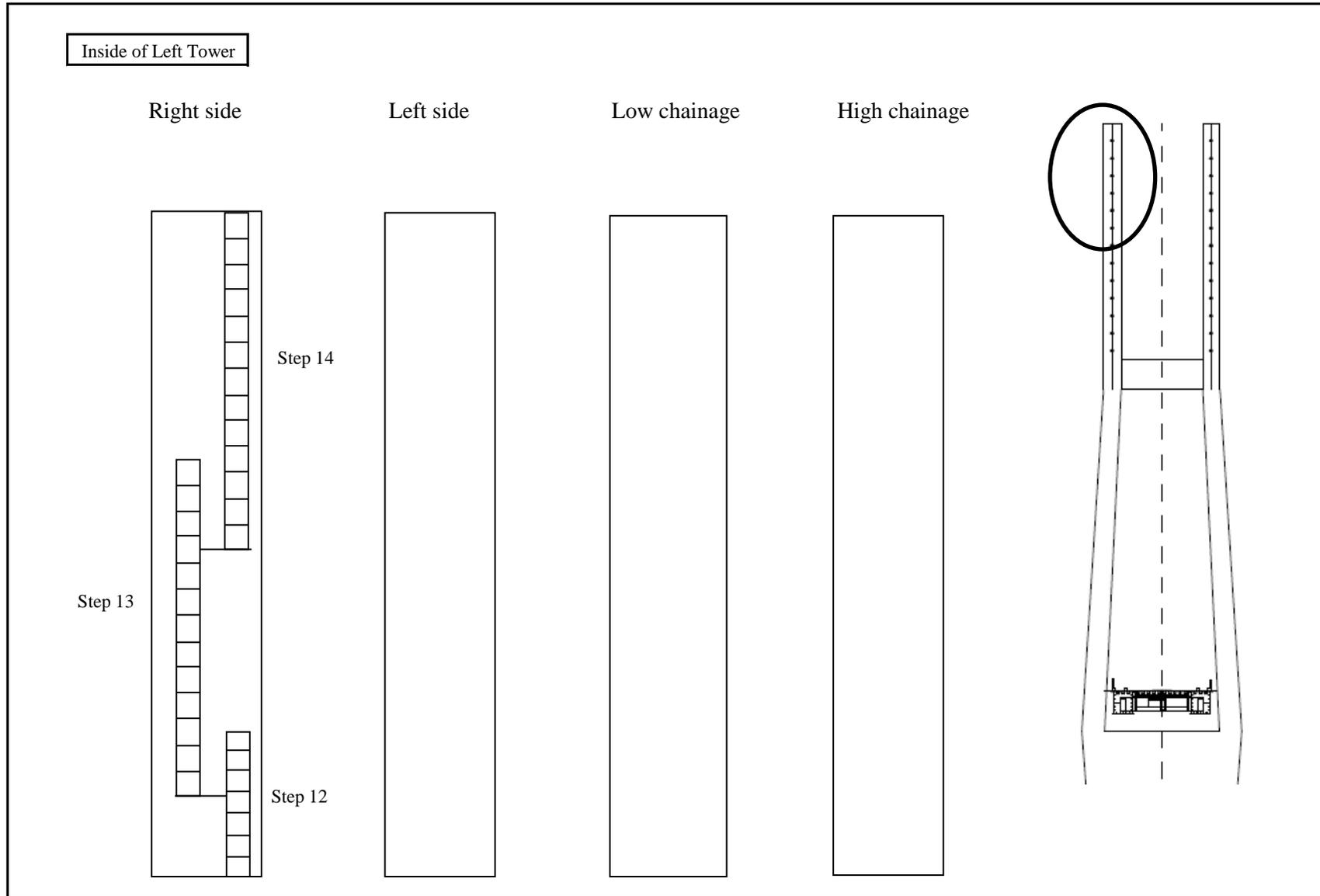
Sketch of Bridge Condition Inspection from Inside Tower (8 of 12)
Diosdado Macapagal Bridge



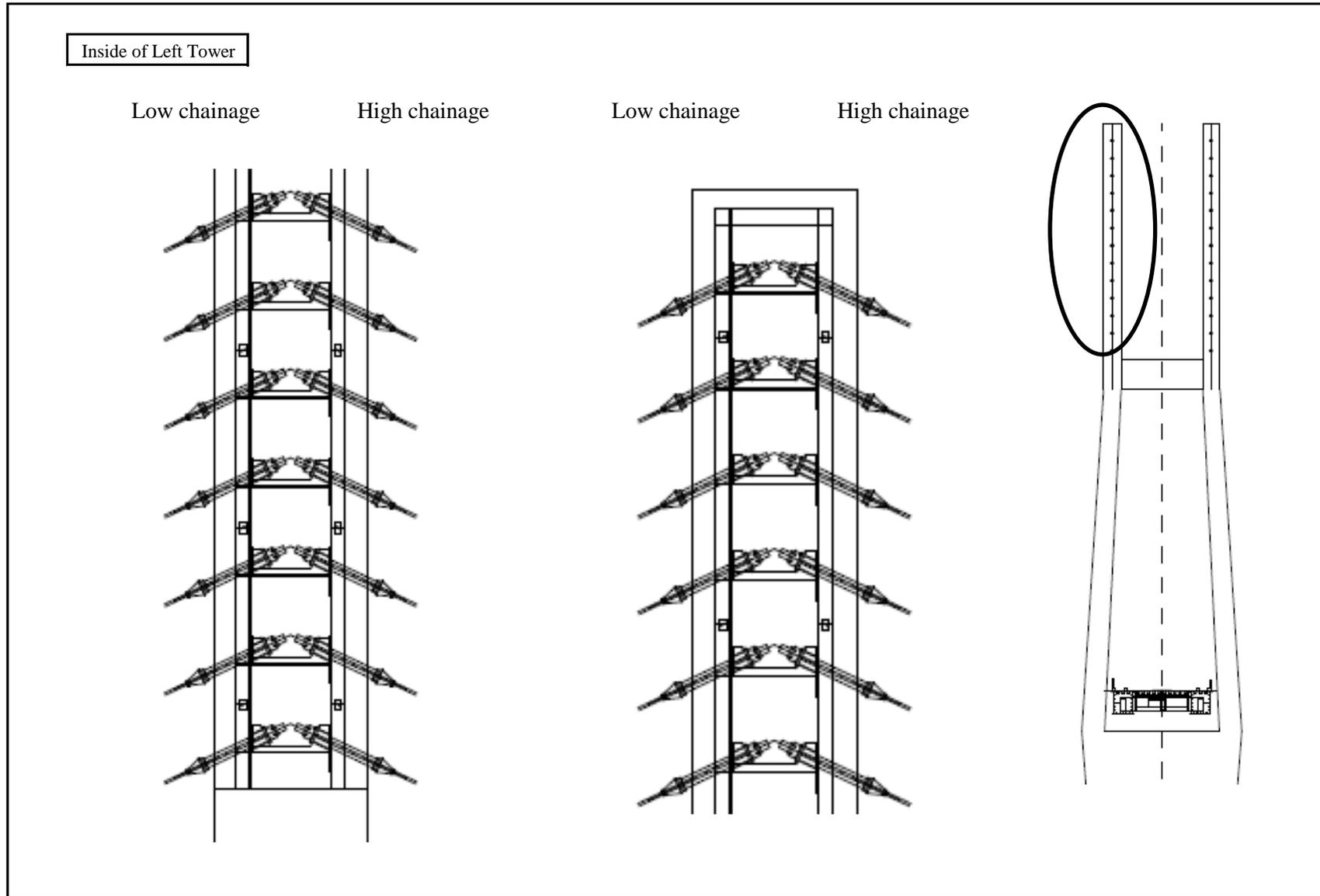
Sketch of Bridge Condition Inspection from Inside Tower (9 of 12)
Diosdado Macapagal Bridge

Inside of Left Tower					
	Right side	Left side	Low chainage	High chainage	
Step 12					
Step 11					
Step 10					
Step 9					

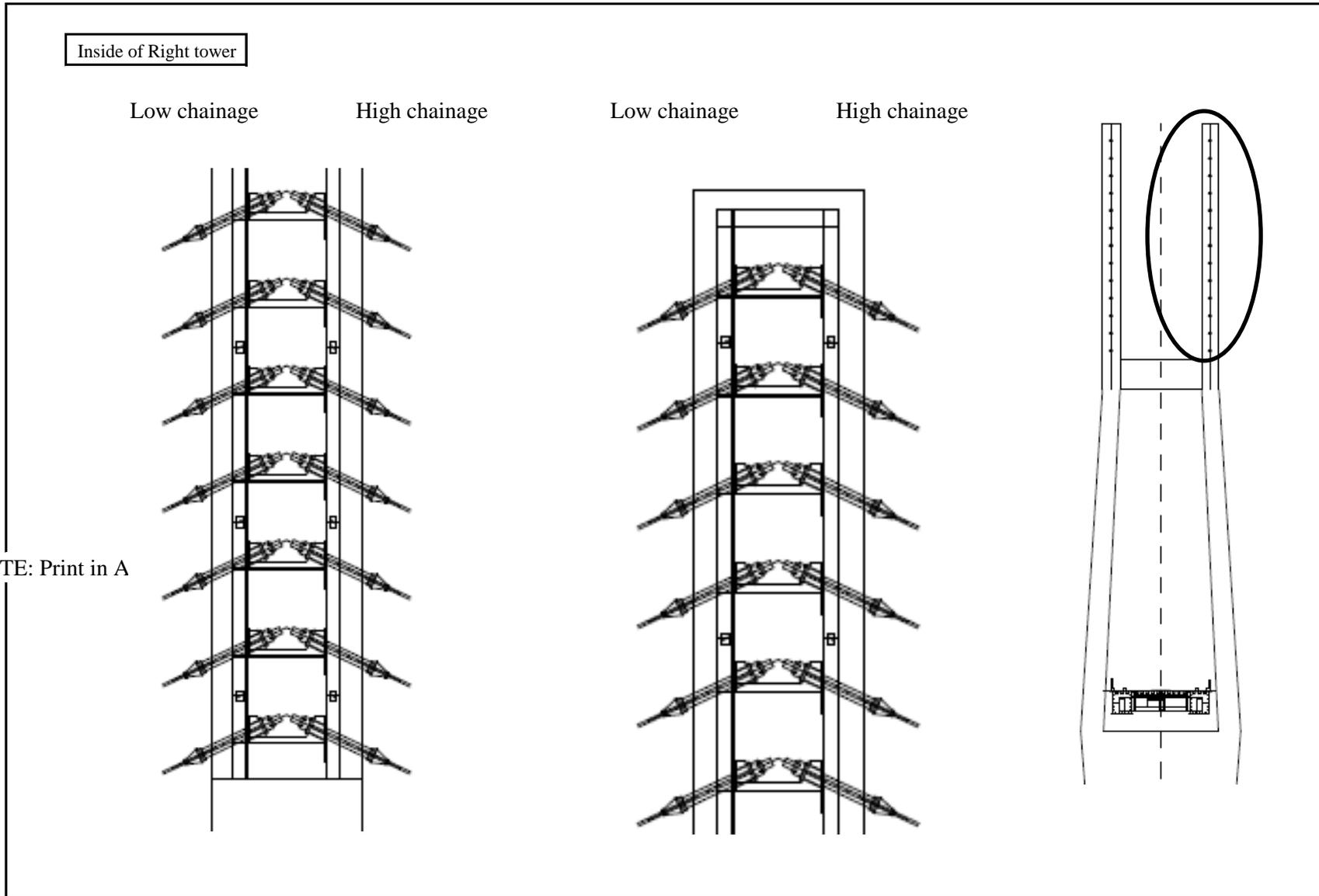
**Sketch of Bridge Condition Inspection from Inside Tower (10 of 12)
Diosdado Macapagal Bridge**



**Sketch of Bridge Condition Inspection from Inside Tower (11 of 12)
Diosdado Macapagal Bridge**

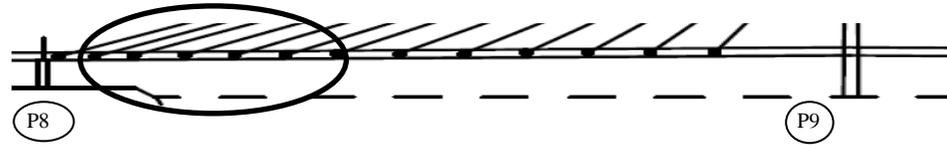


Sketch of Bridge Condition Inspection from Inside Tower (12 of 12)
Diosdado Macapagal Bridge



Sketch of Bridge Condition Inspection from Inside Box (1 of 14)
Diosdado Macapagal Bridge

Lower Chainage



High chainage

Right Girder		1	5	10	15	2		
	(P8)							
Right side web		[Grid of vertical lines representing inspection points]						
		1	5	10	15	2		
Left side web		[Grid of vertical lines representing inspection points]						
		1	5	10	15	2		
Deck Slab		[Grid of horizontal and vertical lines representing inspection points]						
		1	5	10	15	2		
Lower		[Grid of vertical lines representing inspection points]						
		1	5	10	15	2		

⋮ : Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (2 of 14)
Diosdado Macapagal Bridge

Lower Chainage



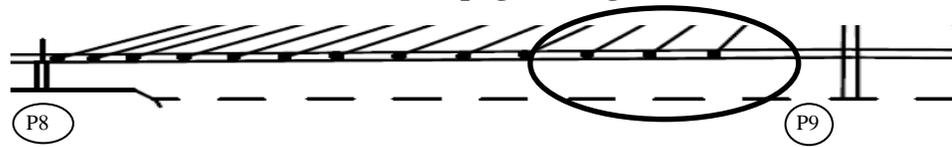
High chainage

Right Girder	22	25	30	35	40	
Right side web	[Grid area for Right side web inspection]					
Left side web	22	25	30	35	40	
Deck Slab	[Grid area for Deck Slab inspection]					
Lower	22	25	30	35	40	

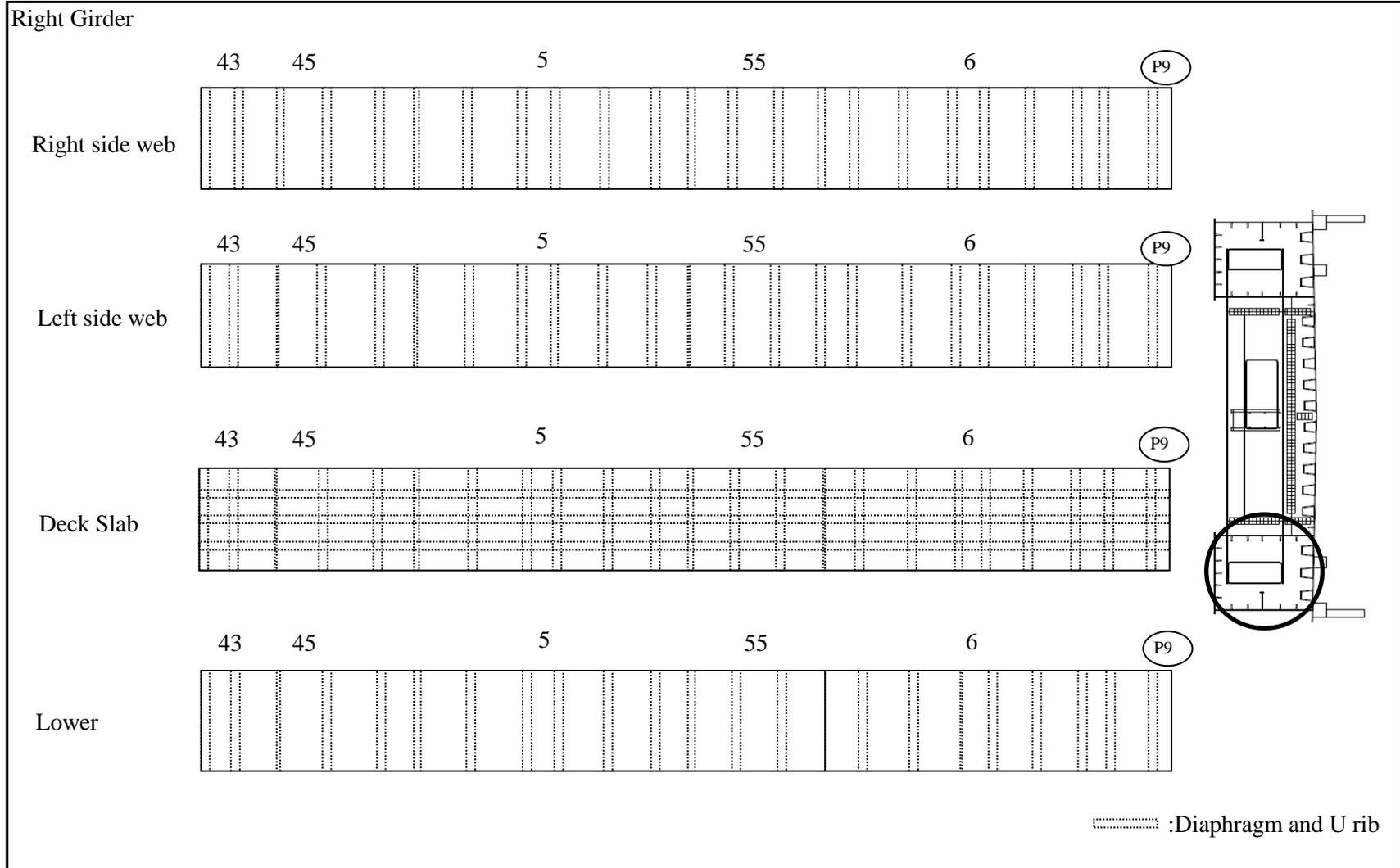
⋮ :Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (3 of 14) Diosdado Macapagal Bridge

Lower Chainage

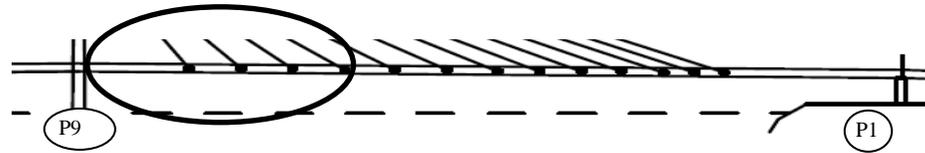


High chainage



Sketch of Bridge Condition Inspection from Inside Box (4 of 14) Diosdado Macapagal Bridge

Lower Chainage



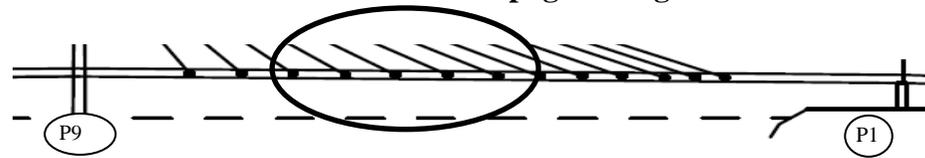
High chainage

	(P9)	66	70	7	80	85
Right Girder						
Right side web						
Left side web						
Deck Slab						
Lower						

: Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (5 of 14) Diosdado Macapagal Bridge

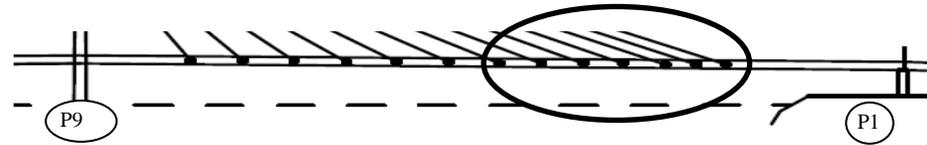
Lower Chainage



Right Girder	86	90	9	100	105	
Right side web						
Left side web						
Deck Slab						
Lower						
						:Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (6 of 14) Diosdado Macapagal Bridge

Lower Chainage

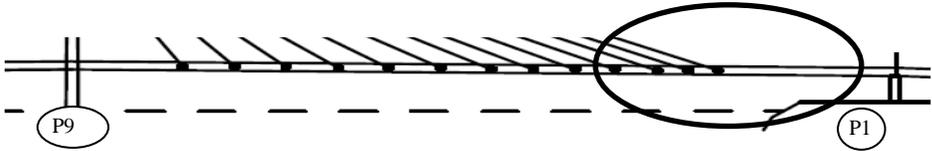


High chainage

	106	11	115	120	125	
Right Girder						
Right side web						
	106	11	115	120	125	
Left side web						
	106	11	115	120	125	
Deck Slab						
	106	11	115	120	125	
Lower						
	106	11	115	120	125	

Sketch of Bridge Condition Inspection from Inside Box (7 of 14) Diosdado Macapagal Bridge

Lower Chainage



High chainage

Right Girder	126	13	135	140	145	P10
Right side web						
Left side web						
Deck Slab						
Lower						
						:Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (8 of 14) Diosdado Macapagal Bridge

Lower Chainage



High chainage

Left Girder	P8	1	5	10	15	2	
Right side web							
Left side web							
Deck Slab							
Lower							
							:Diaphragm and U rib

**Sketch of Bridge Condition Inspection from Inside Box (9 of 14)
Diosdado Macapagal Bridge**

Lower Chainage



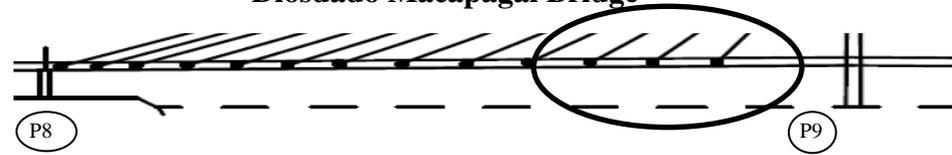
High chainage

Left Girder	22	25	30	35	40		
Right side web							
Left side web	22	25	30	35	40		
Deck Slab	22	25	30	35	40		
Lower	22	25	30	35	40		

:Diaphragm and U rib

**Sketch of Bridge Condition Inspection from Inside Box (10 of 14)
Diosdado Macapagal Bridge**

Lower Chainage



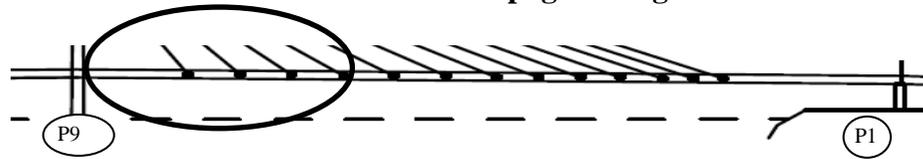
High chainage

Left Girder	43	45	5	55	6	P9
Right side web	[Diagram of Right side web with vertical lines]					
Left side web	22	25	30	35	40	
Deck Slab	22	25	30	35	40	
Lower	22	25	30	35	40	
	[Diagram of Lower section with vertical lines]					

:Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (11 of 14) Diosdado Macapagal Bridge

Lower Chainage

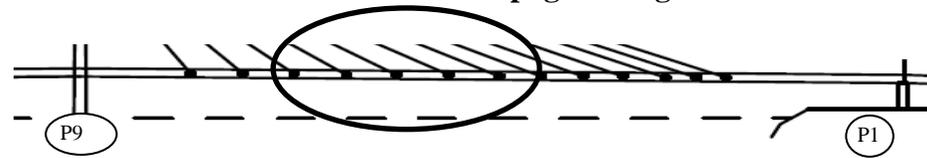


High chainage

Left Girder	(P9) 66	70	7	80	85	
Right side web						
Left side web						
Deck Slab						
Lower						
						: Diaphragm and U rib

**Sketch of Bridge Condition Inspection from Inside Box (12 of 14)
Diosdado Macapagal Bridge**

Lower Chainage

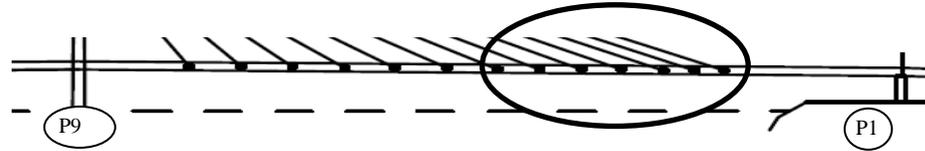


High chainage

Left Girder	86	90	9	100	105		
Right side web							
Left side web	86	90	9	100	105		
Deck Slab							
Lower	86	90	9	100	105		

**Sketch of Bridge Condition Inspection from Inside Box (13 of 14)
Diosdado Macapagal Bridge**

Lower Chainage



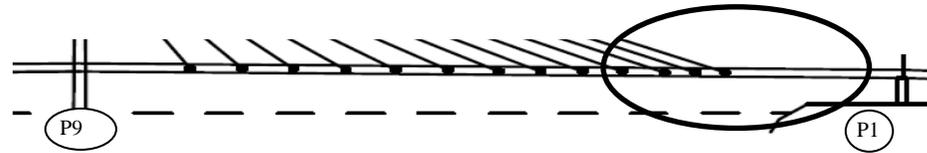
High chainage

Left Girder	106	11	115	120	125	
Right side web						
Left side web	106	11	115	120	125	
Deck Slab						
Lower	106	11	115	120	125	

: Diaphragm and U rib

Sketch of Bridge Condition Inspection from Inside Box (14 of 14) Diosdado Macapagal Bridge

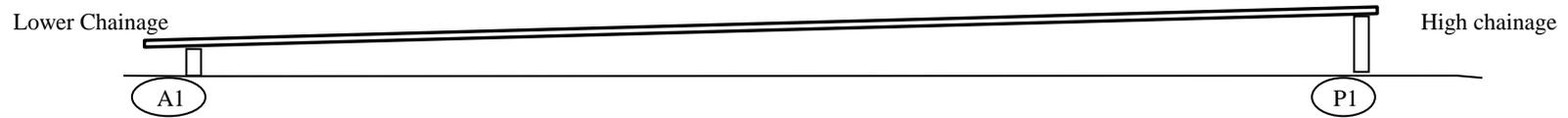
Lower Chainage



High chainage

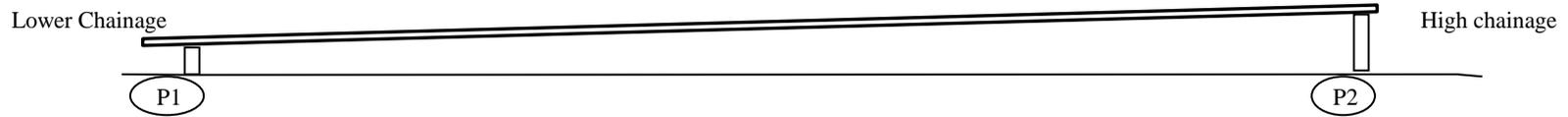
Left Girder	126	13	135	140	145	P10
Right side web						
Left side web	126	13	135	140	145	
Deck Slab						
Lower	126	13	135	140	145	

**Sketch of Bridge Condition Inspection from Underside (1 of 15)
Diosdado Macapagal Bridge**



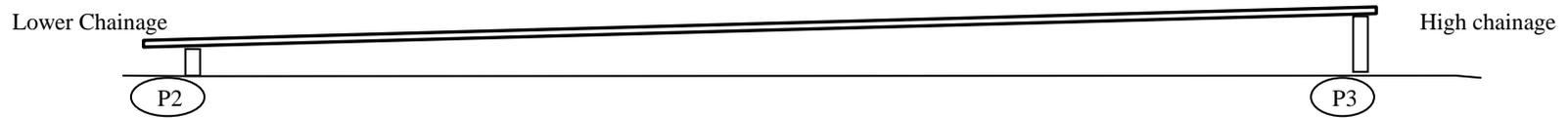
Left Girder			
Left side			
Right side			
Deck Slab			
Lower			
Deck Slab			
Lower Flange			
Deck Slab			
Right Girder			
Left side			
Right side			

**Sketch of Bridge Condition Inspection from Underside (2 of 15)
Diosdado Macapagal Bridge**



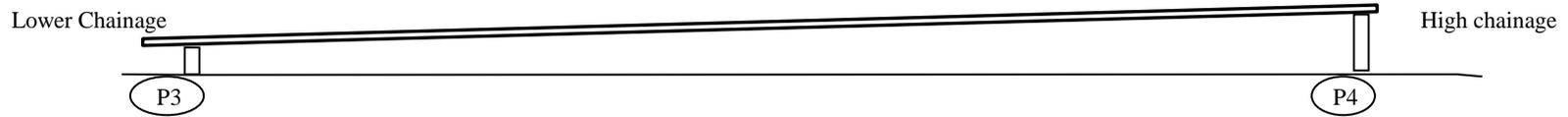
Left Girder		
Left side		
Right side		
Deck Slab		
Lower		
Deck Slab		
Lower Flange		
Deck Slab		
		: Cross Beams
Right Girder		
Left side		
Right side		

**Sketch of Bridge Condition Inspection from Underside (3 of 15)
Diosdado Macapagal Bridge**



Left Girder		
Left side		
Right side		
Deck Slab		
Lower		
Deck Slab		
Lower Flange		
Deck Slab		
		:Cross Beams
Right Girder		
Left side		
Right side		

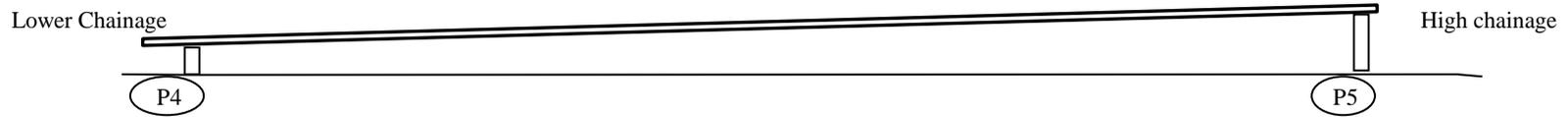
**Sketch of Bridge Condition Inspection from Underside (4 of 15)
Diosdado Macapagal Bridge**



Left Girder			
Left side			
Right side			
Deck Slab			
Lower			
Deck Slab			
Lower Flange			
Deck Slab			
Right Girder			
Left side			
Right side			

: Cross Beams

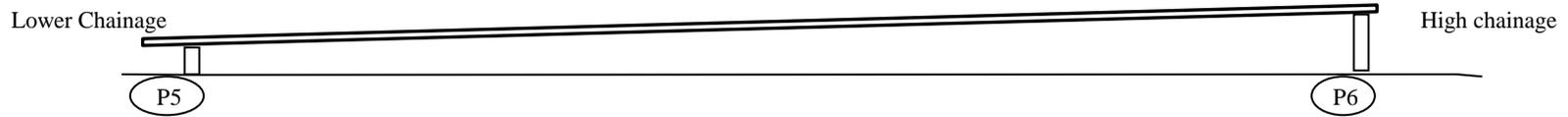
**Sketch of Bridge Condition Inspection from Underside (5 of 15)
Diosdado Macapagal Bridge**



Left Girder			
Left side			
Right side			
Deck Slab			
Lower			
Deck Slab			
Lower Flange			
Deck Slab			
Right Girder			
Left side			
Right side			

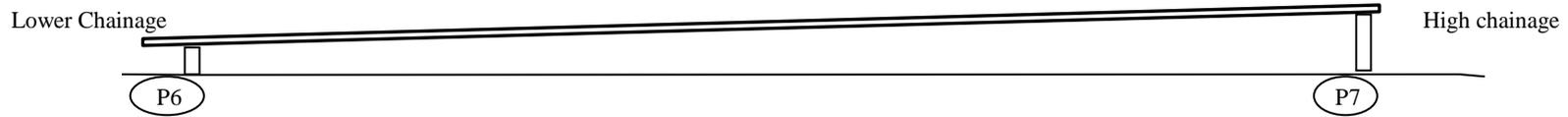
- - - - - : Cross Beams

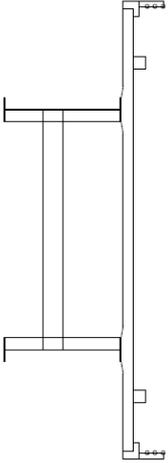
**Sketch of Bridge Condition Inspection from Underside (6 of 15)
Diosdado Macapagal Bridge**



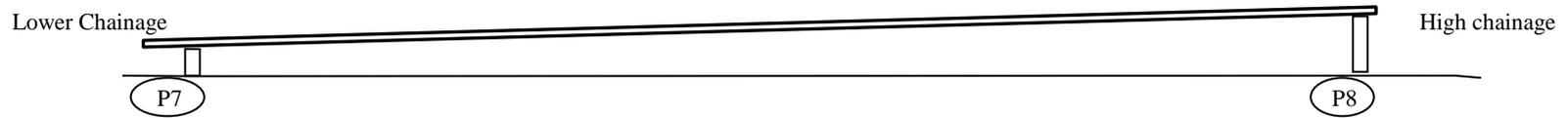
Left Girder		
Left side		
Right side		
Deck Slab		
Lower		
Deck Slab		
Lower Flange		
Deck Slab		
Right Girder		
Left side		
Right side		

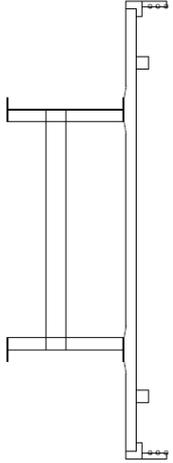
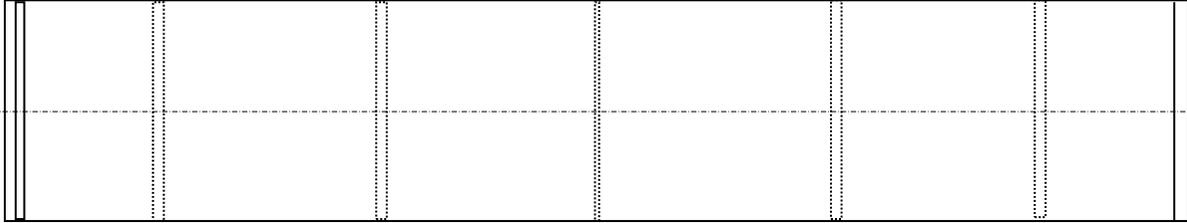
**Sketch of Bridge Condition Inspection from Underside (7 of 15)
Diosdado Macapagal Bridge**



Left Girder		
Left side	<div style="border: 1px solid black; height: 20px;"></div>	
Right side	<div style="border: 1px solid black; height: 20px;"></div>	
Deck Slab	<div style="border: 1px solid black; height: 20px;"></div>	
Lower	<div style="border: 1px solid black; height: 20px;"></div>	
Deck Slab	<div style="border: 1px solid black; height: 20px; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; border-top: 1px dashed black;"></div> <div style="position: absolute; top: 20px; left: 0; right: 0; border-top: 1px dashed black;"></div> <div style="position: absolute; top: 40px; left: 0; right: 0; border-top: 1px dashed black;"></div> <div style="position: absolute; top: 60px; left: 0; right: 0; border-top: 1px dashed black;"></div> <div style="position: absolute; top: 80px; left: 0; right: 0; border-top: 1px dashed black;"></div> </div>	
Lower Flange	<div style="border: 1px solid black; height: 20px;"></div>	
Deck Slab	<div style="border: 1px solid black; height: 20px;"></div>	
		
		<div style="border: 1px dashed black; width: 20px; height: 10px; display: inline-block;"></div> : Cross Beams
Right Girder		
Left side	<div style="border: 1px solid black; height: 20px;"></div>	
Right side	<div style="border: 1px solid black; height: 20px;"></div>	

**Sketch of Bridge Condition Inspection from Underside (8 of 15)
Diosdado Macapagal Bridge**



Left Girder			
Left side	<div style="border: 1px solid black; height: 20px;"></div>		
Right side	<div style="border: 1px solid black; height: 20px;"></div>		
Deck Slab	<div style="border: 1px solid black; height: 20px;"></div>		
Lower	<div style="border: 1px solid black; height: 20px;"></div>		
Deck Slab			
Lower Flange	<div style="border: 1px solid black; height: 20px;"></div>		
Deck Slab	<div style="border: 1px solid black; height: 20px;"></div>		
Right Girder			
Left side	<div style="border: 1px solid black; height: 20px;"></div>		
Right side	<div style="border: 1px solid black; height: 20px;"></div>		

- - - - - : Cross Beams

Sketch of Bridge Condition Inspection from Underside (9 of 15)
Diosdado Macapagal Bridge



Left Girder								
Left side								
Right side								
Side Deck								
Lower								
Deck Slab	Se. 1	Se.	Se.	Se.	Se. 5	Se.	Se.	
Lower								
Side Deck								
Right Girder								
Left side								
Right side								

: Cross Beams

Sketch of Bridge Condition Inspection from Underside (10 of 15)
Diosdado Macapagal Bridge

Lower Chainage



High chainage

Left Girder									
Left side									
Right side									
Side Deck									
Lower									
Deck Slab	Se. 8	Se.	Se. 10	Se. 11	Se. 12	Se. 13	Se. 14	Se. 15	
Lower									
Side Deck									
Right Girder									
Left side									
Right side									

:Cross Beams

Sketch of Bridge Condition Inspection from Underside (11 of 15)
Diosdado Macapagal Bridge

Lower Chainage



High chainage

Left Girder										
Left side										
Right side										
Side Deck										
Lower										
Deck Slab	Se. 16	Se. 17	Se. 18	Se. 19	Se. 20	Se. 21	Se. 22	Se. 23	Se.	
Lower										
Side Deck										
Right Girder										
Left side										
Right side										

: Cross Beams

Sketch of Bridge Condition Inspection from Underside (12 of 15) Diosdado Macapagal Bridge

Lower Chainage

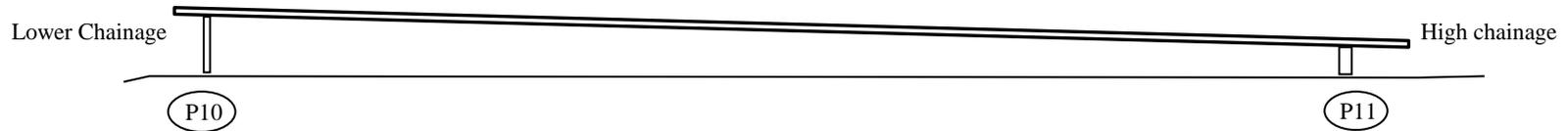


High chainage

Left Girder										
Left side										
Right side										
Side Deck										
Lower										
Deck Slab	Se. 25	Se. 26	Se. 27	Se. 28	Se. 29	Se. 30	Se. 31	Se. 32		Se.
Lower										
Side Deck										
Right Girder										
Left side										
Right side										

⋯⋯⋯: Cross Beams

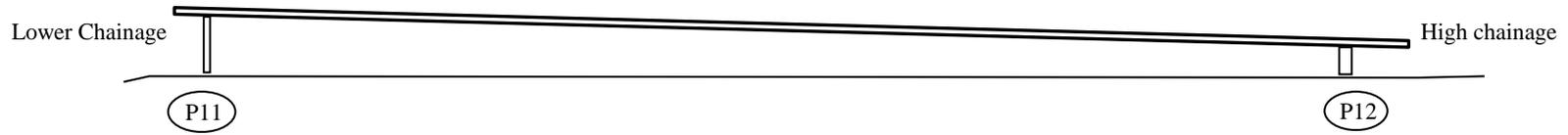
**Sketch of Bridge Condition Inspection from Underside (13 of 15)
Diosdado Macapagal Bridge**



Left Girder		
Left side		
Right side		
Deck Slab		
Lower		
Deck Slab		
Lower Flange		
Deck Slab		
Right Girder		
Left side		
Right side		

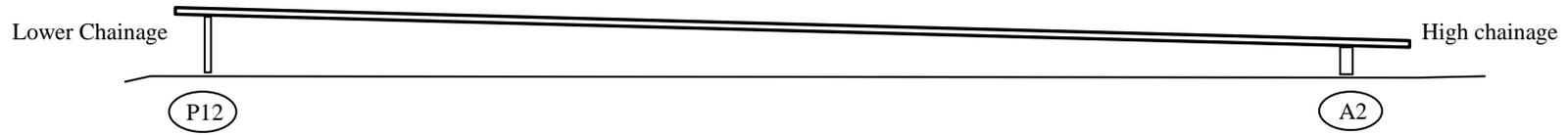
⋯⋯⋯ : Cross Beams

**Sketch of Bridge Condition Inspection from Underside (14 of 15)
Diosdado Macapagal Bridge**



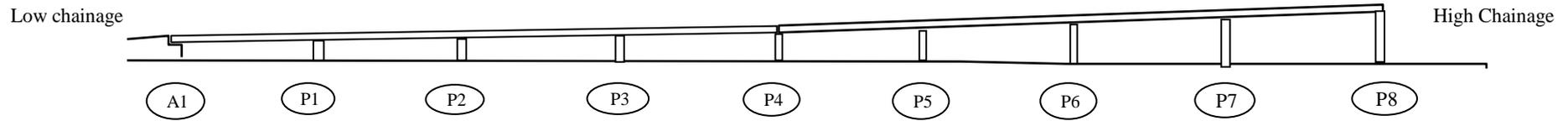
Left Girder		
Left side		
Right side		
Deck Slab		
Lower		
Deck Slab		
Lower Flange		
Deck Slab		
Right Girder		
Left side		
Right side		

**Sketch of Bridge Condition Inspection from Underside (15 of 15)
Diosdado Macapagal Bridge**



Left Girder			
Left side			
Right side			
Deck Slab			
Lower			
Deck Slab			
Lower Flange			
Deck Slab			
Right Girder			
Left side			
Right side			

Sketch of Bridge Condition Inspection from ground level (1 of 5) Diosdado Macapagal Bridge



Pier and Abutment

A1

P1

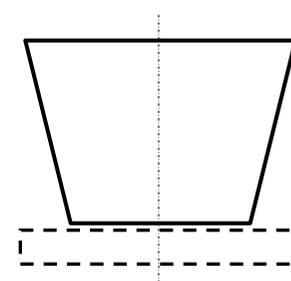
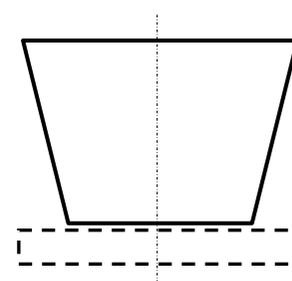
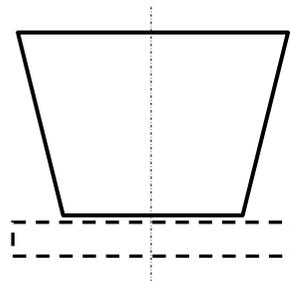
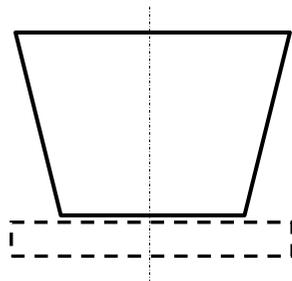
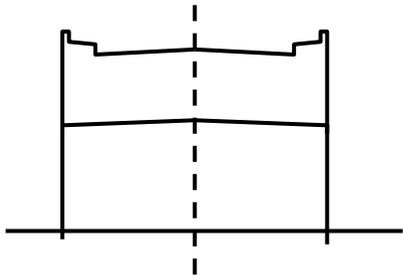
P2

Low chainage

High chainage

Low chainage

High chainage



Left

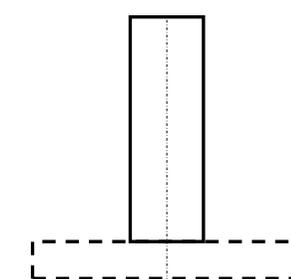
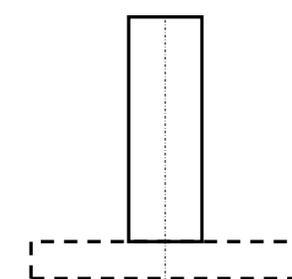
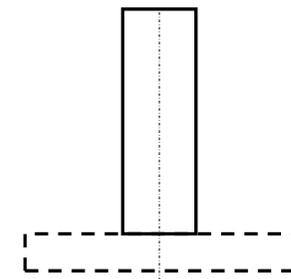
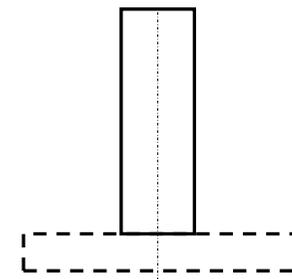
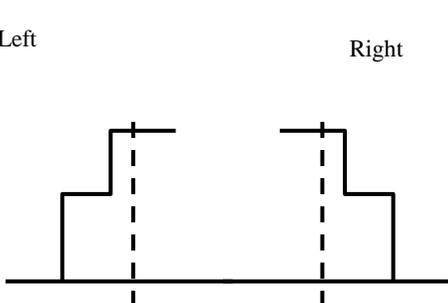
Right

Left

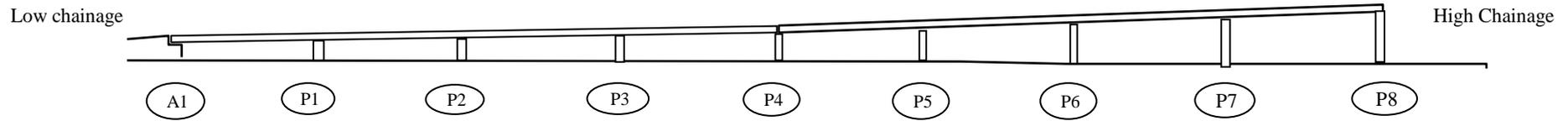
Right

Left

Right



Sketch of Bridge Condition Inspection from ground level (2 of 5)
Diosdado Macapagal Bridge



Pier and Abutment

P3

P4

P5

Low chainage

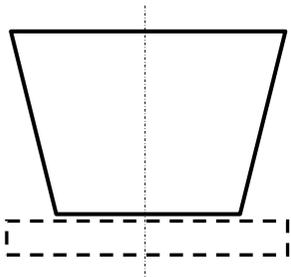
High chainage

Low chainage

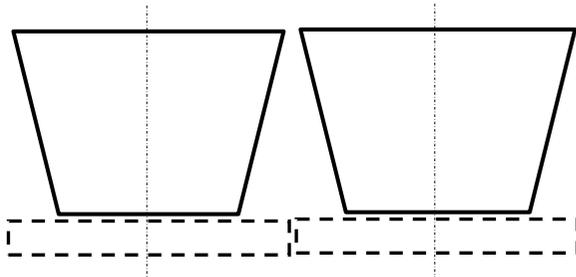
High chainage

Low chainage

High chainage

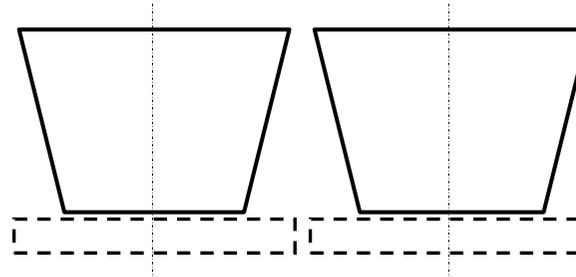


Left



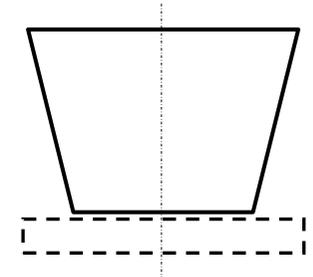
Right

Left

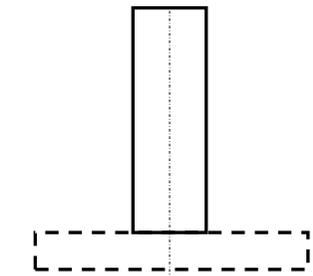
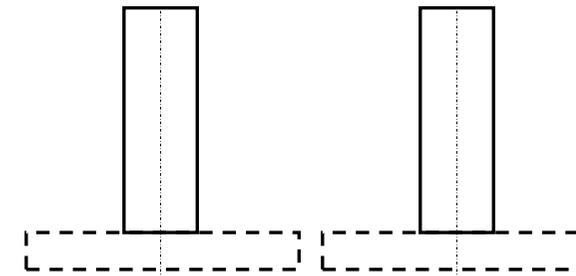
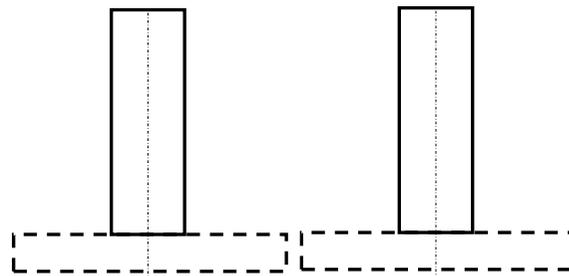
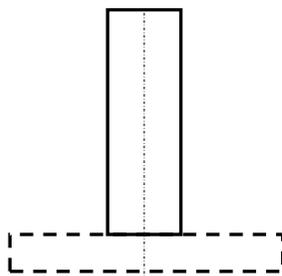


Right

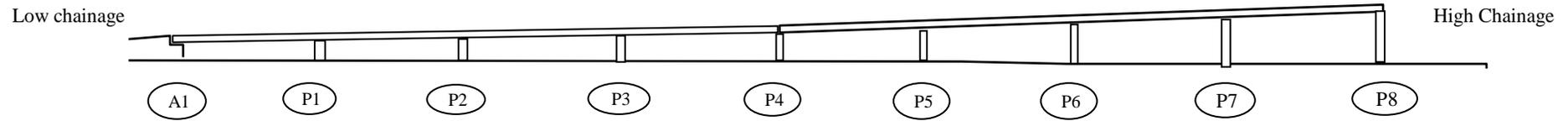
Left



Right



Sketch of Bridge Condition Inspection from ground level (3 of 5)
Diosdado Macapagal Bridge



Pier and Abutment

P6

P7

P8

Low chainage

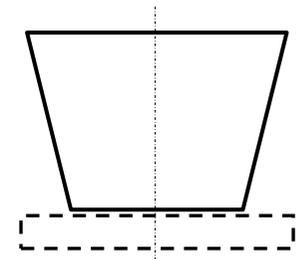
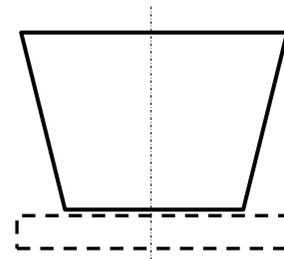
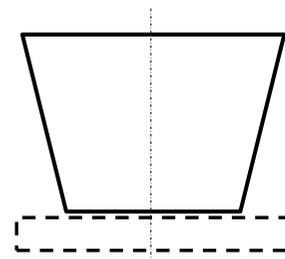
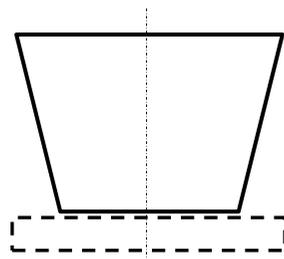
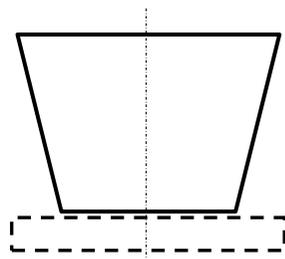
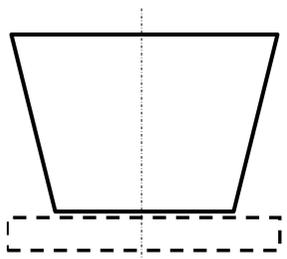
High chainage

Low chainage

High chainage

Low chainage

High chainage



Left

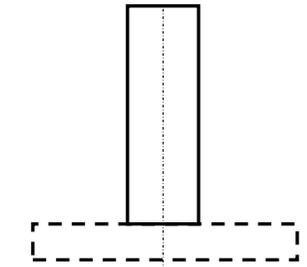
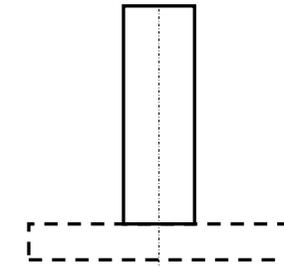
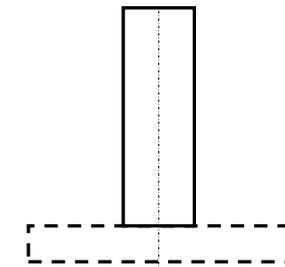
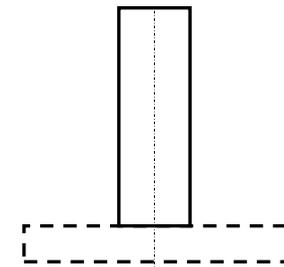
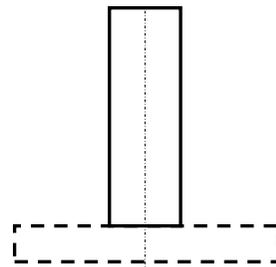
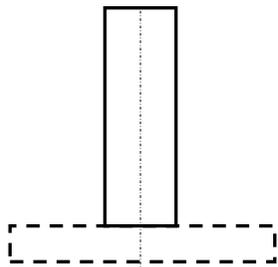
Right

Left

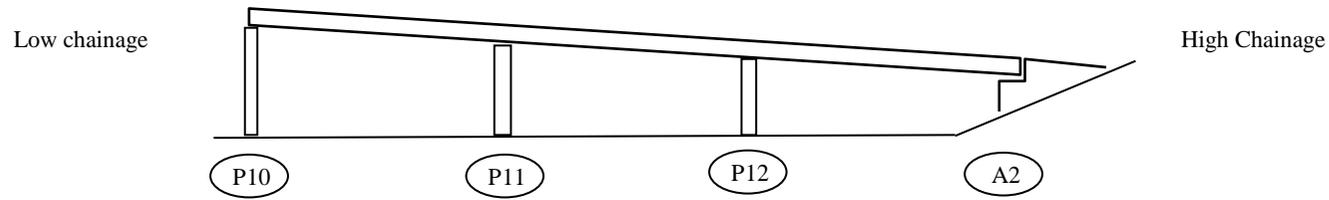
Right

Left

Right



Sketch of Bridge Condition Inspection from ground level (4 of 5) Diosdado Macapagal Bridge



Pier and Abutment

P10

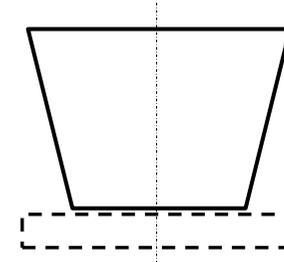
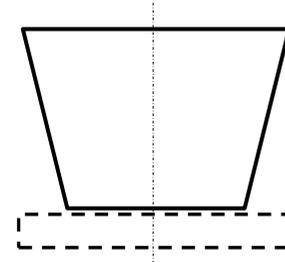
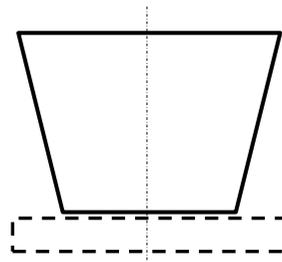
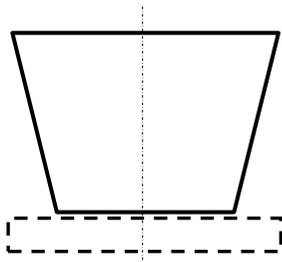
P11

Low chainage

High chainage

Low chainage

High chainage

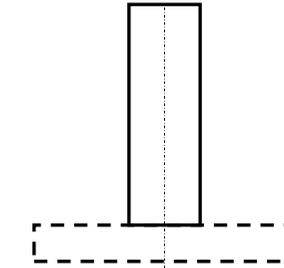
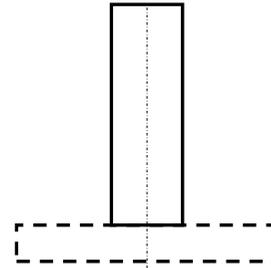
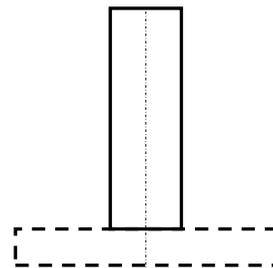
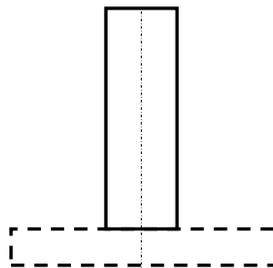


Left

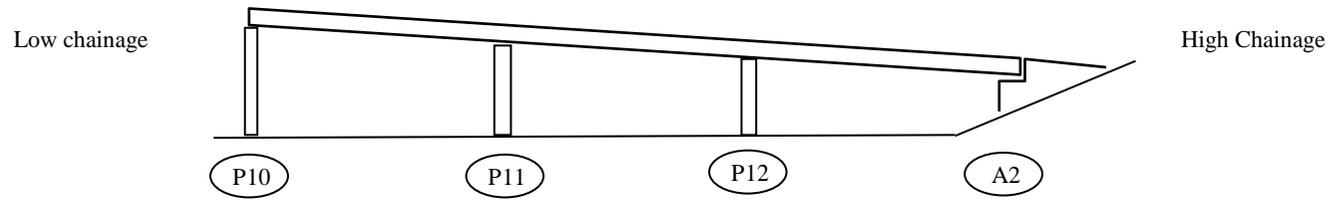
Right

Left

Right

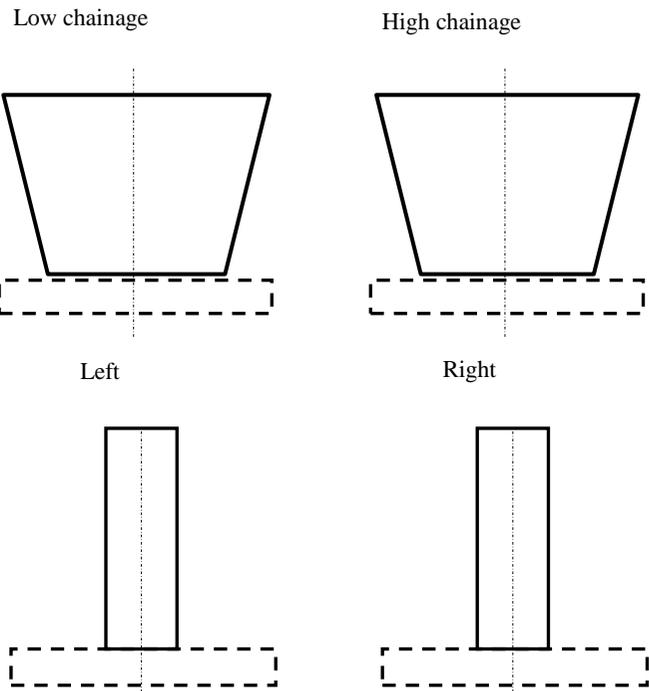


Sketch of Bridge Condition Inspection from ground level (5 of 5)
Diosdado Macapagal Bridge

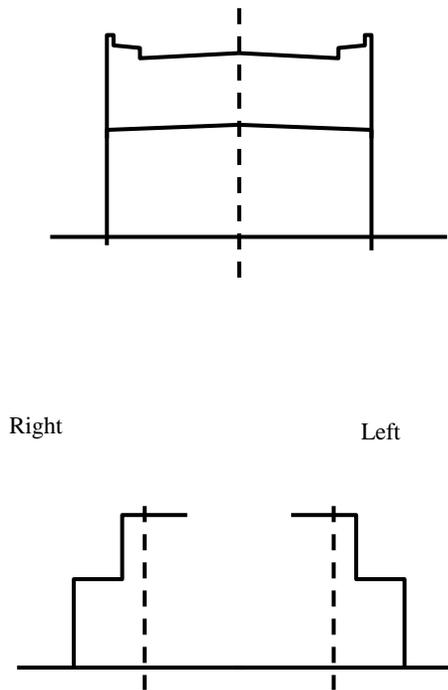


Pier and Abutment

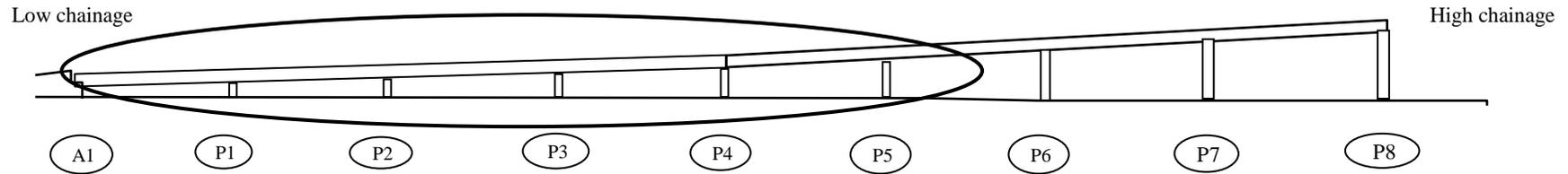
P12



A2

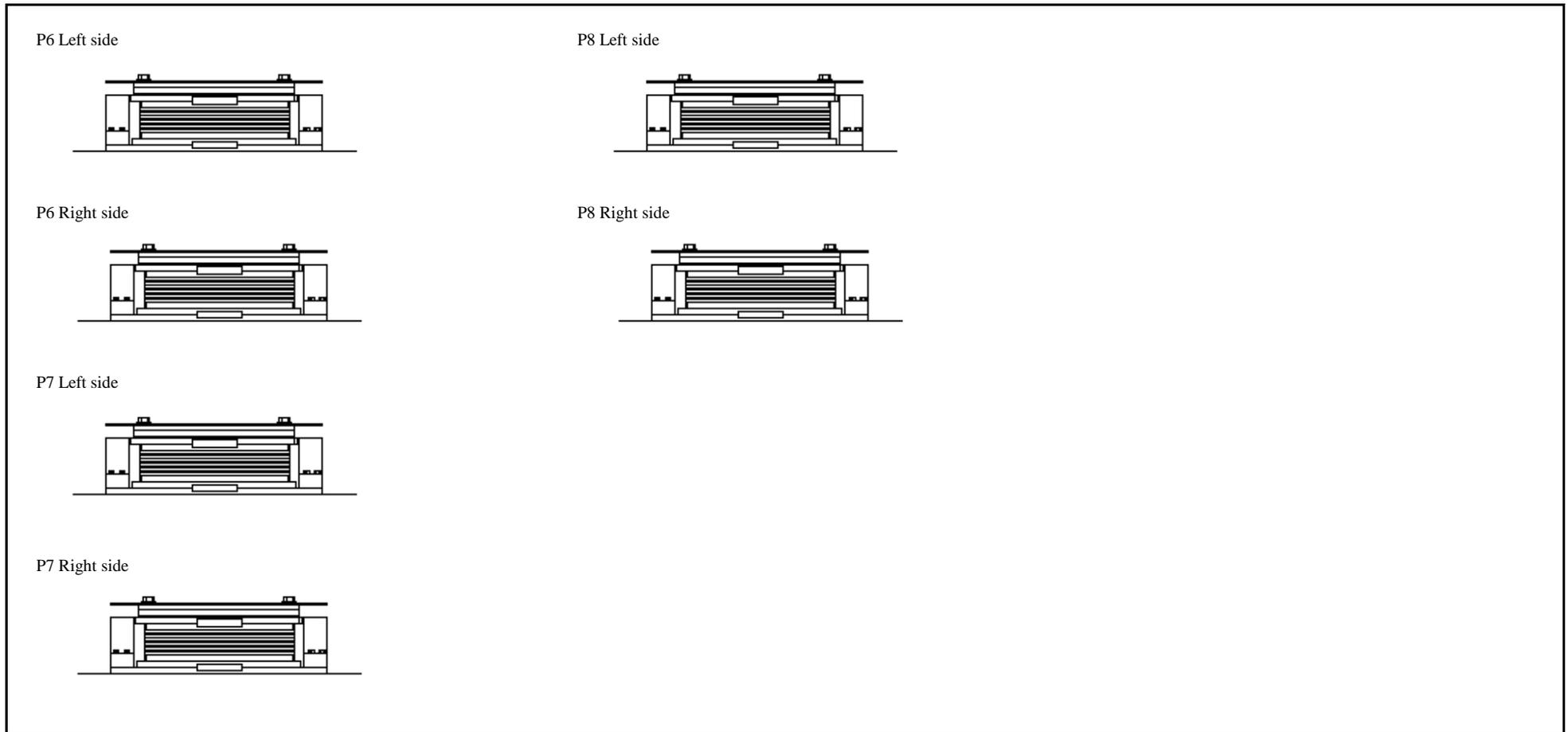
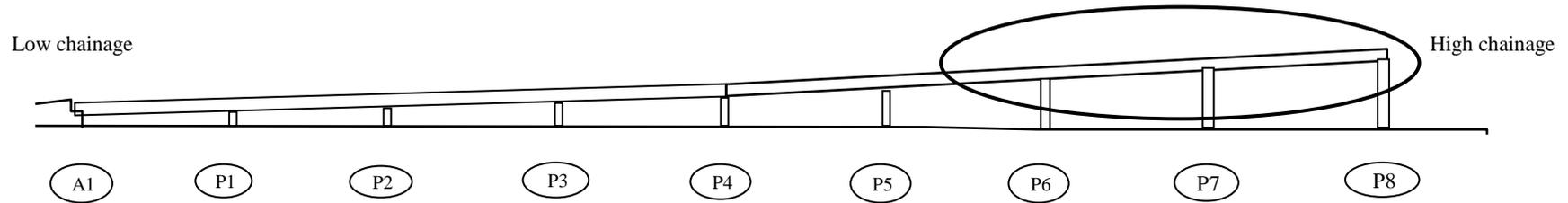


Sketch of Bridge Condition Inspection from Pier (1 of 8) Diosdado Macapagal Bridge

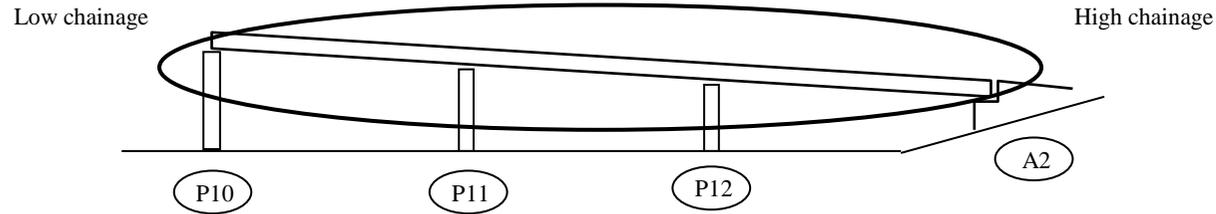


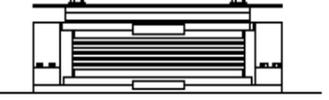
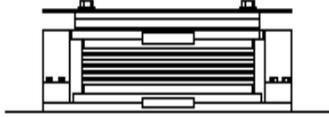
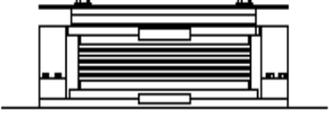
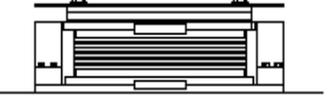
A1 Left side	P2 Left side	P4 Left side
A1 Right side	P2 Right side	P4 Right side
P1 Left side	P3 Left side	P5 Left side
P1 Right side	P3 Right side	P5 Right side

Sketch of Bridge Condition Inspection from Pier (2 of 8)
Diosdado Macapagal Bridge

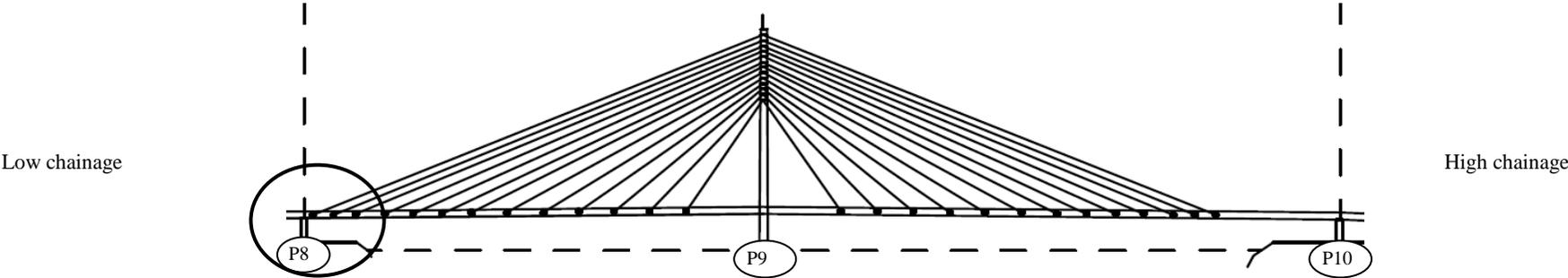


Sketch of Bridge Condition Inspection from Pier (3 of 8) Diosdado Macapagal Bridge



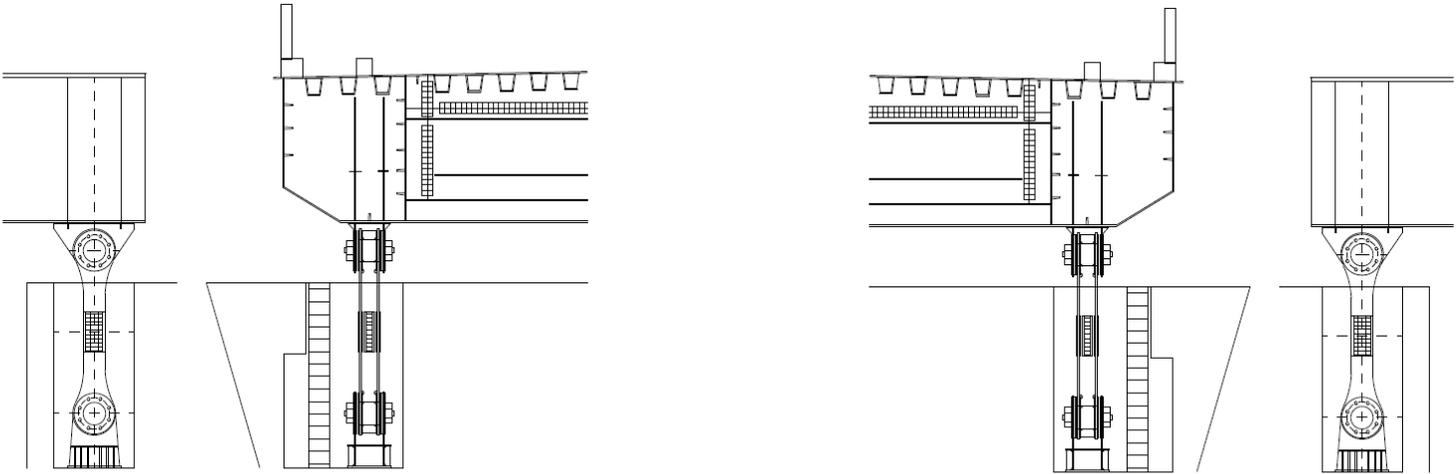
P10 Left side	P12 Left side
	
P10 Right side	P12 Right side
	
P11 Left side	A2 Left side
	
P11 Right side	A2 Right side
	

Sketch of Bridge Condition Inspection from Pier (4 of 8)
Diosdado Macapagal Bridge

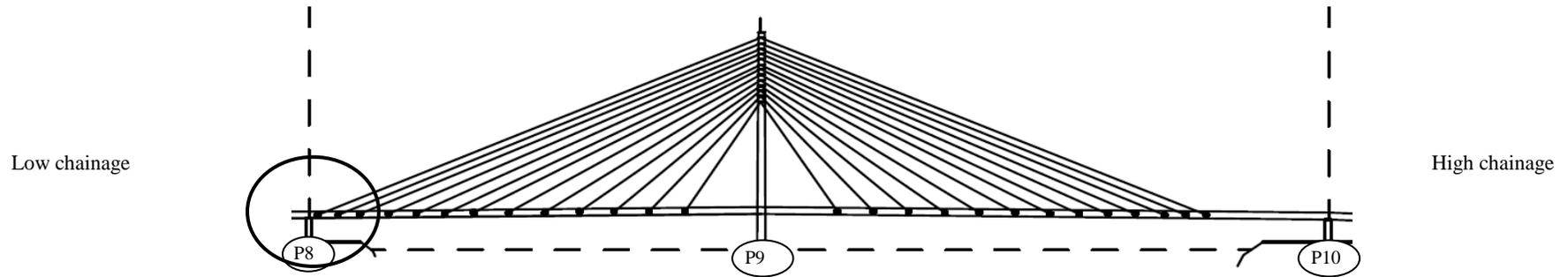


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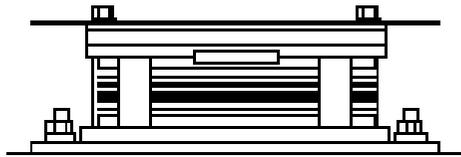
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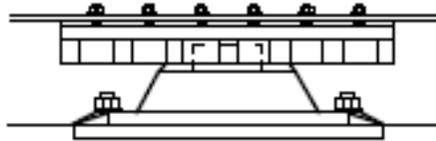
Sketch of Bridge Condition Inspection from Pier (5 of 8)
Diosdado Macapagal Bridge



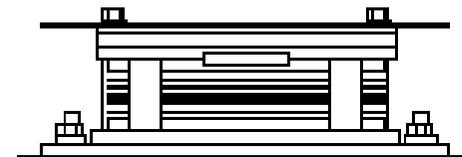
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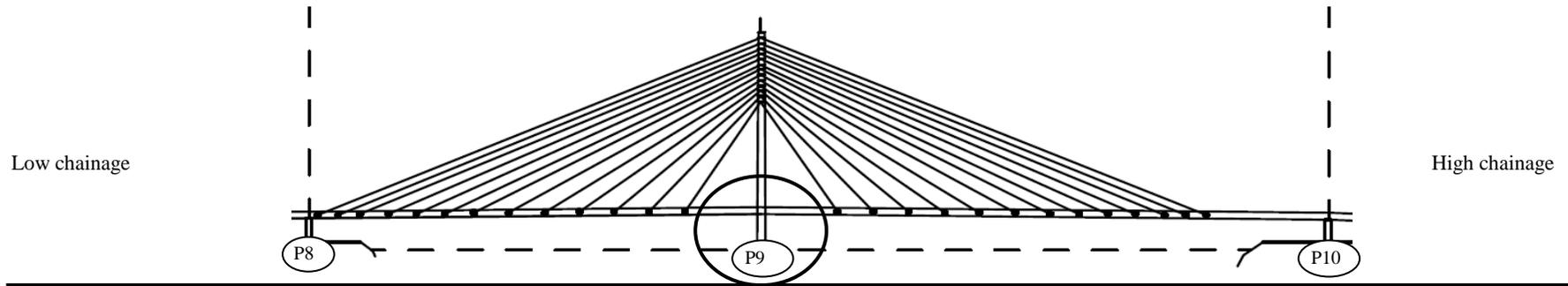
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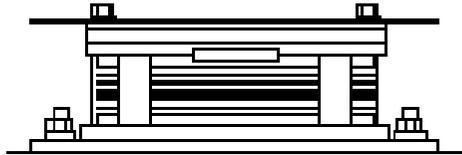
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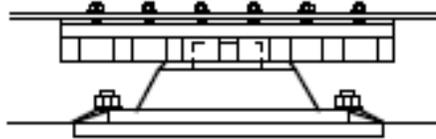
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Diosdado Macapagal Bridge**



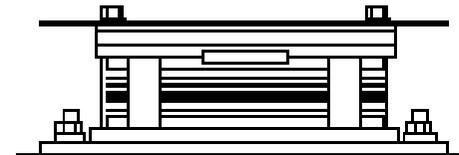
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Left side



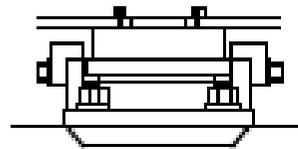
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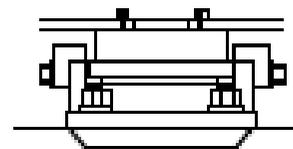
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Right side



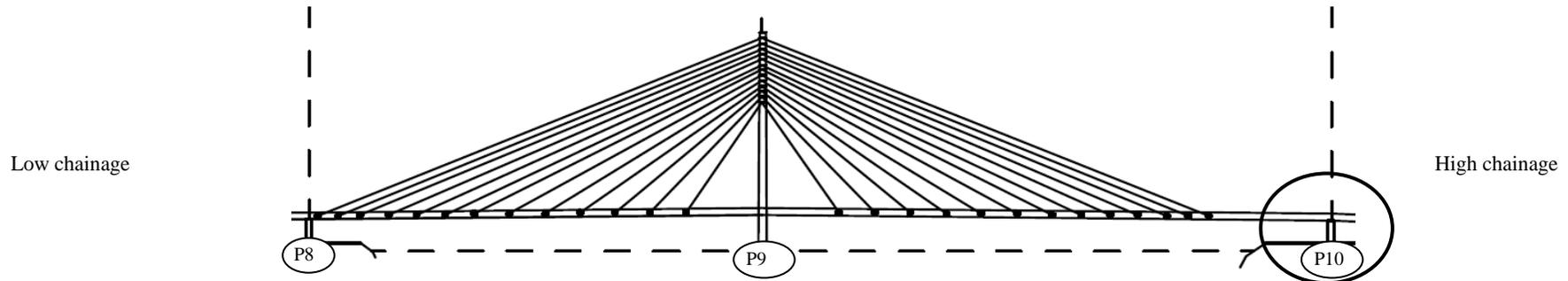
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Left side



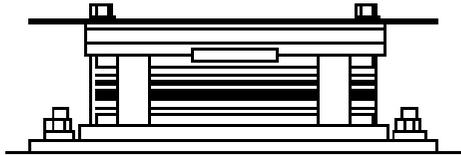
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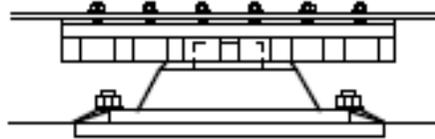
**Sketch of Bridge Condition Inspection from Pier (7 of 8)
Diosdado Macapagal Bridge**



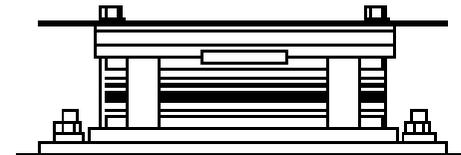
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Left side



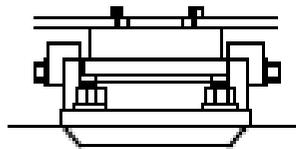
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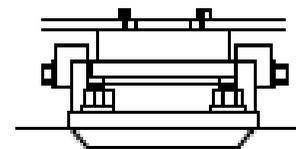
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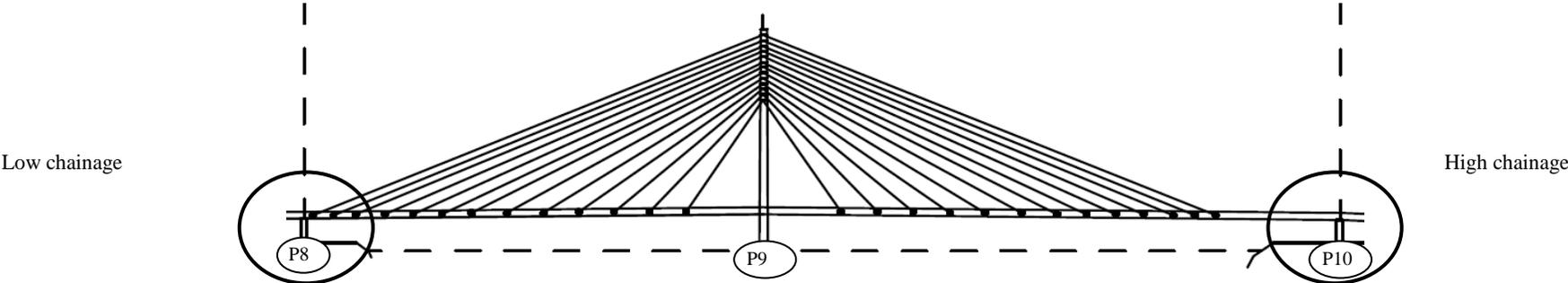
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Left side



P10
Right side



**Sketch of Bridge Condition Inspection from Pier (8 of 8)
Diosdado Macapagal Bridge**



<p>P8 Left side</p>		<p>P10 Left side</p>	
<p>P8 Right side</p>		<p>P10 Right side</p>	

APPENDIX G

ADDITIONAL MATERIAL DEFECTS ON SPECIAL BRIDGE

APPENDIX G
ADDITIONAL MATERIAL DEFECTS ON SPECIAL BRIDGE

1. GENERAL

This appendix describes the defects that are normally found in Asphalt Wearing Surface and Cable attributes such as Anchorage at Tower, Cable and Anchorage outside/inside of the Girder.

Each defect is described and the causes producing it are identified.

2. ASPHALT WEARING SURFACE

The asphalt wearing surface is the surface on which vehicle traffic and pedestrian travel. In the Diosdado Macapagal Bridge, there are two layers and each layer is 40 mm thick. Base and top layers use Stone Mastic Asphalt and Dense Graded Bituminous Concrete Asphalt, respectively. Asphalt wearing surface plays an important role to protect the deck slab.

Defects on asphalt wearing surface are often due to poor composition of asphalt, lack of quality control, improper application procedure, and/or destructive/harsh environment.

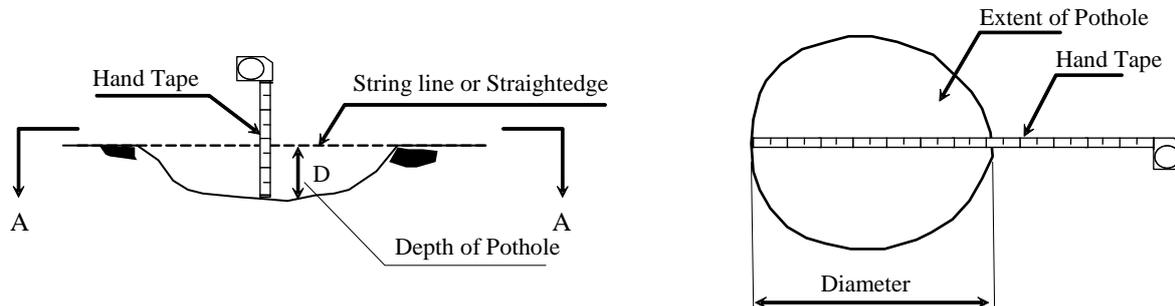
The following defects commonly found on Asphalt Wearing Surface are as follows:

- Potholes
- Shoving
- Rutting
- Cracking
- Raveling

2.1. Potholes

Potholes are bowl-shaped holes in the pavement caused by the penetration of water through the pavement due to heavy rains and breaking up of the pavement due to subsequent traffic action. Pavements already deteriorated with defects such as alligator cracking and raveling are prone to the occurrence of potholes.

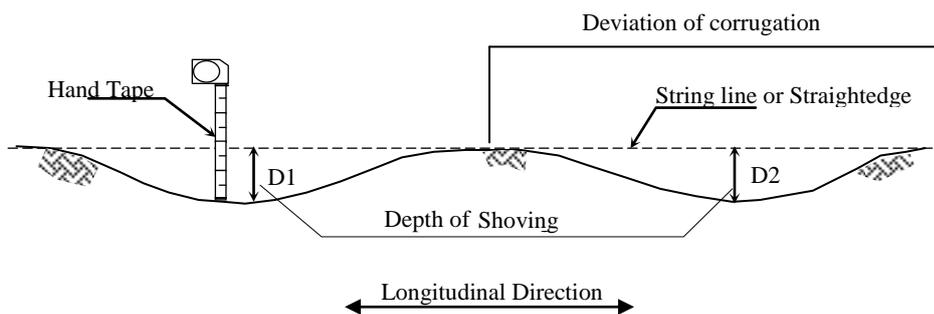
Figure G-1
Method of Measuring Potholes



2.2. Shoving

Shoving is defined as the unevenness of the roughness on the carriageway surface along the longitudinal direction of the road. This deformation, as it progresses, will lead to an increasingly severe impact loading under traffic, particularly at joints. It is usually the result of the combined effects of traffic and warm weather. Blisters are formed in the surface during warm weather while traffic normally prevents them from rising.

Figure G-2
Measurement of Waving Depth and Corrugation

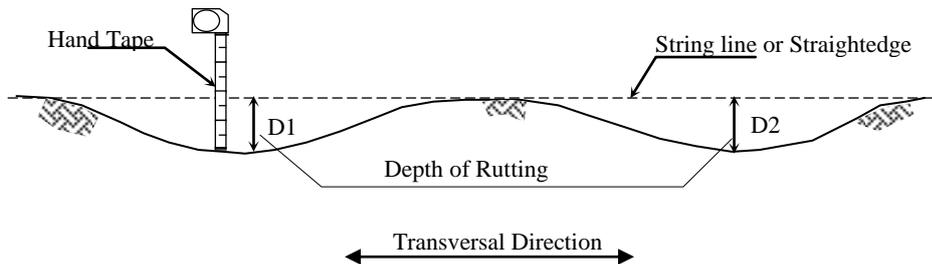


2.3. Rutting

Rutting is defined as the unevenness on the carriageway surface in the transverse direction of the road. This deformation is caused by continuous heavy wheel loads passing along the carriageway in the longitudinal direction.

Rutting progresses rapidly in warm weather and does indicate failure of the surfacing materials. The main effect is that it prevents water to drain from the carriageway and in some severe cases, prevent vehicles from leaving the rut affected depressed areas, causing a temporary loss of control on the vehicle. In some instances, the combined effect with rain makes braking extremely difficult with a strong possibility of the vehicle aquaplaning.

Figure G-3
Measurement of Rutting Depth



2.4. Cracking

A crack is a linear fracture extending partially or completely through the pavement. Cracking in pavements may be caused by any or a combination of the following factors: the action of vehicular wheel loading, poor quality of material, compaction, placement and drainage. It also includes temperature susceptibility of the asphalt cement binder and reflection cracks, due to the extension of cracks on the surface below the pavement.

Cracks are distinguished by its appearance and direction. The following types of cracks are commonly observed on the pavement surface:

- Longitudinal
- Transverse
- Alligator

Longitudinal cracks are roughly parallel to the direction of the traffic and may be situated at or near the center of the wheel tracks, centerline of roadway, mid-lane or along pavement edges.

Transverse cracks are approximately at to the pavement centerline and may extend partially or completely across the pavement.

Alligator cracks form a network of multi-sided polygons or blocks resembling the skin of an alligator. The block sizes typically range from 50mm to 500mm. They may occur anywhere in the pavement surface and may be accompanied by depressions in the surface. For this type of crack, the Condition Rating such as the severity of defect and condition state will be determined only by measuring its area.

2.5. Raveling

Raveling is one of the abrasions of Bituminous Pavements. It is defined as the loss of the wearing surface exposing the aggregates. Rough surface is caused by the segregation of course aggregates from the mixture.

3. CABLE ELEMENTS

Attributes of Cable are:

- Anchorage at Tower
- Cable
- Anchorage outside/inside of Girders

The above-listed attributes are used in structures for external pre-stressing system.

The following defects are commonly observed in cable attributes:

- Anchorage** : Corrosion, Missing Bolts, Deformation, Cracking and Water Leakage
- Cable** : Abnormal Vibration, Alignment Deformation, Cracking, Water leakage, Corrosion and Delamination
- Inside of tower around anchorage** : Cracking, Spalling, Scaling, Disintegration, Delamination, Rebar Exposure/Corrosion, Honeycomb and Water Leakage

3.1 Anchorage and Cable

Cables with three different diameters are adopted in Diosdado Macapagal Bridge. Cable is produced in factory and transported in the site. Wires are covered by high density polyethylene for the protection against corrosion. Figure G-4 shows the details of stay cables used in Diosdado Macapagal Bridge.

Figure G-4
Stay Cables in Diosdado Macapagal Bridge

Cable Size	φ 7 x 73	φ 7 x 85	φ 7 x 109
Cross Section			
Nominal Area	0.002809 m ²	0.003271 m ²	0.004195 m ²
Unit Weight	23.1 kg/m	26.8 kg/m	34.7 kg/m
Nominal Tensile Strength	4,410 kN	5,140 kN	6,590 kN
Elastic modulus	196,000 MPa	196,000 MPa	196,000 MPa

The Cable is the primary structural component of a Cable Stayed Bridge. It is very important to check whether the above-listed defects are present in comparison with the adjacent cable by visual inspection, sensory or engineering judgment.

Abnormal vibration and alignment deformation of cable are caused by the combination of conditions of material, construction method, environmental aspects, structural characteristic and concentrated external force. The resonance is a serious problem though it hardly occurs at the same time because of the small difference in length of each cable.

Cracks on the surface of cable should be located and checked. When there is water leakage, there is a possibility of corrosion and section loss of cable. Water leakage from the connection with anchorage and cable is dangerous defect. Water proof sealing and rubber cover should be inspected carefully.

Water leakage at the anchorage and cable has a dangerous effect, therefore when these defects are observed, it must be referred to an expert of a specialized investigation company immediately so that an appropriate inspection can be undertaken.

As for defects of anchorage, refer to “Appendix A, Material Defects, Section 3- STEEL” for standard bridges of the BMS Manual.

3.2 Inside of Tower around Anchorage

The concrete element around anchorage at tower is very important to sustain bridge and these members are stressed with heavy load from cable. The tower is supporting every dead and live load through the cable. Excessive stress from cable will cause the bridge to collapse. Cracking and buckling should be inspected carefully.

Refer to “Appendix A, Material Defects Section 2- CONCRETE” for standard bridges of the BMS Manual.

4. WEATHERING STEEL

4.1. General

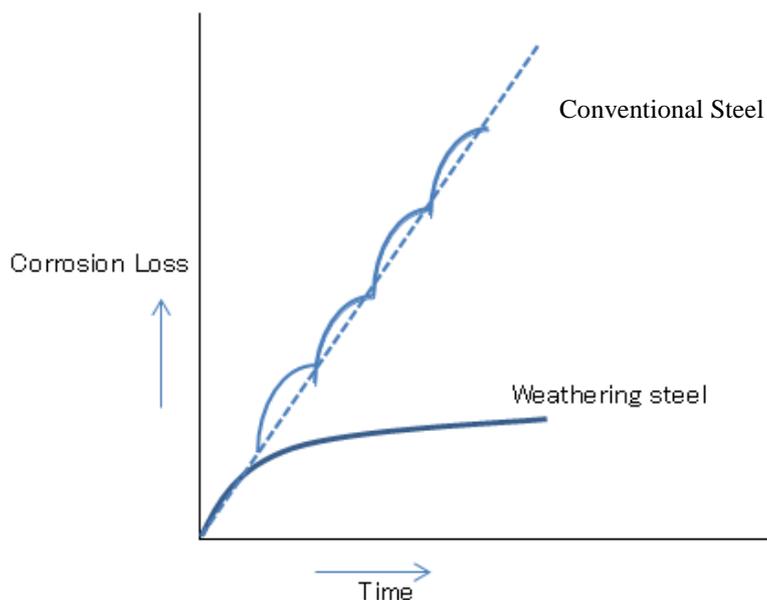
Usually, steel bridges are painted for prevention of corrosion. However, painting is costly and repainting is necessary in every ten years during the bridge life span.

Weathering steel is special material which develops a stable rust layer (Protective oxide film) on the surface of steel, as a protective barrier which impedes further corrosion by prevention of access of oxygen and moisture. Hence it does not require painting. In consideration of bridge life cycle, weathering steel is one of the most appropriate as bridging material.

Conventional steel is prone to corrosion when exposed to moisture and air. Rust on the surface forms layer and detaches from the metal surface after certain time. The corrosion loss rate progresses as the cycle continues. On the other hand, weathering steel produces a stable rust layer which is high density as it protects itself from further corrosion and loss of material thickness. Finally, the corrosion loss rate gradually reduces to the level that causes no damage.

Shown in Figure G-5 is the comparison between conventional steel and weathering steel.

Figure G-5
Comparison Between Conventional Steel and Weathering Steel



Although stable rust is produced under suitable condition, abnormal rust (advanced rust) is developed under extreme environment which can lead to durability problems.

The performance of weathering steel is not satisfactory under these conditions;

Salty Situation (Marine Area):

High concentration of chloride ions, sea water spray and so on are damaging for weathering steel.

Continuously Wet/Damp Condition:

The frequency of surface wet/dry cycles is required for the formation of stable rust. Under

continuously wet or damp condition for long period, stable rust will not be formed and corrosion becomes severe.

Accumulated Dust/Vegetation Condition: This situation keeps the surface of steel wet or damp and avoids establishing stable rust.

Atmospheric Pollution: Weathering steel is weak against high concentrations of corrosive chemicals or industrial fumes.

In such condition, those stable protective layers are not stabilized, instead corrosion progresses. Special attention should be given to parts of weathering steel prone to corrosive environment such as near or exposed to broken drainage pipes, water leakage from slab and expansion joint, water and sand accumulation on the lower flange, gusset plate and so on.

Figure G-6 is the photo example of defects on weathering steel.

4.2. Characteristic of Weathering Steel

Initially, weathering steel appears orange-brown color and has a little bit rough and dusty surfaces. Once matured, steel color becomes dark brown and has fine, even, tightly adhered and high density particle of rust. In this situation, rust is stable and corrosion speed is quite low with no damage level for steel. Rust pit is around 1mm in diameter and rust thickness is below 400 μ m. In the next stage, Rust pit becomes like granular and diameter increases from 1 to 5 mm. However, corrosion speed is still slow and rust is fine and has high density to avoid further corrosion.

Under severe circumstances, abnormal rust (advanced rust) would be developed. Small flake rust appears and thickness of rust becomes thick. The diameter of flakes is 5 mm to 25 mm and rust thickness is below 800 μ m. Dark black color on weathering steel indicates failed condition after which laminar sheets, layered rust and nodules is formed and rust becomes thick. Sometimes rust is detached and section loss occurs. Rust thickens over 800 μ m. In this condition, weathering steel should be monitored carefully. It is important for the Bridge Inspector to distinguish the difference between stable rust from abnormal rust which leads to section loss.

4.3. Inspection

The standard inspection method is a visual inspection which should be carried out closely. If not accessible, binoculars must be used. The existence of water leakage must be carefully checked. If abnormal rust is observed all over bridge, the condition of the environment might have been misjudged. The maintenance scheme will be reviewed and revised. If localized abnormal rust is observed, there are causes near defects, like water leakage, the accumulation of dust and so on.

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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Evaluation of rust appearance should be conducted and photographs should be taken for reference. Scotch tape test and rust thickness measurement is one of the methods to analyze the defect condition. If section loss occurs, section measurement of plate thickness should be conducted.

Evaluation of Appearance:

- (1) The visual inspection, color and size of rust particle are conducted. If not accessible, binocular should be used.
- (2) Photographs should be taken for reference. It is better to be taken with scale and color sample.
- (3) The rust condition will be evaluated through the bridge condition rating criteria and photo

Scotch Tape test:

- (1) The test should be conducted at the same location where a close-up photograph was taken.
- (2) Scotch tape is pressed uniformly by a finger on the weathering steel.
- (3) Remove tape for particle size evaluation and is kept for the record.

Measurement of rust thickness:

- (1) An electromagnetic thickness tester is used.
- (2) Measurement using this device is influenced by the roughness of the surface. It is recommended that the sensor is placed at the convex portion of the rusty surface.
- (3) Rust thickness should be measured at 3 points and average of these is analyzed.

Figure G-6
Example of Defects on Weathering Steel

	Defects condition	Causes of defect
①		
②		
③		
④		
⑤		

APPENDIX H

CONDITION RATING CRITERIA ON SPECIAL BRIDGE

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
BRIDGE CONDITION RATING CRITERIA

BRIDGE ELEMENT		SPAN		BRIDGE ATTRIBUTE		ASPHALT WEARING SURFACE	
MATERIAL TYPE	COND. STATE	GENERAL CONDITION	SEVERITY OF DEFECT				
			TYPE OF DAMAGE		CONDITION		
Asphalt	0 - Good	The pavement is generally in good condition.	1 Potholes	Slight and shallow potholes or no damage			
			2 Shoving	< 10mm in depth or no damage/defects			
			3 Rutting	< 10mm in depth or no damage/defects			
			4 Cracking	If alligator cracks area measuring <= 5% or no crack			
			5 Raveling	< 10mm in depth or no damage/defects			
	1 - Fair	Minor damage in area, depth and numbers of potholes, unevenness, rutting and cracking which reduces the pavement function and durability.	1 Potholes	Holes measuring < 200mm in any direction or 10mm - 30mm in depth			
			2 Shoving	10mm - 20mm in depth and corrugation < 30mm in deviation			
			3 Rutting	10mm - 20mm in depth			
			4 Cracking	If alligator cracks area measuring > 5% to < 10%			
			5 Raveling	10mm - 20mm in depth			
	2 - Poor	Severe damage in area, depth and numbers of potholes, unevenness, rutting and cracking which causes hindrance for smooth traffic, pavement function and durability.	1 Potholes	Holes measuring 200mm-400mm in any direction or 30mm-50mm in depth			
			2 Shoving	20mm - 30mm in depth and corrugation > 30mm in deviation			
			3 Rutting	20mm - 30mm in depth			
			4 Cracking	If alligator cracks area measuring > 10% to < 20%			
			5 Raveling	20mm - 30mm in depth			
	3 - Bad	Very severe damage in area, depth and numbers of potholes, unevenness, rutting and cracking which causes total hindrance for smooth traffic, pavement function and durability.	1 Potholes	Holes measuring > 400mm in any direction or > 50mm in depth			
			2 Shoving	> 30mm in depth			
			3 Rutting	> 30mm in depth			
			4 Cracking	If alligator cracks area measuring > 20%			
			5 Raveling	> 30mm in depth			

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
BRIDGE CONDITION RATING CRITERIA

BRIDGE ELEMENT		CABLE	BRIDGE ATTRIBUTE	MAIN / SECONDARY MEMBER (1/3)	
MATERIAL TYPE	COND. STATE	GENERAL CONDITION	SEVERITY OF DEFECT		
			TYPE OF DAMAGE	CONDITION	
Anchorage at Tower and Outside of girder	0 - Good	Paint system is generally sound with only minor chalking, peeling or curling, but with no exposure of metal. All welds or bolts are in good condition with no movement of plates or sections in the element. No water leakage.	1 Corrosion	Loose rust formation and pitting in the paint surface, no section loss	
			2 Missing bolts	No bolts missing	
			3 Deformation/Buckling	No deformation on bridge components	
			4 Water leakage	Not Detected	
	1 - Fair	Spot rusting of the paint system is occurring and the paint system is no longer effective. No corrosion of the section has occurred, welds and bolts in good condition. No water leakage.	1 Corrosion	Loose rust formation with scales/flakes, <= 10% section loss	
			2 Missing bolts	Falling out of bolts in > 1 piece	
			3 Deformation/Buckling	Partial deformation on secondary members only	
			4 Water leakage	Not Detected	
	2 - Poor	Presence of some surface pitting with active corrosion in isolated areas but no loss of section area. Paint system completely broken. Nuts & bolts corroded but still tight, no cracks on welds. No water leakage.	1 Corrosion	Stratified rust with pitting of metal surface, >10% to <=20% section loss	
			2 Missing bolts	Falling out of bolts in > 2 pieces	
			3 Deformation/Buckling	Partial deformation on primary members	
			4 Water leakage	Not Detected	
	3 - Bad	Advanced corrosion, loss of section, cracking on welds between plates, nuts & bolts severely corroded. Water leakage occurred.	1 Corrosion	Extensive rusting w/ local perforation/rusting through > 20% section loss	
			2 Missing bolts	Falling out of bolts in > 3 pieces	
			3 Deformation/Buckling	Outstanding deformation due to buckling or partial yielding	
			4 Water leakage	Detected	

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
BRIDGE CONDITION RATING CRITERIA

BRIDGE ELEMENT		CABLE			BRIDGE ATTRIBUTE		MAIN / SECONDARY MEMBER (2/3)		
MATERIAL TYPE	COND. STATE	GENERAL CONDITION	SEVERITY OF DEFECT						
			TYPE OF DAMAGE		CONDITION				
Cable	0 - Good	Abnormal continuous vibration of stay cable and abnormal alignment/deformation of cover duct are not detected. No crack and delamination on covering of cable. No water leakage in the connection with anchorage parts	1	Vibration	Not detected				
			2	Alignment/Deformation	Not Detected				
			3	Crack	Not Detected				
			4	Delamination/Scaling	Not Detected				
			5	Water leakage	Not Detected				
	2 - Poor	Abnormal continuous vibration of stay cable and abnormal alignment/deformation of cover duct are not detected. Crack and delamination on covering of cable is detected. No water leakage in the connection with anchorage parts	1	Vibration	Not detected				
			2	Alignment/Deformation	Not Detected				
			3	Crack	Detected crack, but no exposed wire and no corrosion				
			4	Delamination/Scaling	Detected delamination of covering, but no exposed wire and no corrosion				
			5	Water leakage	Not Detected				
	3 - Bad	Abnormal continuous vibration of stay cable caused by heavy loads or excessive vibration due to wind in comparison with adjacent cables and abnormal alignment/deformation of cover duct are detected. Crack and delamination on covering of cable is detected and wire is exposed. Water leakage in the connection with anchorage parts is detected.	1	Vibration	Detected the excessive or abnormal vibration of stay cable during the passage of heavy loads or excessive vibration caused by wind in comparison with adjacent cables by visual inspection or touch or engineering judgment				
			2	Alignment/Deformation	Detected the apprent difference in the sag of the cable				
			3	Crack	Detected Crack and wire exposure, corrosion				
			4	Delamination/Scaling	Detected delamination of covering and wire exposure, corrosion				
			5	Water leakage	Detected in the connection with anchorage parts				

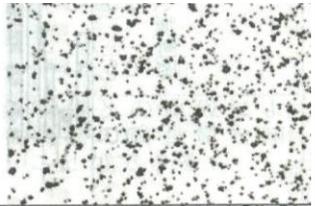
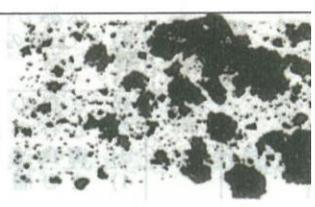
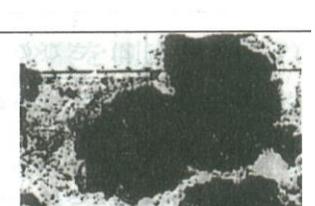
Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
BRIDGE CONDITION RATING CRITERIA

BRIDGE ELEMENT		CABLE	BRIDGE ATTRIBUTE	MAIN / SECONDARY MEMBER (3/3)
MATERIAL TYPE	COND. STATE	GENERAL CONDITION	TYPE OF DAMAGE	SEVERITY OF DEFECT CONDITION
Inside of tower around anchorage	0 - Good	There maybe minor cracking of the girder due to corroding reinforcement or a lack of distribution reinforcement, but there should be no structural cracking or spalling. Minor discoloration of efflorescence powder maybe visible in few locations.	1 Cracking	Hairline crack or no crack
			2 Spalling Scaling Disintegration	Affected area is <= 150mm wide in any direction, or depth is less than 25mm
			3 Delamination	Delaminated area measuring <=150mm in any direction
			4 Rebar exposure/corrosion	No damage
			5 Honeycomb	Affected area is <= 150mm wide in any direction
			6 Water Leakage	Not visible
	1 - Fair	There maybe a few minor cracks or spalls due to corroding reinforcement in some locations but there should be no exposure of the stressing ducts. Some minor discoloration or white efflorescence powder maybe visible in few locations.	1 Cracking	<= 0.3mm, spacing > 500mm
			2 Spalling Scaling Disintegration	Affected area is > 150mm to <= 300mm wide in any direction. or depth is 25mm to 50mm
			3 Delamination	Delaminated area measuring >150mm to <= 300mm in any direction
			4 Rebar exposure/corrosion	Main rebar exposed is <= 50 mm ² wide, corroded or flaking only
			5 Honeycomb	Affected area is > 150mm to <= 300mm wide in any direction
			6 Water Leakage	Water leak in 1 spot has an area of <= 20cm wide
	2 - Poor	There maybe some scaling or spalling in isolated locations with stressing ducts exposed but with little or no corrosion occurring. Corrosion on some exposed reinforcement.	1 Cracking	> 0.3mm to <= 1.0mm, spacing is <500mm to >= 200mm
			2 Spalling Scaling Disintegration	Affected area is > 300mm to <= 600mm wide in any direction, or depth is 50mm to 100mm
			3 Delamination	Delaminated area measuring >300mm to <= 600mm in any direction
			4 Rebar exposure/corrosion	Main rebar exposed is >50cm ² to <=100cm ² wide, corroded
			5 Honeycomb	Affected area is >300mm to <= 600mm wide in any direction
			6 Water Leakage	Water leak in 1 spot has an area of > 20cm to <= 50cm wide
3 - Bad	Heavy cracking is present in large areas with heavy corrosion of reinforcement.	1 Cracking	> 1.0mm, spacing is < 200mm	
		2 Spalling Scaling Disintegration	Affected area is > 600mm wide in any direction, or depth is more than 100mm	
		3 Delamination	Delaminated area measuring > 600mm in any direction	
		4 Rebar exposure/corrosion	Main rebar exposed is > 100cm ² wide and corroded	
		5 Honeycomb	Affected area is >600mm wide in any direction	
		6 Water Leakage	Water leak in 1 spot has an area of > 50cm wide	

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
BRIDGE CONDITION RATING CRITERIA

BRIDGE ELEMENT		SPAN		BRIDGE ATTRIBUTE		WEATHERING STEEL	
MATERIAL TYPE	COND. STATE	GENERAL CONDITION	TYPE OF DAMAGE	SEVERITY OF DEFECT CONDITION			
Weathering steel	0 - Good	Condition of rust is early stage or already been stabilized. Under the suitable circumstance, weathering steel has a tendency to keep on early stage for long term. Rust is tightly adhered, high density, fine and uniform.	Corrosion	1 Surface appearance	Rust is tightly adhered, high density, fine and uniform (sometimes, dusty in early stage), Rust pit is around 1 mm in diameter.		
				2 Color	Evenly brown or dark brown (sometimes, light brown and uneven in early stage)		
				3 Corrosion speed	Very slow		
				4 Thickness of rust	Thickness < 400 μ m		
	1 - Fair	Condition of corrosion is still permissible stage and rust is stabilized. Speed of corrosion is still slow. Rust looks like granular and diameter increase around 1mm to 5mm.	Corrosion	1 Surface appearance	Rust pit become like granular and diameter increase around 1mm to 5mm, but rust is still fine and high density.		
				2 Color	Evenly brown or dark brown		
				3 Corrosion speed	Slow		
				4 Thickness of rust	Thickness < 400 μ m		
	2 - Poor	Abnormal corrosion is appeared on the surface. Small flake rust like scale appears under unsustainable condition like dust accumulation, wet condition and so on. Thickness of rust become thick and section loss is being happened.	Corrosion	1 Surface appearance	Small flake rust like scale appears and diameter increase around 5mm to 25mm. Also thickness of rust becomes thick.		
				2 Color	Dark black or other (Depend on circumstance)		
				3 Corrosion speed	Abnormal corrosion start		
				4 Thickness	Thickness < 800 μ m		
	3 - Bad	Abnormal corrosion is appeared on the surface. Rust is layered and laminated. sometimes it is detached. Section loss becomes severe condition.	Corrosion	1 Surface appearance	Rust is layered and laminated, sometimes it is detached. Also thickness of rust becomes thick.		
				2 Color	Dark black or other (Depend on circumstance)		
				3 Corrosion speed	Abnormal corrosion happened		
				4 Thickness of rust	Thickness > 800 μ m		

Example of Condition Rating Criteria for Weathering Steel

	Outside photo	Nearness photo	Scotch tape test
Good (Young stage)			
Good (Mature stage)			
Fair			
Poor			
Bad			

APPENDIX I

INVENTORY INSPECTION FORM



Department of Public Works and Highways

INVENTORY INSPECTION FORM (TYPE 5)

LOCATION

BRIDGE ID	
Bridge Name	Diosdado Macapagal Bridge
Bridge Type	Cable Stayed Bridge
Road Name	Mayor Democrito D. Plaza II Avenue
Road ID	
Section ID	
Location	Butuan City

Region	CARAGA Region XIII
Province	Agusan del Norte
Congressional District	Butuan City Congressional District
Engineering District	Butuan City Engineering District
Municipality	-
Barangay	-
River Name	Agusan River

Date of Field Inspection	
---------------------------------	--

Total No. of Span:

Total No. of Abutment:

Total No. of Pier:

Accomplished by: 	Submitted by:
-------------------------------------	----------------------------------

Insert Name, Position, Signature and Date of Signing
Initial all other pages

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

INVENTORY

SPECIAL INSPECTION REQUIREMENTS

Boat	<input checked="" type="checkbox"/>
Bridge inspection vehicle	<input type="checkbox"/>
Ladder	<input checked="" type="checkbox"/>
Binoculars	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Note any unusual requirements:	

Up to three (3) options may be selected.

GENERAL BRIDGE DATA

Posted load limit?		Yes	<input type="checkbox"/>
		No	<input checked="" type="checkbox"/>
If yes, give limit (tons)			
Height clearance?	Over (bridge structure over), (m)	Yes	<input checked="" type="checkbox"/>
		No	<input type="checkbox"/>
If yes, give clearances (m)	Under (road under bridge), (m)	Yes	<input checked="" type="checkbox"/>
		No	<input type="checkbox"/>
		22.86	
Maximum bridge height (m)		30	

NAVIGATION CLEARANCES

Horizontal, (m)	112.78
Vertical, (m)	22.86

BRIDGE GEOMETRY

Overall length, (m)	1,237.0	
Overall width, (m)	11.70	
Number of lanes	2	
Number of spans	13	
Width of carriageway, (m)	7.25	
Width of island(s), (m)		
Width of shoulder, (m)	Left	
	Right	
Sidewalk width, (m)	Left	1.5
	Right	1.5

TRAFFIC DIRECTION

Two way	<input checked="" type="checkbox"/>
One way in direction of increasing chainage	<input type="checkbox"/>
One way in direction of decreasing chainage	<input type="checkbox"/>

TYPE OF BRIDGE

Standard Bridge	<input type="checkbox"/>
Special bridge	<input checked="" type="checkbox"/>

Special bridges are major or complex bridges and require additional inventory information outside the RBIA.

GENERAL BRIDGE TYPE

Concrete Steel Bailey Timber

YEAR OF CONSTRUCTION OF BRIDGE

Year of construction	Year known	<input type="checkbox"/>
	Spanish era (1600-1899)	<input type="checkbox"/>
	American era (1899-1941)	<input type="checkbox"/>
	Japanese era (1941-1945)	<input type="checkbox"/>
	1945 – 1970	<input type="checkbox"/>
	Post 1970	<input type="checkbox"/>
Insert year if known	2004	

END OF WARRANTY PERIOD

Insert year of end of warranty period

PUBLIC UTILITIES CARRIED

Utility Identification No.	1	2	3	4	5	6
Electricity	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telephone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil, fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sewage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PUBLIC UTILITIES DETAIL

Description for each utility, listed by Utility Identification No.

1. Electric Post	LHS	<input checked="" type="checkbox"/>
	Under	<input type="checkbox"/>
	RHS	<input checked="" type="checkbox"/>
	Other	<input type="checkbox"/>
	LHS	<input type="checkbox"/>
	Under	<input type="checkbox"/>
	RHS	<input type="checkbox"/>
	Other	<input type="checkbox"/>
	LHS	<input type="checkbox"/>
	Under	<input type="checkbox"/>
	RHS	<input type="checkbox"/>
	Other	<input type="checkbox"/>
	LHS	<input type="checkbox"/>
	Under	<input type="checkbox"/>
	RHS	<input type="checkbox"/>
	Other	<input type="checkbox"/>
	LHS	<input type="checkbox"/>
	Under	<input type="checkbox"/>
	RHS	<input type="checkbox"/>
	Other	<input type="checkbox"/>

LIGHTING TO BRIDGE

Yes No

INTERVAL OF LIGHT POLES

Left, (m)	60.00 meters
Right, (m)	60.00 meters

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

TERRAIN CROSSED

Sea (exposed)	<input checked="" type="checkbox"/>
Estuary (salt water)	<input type="checkbox"/>
River or waterway (fresh water)	<input checked="" type="checkbox"/>
Canal	<input type="checkbox"/>
Railway	<input type="checkbox"/>
Road	<input type="checkbox"/>
Open ground	<input type="checkbox"/>
Swamp	<input type="checkbox"/>
Other	<input type="checkbox"/>

Up to three (3) types of terrain may be selected.

BRIDGE COMMENTS

With electric post, but electric wire already stolen.

BRIDGE TYPE OF CONSTRUCTION

Type of Construction Identification No.	1	2	3
Girder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Box girder	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Slab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Truss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trestle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cable stayed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suspension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Arch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portal frame	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spillway/Overflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Most structures are of only one type of construction. Some bridges are of more than one type of construction; these shall be listed in order of importance.

MAIN MEMBER MATERIAL

Type of Construction Identification No.	1	2	3
Timber	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concrete	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Masonry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUBSTRUCTURE TYPE

Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Gabion	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

DECK WEARING SURFACE

Asphaltic concrete	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK DRAINAGE

Scuppers through deck	<input type="checkbox"/>
Piped drainage	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DESIGN LOAD

Available?	Yes	<input checked="" type="checkbox"/>
	No	<input type="checkbox"/>
	Not known	<input type="checkbox"/>

If yes, insert as:

% of MS18

DESIGN DRAWINGS

Available?	Yes	<input checked="" type="checkbox"/>
	No	<input type="checkbox"/>
	Not known	<input type="checkbox"/>

If yes, insert location

Head Office

AS-BUILT DRAWINGS

Available?	Yes	<input checked="" type="checkbox"/>
	No	<input type="checkbox"/>
	Not known	<input type="checkbox"/>

If yes, insert location

Head Office

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

BRIDGE MODIFICATION SHEET

MODIFICATION TYPE

Bridge widened?	Yes	<input type="checkbox"/>
If yes, complete below	No	<input checked="" type="checkbox"/>
Year of widening	<input type="text"/>	
Bridge strengthened?	Yes	<input type="checkbox"/>
If yes, complete below	No	<input checked="" type="checkbox"/>
Year of strengthening	<input type="text"/>	
Bridge retrofitted?	Yes	<input type="checkbox"/>
If yes, complete below	No	<input checked="" type="checkbox"/>
Year of seismic retrofitting	<input type="text"/>	
Bridge lengthened?	Yes	<input type="checkbox"/>
If yes, complete below	No	<input checked="" type="checkbox"/>
Year of lengthening	<input type="text"/>	

SUPERSTRUCTURE WIDENING FORM

Widened left side	<input type="checkbox"/>
Widened right side	<input type="checkbox"/>
Widened both sides	<input type="checkbox"/>

SUPERSTRUCTURE WIDENING DETAIL

Same detail/material as existing bridge	<input type="checkbox"/>
Same detail/modified material	<input type="checkbox"/>
Different details	<input type="checkbox"/>

SUPERSTRUCTURE WIDENING TYPE

Cantilever box girder	<input type="checkbox"/>
Girder	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Truss	<input type="checkbox"/>
Trestle	<input type="checkbox"/>
Cable stayed	<input type="checkbox"/>
Suspension	<input type="checkbox"/>
Arch	<input type="checkbox"/>
Portal frame	<input type="checkbox"/>
Other structure	<input type="checkbox"/>

SUPERSTRUCTURE WIDENING MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

TYPE OF PIER WIDENING

Widening original piers	<input type="checkbox"/>
Bored pile bents	<input type="checkbox"/>
Driven pile bents	<input type="checkbox"/>
Coping widening	<input type="checkbox"/>
Other	<input type="checkbox"/>

TYPE OF ABUTMENT WIDENING

Widening original abutments	<input type="checkbox"/>
Bored pile bents	<input type="checkbox"/>
Driven pile bents	<input type="checkbox"/>
Coping widening	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER/ABUTMENT WIDENING MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

TYPE OF STRENGTHENING

Main member reinforcement	<input type="checkbox"/>
Deck reinforcement	<input type="checkbox"/>
Additional piers	<input type="checkbox"/>
Substructure reinforcement	<input type="checkbox"/>
Other	<input type="checkbox"/>

TYPE OF SEISMIC RETROFIT

Sleeves to columns	<input type="checkbox"/>
Lateral restraints	<input type="checkbox"/>
Longitudinal restraints	<input type="checkbox"/>
Beam continuity	<input type="checkbox"/>
Deck continuity	<input type="checkbox"/>
Other	<input type="checkbox"/>

TYPE OF LENGTHENING

Low chainage end, original and widening	<input type="checkbox"/>
Low chainage end, widened part only	<input type="checkbox"/>
High chainage end, original and widening	<input type="checkbox"/>
High chainage end, widened part only	<input type="checkbox"/>

No. of spans added	<input type="text"/>
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MODIFICATION COMMENTS

Insert comments about unusual modifications to bridges:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	1
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	2
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL SPAN INFORMATION

Span Number	3
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL SPAN INFORMATION

Span Number	4
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL SPAN INFORMATION

Span Number	5
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	6
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL SPAN INFORMATION

Span Number	7
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

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R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL SPAN INFORMATION

Span Number	8
Length of span, (m)	46.50
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

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R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	9
Length of span, (m)	160.00
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	10
Length of span, (m)	200.00
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	11
Length of span, (m)	50.00
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	12
Length of span, (m)	50.00
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL SPAN INFORMATION

Span Number	13
Length of span, (m)	50.00
Skew (in Degrees)	0
Number of main members	2

MAIN MEMBER TYPE

Girder - Also complete girder form	<input checked="" type="checkbox"/>
Cantilever girder continuous	<input type="checkbox"/>
Cantilever girder with suspended span	<input type="checkbox"/>
Slab	<input type="checkbox"/>
Voided slab	<input type="checkbox"/>
Demountable (Bailey type)	<input type="checkbox"/>
Through truss	<input type="checkbox"/>
Deck truss	<input type="checkbox"/>
Cable supported	<input type="checkbox"/>
Arch	<input type="checkbox"/>

GIRDER FORM

I beam	<input checked="" type="checkbox"/>
Channel beam	<input type="checkbox"/>
Rectangular beam	<input type="checkbox"/>
Tee beam	<input type="checkbox"/>
Box girder	<input type="checkbox"/>
Built-Up (Plate) girder	<input type="checkbox"/>

MAIN MEMBER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input checked="" type="checkbox"/>
Concrete	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

MAIN MEMBER PRESTRESSED?

Yes	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>

CONTINUITY

	L	H
Fixed	<input type="checkbox"/>	<input type="checkbox"/>
Continuous	<input type="checkbox"/>	<input type="checkbox"/>
Simply supported	<input type="checkbox"/>	<input type="checkbox"/>
Not supported	<input type="checkbox"/>	<input type="checkbox"/>
Not known	<input type="checkbox"/>	<input type="checkbox"/>

L Low chainage end
H High chainage end

SECONDARY MEMBER TYPE

Transverse/longitudinal girders	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SECONDARY MEMBER MATERIAL

Masonry	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECONDARY MEMBER PRESTRESSED?

Yes	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
Not known	<input type="checkbox"/>

OTHER MEMBER TYPE

Diaphragms	<input checked="" type="checkbox"/>
Bracings	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

DECK MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

RAILING TYPE

	L	R
Concrete wall	<input type="checkbox"/>	<input type="checkbox"/>
Concrete wall and top rail	<input type="checkbox"/>	<input type="checkbox"/>
Concrete posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Steel posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium posts and rails	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber posts and rails	<input type="checkbox"/>	<input type="checkbox"/>
Masonry wall	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>

L Left side
R Right side

SPAN COMMENTS

Insert comments about unusual spans and special components:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	1
Pier height, (m)	8.348
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	2
Pier height, (m)	8.348
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	3
Pier height, (m)	10.642
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	4
Pier height, (m)	10.644
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	5
Pier height, (m)	10.642
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	6
Pier height, (m)	11.045
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	7
Pier height, (m)	11.242
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	8
Pier height, (m)	13.464
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	9
Pier height, (m)	22.5
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	10
Pier height, (m)	12.864
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	11
Pier height, (m)	9.851
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

GENERAL PIER INFORMATION

Pier Number	12
Pier height, (m)	7.351
Pier height case	

PIER TYPE

Wall	<input type="checkbox"/>
Single column	<input type="checkbox"/>
Multiple columns	<input checked="" type="checkbox"/>
Single pile bent	<input type="checkbox"/>
Multiple pile bent	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER MATERIAL

Timber	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Concrete	<input checked="" type="checkbox"/>
Masonry	<input type="checkbox"/>
Other	<input type="checkbox"/>

PIER FOUNDATION TYPE

Spread footing	<input type="checkbox"/>
Bored piles	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE LOW CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearings	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
None	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE HIGH CHAINAGE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

PIER COMMENTS

Insert comments about unusual piers:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

GENERAL ABUTMENT DATA

Abutment Number	1
Abutment height, (m)	10.10
Abutment height case	

ABUTMENT TYPE

Solid wall	<input checked="" type="checkbox"/>
Spill through	<input type="checkbox"/>
Pile bent	<input type="checkbox"/>
Reinforced earth	<input type="checkbox"/>
Diaphragm wall	<input type="checkbox"/>
Other	<input type="checkbox"/>
None (cantilever superstructure)	<input type="checkbox"/>
None (superstructure on ground)	<input type="checkbox"/>
Not known	<input type="checkbox"/>

ABUTMENT MATERIAL

Concrete	<input checked="" type="checkbox"/>
Steel	<input type="checkbox"/>
Timber	<input type="checkbox"/>
Masonry	<input type="checkbox"/>
Gabions	<input type="checkbox"/>
Other	<input type="checkbox"/>

ABUTMENT FOUNDATION

Spread footing	<input type="checkbox"/>
Bored pile	<input checked="" type="checkbox"/>
Driven piles	<input type="checkbox"/>
Caisson	<input type="checkbox"/>
Diaphragm wall	<input type="checkbox"/>
Other	<input type="checkbox"/>
Not known	<input type="checkbox"/>

BEARING TYPE

Elastomeric pad	<input checked="" type="checkbox"/>
Pot bearing	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
PTFE coated plate	<input type="checkbox"/>
Metal rocker	<input type="checkbox"/>
Monolithic	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

LATERAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>
None	<input type="checkbox"/>

LONGITUDINAL RESTRAINT TYPE

Concrete	<input type="checkbox"/>
Steel	<input type="checkbox"/>
Cables or bolts	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>
Not known	<input type="checkbox"/>
None	<input type="checkbox"/>

EXPANSION JOINT TYPE

Continuous deck	<input type="checkbox"/>
Steel plate	<input type="checkbox"/>
Rubber	<input checked="" type="checkbox"/>
None (open gap)	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

SCOUR PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Steel sheet piling	<input type="checkbox"/>
Concrete sheet piling	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>
Not known	<input type="checkbox"/>

SLOPE PROTECTION

Dumped riprap	<input type="checkbox"/>
Grouted riprap	<input type="checkbox"/>
Gabions or mattresses	<input type="checkbox"/>
Concrete	<input type="checkbox"/>
Paving	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

ABUTMENT COMMENTS

Insert comments about unusual bridge abutments:

Insert comments about unusual bridge abutments:
Full of trash, garbage; encroachments

Recommendation : Cleaning and removal of encroachments.

DMB – Inventory Inspection Form (Type 5)

Bridge ID

--

Bridge Name

Diosdado Macapagal Bridge

GENERAL ABUTMENT DATA

Abutment Number	2
Abutment height, (m)	9.60
Abutment height case	

ABUTMENT TYPE

Solid wall	X
Spill through	
Pile bent	
Reinforced earth	
Diaphragm wall	
Other	
None (cantilever superstructure)	
None (superstructure on ground)	
Not known	

ABUTMENT MATERIAL

Concrete	X
Steel	
Timber	
Masonry	
Gabions	
Other	

ABUTMENT FOUNDATION

Spread footing	
Bored pile	X
Driven piles	
Caisson	
Diaphragm wall	
Other	
Not known	

BEARING TYPE

Elastomeric pad	X
Pot bearing	
Steel plate	
PTFE coated plate	
Metal rocker	
Monolithic	
Other	
None	
Not known	

LATERAL RESTRAINT TYPE

Concrete	
Steel	
Cables or bolts	
Other	X
Not known	
None	

LONGITUDINAL RESTRAINT TYPE

Concrete	
Steel	
Cables or bolts	
Other	X
Not known	
None	

EXPANSION JOINT TYPE

Continuous deck	
Steel plate	
Rubber	X
None (open gap)	
Other	
None	

SCOUR PROTECTION

Dumped riprap	
Grouted riprap	
Gabions or mattresses	
Concrete	
Steel sheet piling	
Concrete sheet piling	
Other	
None	
Not known	

SLOPE PROTECTION

Dumped riprap	
Grouted riprap	
Gabions or mattresses	
Concrete	
Paving	
Other	
None	

ABUTMENT COMMENTS

Insert comments about unusual bridge abutments: Insert comments about unusual bridge abutments: Full of trash, garbage; encroachments Recommendation : Cleaning and removal of encroachments.
--

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

Approach Number	1
------------------------	---

WING WALL TYPE	L	R
Solid wall	X	X
Reinforced earth		
Protected slope		
Other		
None		

WING WALL MATERIAL	L	R
Concrete	X	X
Masonry		
Timber		
Gabions or mattresses		
Other		

WING WALL FOUNDATION TYPE	L	R
Spread footing		
Bored piles	X	X
Driven piles		
Other		
None (attached to abutment)		
Not known		

WING WALL LENGTH	
Left, (m)	<input type="text"/>
Right, (m)	<input type="text"/>

BRIDGE APPROACH	
Overall length of approach, (m)	<input type="text"/>

TYPE OF APPROACH	
At grade	<input type="checkbox"/>
Embankment up to 3.0 meters high, no retaining structures	<input type="checkbox"/>
Embankment in excess of 3.0 meters high, no retaining structures	<input type="checkbox"/>
Embankment up to 3.0 meters high, retained at road shoulders	<input type="checkbox"/>
Embankment in excess of 3.0 meters high, retained at road shoulders	<input type="checkbox"/>

BRIDGE APPROACH COMMENTS
Insert comments about unusual or long bridge approaches:

DMB – Inventory Inspection Form (Type 5)

Bridge ID

Bridge Name

Diosdado Macapagal Bridge

Approach Number	2
------------------------	----------

WING WALL TYPE	L	R
Solid wall	X	X
Reinforced earth		
Protected slope		
Other		
None		

WING WALL MATERIAL	L	R
Concrete	X	X
Masonry		
Timber		
Gabions or mattresses		
Other		

WING WALL FOUNDATION TYPE	L	R
Spread footing		
Bored piles	X	X
Driven piles		
Other		
None (attached to abutment)		
Not known		

WING WALL LENGTH	
Left, (m)	
Right, (m)	

BRIDGE APPROACH	
Overall length of approach, (m)	

TYPE OF APPROACH	
At grade	
Embankment up to 3.0 meters high, no retaining structures	
Embankment in excess of 3.0 meters high, no retaining structures	
Embankment up to 3.0 meters high, retained at road shoulders	
Embankment in excess of 3.0 meters high, retained at road shoulders	

BRIDGE APPROACH COMMENTS

Insert comments about unusual or long bridge approaches:

APPENDIX J

GEOMETRICAL INSPECTION FORM

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

GEOMETRICAL INSPECTION FORM (TYPE 6)

DIOSDADO MACAPAGAL BRIDGE

Deptment of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
FOR
DIOSDADO MACAPAGAL BRIDGE
GEOMETRICAL INSPECTION FORM (TYPE 6)

LOCATION		SUMMARY
BRIDGE ID		<div style="border: 1px solid black; height: 400px; margin-bottom: 5px;">COMMENTS:</div>
Bridge Name	Diosdado Macapagal Bridge	
Road Name		
Road ID		
Section ID		
Location		
Region		
Province		
Congressional District		
Engineering District		
Municipality		
Barangay		
River Name		

Insert Name, Position, Signature and Date of Signing
Initial all other pages

Bridge ID.

Bridge Name

Leveling

Element	Place	2014	2017	Difference	Remark
P8	NORTH				
	SOUTH				
P9	NORTH				
	SOUTH				
P10	NORTH				
	SOUTH				
Longitudal Alignment	1 NORTH				
Longitudal Alignment	2 NORTH				
Longitudal Alignment	3 NORTH				
Longitudal Alignment	4 NORTH				
Longitudal Alignment	5 NORTH				
Longitudal Alignment	6 NORTH				
Longitudal Alignment	7 NORTH				
Longitudal Alignment	8 NORTH				
Longitudal Alignment	9 NORTH				
Longitudal Alignment	10 NORTH				
Longitudal Alignment	11 NORTH				
Longitudal Alignment	12 NORTH				

Element	No.	place	2014	2017	Difference	Remark
Longitudal Alignment	13	NORTH				
Longitudal Alignment	14	NORTH				
Longitudal Alignment	15	NORTH				
Longitudal Alignment	1	SOUTH				
Longitudal Alignment	2	SOUTH				
Longitudal Alignment	3	SOUTH				
Longitudal Alignment	4	SOUTH				
Longitudal Alignment	5	SOUTH				
Longitudal Alignment	6	SOUTH				
Longitudal Alignment	7	SOUTH				
Longitudal Alignment	8	SOUTH				
Longitudal Alignment	9	SOUTH				
Longitudal Alignment	10	SOUTH				
Longitudal Alignment	11	SOUTH				
Longitudal Alignment	12	SOUTH				
Longitudal Alignment	13	SOUTH				
Longitudal Alignment	14	SOUTH				
Longitudal Alignment	15	SOUTH				

Bridge ID.

Bridge Name

Vertical Slope

Mesure	Place	2014 (original)	2017	Difference	Remark
Angle (Vertical)	V1				
	V2				
	V3				
	V4				
Angle (Horizontal)	H1				
	H2				
	H3				
	H4				
Length	L1				
	L2				
	L3				
	L4				
Hight	K1				
	K2				
	K3				
	K4				

Element	No.	2014 (original)	2017	Difference	Remark
Raise	1				$K1'+\tan V1 * L1'$
	2				$K2'+\tan V2 * L2'$
	3				$K3'+\tan V3 * L3'$
	4				$K4'+\tan V4 * L4'$
Raise Average	2				
Slope	3				$L1 * \sin(H1 - H1')$
	4				$L2 * \sin(H2 - H2')$
	5				$L3 * \sin(H3 - H3')$
	6				$L4 * \sin(H4 - H4')$
Slope Average	7				

Bridge ID.

Bridge Name

Bearing (Center Span)

Mesure		Place		2014 (original)	2017	Difference	Remark
P8	North side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					
	South side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
M4		South side					
Ave							

Mesure		Place		2014 (original)	2017	Difference	Remark	
P8	Center (Late)	H1	Lower Chainage					
		H2	High Chainage					
		H3	North side					
		H4	South side					
		Ave						
		M1	Lower Chainage					
		M2	High Chainage					
		M3	North side					
		M4	South side					
		Ave						

Bridge ID.

Bridge Name

Bearing (Center Span)

Mesure		Place		2014 (original)	2017	Difference	Remark
P9	North side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					
	South side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					

Mesure		Place		2014 (original)	2017	Difference	Remark
P9	Center (Late)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					
	South side (Vertical)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					

Bridge ID.

Bridge Name

Bearing (Center Span)

Mesure		Place		2014 (original)	2017	Difference	Remark
P9	South side (Vertical)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					

Mesure		Place		2014 (original)	2017	Difference	Remark

Bridge ID.

Bridge Name

Bearing (Center Span)

Mesure		Place		2014 (original)	2017	Difference	Remark
P10	North side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	City side				
		M2	Airport side				
		M3	North side				
		M4	South side				
		Ave					
	South side (Seismic)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	City side				
		M2	Airport side				
		M3	North side				
		M4	South side				
		Ave					

Mesure		Place		2014 (original)	2017	Difference	Remark
P10	Center (Late)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					
	South side (Vertical)	H1	Lower Chainage				
		H2	High Chainage				
		H3	North side				
		H4	South side				
		Ave					
		M1	Lower Chainage				
		M2	High Chainage				
		M3	North side				
		M4	South side				
		Ave					

Bridge ID.

Bridge Name

Expansion Joint

Mesure		Place		2014 (original)	2017	Difference	Remark
P8	A1 side	1					
		2					
		3					
		4					
		5					
	A2 side	1					
		2					
		3					
		4					
		5					

Mesure		Place		2014 (original)	2017	Difference	Remark

