



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

**BRIDGE INSPECTION MANUAL
FOR
STEEL TRUSS 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 with long span steel truss demands proper maintenance done through routine inspection or early detection of defects. This will enable us to institute proper measures to prolong its design life averting very high cost of replacement.

With the assistance from Japan International Cooperation Agency (JICA), the production of a Manual titled, **Bridge Inspection Manual for Steel Truss Bridge** is a laudable effort to effect proper inspection guidelines for this special type of bridge.

This Manual will undoubtedly improve our engineers' knowledge by providing consistent and standardized bridge inspection procedures resulting to consistent inspection reports. These reports shall then be analyzed and studied thoroughly to come up with more concrete recommendations for the bridge maintenance.

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 the conduct of inspection for steel truss bridges.


ROGELIO L. SINGSON
Secretary



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The JICA Expert Team would like to express its appreciation and its heartfelt thanks to the Technical Working Group and Counterpart Working Group members who 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 |
| 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 |



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| | |
|-------|--|
| KPI | Key Performance Indicator |
| LFP | Locally Funded Project |
| LRM | Locational Referencing Method |
| LRP | Locational Reference Point |
| LRS | Locational Referencing System |
| MIS | Monitoring & Information Service |
| MMB | 1 st Mandaue-Mactan Bridge |
| 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 |



BRIDGE INSPECTION MANUAL FOR STEEL TRUSS BRIDGE

1. INTRODUCTION

1.1 Background

The Inspection Manual for the 1st Mandaue-Mactan Bridge (MMB) is one of the many manuals and guidelines realized under the DPWH program: “Improvement of Quality Management for Highway and Bridge Construction and Maintenance” as implemented under the JICA Technical Cooperation Project Phase I (JICA-TCP I) in 2007-2010.

In 2011-2014, the MMB manual was further refined and improved under Phase II of the same program. It is now developed into the Bridge Inspection Manual for Steel Truss Bridge (BIMSTB), also referred to as the “Manual”) so that it can be used for inspection of other long-span steel truss bridges managed by DPWH.

The Manual is designed in close conformity with the improved Bridge Management System (BMS) Manual and was developed by JICA upon the request of DPWH for the formulation of inspection guidelines for long span steel truss bridges since inspection requirements are not totally covered in the present BMS Manual.

This Manual is intended for long-span steel truss bridges and MMB is used as representative bridge. In comparison, the common features/differences between BMS Bridge Inspection Manual (BIM) and Bridge Inspection Manual for Steel Truss Bridge are as follows.

- The Manual uses the same procedure introduced in the BMS BIM as to the type of material, the type of damage, bridge rating criteria, etc.
- All descriptions in the BMS BIM intended for standard bridges but are applicable for steel truss bridge are adopted to the Manual.

Considering that MMB is used as the representative bridge in the Manual, the following provisions are specifically developed:

- Drawings concerning the Inventory, Routine and Condition Inspections are specific for MMB.
- Inspection routes for the Routine and Condition Inspections pertain only to specific areas within MMB.
- Check points on Routine and Condition Inspections refer only to specific bridge members of MMB.

In the Inspection Forms attached in the appendices, the following data are presented:

- Present inventory information pertaining to the current state of MMB.
- Unnecessary descriptions in the BMS Manual concerning the type of materials such as timber, masonry are not included in the MMB Manual since these are not applicable for MMB.



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- All inspection forms applicable only for the Spans, Piers, and Abutments of MMB.

On the scope of Routine Inspection for standard bridges, the said activity is conducted in accordance with the Department Order (DO) Nos. 179 and 81 series of 1997 and 2005, respectively. However MMB is a special bridge and as such, there are aspects on its Routine Inspection criteria that are not covered in the aforementioned DOs.

Considering the higher degree of importance of special bridges which demand that proper maintenance should be instituted, the development of a special bridge inspection manual is essential as it provides the appropriate routine inspection procedure which is a prerequisite of the routine maintenance needs and addresses the following issues:

- Necessity of earlier detection of defects as the preventive approach through Routine Inspection.
- Be able to interpret some of the complicated behavior of the bridge.
- Avoid high cost of major repair.
- Extreme difficulty for the replacement of the bridge is averted.

In order to utilize this Manual effectively, it is recommended that users should adequately recognize the close similarity of application between the BMS BIM and the Manual. Moreover, users should also recognize and understand the current state and damage situation of the representative bridge which is the 1st Mandaue-Mactan Bridge, the basic facts of which are stipulated below.

From the field investigation conducted by the JICA-TCP team, the current state and structural situation of the 1st Mandaue-Mactan Bridge are as follows:

- The 1st Mandaue-Mactan Bridge was opened to traffic about 40 years ago.
- The bridge had encountered ship collisions.
- It gradually draws up to its life span.
- The deck slab has a number of significant defects.
- The bridge has serious structural condition with the limitation of the vehicle load to within 5 tons only.

Based on the above facts, it is imperative that proper maintenance should strictly be observed for MMB which is reckoned through the findings and recommended measures of a through conduct of a Bridge Condition Inspection which may be supported by an Engineering Inspection, whenever necessity warrants.

1.2 Scope of the Manual

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

Along with such intention, the Manual presents a guideline in the actual conduct of Inventory, Routine and Condition Inspections whose purpose is to obtain an accurate inventory and condition report which will lead to the formulation of appropriate maintenance measures needed to ensure an efficient and sound operation and management of special



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bridges.

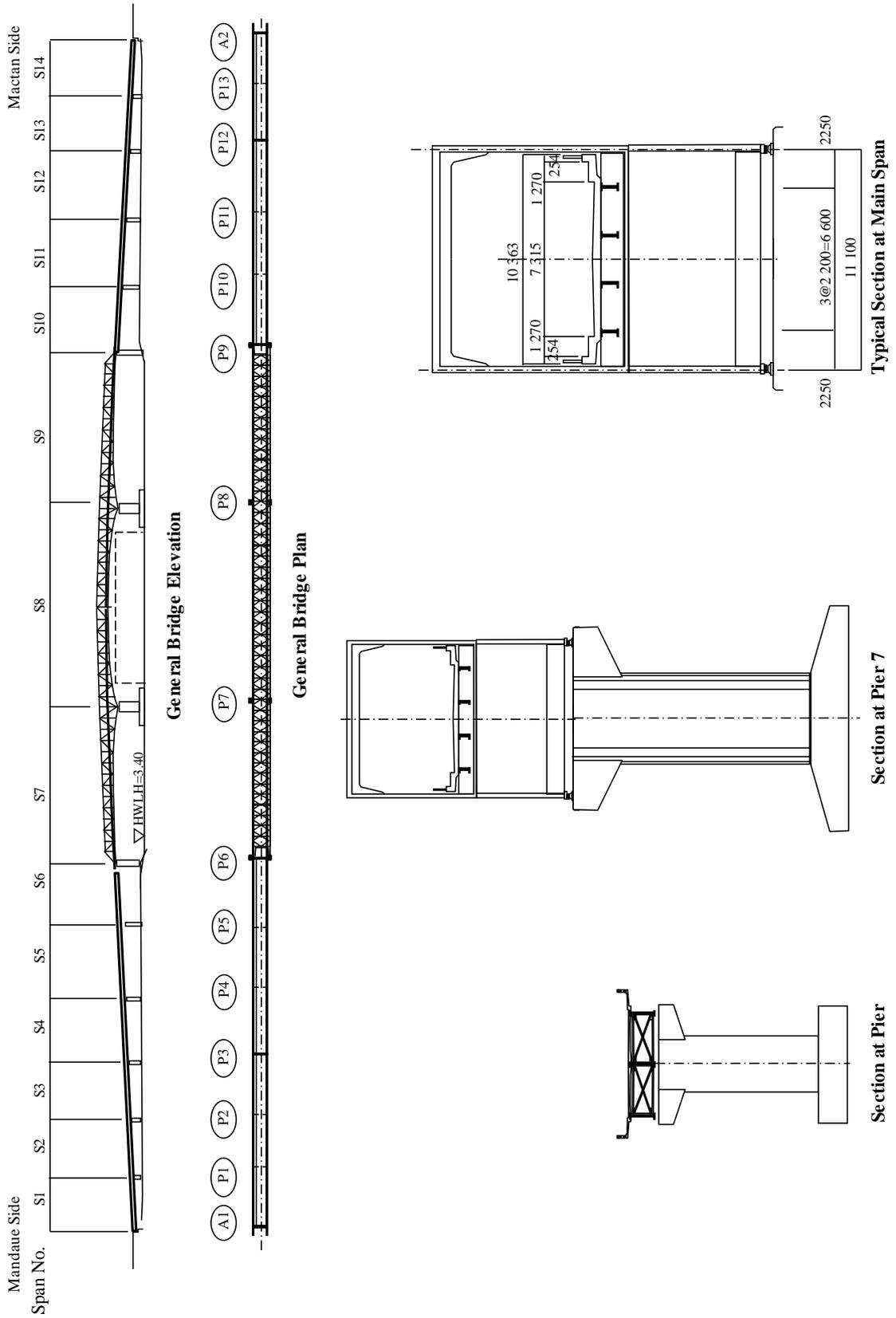
Throughout its contents, the Manual depicts a consistent and standardized bridge inspection procedures to ensure that consistent inspection reports are properly established for all types of bridge inspections covered therein.

The main focus of this Manual are Routine Inspection (Type 1), Condition Inspection (Type 2), Engineering Inspection (Type 3), Emergency Inspection (Type 4), Inventory Inspection (Type 5) and Geometrical Inspection (Type 6). These inspections provide the basic bridge data required to be stored in the Road and Bridge Information Application (RBIA) for the operation of MMB. More detailed procedures for other types of bridge inspections will be prepared separately.

General views of the 1st Mandaue-Mactan Bridge are shown in Figure 1-1.



Figure 1-1 General Views of 1st Mandaue-Mactan Bridge

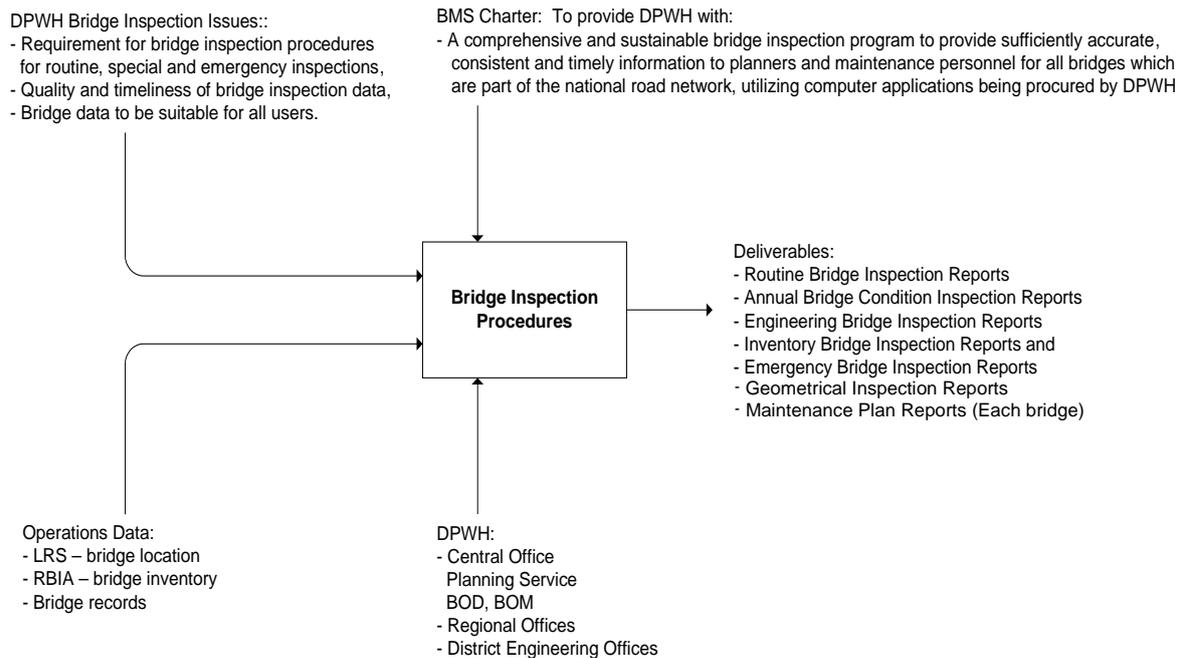




1.3 Bridge Inspections Requirements

The bridge inspection procedures and requirements are shown in Figure 1-2.

Figure 1-2
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. quarterly, annually) 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).



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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 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 | |
| 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 on Special Bridge Inventory Database |
| 6 | Geometrical | Once every three years and as the need arises (after earthquake, Typhoon, etc.) | Measure by surveying instrument | As Built Drawings data should be collected and attached on Special Bridge Inventory Database |

The responsible offices tasked to undertake specified bridge inspections are summarized in Table 1-2.

Table 1-2
Special 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 |

The specific requirements for personnel assigned to undertake the bridge inspections are given in Table 1-3.



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Table 1-3
Requirements for Special Bridge Inspection Personnel

| TYPE | NAME | PERSONNEL |
|-------------|-------------|---|
| 1 | Routine | Accredited Bridge Inspector |
| 2 | Condition | Accredited Bridge Inspector |
| 3 | Engineering | Accredited Bridge Inspector / BMS Coordinator / Bridge Engineer / Materials Engineer or outsourcing to Private Consultant company or entities |
| 4 | Emergency | RO Bridge Engineer / DEO Bridge Engineer / Accredited Bridge Inspector |
| 5 | Inventory | Accredited Bridge Inspector |
| 6 | Geometrical | Accredited Bridge Inspector and Bridge Engineer |

Bridge Inspection Types 1, 2 and 5 shall be undertaken by the Accredited Bridge Inspector because of the complicated structure of a special bridge. Bridge Inspection Type 3 of special bridge requires a high level of bridge engineering knowledge and will be undertaken by experienced bridge engineers with the assistance of an accredited bridge inspector and materials engineer or be outsourced to private consultant company or entities. Bridge Inspection Type 4 shall be undertaken by the Regional Accredited Bridge Inspector to be assisted by the Maintenance Engineers from the District Engineering Offices concerned. Bridge Inspection Type 6, will require surveying instruments (i.e., total station, level, and/or transit), to be conducted by the Accredited Bridge Inspector and Bridge Engineer.

For reference, the classification of bridges to be categorized into a Special Bridge is given in Table 1-4 below.

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 the respective special bridge inspection manuals and should be managed separately from standard bridges by a medium term management plan (5-10years). A list of special bridges in each region should be collected and be listed for management in the Special Bridge Inventory Database.

The 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.

An accredited bridge inspector is trained in assessment of the condition of bridge structures through visual inspection defects. However, the accredited bridge inspectors can get support



and assistance from bridge engineers in the Regional and District Engineering Offices concerned in making decision/s or recommendation/s.

1.4 Purpose of Bridge Inspection Manual

The main purpose of the bridge inspection manual is to provide bridge inspectors and other users with guidelines and procedures to undertake effective bridge inspections.



2. GENERAL REQUIREMENTS FOR BRIDGE INSPECTIONS

2.1 Accuracy

It is important that bridge inspection is completed with accuracy and thoroughness as the primary goal.

Bridge inspectors should allow sufficient time in undertaking the bridge inspection to collect all data required.

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 the corrective inspection.

As part of regular activities of the maintenance personnel, routine inspections of the bridges is undertaken to determine immediately physical conditions that might endanger life or property. All such conditions should be immediately reported to the Regional or District Engineering Offices for appropriate action.

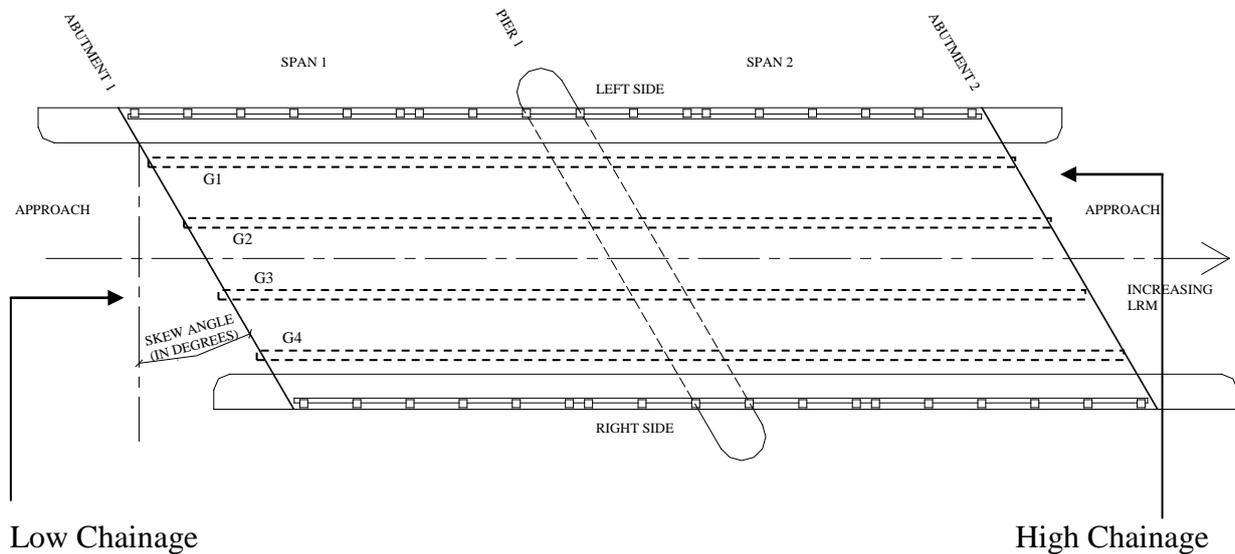
2.3 Bridge Geometry Definition

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 2-1.



2.3.1. General

Figure 2-1
Bridge Geometry Definition



The following standard abbreviations have been 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 (S2 G1).

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

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 enable 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 inspections is to develop an inspection program. This program contains 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 bridge is a complex structure with complicated design. There are inspection ways, box type 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.

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, and
- 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 bridge. Each bridge has its own unique structure. There is no standard drawing in the special bridge. Before the arrangement of inspection, “As-Built Drawing” should be collected and soft data should be installed in Special Bridge Inventory Database.



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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.

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 2-1 and this should be carefully considered prior to inspection. It may also be necessary to arrange specialized equipment on a case-to-case basis. This includes 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. Flashlight
5. Hand Mirror for viewing behind bearings, etc.
6. Geologist’s Hammer
7. 40-Meter Measuring Tape
8. 3-Meter Measuring Tape
9. Binoculars
10. Crayon for marking concrete or masonry
11. 35-70 MM Zoom Digital Camera with date feature
12. Inspection Forms
13. Writing/Sketching Paper
14. Copy of previous report
15. First-Aid Kit
16. Bridge Inspection Vehicle
17. Shovel and Broom
18. Extension Ladder
19. Boat or Barge
20. Crack Gauge
21. Wire Brush
22. Scotch Tape (inspection for weathering steel)
23. 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 of special bridge/long span 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.

The flowchart for the Special Bridge Inventory Database is shown in Appendix H.

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 regional coordinators shall ensure that all special/long span bridges are included in the Database and updated, if necessary.

2.4.6 Inspection Forms and Sketches Drawings Forms

Inspection and sketch forms for special bridge (e.g., long span steel truss) is individually produced, because it has unique design compared to standard bridges.

Prior to the conduct of the inspection, the inspection forms will be prepared in advance. The inspection forms and 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 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 high risk 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.
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 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, and depth (if applicable). 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 1st Mandaue-Mactan Bridge are shown in Appendix C-2.

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 take the photo of entire condition and defects condition on the bridges exactly.
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 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 Bridges

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 Database. The details of reports are shown in the chapter of each inspection type.

- File the inspection report; Inspection forms, the 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 Bridges

Special bridges should be managed separately from standard bridges which could be inspected and repaired by separate budget. Regional office and District Engineering Office should make the medium term management plan(next 5years) to include budget estimation, inspection schedule, planning of routine and major maintenance and implementation schedule.



Management of Special Bridges consists of:

- Special bridge should be managed properly by medium term management plan (next 5 years)
- Analyzes of the result of inspections (Inventory, Routine, Condition, etc.)
- Preparation of the maintenance management plan for each specific bridge
- Estimation the cost of inspection, routine and major maintenance works, etc.)



3. ROUTINE INSPECTION (TYPE 1)

3.1 Purpose

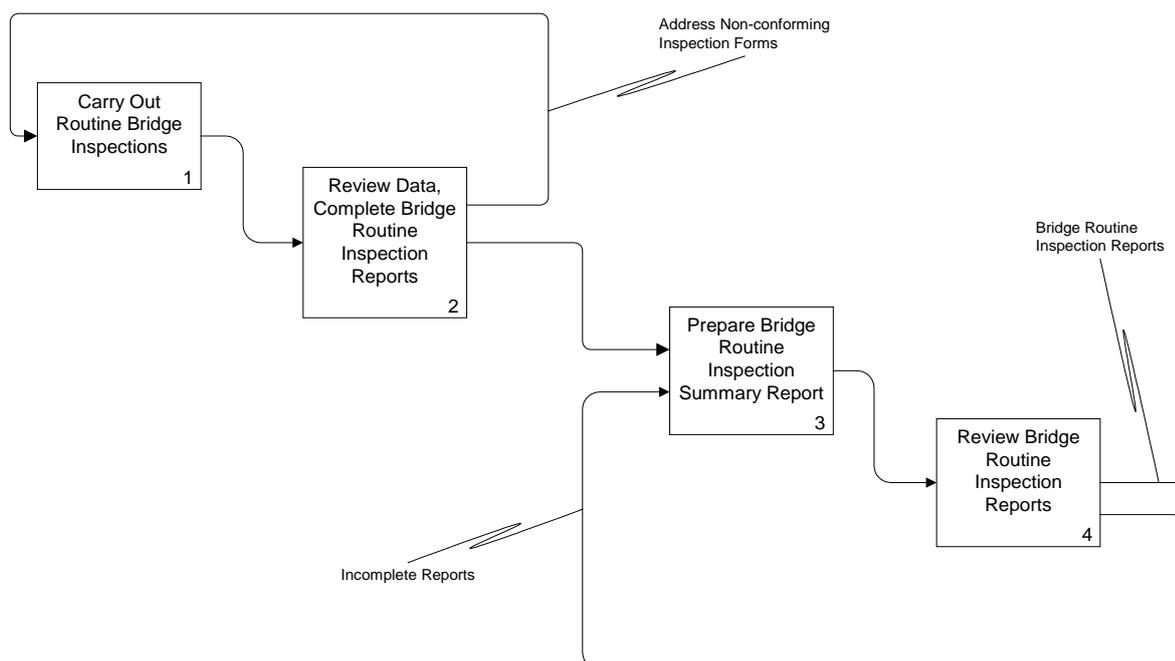
Routine Inspection is essentially a visual inspection that requires assessment of obvious defects on the Special Bridge.

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 public property. Routine inspection is important for taking emergency works to avoid collapse of the bridge and severe damage to a third party.

3.2 Process

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

Figure 3-1
Routine Inspection



3.3 Procedure

The procedure in accomplishing the Routine Inspection Forms and sketches is straightforward and involves visual inspection. The Bridge Routine Inspection Forms (Type 1) for MMB are shown in Appendix C-1.

For reference, the route and check points of Routine Inspection of MMB are shown in Figures 3-2 and 3-3, respectively. The routine inspection time table for MMB is shown in Figure 3-4 which is based on the actual routine inspection conducted on November 28, 2007.



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A copy of the last Routine Inspection Report should always be brought to site as reference. The bridge inspector who will undertake the inspection should check the defects, actions and condition ratings for the bridge listed in the inspection results are accurate.

During routine inspection, inspectors walk through upper level and ground level around piers and abutments. Inspectors should find obvious defects for routine maintenance according to the sheet of check points and also severe damage for emergency works. Check points of routine inspection show typical defects on each members which are limited compared with condition inspection.

The bridge inspector should check the defects and draw them on sketch drawings sheet and photographs should be used to document any major defects or situations of concern.

Upon return to the office, the inspectors select the routine maintenance 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), it should be informed immediately without waiting for the completion of 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.

Routine maintenance rating for Routine inspection and Required Maintenance Actions for each defect are shown in Tables 3-1 and 3-2.

Table 3-1
Routine Maintenance Rating

| Routine Inspection Rating | Condition |
|----------------------------------|---|
| Good | No damage |
| Fair | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |



Table 3-2
Maintenance Action Required

| 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 to a third party |

3.4 Deliverables

The deliverables of Routine Inspection are as follows:

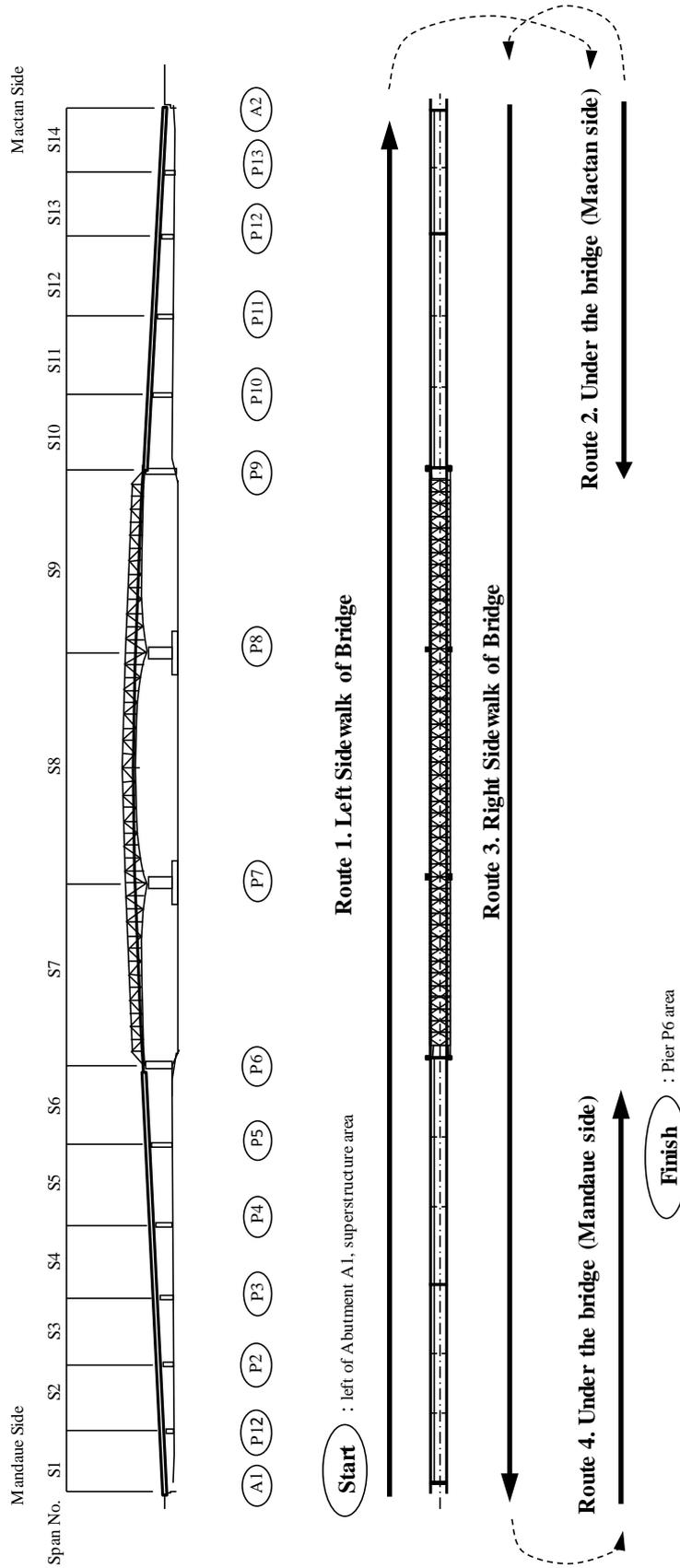
- Routine Inspection Report
 - Bridge Routine Inspection Form (Type1)
 - Summary of Routine Inspection Results
 - Repair Record
 - Inspection Results sheet
- Sketch Drawings sheet
- Photo Record sheet (Pictorial Report)

The Bridge Routine Inspection Reports shall be prepared by the concerned accredited bridge inspectors and BMS coordinators. The report shall be checked and reviewed in the Regional Office for completion and accuracy prior to finalization.

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



**Figure 3-2 Routine Inspection Route
1st Mandaue-Mactan Bridge**



Note: Inspection shall be done by walking through the route herein indicated.



**Figure 3-3 Check Points of Routine Inspection Points
1st Mandaue-Mactan Bridge**

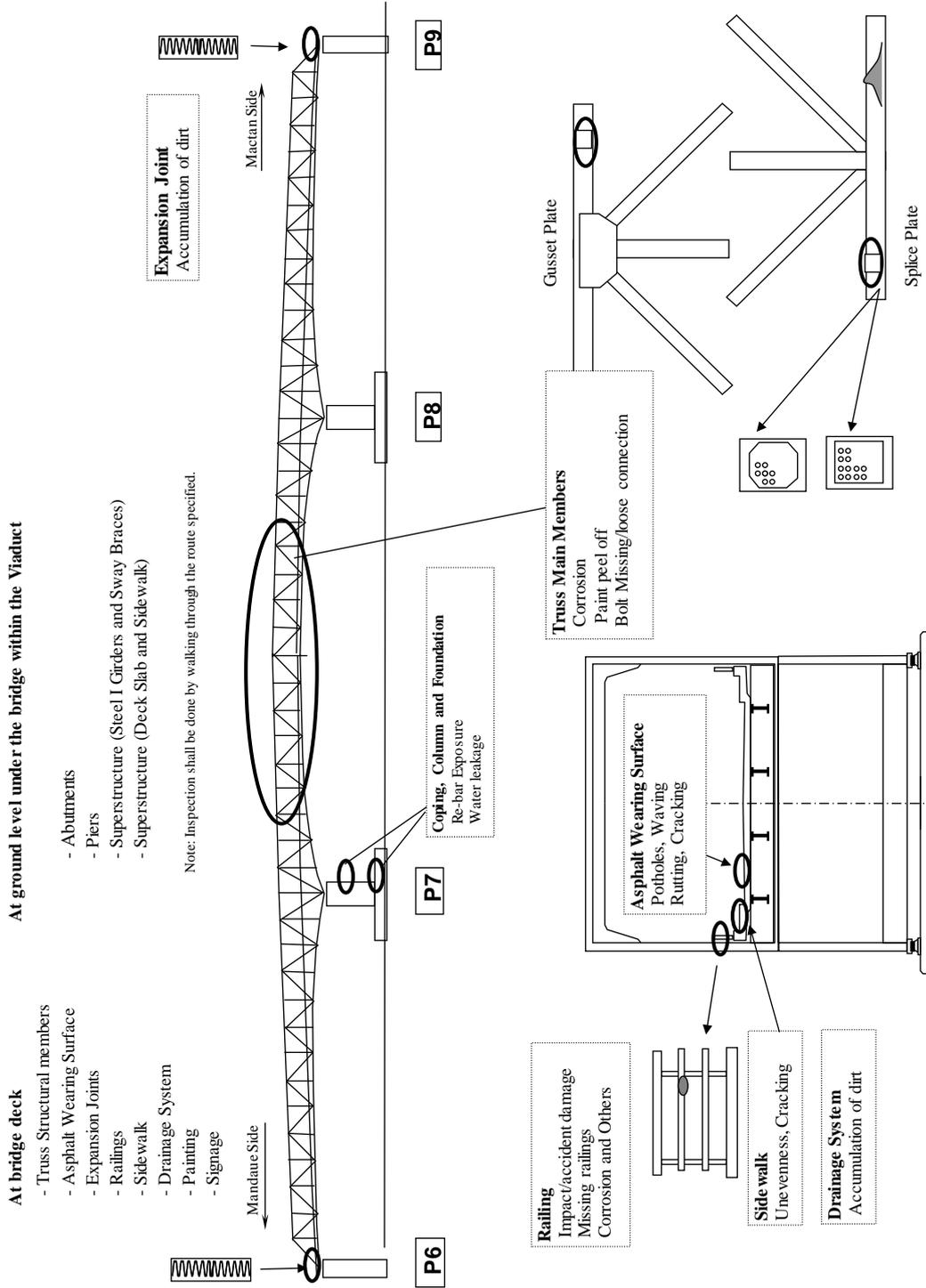
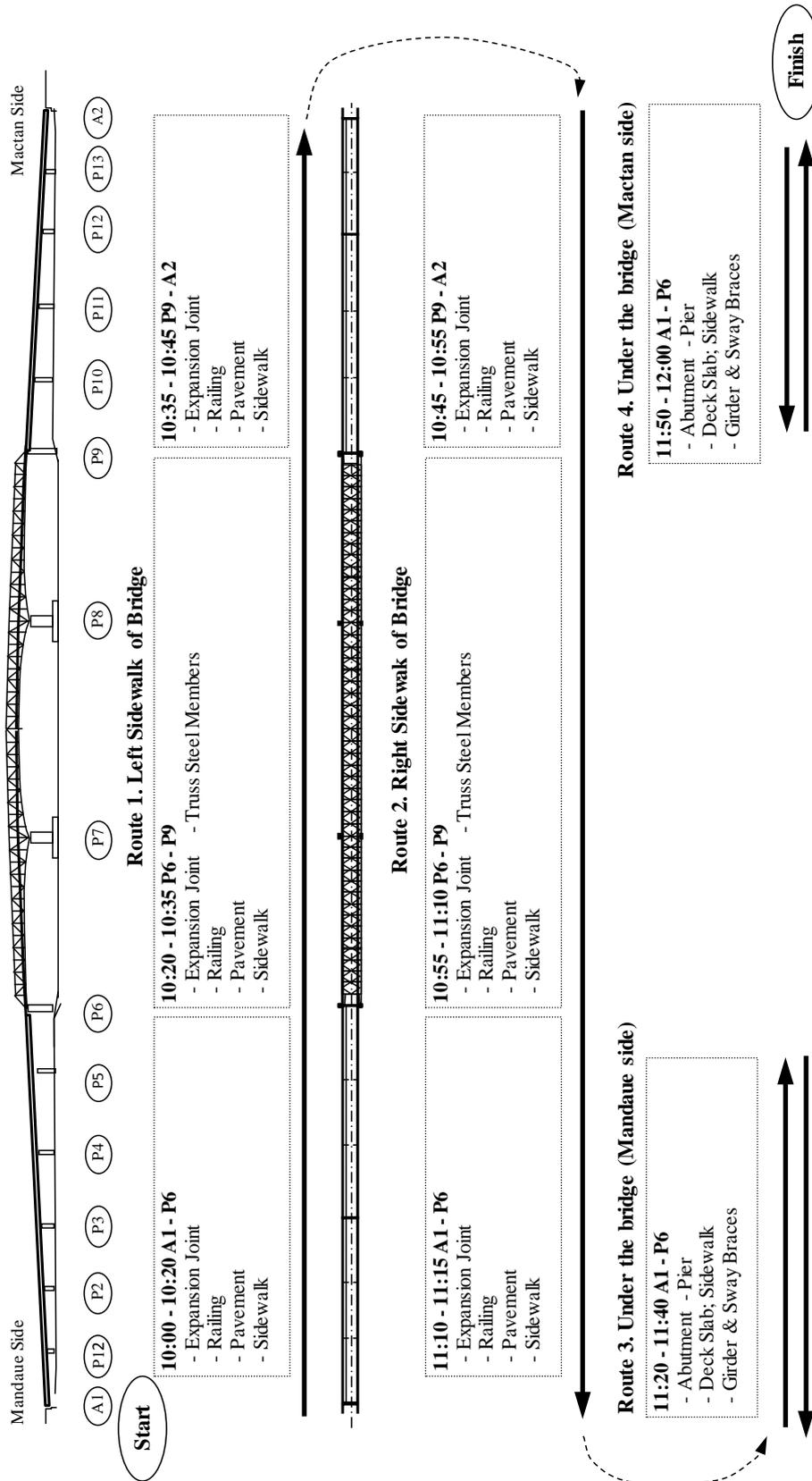




Figure 3-4 Sample of Routine Inspection Time Table
1st Mandaue-Mactan Bridge



Note: The time duration reflected above is the actual time table on the Bridge Routine Inspection conducted on November 28, 2007.
This Bridge Routine Inspection was jointly conducted by JICA Long-term & short-term Bridge Experts together with engineers from the DPWH Regional Office VII and Cebu 6th Engineering District.



4. CONDITION INSPECTION (TYPE 2)

4.1 Purpose

The purpose of the Condition Inspection is to monitor and rate the condition of Steel Truss Bridge as the basis for identifying its current maintenance needs, forecasting its future intervention measures and estimating its future funding requirements.

4.2 Scope of the Inspection

The scope of the condition inspection will include:

- 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 criteria and also for the monitoring of progress and deterioration of defects. Therefore, the individual attributes of the bridge shall be inspected at a distance of at least three (3) meters from the surfaces 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 bridge inspection is done visually to cover all parts of the bridge above the ground and water level.

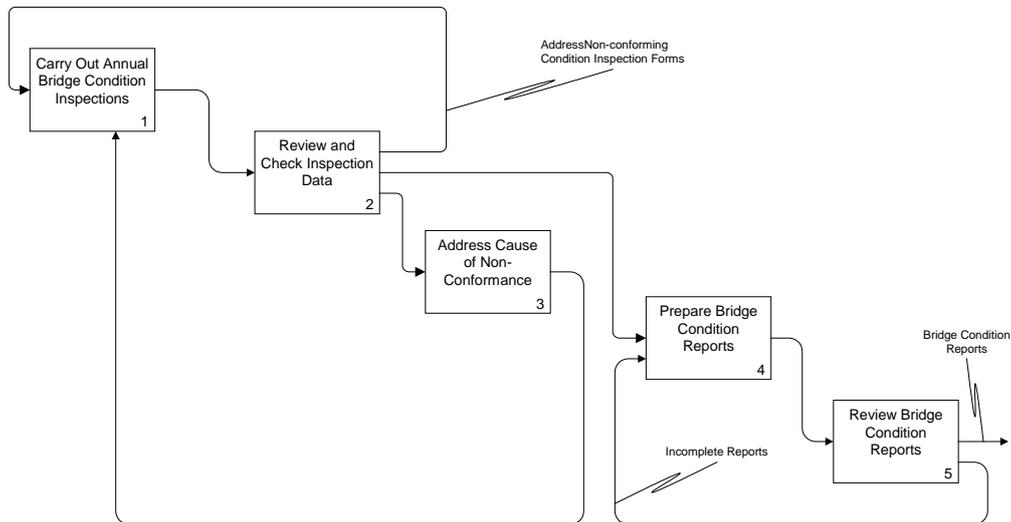
Sketch drawings in condition inspection is very important for the analysis of bridge condition and for the monitoring of deterioration of defects. Inspector should sketch carefully the details of defects. Sketch drawing of defects should include the range, length, square measure and severity of defect as much as possible. When inspectors cannot possibly measure the defects, inspectors should roughly estimate the measurement.

If the previous Condition Inspection Report is available, it will be used to verify whether the findings remain the same.



4.3 Process

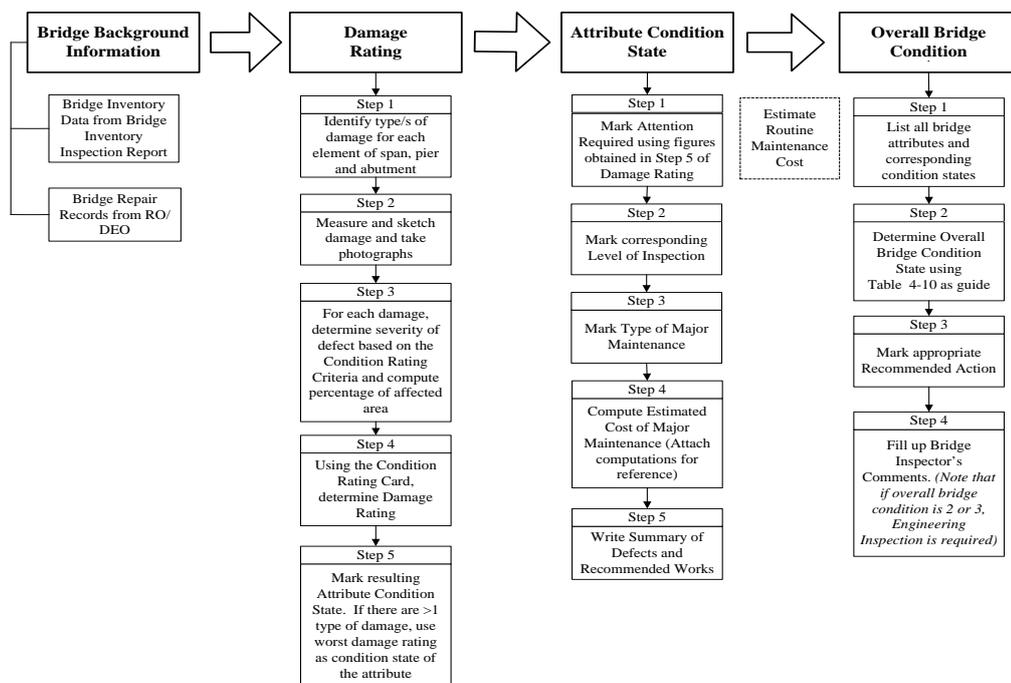
Figure 4-1
Bridge Condition Inspection



The step-by-step procedure for conducting the condition inspection is illustrated in the following flowchart.

Figure 4-2

Flowchart of Bridge Condition Inspection





4.4 Procedure

4.4.1. Condition Inspection Form

All information collected during a condition inspection is recorded on a Condition Inspection Form (CIF) which is shown in Appendix D-1. An additional feature in the form is the inclusion of the Asphalt Wearing Surface wherein its material defect descriptions are explained in Appendix A-1 and its condition rating criteria is presented in Appendix B-1.

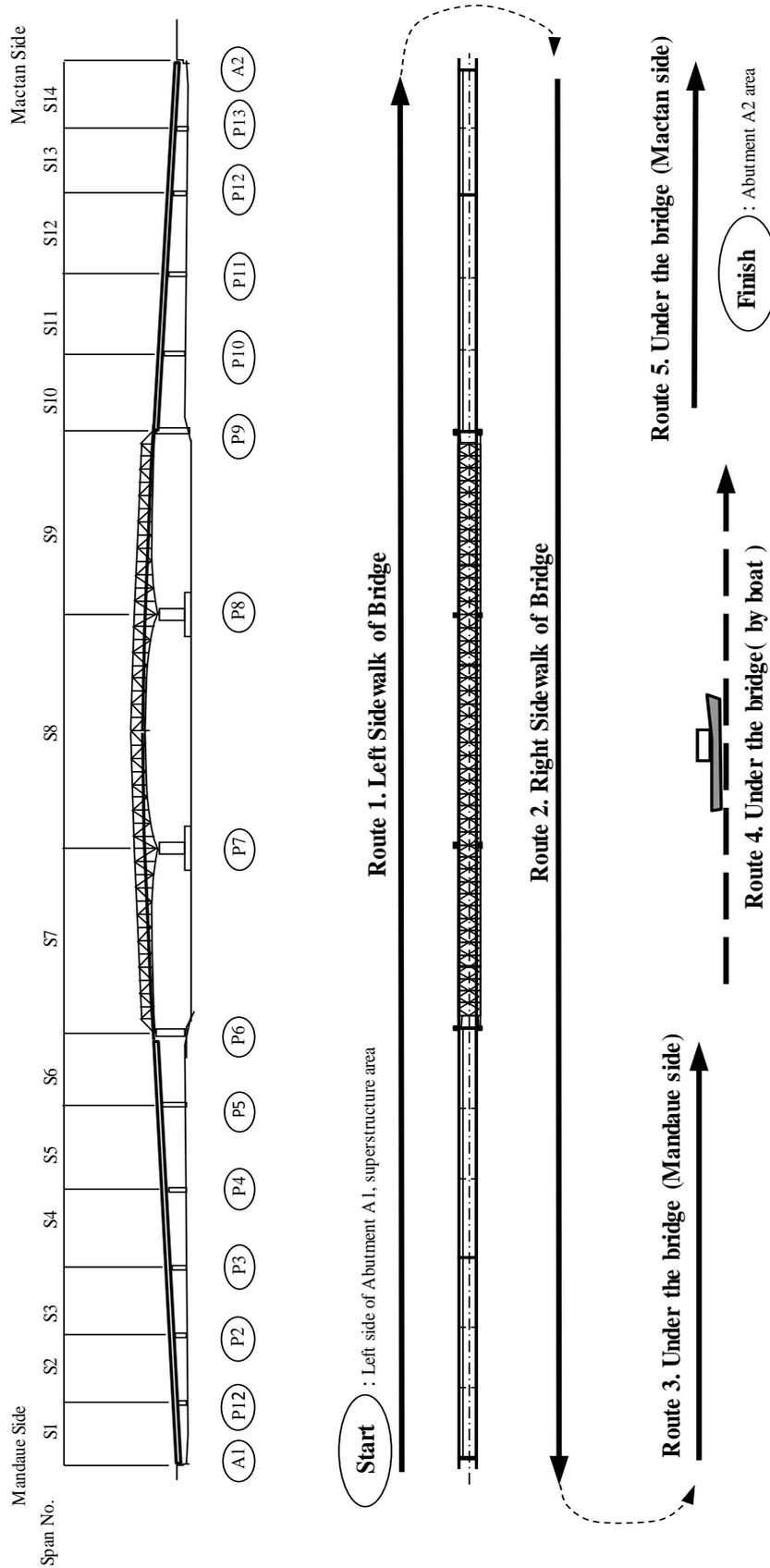
As a reference, the bridge condition inspection routes and check points of Condition Inspection for MMB are shown in Figures 4-1 and 4-2, respectively. As shown in Table 4-1, the CIF consists of the following:

Table 4-1
Composition of Condition Inspection Forms

| Title of Form | Number of Sheets |
|--|-------------------------|
| (1) Cover | 1 |
| (2) Bridge Location and General Description (with signature) | 1 |
| (3) Summary of Findings/ Recommendation | 1 |
| (4) Repair Records | 1 |
| (5) Span Element - Condition | 14 |
| (6) Pier Element - Condition | 7 |
| (7) Abutment Element - Condition | 4 |
| (8) Span Element - Damage Rating | 7 |
| (9) Pier Element - Damage Rating | 5 |
| (10) Abutment Element - Damage Rating | 2 |
| Total | 43 |



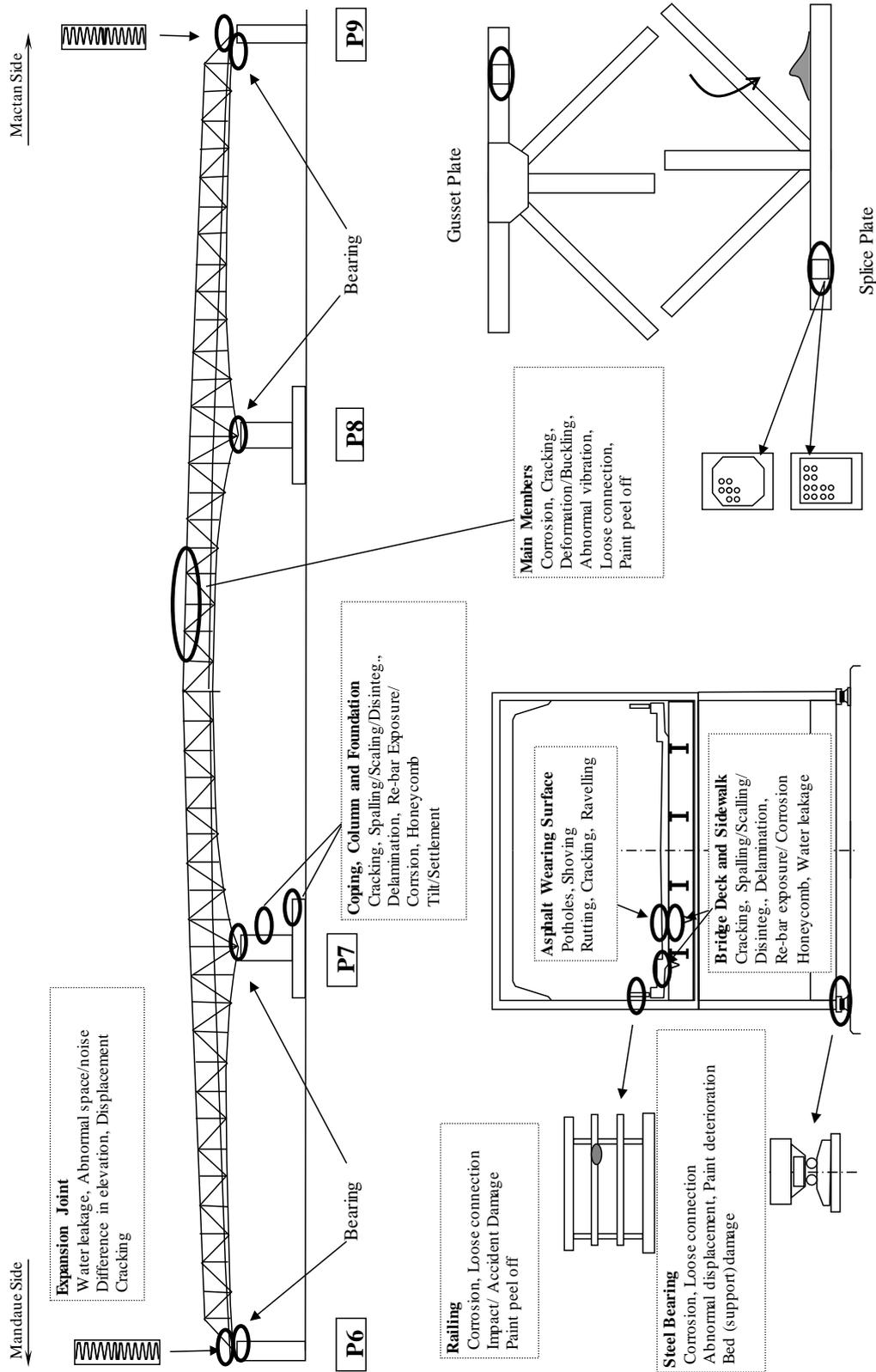
**Figure 4-3 Condition Inspection Route
1st Mandaue-Mactan Bridge**



- Note:
1. Inspection shall be done by walking through the route specified except at Route 4 which will be done by using boat.
 2. Whenever necessary, inspection equipment (e.g. bridge inspection vehicle, ladder etc.) may be used to conduct a more detailed inspection on any attribute member.



Figure 4-4 Check Points of Condition Inspection
1st Mandaue-Mactan Bridge





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"/> |

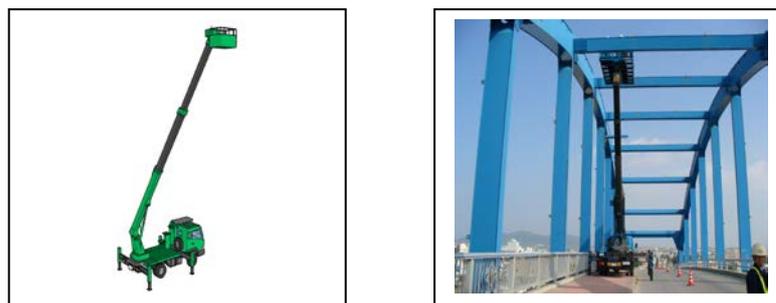
It is practical to use Bridge Inspection Vehicle (BIV) at least once in every three years, due to the limited number of such vehicle in DPWH. Bridge inspector should consider the arrangement of BIV when they make a maintenance plan for special bridges. If a complete inspection is not undertaken, then inspector should revisit the bridge and inspect with a BIV 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 (BIV):

BIV is used to provide access for inspectors to conduct inspection of inaccessible areas. It is very useful when special/long span bridge is inspected.

There are two types of BIV. One type is bucket type which is also called Aerial Work Platform. This type is widely used for maintenance and construction of bridge and for power and telecommunication industries. They can lift inspectors up to high level to inspect tower, cable band chord, etc. as shown in Figure 4-5.

Figure 4-5
Photos of Bucket Type BIV



Another type is a telescoping articulated platform. It can carry inspector underneath the bridge to check girders, bottom of slab, etc. Figure 4-6 show pictures of telescoping articulated platform type BIV.



Figure 4-6
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 use safety belt during inspection.

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 to 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 other minor works. 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 waterways | 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 Steel Truss Bridge have unique attributes and materials which are not defined in the BMS Manual for standard bridges. Bridge Inspectors/Engineers should understand their characteristics and functions beforehand by reviewing the As Built Drawings and other related documents.

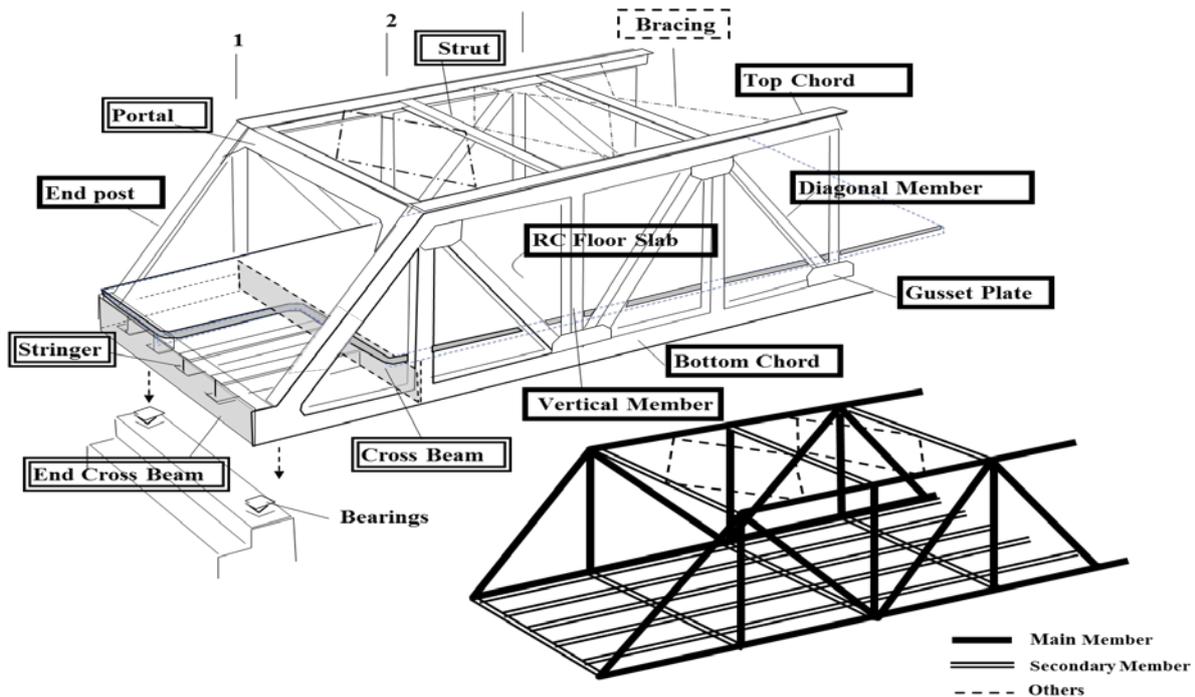
Asphalt Wearing Surface, considered to be an independent feature of a steel truss bridge, is defined in this section. It should be noted however that this item is not included in the BMS Manual for standard bridges. The defined attribute of the Asphalt Wearing Surface is listed in Table 4-6. All other applicable descriptions in the BMS Manual for standard bridge are applied to IMSTB.

Table 4-6
Attributes of the Asphalt Wearing Surface

| Element | Attribute | Description |
|---------|-------------------------|--|
| Span | Asphalt Wearing Surface | The asphalt wearing surface is the surface on which vehicle traffic and/or pedestrian move |

In the superstructure of a Steel Truss Bridge, the defined attributes of the main members or elements are the Top Chord, Bottom Chord, End Post, Vertical Member, Diagonal Member, Gusset Plate and RC Deck Slab. On the other hand, the secondary members are the Struts, Portals, Stringers, Cross Beams and Bracings.

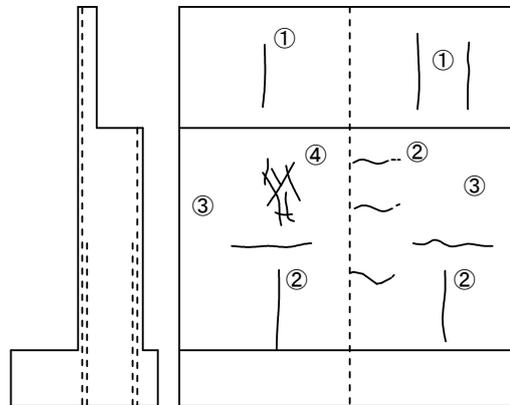
Figure 4-7 Attributes of Steel Truss Bridge



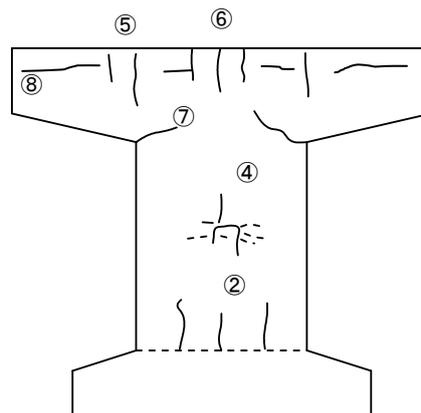
The general pattern of defects in a Steel Truss Bridge are shown in Figures 4-8, 4-9 and 4-10.



Figure 4-8 General Patterns of Crack Defects on Abutment and Pier



Abutment

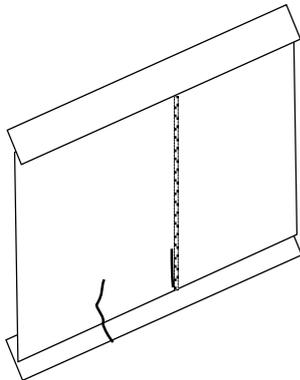


Pier

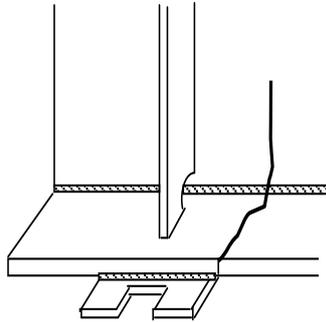
| Number | Pattern |
|--------|---|
| 1 | Crack by regular interval |
| 2 | Vertical crack on the concrete casting joint |
| 3 | Crack around the changing point of density of reinforcement bar |
| 4 | Crack like mesh |
| 5 | Crack on topside of overhang beam(coping) |
| 6 | Vertical crack on pier center |
| 7 | Crack on bottomside of overhang beam(coping) |
| 8 | Horizontal crack on overhang beam (coping) |



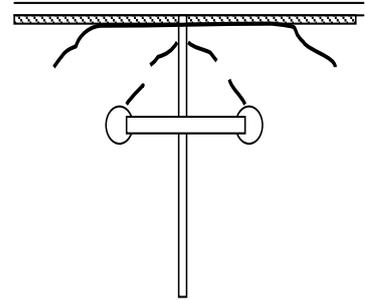
Figure 4-9 General Patterns of Crack Defects on Steel Attributes



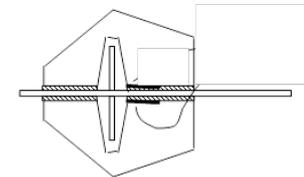
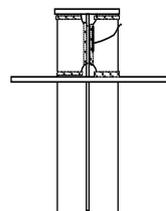
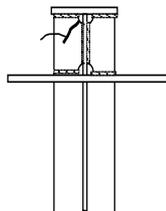
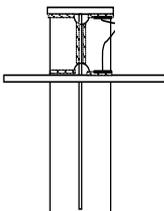
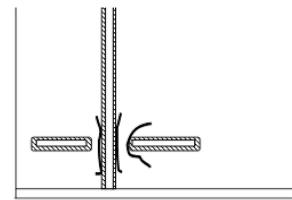
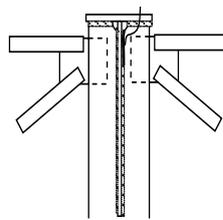
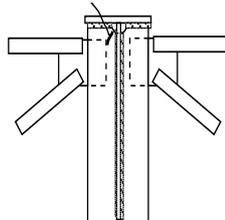
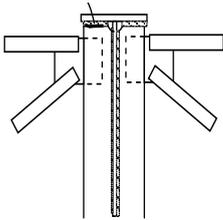
Vertical crack on lower flange or web crack on welding



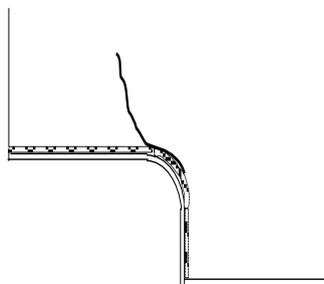
Crack around welding part of bearing's upper plate



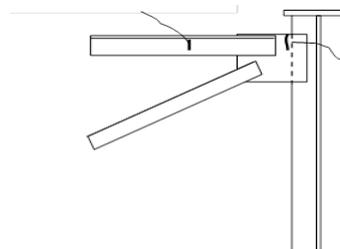
Crack on web connected with cross beam



Crack around gusset, connecting point with rib, cross beam



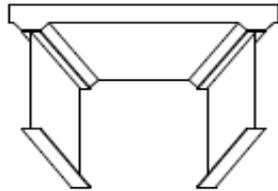
Crack on notch



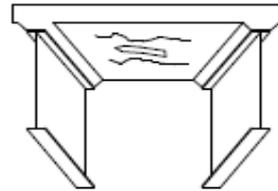
Crack on secondary member and on gusset



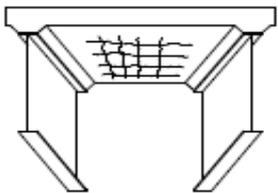
Figure 4-10 General Patterns of Crack Defects on Concrete Deck Slab



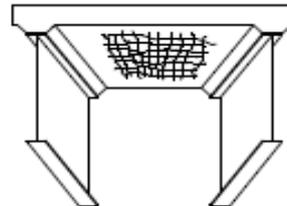
Stage 0
Sound condition



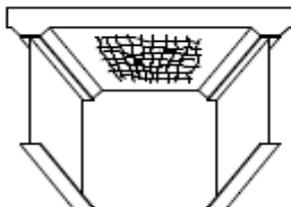
Stage 1
Development of
cracks in One
direction



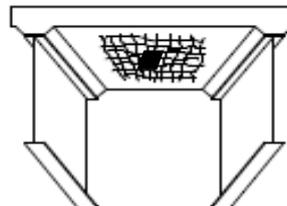
Stage 2
Development of
cracks in two
directions



Stage 3
Alligator cracks



Stage 4
Increasing number
of cracks/water
penetration



Stage 5
Disintegration/
spalling

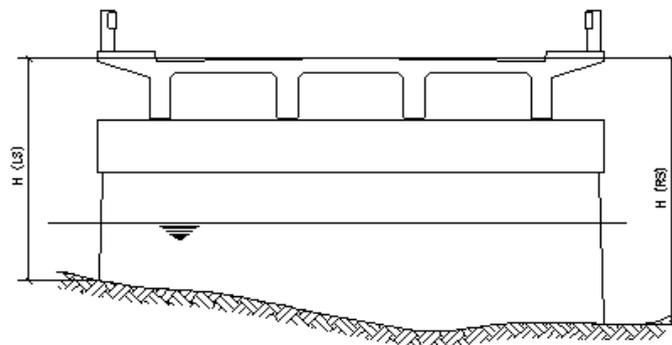


4.4.7. Pier and Abutment Scour Check

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.

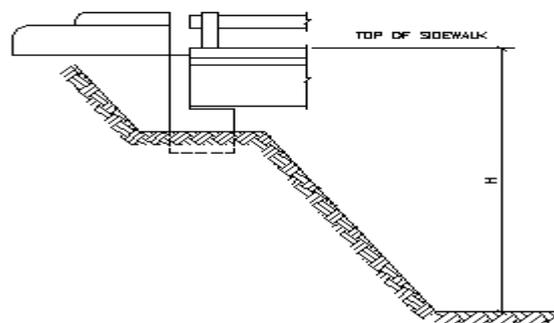
The scour check at a pier is undertaken as shown in Figure 4-11. The bridge inspector is required to measure the height from the top of the concrete deck or parapet to the ground or streambed level on each side of the bridge on the centerline of each pier.

Figure 4-11
Measurement of Pier Scour Check



The scour check at an abutment is undertaken as shown in Figure 4-12. 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 4-12
Measurement of Abutment Scour Check



4.4.8. Condition Rating of Bridge Attributes

Asphalt Wearing Surface shall be assessed based on the Material Defect descriptions and Condition State Rating criteria which are both included in Appendix A-1 and Appendix B-1, respectively.



All other descriptions in the BMS Manual which are applicable for steel truss bridge are also adopted in this manual.

4.4.9 Not Applicable Attributes

There are many instances when the 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 he cannot recognize or see the attribute in the bridge. In this case, the bridge inspector should mark the attribute 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 costs 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 where 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 4-7.

Table 4-7
Definition of Major Maintenance

| Definition | Major Maintenance |
|--|---|
| All bridge maintenance undertaken using a specific allocation of funds | All repair work to bridges that is 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 costs 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 that will be required to make 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 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.

The required accuracy for the major maintenance cost estimates is only +/- 50 % as these estimates are only order-of-cost estimates and prepared based on a visual inspection of the damaged bridge attributes. The accuracy cannot be higher as the scope and extent of work has not been defined.

Any bridges where the defects recorded during a bridge condition survey are such that the bridge is assessed as requiring some form of intervention, will be subject to an engineering inspection which will define the type of intervention required, determine the scope of work for the intervention, and provide a more accurate cost estimate based on estimated quantities of work.

4.5 Sample of Attribute Inspection Forms

For example, the deck slab of a bridge 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 4-13, 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. In Appendix B, 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 4-15) 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.



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Figure 4-13
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 | | | | | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Cracking | 3 | - | - | Bad | 3 |
| Concrete Slab | Spalling/Scaling/Disinteg. | | | | | |
| | Rebar exposure/corrosion | | | | | |
| | 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 4-14.

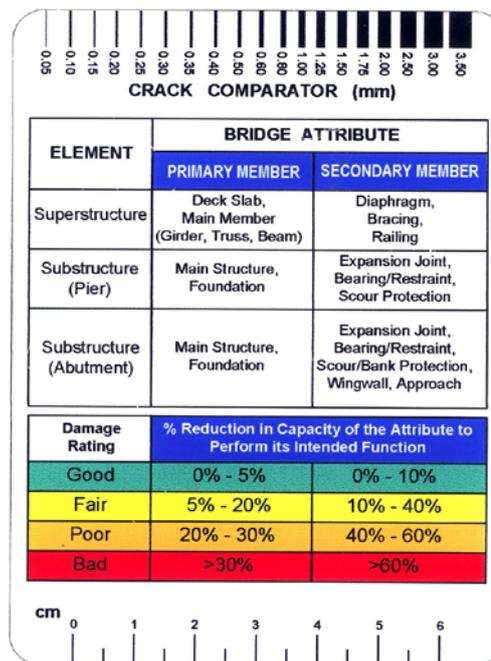
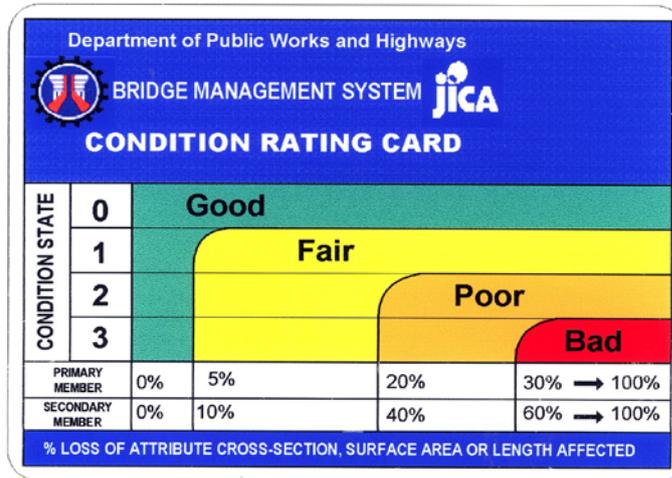
Figure 4-14
Sample Attribute Form (Condition)

| ATTRIBUTE | ATTENTION REQUIRED | | LEVEL OF INSPECTION | | TYPE OF MAJOR MAINTENANCE | ESTIMATED COST (P) | REFERENCE | |
|-------------------------|--------------------|----------|-------------------------------------|-------------------------------------|---|--------------------------------|-------------------|--|
| DECK | Immediate | 3 | <input checked="" type="checkbox"/> | Fully | <input checked="" type="checkbox"/> Repair damage | 100,000.00 | S1 | |
| | 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 | 100,000.00 | |
| SECONDARY MEMBER | 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 | | | <input checked="" type="checkbox"/> | Not | <input type="checkbox"/> Other | | |
| | | | | | assessed | Total Estimated Cost | | |

The bridge is a concrete girder bridge with a reinforced concrete deck slab supported directly on the main members consisting of beams. In this case, there are no secondary members attribute for Span 1, therefore the box for “Not Applicable” will be marked.



Figure 4-15
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



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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 4.8 (Table 4-10 in BMS-BIM).

Table 4-8
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 to be submitted 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 reports shall be prepared in the respective Regional Office in which the bridge inspectors are based. The reports shall be checked and reviewed in the Central Office for completion and accuracy prior to finalization.

When the Bridge Condition Inspection Report have been found to be complete, accurate and accepted all the data shall be stored in Special Bridge Inventory Database.



5. ENGINEERING INSPECTION (TYPE 3)

5.1 Purpose

Bridge Engineering Inspection is undertaken as a follow-up to Bridge Condition Inspection when defects with a condition state of 2 or 3 are recorded in any primary component/attribute or in any secondary component that has a detrimental effect on the structural performance of the bridge. The purposes of a Bridge Engineering Inspection for Steel Truss 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, structural analysis; and also to document 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 of bridge elements and attributes, the Bridge Engineering Inspection Manual 2014 developed by JICA should be referred to. However, there is no standard engineering inspection methods for special materials, elements and attributes for long span steel bridges.

It is recommended that the Regional Office engage the services of engineering inspection and investigation firm for engineering inspection of long span steel truss bridges like the 1st Mandaue-Mactan Bridge



6. EMERGENCY INSPECTION (TYPE 4)

6.1. Purpose

Emergency Inspection for the steel truss bridge will only be undertaken in response to calamities and whenever a major ship collision will happen that may tend to cause substantial damage to any part of the structure. This inspection is required to confirm that the bridge remains safe for 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 INSPECTION (TYPE 5)

7.1. Purpose

The purpose of the Inventory Inspection for a steel truss bridge is to obtain its inventory data for inclusion in the RBIA. 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 special bridges, is similar to the inventory inspection of standard bridges.

7.3 Procedure

All information collected during a bridge inventory inspection is recorded or referenced on an inventory inspection form (IIF).

7.3.1 Bridge Description

The representative Steel Truss Bridge which is the 1st Mandaue-Mactan Bridge is described below:

The 1st Mandaue-Mactan Bridge is a steel truss bridge crossing the Mactan Channel from the island of Cebu to the island of Mactan. It has an overall length of 860m from Abutment A1 to Abutment A2 comprising of 14 spans, 13 RC Piers and 2 RC Abutments. The three (3) central spans are made up of steel trusses while the rest of the spans at the viaduct portion, are composed of steel plate girder spans. For navigation purposes, the clear vertical height is 22.86m while the clear horizontal distance is 112.78m.



Figure 7-1 Photograph of 1st Mandaue-Mactan Bridge



7.3.2. Inspection Form

The Bridge Inventory Inspection Forms and attached drawings prepared specifically for the 1st Mandaue-Mactan Bridge are shown in Appendix E-1 and Appendix F-1, respectively.

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.

The bridge inspector will collect all the general bridge data required for the general bridge inventory as discussed in Table 7-2.



A bridge is made up of various inventory elements:

- General
- Modifications
- Spans
- Piers
- Abutments

Table 7-2
General Bridge Data

| Bridge Item | Description |
|-----------------------|--|
| Posted load limit | The sign posted for the bridge load capacity. Note that for some bridges the limit has been reduced by the DPWH due to structural problems. |
| Height clearances | Height clearances apply only to bridges that limit the height of vehicles passing over or under the bridge. |
| - Over | This is measured from the roadway surface to the soffit of the overhead bridge structure for traffic over the bridge. |
| - Under | This is measured from the roadway surface under the bridge to the soffit of the superstructure. |
| Maximum bridge height | The maximum height of the bridge measured from the top of the deck to the ground level. |

Other information about Section 7.3.3 – Location and Inventory Data Collection are explained in BMS-BIM pages 7-46 to 7-77.

Figure 7-1 shows the attributes of elements of 1st Mandaue-Mactan Bridge.

7.4 Deliverables

A bridge inventory report is prepared following the inventory inspection.

The Bridge Inventory Report shall include the following items:

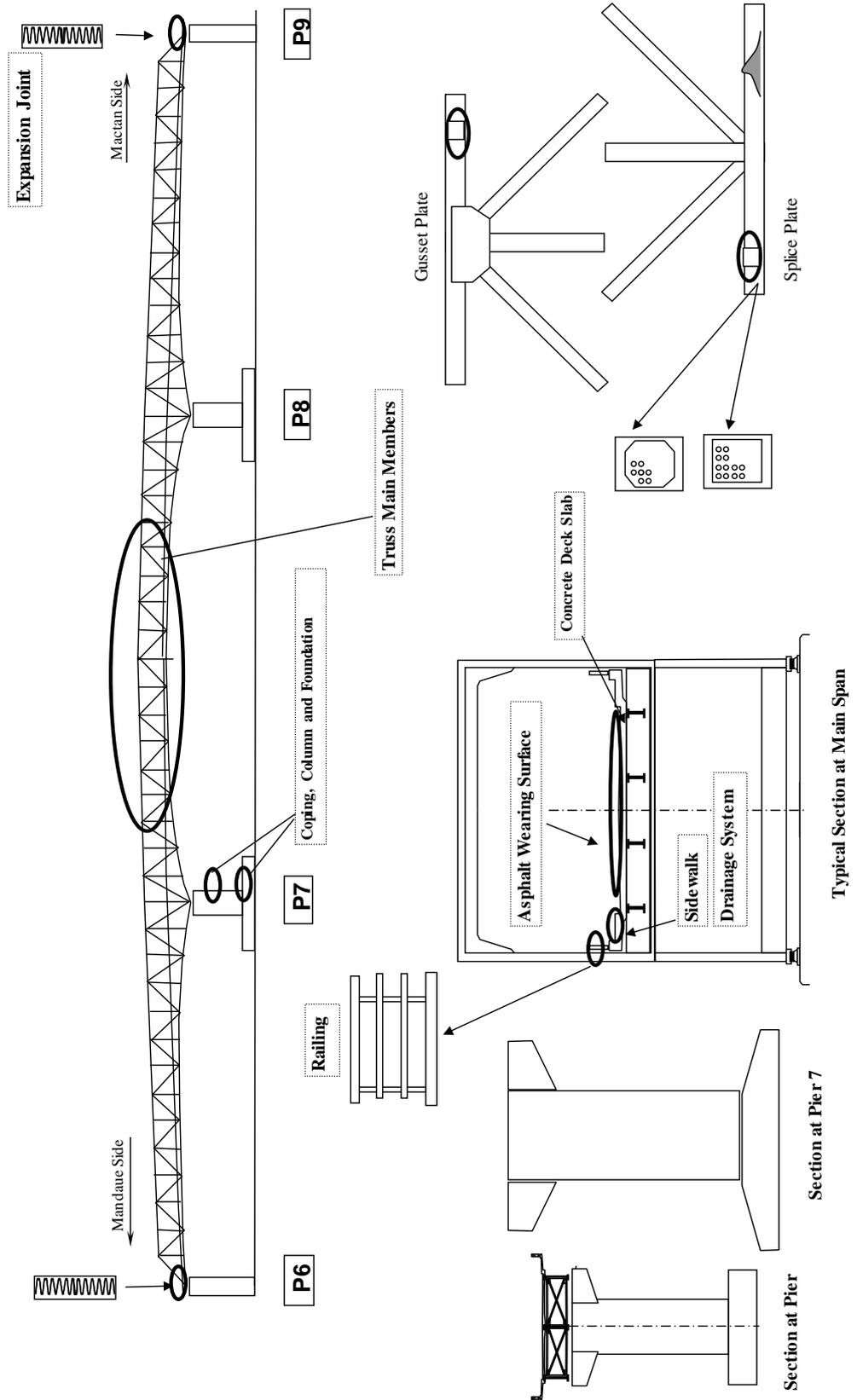
- A fully completed bridge inventory inspection form (IIF).
- Inventory photographs

The bridge inventory shall be prepared in the offices in which the bridge inspectors are based for all bridges in each region. The reports shall be checked and reviewed in the Regional Office for completeness and accuracy prior to finalization.

The data contained in the Bridge Inventory Reports including photographs shall be loaded into the RBIA and retained in concerned regional office when the reports have been accepted as accurate and complete.



**Figure 7-2 Attributes of Bridge Elements
1st Mandaue-Mactan Bridge**





8. BRIDGE GEOMETRICAL INSPECTION (TYPE 6)

8.1. Purpose

The purpose of the Geometrical Inspection is to obtain basic information on special bridge. The bridge could 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 a useful information for analysis of bridge soundness.

8.2. Procedure

Special Bridge geometric dimensions should be measured every three years using measuring survey equipment, like total station.

When severe disasters like earthquake, typhoon and ship or heavy equipment collisions occur, geometrical inspection should be undertaken in order to confirm the degree of deformation.

Geometrical inspection methods are shown in Figures 8-1, 8-2, 8-3 and 8-4. As a reference, forms of geometrical inspection of 1st Mandaue-Mactan Bridge are shown in Appendix G-1.

Geometrical inspection is composed of a three-part measurement survey, as described below.

- Leveling of superstructure and substructure
 - Elevation of longitudinal alignment of deck surface
 - Elevation of piers (abutments)
- Slope of top chord of truss
- Movement of bearing and expansion joint

In case there is an official bench mark that is close to the bridge, it should be used as reference 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, the inspector and the bridge engineer should analyze and compare the previous year's result. If excessive movement is observed, further investigation such as engineering inspection should be conducted in order to determine the appropriate corrective measure to be undertaken.

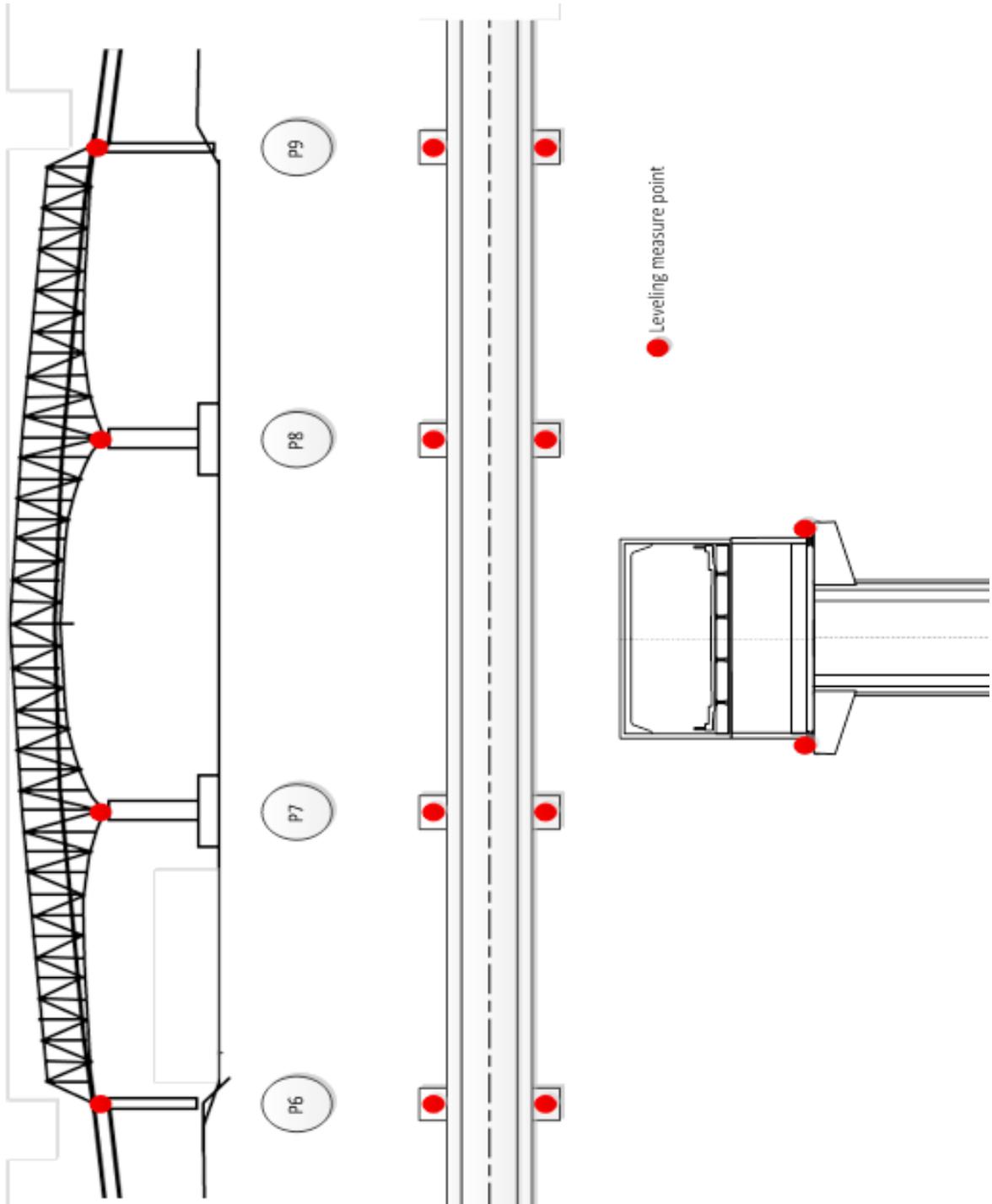


Figure 8-1
Geometrical Inspection of 1st Mandaue-Mactan Bridge:
Leveling of Piers

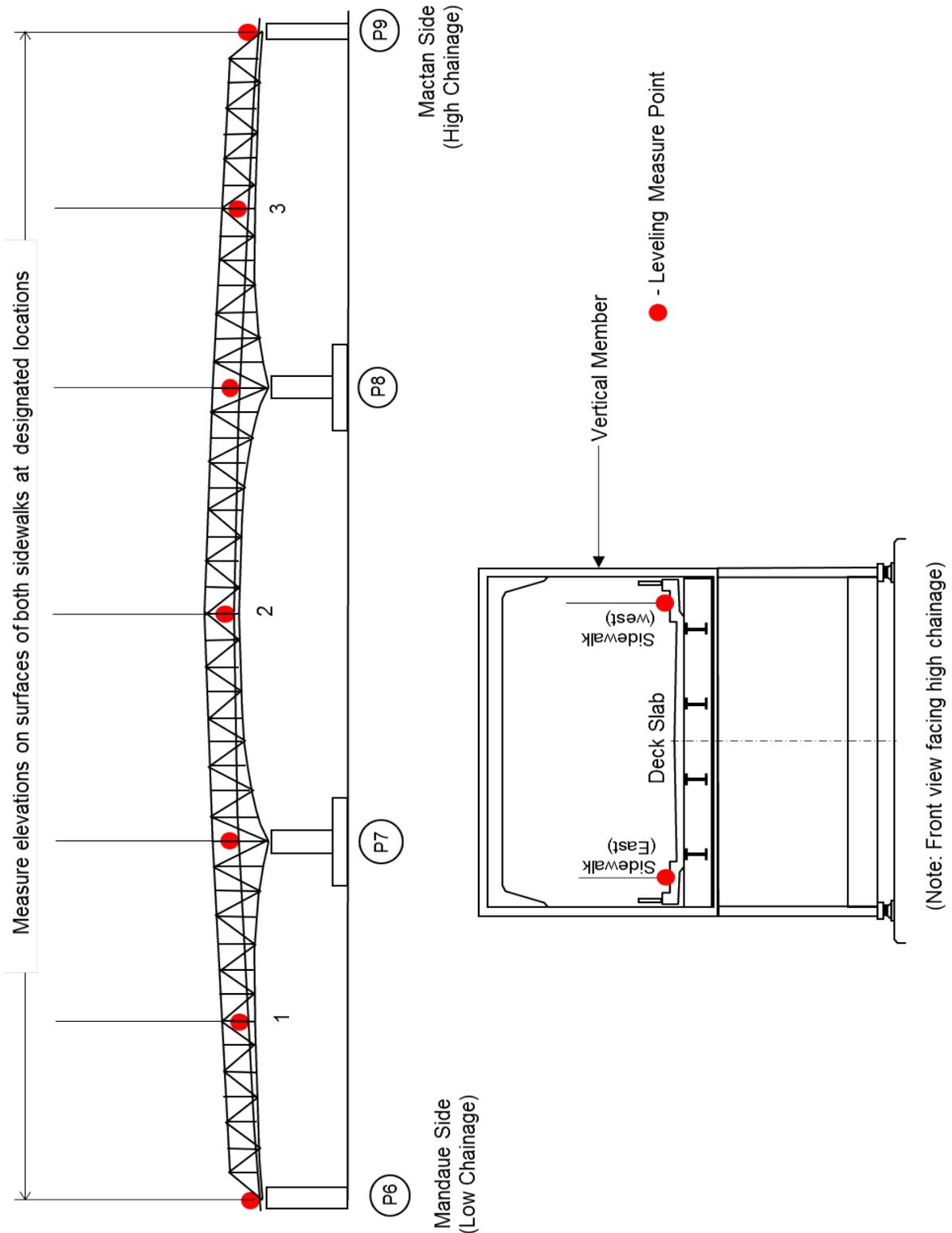


Figure 8-2
Geometrical Inspection of 1st Mandaue-Mactan Bridge:
Leveling of Longitudinal Alignment of Deck Slab Surface

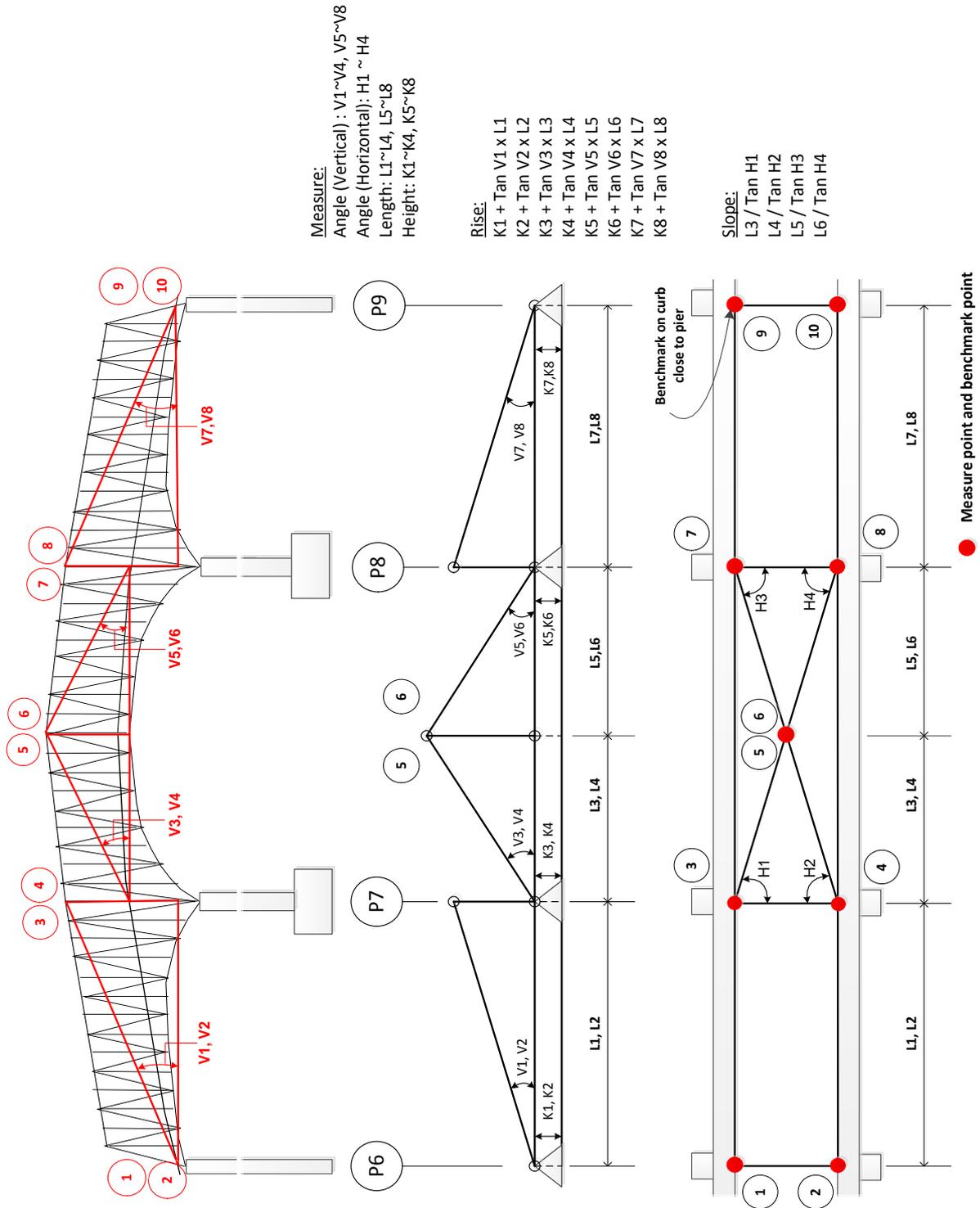
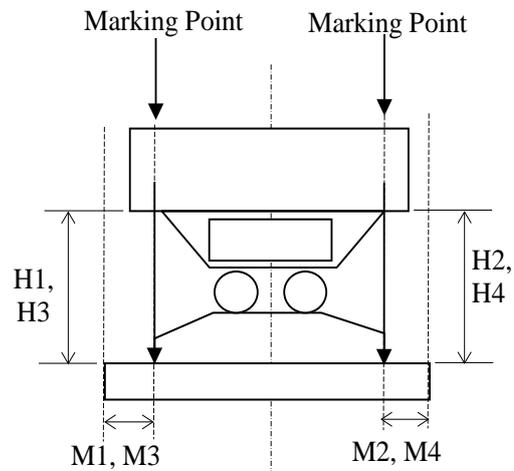
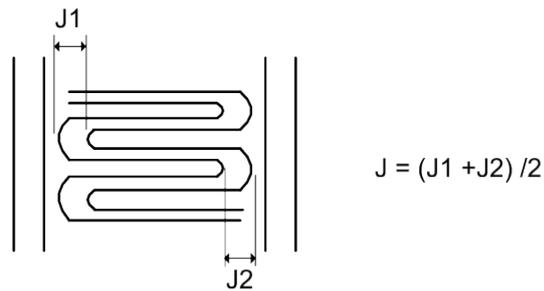


Figure 8-3
Geometrical Inspection of 1st Mandaue-Mactan Bridge:
Slope of Truss Top Chord



Measure every bearing (everytime use same marking point)

Bearing



Measure 5 selected points in each joint and get the average
(everytime use same points)

Expansion Joint

Figure 8-4
Geometrical Inspection of 1st Mandaue-Mactan Bridge:
Movement of Bearing and Expansion Joint



8.3. Deliverables

The deliverable will be the Geometrical Inspection Report which shall include:

- The geometrical inspection reports - a fully completed Geometrical Inspection Form (GIF).
- Updated geometrical inspection (past 3 times data)
- Inventory photographs

The Bridge Geometrical Inspection Report shall be prepared by the bridge inspector and bridge engineer. The report shall be checked and reviewed in the Regional Office for completion and accuracy prior to finalization.

When the Bridge Geometrical Inspection Report have been found to be complete, accurate and accepted all the data shall be stored in Special Bridge Inventory Database.



LIST OF APPENDICES

I. BMS BRIDGE INSPECTION MANUAL

APPENDIX A: MATERIAL DEFECTS

APPENDIX B: CONDITION RATING CRITERIA

APPENDIX C: PHOTOGRAPHS OF CONDITION STATES

APPENDIX D: INSPECTION EQUIPMENT

APPENDIX E: BRIDGE INSPECTION FORMS

APPENDIX F: SAMPLE BRIDGE INSPECTION FORMS

APPENDIX G: SAMPLE INSPECTION PHOTOGRAPHS AND SKETCHES

The above Appendices C, D, F, G are also applied to the Bridge Inspection Manual for Steel Truss Bridge

II. BRIDGE INSPECTION MANUAL FOR STEEL TRUSS BRIDGE

APPENDIX A-1: ADDITIONAL MATERIAL DEFECTS

APPENDIX B-1: ADDITIONAL CONDITION RATING CRITERIA

APPENDIX C-1: BRIDGE ROUTINE INSPECTION FORM

APPENDIX C-2: SKETCH DRAWINGS FOR BRIDGE ROUTINE INSPECTION

APPENDIX D-1: BRIDGE CONDITION INSPECTION FORM

APPENDIX D-2: SKETCH DRAWINGS FOR BRIDGE CONDITION
INSPECTION

APPENDIX E-1: BRIDGE INVENTORY INSPECTION FORM

APPENDIX F-1: NUMBERING OF TRUSS, PIER AND ABUTMENT

APPENDIX G-1: GEOMETRICAL INSPECTION FORM

APPENDIX H: FLOWCHART OF SPECIAL BRIDGE INVENTORY
DATABASE



APPENDIX A-1

ADDITIONAL MATERIAL DEFECTS



APPENDIX A-1
ADDITIONAL MATERIAL DEFECTS FOR BRIDGE INSPECTION MANUAL
FOR STEEL TRUSS BRIDGE

1. GENERAL

This appendix describes the defects that are normally found in Asphalt Wearing Surface. Each defect is described and the causes producing it are discussed below.

2. ASPHALT WEARING SURFACE

Asphalt Wearing Surface is the type of bridge deck slab surfacing on which vehicle traffic and pedestrian travel.

Defects in Asphalt Wearing Surface is often related with the lack of durability of the asphalt, resulting from the incorrect composition of the asphalt, poor placement practices, poor quality control or the aggressive environment in which it is placed.

The following defects commonly occurring in Asphalt Wearing Surface are as follows:

1. Potholes
2. Shoving
3. Rutting
4. Cracking
5. Raveling

2.1 Potholes

Potholes are bowl-shaped holes in the Asphalt Wearing Surface caused by the penetration of water through the surfacing due to heavy rains and breaking up of the wearing surface due to subsequent traffic action. Asphalt Wearing Surface with defects like alligator cracking and raveling are prone to the occurrence of potholes.

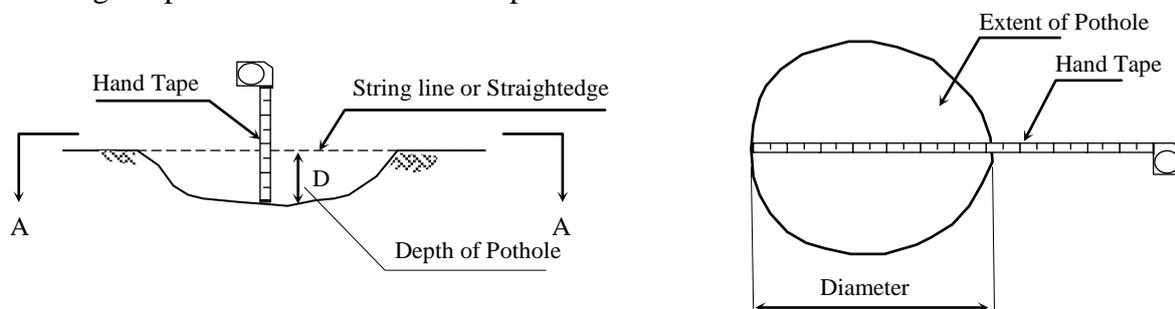


Figure A-1
Method of Measuring Potholes



2.2 Shoving

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

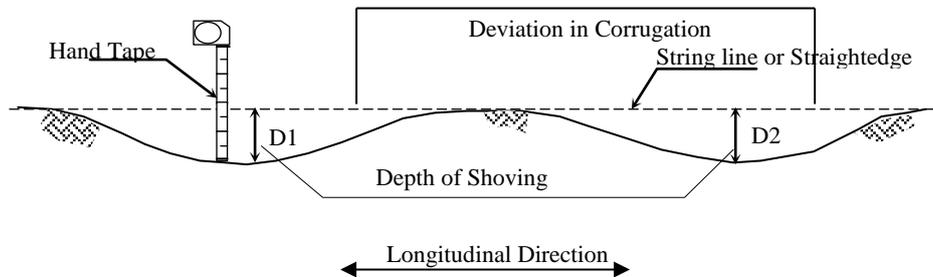


Figure A-2
Measurement of Shoving Depth and Corrugation

2.3 Rutting

Rutting is defined 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 may progresses rapidly in warm weather. While rutting by itself may not indicate failure of the surfacing, the main effects is that it prevent water to drain effectively from the carriageway surfacing and in some severe cases, prevent vehicles from leaving the rutting-affected depressed areas causing a temporary loss of control on the vehicle. In other instances the combined effects with rain make braking extremely difficult with a strong possibility of the vehicle aquaplaning.

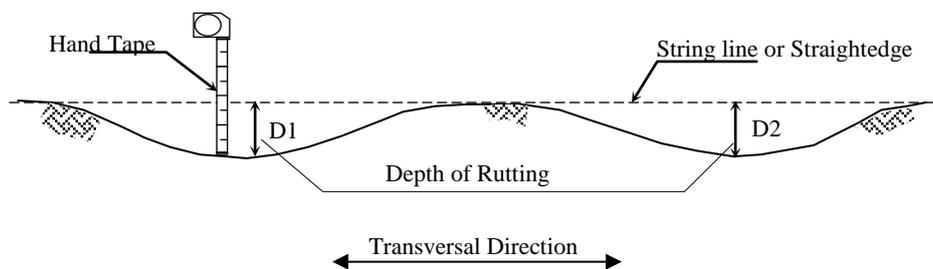


Figure A-3
Measurement of Rutting Depth

2.4 Cracking

A crack is a linear fracture extending partially or completely through the pavement. Cracking in pavements may be caused by any one or a combination of the following factors; the action



of vehicular wheel loading; poor quality material; poor compaction, poor placement or quality control; poor drainage; temperature susceptibility of the asphalt cement binder; and as reflection cracks, which are the extension of cracks in the surface below the pavement.

Cracks are distinguished by their appearance and direction. The following types of cracks are commonly observed in pavements: longitudinal, transverse, and alligator.

Longitudinal cracks are roughly parallel to the direction of travel 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 right angles 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 develops due to segregation of coarse aggregates from the mixture. Raveling is caused by uneven mixture of aggregate.



APPENDIX B-1

ADDITIONAL CONDITION RATING CRITERIA



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

APPENDIX B-1
ADDITIONAL CONDITION RATING CRITERIA FOR 1ST MMB INSPECTION MANUAL

BRIDGE CONDITION RATING CRITERIA
1st Mandaue-Mactan Bridge

| 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 <= 10% 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 > 10% to < 15% | | |
| | | | 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 > 15% 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 | | |



APPENDIX C-1

BRIDGE ROUTINE INSPECTION FORM



Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

BRIDGE ROUTINE INSPECTION FORM (TYPE 1)

1st MANDAUE-MACTAN BRIDGE

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS



Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
FOR
1st MANDAUE-MACTAN BRIDGE (STEEL TRUSS)

BRIDGE ROUTINE INSPECTION FORM (TYPE 1)

| LOCATION | |
|------------------------|-----------------------------|
| BRIDGE ID | B00587CB |
| Bridge Name | 1st MANDAUE-MACTAN BRIDGE |
| Road Name | A.C.Cortes Ave. |
| Road ID | R00069CB |
| Section ID | S00360CB |
| Location | 9 + 704 |
| | |
| Region | VII |
| Province | Cebu |
| Congressional District | 6th |
| Engineering District | 6th |
| Municipality | Mandaue City, Lapulapu City |
| Barangay | Looc , Pajo |
| River Name | Mactan Channel |

| BRIDGE DESCRIPTION | |
|---------------------------|--------------------------------|
| Type of Bridge | Special Bridge |
| Superstructure | STEEL TRUSS and STEEL I-GIRDER |
| Substructure | RC Pier and Abutment |
| Foundation | RC Pile |
| Total Number of Span | 14 |
| Total Number of Abutment | 2 |
| Total Number of Pier | 13 |

| | |
|-----------------------------------|--|
| Date of Routine Inspection | |
| ACCOMPLISHED BY: | |
| SUBMITTED BY: | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REPAIR RECORD

Bridge ID.

B00587CB

Bridge Name

1st Mandaue-Mactan

ROUTINE MAINTENANCE

| DATE | ROUTINE MAINTENANCE | | | IMPLEMENTATION | | | | INSPECTOR COMMENTS |
|--|--------------------------------|-------|------|---|------------|----------|---------------------------------------|--------------------|
| | TYPE | SCOPE | COST | START | COMPLETION | DURATION | STATUS | |
| Low Chamage Approach Viaduct A1 to P6 Mandaue side | | | | | | | | |
| | | | | | | | | |
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| Main Bridge Steel Truss P6 to P9 | | | | | | | | |
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| | | | | | | | | |
| High Chamage Approach Viaduct P9 to A2 Mactan side | | | | | | | | |
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| | | | | | | | | |
| LEGEND: | TYPE OF MAJOR MAINTENANCE | | | ROUTINE MAINTENANCE ACTIVITY | | | | |
| | A - Repair damage | | | A - Sweeping and cleaning of bridge deck | | | E - Painting bridge components | |
| | B - Protective measures | | | B - Repairs to concrete bridge deck | | | F - Cleaning bridge waterways | |
| | C - Strengthen | | | C - Repairs to concrete component | | | G - Others (Specify) | |
| | D - Replace | | | D - Repairs to steel component | | | | |
| | E - None | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Summary of Routine Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

| Bridge members | January 20__ | | February 20__ | | March 20__ | | April 20__ | | May 20__ | | June 20__ | |
|-------------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| | Routine Rating | Required Action |
| Truss | | | | | | | | | | | | |
| Steel I Girder | | | | | | | | | | | | |
| Deck Slab | | | | | | | | | | | | |
| Asphalt Wearing Surface | | | | | | | | | | | | |
| Expansion Joint | | | | | | | | | | | | |
| Railing | | | | | | | | | | | | |
| Sidewalk | | | | | | | | | | | | |
| Drainage System | | | | | | | | | | | | |
| Signage | | | | | | | | | | | | |
| Abutment | | | | | | | | | | | | |
| Pier | | | | | | | | | | | | |

| Bridge members | July 20__ | | August 20__ | | September 20__ | | October 20__ | | November 20__ | | December 20__ | |
|-------------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| | Routine Rating | Required Action |
| Truss | | | | | | | | | | | | |
| Steel I Girder | | | | | | | | | | | | |
| Deck Slab | | | | | | | | | | | | |
| Asphalt Wearing Surface | | | | | | | | | | | | |
| Expansion Joint | | | | | | | | | | | | |
| Railing | | | | | | | | | | | | |
| Sidewalk | | | | | | | | | | | | |
| 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 12 to 12 of 12..

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (1) S1 (A1~P1)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | Incorrect Location Visibility | | | | | |
| | Not Good Condition | | | | | |
| | Unclear Lettering | | | | | |

Routine Maintenance Rating

| Routine Rating | Condition |
|----------------|---|
| Good | No damage |
| Fair | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

| Required Action | Condition |
|-------------------------|---|
| M: Monitoring | No repair work & keep monitoring (Damage not progressing or very slow) |
| RM: Routine Maintenance | Should be maintained by Routine Maintenance |
| MM: Major Maintenance | Should be maintained by Major Maintenance |
| EA: Emergency Action | Need to take action immediately to avoid bridge collapse or damage to 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 in Red ink)

From Ground Level under the bridge (1) S1 (A1~P1)

| Bridge members | Defects | Routine Rating | | Action | |
|----------------|----------------|----------------|--|---|---------|
| | | Route 4 | | Action | Route 4 |
| Abutment | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Pier | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Deck Slab | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Steel I Girder | Corrosion | | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | | |
| | Paint Peel off | | | | |

| Remarks |
|---------|
| |

Note: Attach sketch of the defects.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (2) S2 (P1~P2)

| Bridge members | Defects | Routine Rating | | Action | Route | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | --- | |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (2) S2 (P1~P2)

| Bridge members | Defects | Routine Rating | | Action | Route | |
|----------------|----------------|----------------|--|---|---------|--|
| | | Route 4 | | | Route 4 | |
| Abutment | Rebar Exposure | | | Repairs to concrete component | | |
| | Water Leakage | | | | | |
| Pier | Rebar Exposure | | | Repairs to concrete component | | |
| | Water Leakage | | | | | |
| Deck Slab | Rebar Exposure | | | Repairs to concrete component | | |
| | Water Leakage | | | | | |
| Steel I Girder | Corrosion | | | Repairs and Repainting to steel component | | |
| | Bolt Missing | | | | | |
| | Paint Peel off | | | | | |

Note: Attach sketch of the defects.

| Remarks |
|---------|
| |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (3) S3 (P2~P3)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|--|---------|
| | | Route 1 | Route 3 | Action | | Route 1 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (3) S3 (P2~P3)

| Bridge members | Defects | Routine Rating | | Action | |
|----------------|----------------|----------------|--|---|--|
| | | Route 4 | | Action | |
| Abutment | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Pier | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Deck Slab | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Steel I Girder | Corrosion | | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | | |
| | Paint Peel off | | | | |

Note: Attach sketch of the defects.

| Remarks |
|---------|
| |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (4) S4~S6 (P3~P6)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (4) S4~S6 (P3~P6)

| Bridge members | Defects | Routine Rating | | Action | |
|----------------|----------------|----------------|--|---|---------|
| | | Route 4 | | Action | Route 4 |
| Abutment | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Pier | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Deck Slab | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Steel I Girder | Corrosion | | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | | |
| | Paint Peel off | | | | |

Note: Attach sketch of the defects.

| Remarks |
|---------|
| |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (5) S7~S9 (P6~P9)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Truss | Corrosion | | | Repairs to Steel Component | | |
| | Paint Peel off | | | | | |
| | Bolt Missing/Loose Connection | | | | | |
| | Others | | | | | |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

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

(Note: EA should be written in Red ink)

Note: Attach sketch of the defects.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (6) S10~S12 (P9~P12)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (6) S10~S12 (P9~P12)

| Bridge members | Defects | Routine Rating | | Action | |
|----------------|----------------|----------------|--|---|---------|
| | | Route 2 | | Action | Route 2 |
| Abutment | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Pier | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Deck Slab | Rebar Exposure | | | Repairs to concrete component | |
| | Water Leakage | | | | |
| Steel I Girder | Corrosion | | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | | |
| | Paint Peel off | | | | |

Note: Attach sketch of the defects.

| Remarks |
|---------|
| |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (7) S13 (P12~P13)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (7) S13 (P12~P13)

| Bridge members | Defects | Routine Rating | Action | |
|----------------|----------------|----------------|---|---------|
| | | Route 2 | Action | Route 2 |
| Abutment | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Pier | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Deck Slab | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Steel I Girder | Corrosion | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | |
| | Paint Peel off | | | |

Note: Attach sketch of the defects.

| Remarks |
|---------|
| |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Inspection Results

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

From Bridge Roadway Level (8) S14 (P13~A2)

| Bridge members | Defects | Routine Rating | | Action | | |
|-------------------------|-------------------------------|----------------|---------|---|---------|---------|
| | | Route 1 | Route 3 | Action | Route 1 | Route 3 |
| Asphalt Wearing Surface | Potholes | | --- | Patching and Cleaning | | --- |
| | Shoving | | --- | | | --- |
| | Rutting | | --- | | | --- |
| | Cracking | | --- | | | --- |
| | Raveling | | --- | | | --- |
| | Others | | --- | | | --- |
| Expansion Joint | Accumulation of Dirt | | --- | Sweeping and Cleaning of Bridge Deck | | --- |
| 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 of Signage, Signage marking correction, Replacement /transfer of signage | | |
| | 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 | With minor damage(s) not affecting the stability of the structure. |
| Poor | With deteriorating damage(s) which should be repaired as a preventive action |
| Bad | With severe damage(s) that affects stability of bridge or that has possibility to harm public |

Maintenance Action Required

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

(Note: EA should be written in Red ink)

From Ground Level under the bridge (8) S14 (P13~A2)

| Bridge members | Defects | Routine Rating | Action | |
|----------------|----------------|----------------|---|---------|
| | | Route 2 | Action | Route 2 |
| Abutment | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Pier | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Deck Slab | Rebar Exposure | | Repairs to concrete component | |
| | Water Leakage | | | |
| Steel I Girder | Corrosion | | Repairs and Repainting to steel component | |
| | Bolt Missing | | | |
| | Paint Peel off | | | |

Note: Attach sketch of the defects.



APPENDIX C-2

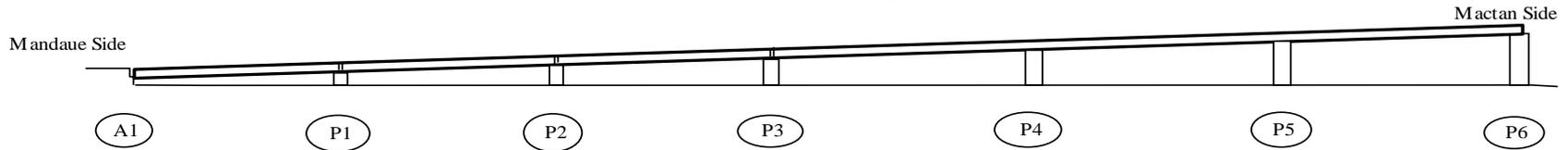
**SKETCH DRAWINGS FOR
BRIDGE ROUTINE INSPECTION**

Sketch Drawings for Routine Inspection 1st Mandaue-Mactan Bridge

NOTE: Print in A3 size for use during routine inspection

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

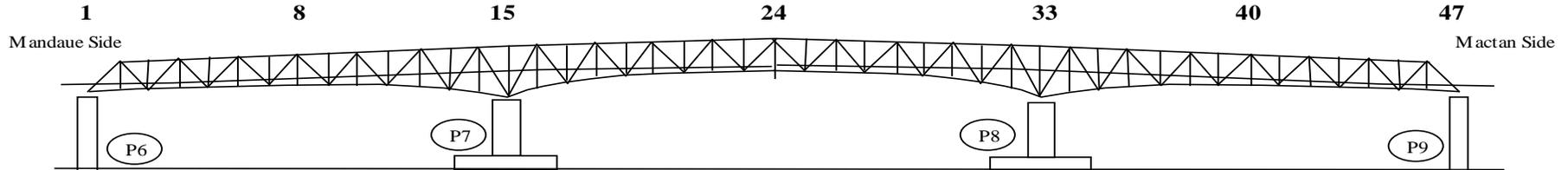
**Sketches of Bridge Routine Inspection Findings at Mandaue side Viaduct A1-P6 as noted from Bridge Roadway Level
1st Mandaue-Mactan Bridge**



| | | |
|---|--|--|
| | Railing | Impact/accident damage, Missing railings, Corrosion, Paint Peel off and Others (which refers to the presence of trash, graffiti, posters and lush vegetation.) |
| | | |
| | | |
| | Asphalt Wearing Surface, Sidewalk, Drainage, Expansion Joint and Signage | Asphalt Wearing Surface: <u>Potholes, Shoving, Rutting, Cracking, Raveling and Others</u> Sidewalk: <u>Unevenness, Cracking and Others</u> Drainage & Expansion Joint: <u>Accumulation of dirt</u> Signage: <u>Improper signage, Incorrect location visibility, Not good condition, Unclean lettering</u> |
| Route 1 → Expansion Joint ← Route 2 | | |
| | | |
| | Railing | |
| | | |

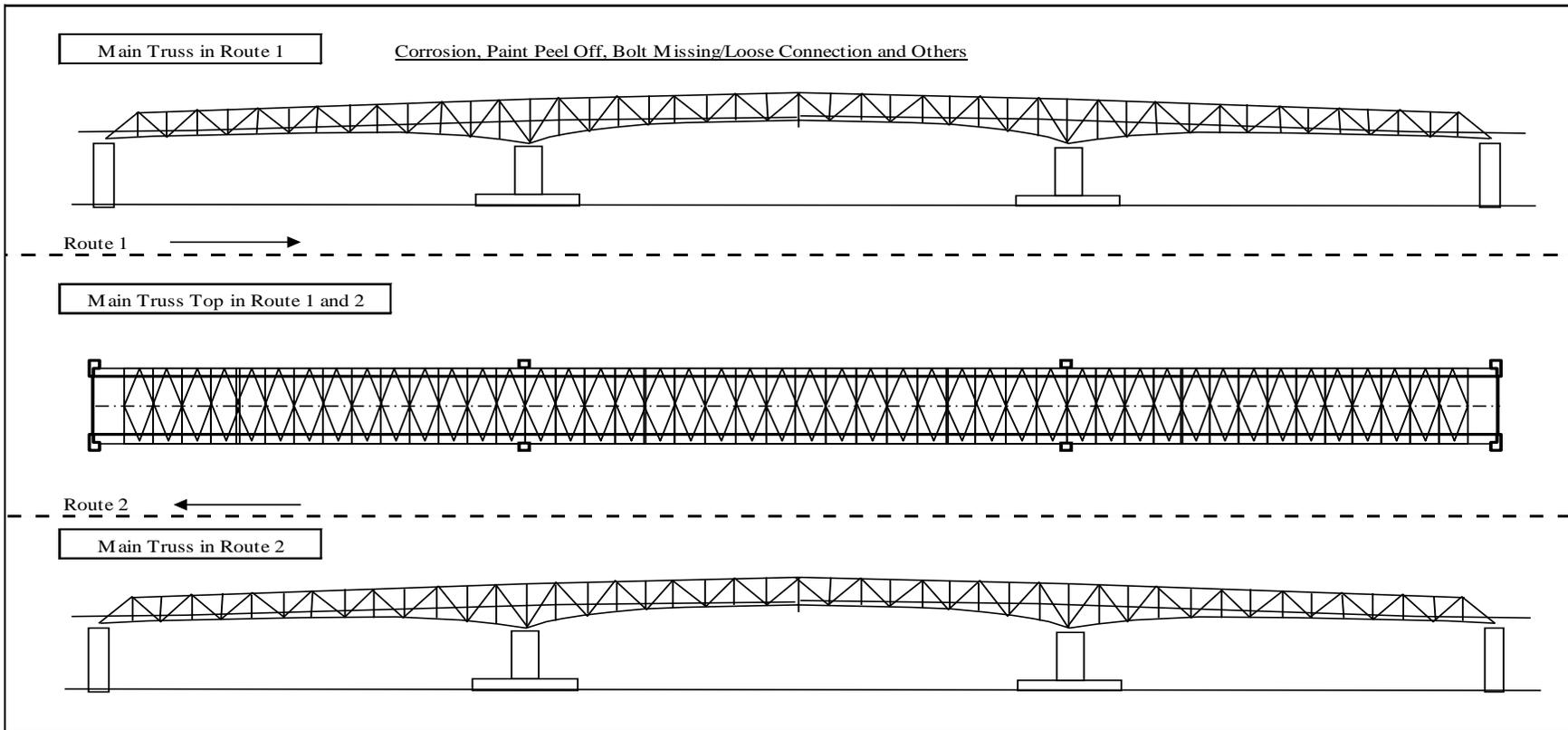
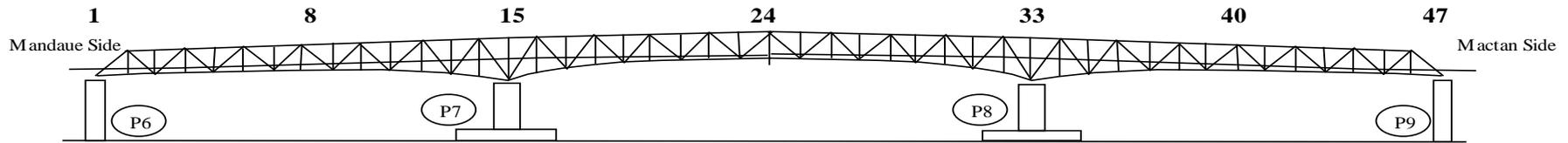
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Routine Inspection Findings at Main Bridge as noted from Bridge Roadway Level
1st Mandaue-Mactan Bridge



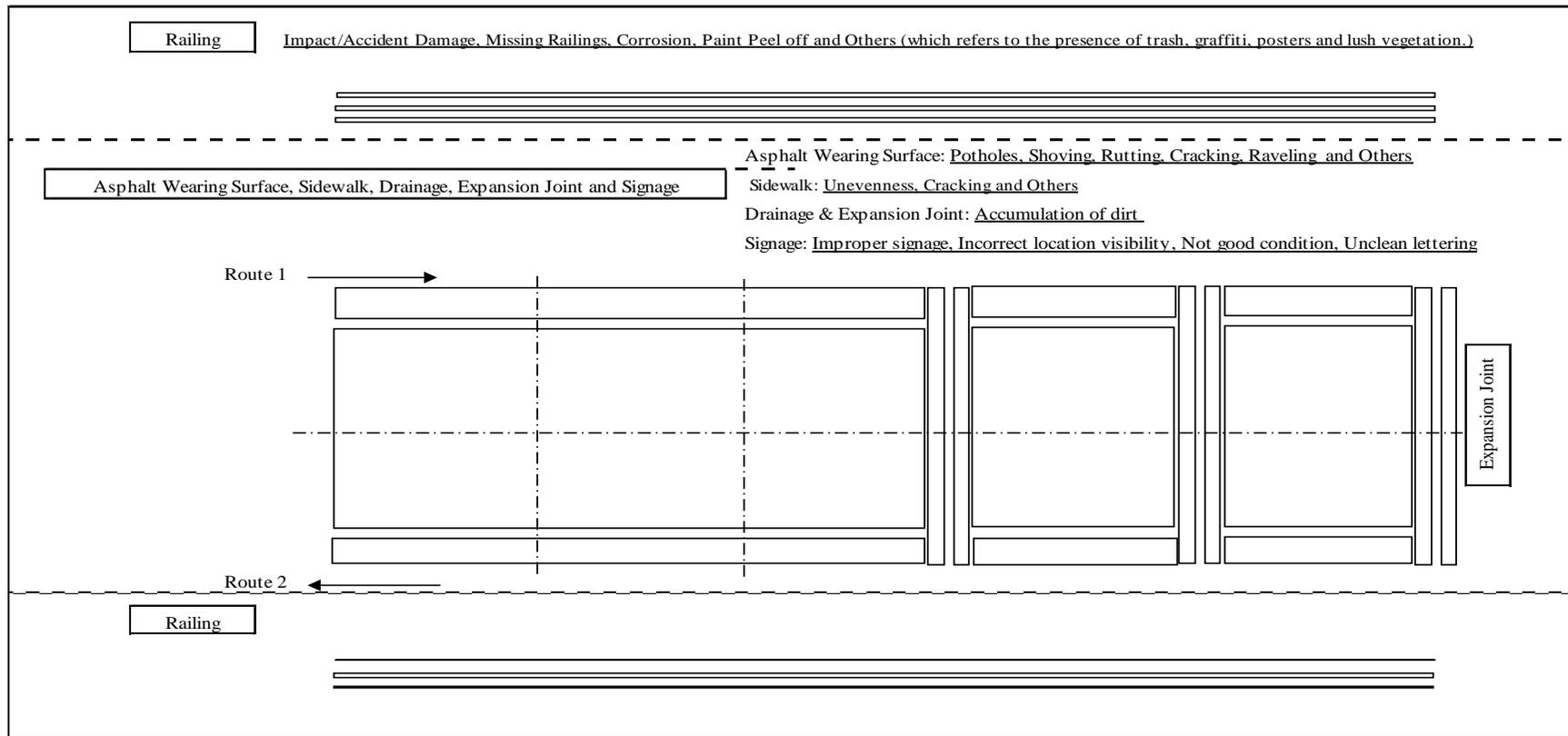
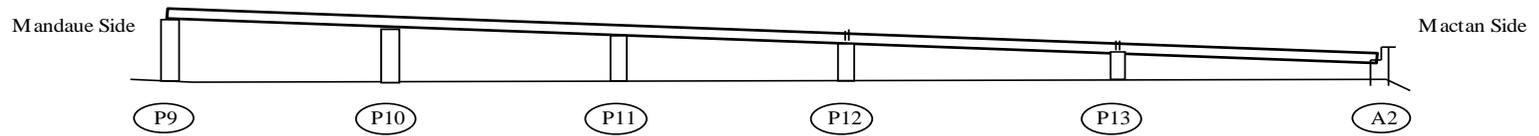
| | | | | | | | | | | |
|---|--|----------------|---|---|--|--|--|--|--|--|
| Railing | Impact/Accident Damage, Missing Railings, Corrosion, Paint Peel off and Others (which refers to the presence of trash, graffiti, posters and lush vegetation.) | | | | | | | | | |
| <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> | | | | | | | | | | |
| Asphalt Wearing Surface, Sidewalk, Drainage and Signage | Asphalt Wearing Surface: <u>Potholes, Shoving, Rutting, Cracking, Raveling and Others</u> Sidewalk: <u>Unevenness, Cracking and Others</u> Drainage: <u>Accumulation of dirt</u> Signage: <u>Improper signage, Incorrect location visibility, Not good condition, Unclean lettering</u> | | | | | | | | | |
| Route 1 → | <table border="1" style="width: 100%; height: 150px; border-collapse: collapse;"> <tr> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> <td style="width: 33%; height: 20px;"></td> </tr> <tr> <td style="height: 130px;"></td> <td style="height: 130px;"></td> <td style="height: 130px;"></td> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table> | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Route 2 ← | <table border="1" style="width: 100%; height: 50px; border-collapse: collapse;"> <tr> <td style="width: 15%; padding: 5px;">Railing</td> <td style="padding: 5px;"> <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> </td> </tr> </table> | Railing | <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> | <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> | | | | | | |
| Railing | <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> | | | | | | | | | |
| <div style="border-bottom: 1px dashed black; height: 10px; width: 100%;"></div> | | | | | | | | | | |

Sketches of Bridge Routine Inspection Findings at Main Bridge as noted from Bridge Roadway Level
1st Mandaue-Mactan Bridge



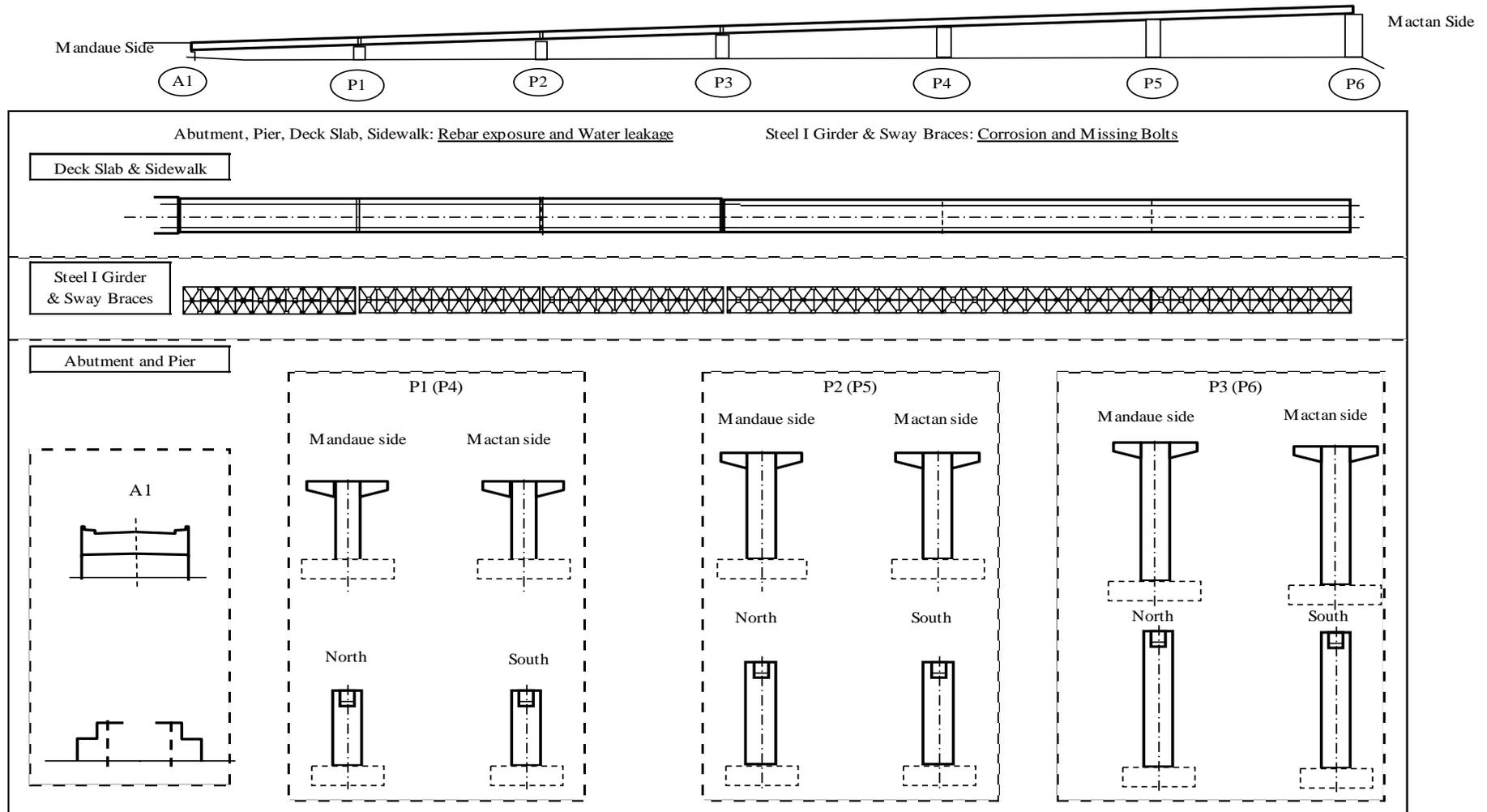
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Routine Inspection Findings at Mactan side Viaduct P9-A2 from Bridge Roadway Level
1st Mandaue-Mactan Bridge



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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

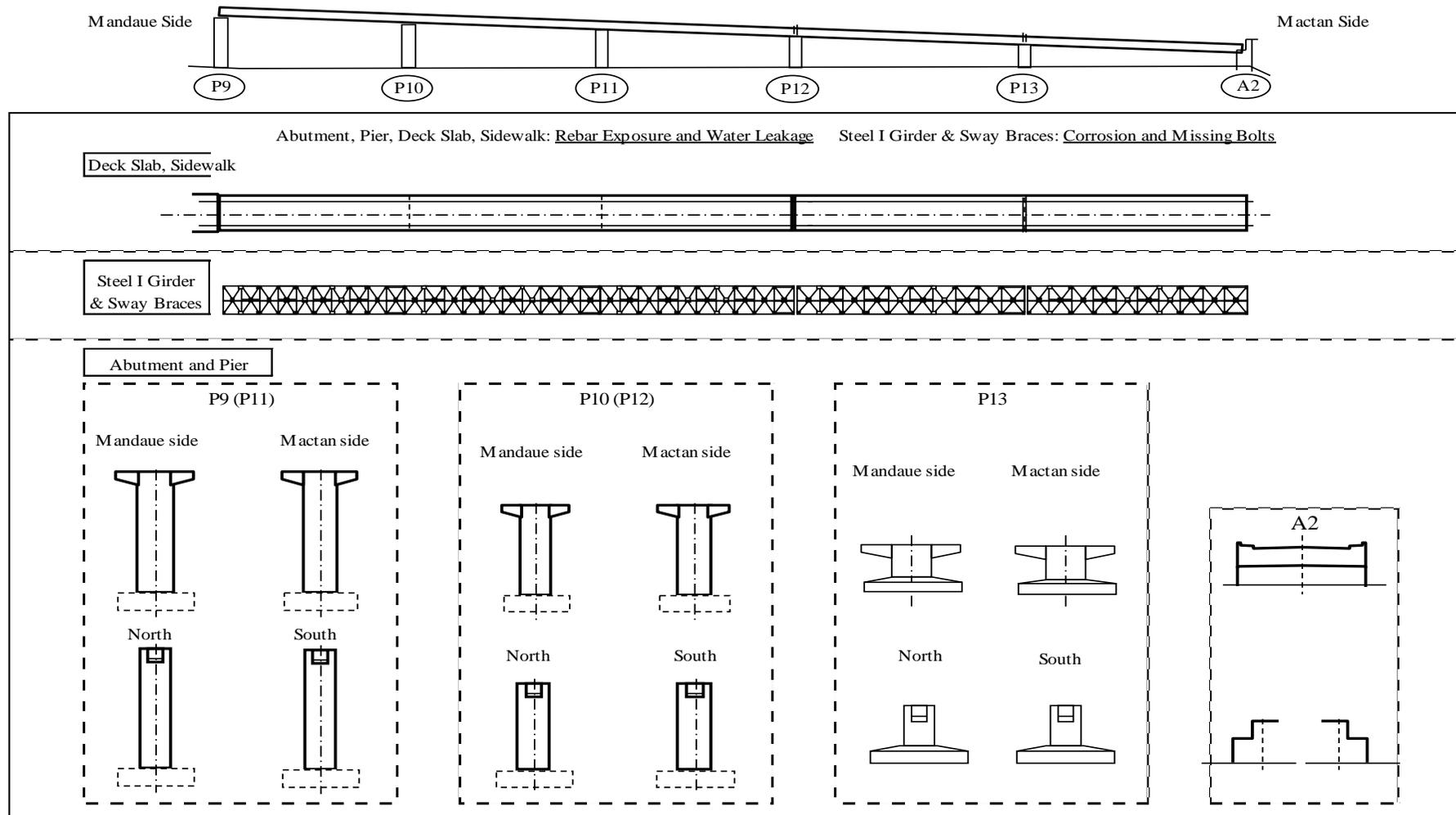
**Sketches of Bridge Routine Inspection Findings at Mandaue side Viaduct A1-P6 as noted from Ground Level under the Bridge
1st Mandaue-Mactan Bridge**



Note: Please make photo copy of this sheet for P4,P5,P6 before use.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

**Sketches of Bridge Routine Inspection Findings at Mactan side Viaduct P9-A2 from Ground Level under the Bridge
1st Mandaue-Mactan Bridge**



Note: Please make photo copy of this sheet for P11,P12 before use.



APPENDIX D-1

BRIDGE CONDITION INSPECTION FORM

Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM

BRIDGE CONDITION INSPECTION FORM (TYPE 2)

1st MANDAUE-MACTAN BRIDGE

**BRIDGE MANAGEMENT SYSTEM
FOR
1st MANDAUE-MACTAN BRIDGE**

BRIDGE CONDITION INSPECTION FORM (TYPE 2)

| LOCATION | |
|------------------------|-----------------------------|
| BRIDGE ID | B00587CB |
| Bridge Name | 1st MANDAUE- MACTAN |
| Road Name | A.C.Cortes Ave. |
| Road ID | R00069CB |
| Section ID | S00360CB |
| Location | 9+704 |
| | |
| Region | VII |
| Province | Cebu |
| Congressional District | 6th |
| Engineering District | 6th |
| Municipality | Mandaue City, Lapulapu City |
| Barangay | Looc, Pajo |
| River Name | Mactan Channel |

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

| BRIDGE DESCRIPTION | |
|---------------------------|-----------------------------------|
| Type of Bridge | Special Bridge |
| Superstructure | STEEL TRUSS and STEEL I-GIRDER |
| Substructure | RC Pier and Abutment |
| Foundation | RC Pile |
| Total Number of Span | 14 |
| Total Number of Abutment | 2 |
| Total Number of Pier | 13 |

| | |
|-----------------------------------|--|
| Date of Routine Inspection | |
| ACCOMPLISHED BY: | |
| | |
| SUBMITTED BY: | |
| | |
| | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID. B00587CB

Bridge Name 1st MANDAUE-MACTAN

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 | |

Up to three (3) options may be selected.

RECOMMENDED ACTION

| | |
|--------------------------|--|
| Routine maintenance only | |
| Major maintenance | |
| Upgrading | |
| Replacement | |
| Bridge required | |

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 | |

LEVEL OF INSPECTION

| | |
|--------------------------|--|
| Complete inspection | |
| Partial inspection only: | |
| BIV not available | |
| Other reason | |

REASON FOR NO SURVEY

| | |
|------------------------------|--|
| Bridgeworks in progress | |
| Access restricted | |
| Affected by natural disaster | |
| No reason | |
| Other, insert 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 | | Estimated Cost |
|--------------------------------------|----------|----------------|
| Sweeping and cleaning of bridge deck | P | |
| Repairs to concrete bridge deck | P | |
| Repairs to concrete component | P | |
| Repairs to steel component | P | |
| Painting bridge components | P | |
| Cleaning bridge waterways | P | |
| Others (Specify) | P | |
| | | |
| Total Estimated Cost | P | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REPAIR RECORD

Bridge ID.

B00587CB

Bridge Name

1st MANDAUE-MACTAN

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:

TYPE OF MAJOR MAINTENANCE

- A - Repair damage
- B - Protective measures
- C - Strengthen
- D - Replace
- E - None

ROUTINE MAINTENANCE ACTIVITY

- A - Sweeping and cleaning of bridge deck
- B - Repairs to concrete bridge deck
- C - Repairs to concrete component
- D - Repairs to steel component
- E - Painting bridge components
- F - Cleaning bridge waterways
- G - Others (Specify)

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

| | | |
|----------|---|-------|
| SPAN No. | 1 | A1-P1 |
|----------|---|-------|

| | |
|-----------|----------|
| Bridge ID | B00587CB |
|-----------|----------|

| | |
|-------------|--------------------|
| Bridge Name | 1st MANDAUE-MACTAN |
|-------------|--------------------|

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **2** **P1-P2**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **3** **P2-P3**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **4** **P3-P4**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **5** **P4-P5**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

| ATTRIBUTE | ATTENTION REQUIRED | LEVEL OF INSPECTION | TYPE OF MAJOR MAINTENANCE | ESTIMATED COST (P) | DESCRIBE DEFECTS AND RECOMMENDED WORKS |
|--------------------------------|--------------------|----------------------------|-----------------------------|---------------------|--|
| DECK | 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 | | |
| MAIN 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 type="checkbox"/> | Not assessed | Other | |
| | | | Total Estimated Cost | | |
| 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 type="checkbox"/> | Not assessed | Other | |
| | | | Total Estimated Cost | | |
| LEFT RAILING | 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 | | |
| RIGHT RAILING | 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 | | |
| ASPHALT WEARING SURFACE | 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 | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **6** **P5-P6**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. 7 P6-P7

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **8** **P7-P8**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **9** **P8-P9**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **10** **P9-P10**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **11** **P10-P11**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **12** **P11-P12**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **13** **P12-P13**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - CONDITION

SPAN No. **14** **P13-A2**

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (1/7)

| PIER No. | P1 | | Bridge ID | B00587CB | Bridge Name | 1st MANDAUE-MACTAN |
|---------------------------|--------------------|---------------------|------------------------------------|-----------------------------|--|--------------------|
| 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 | | |
| 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 | | |
| BEARING/ 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 | | |

| | | |
|-----------------|----|--|
| PIER No. | P2 | |
|-----------------|----|--|

| 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 | | |
| 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 | | |
| BEARING/ 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 | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (2/7)

PIER No. P3

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | |
| 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 | |
| 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 | |

PIER No. P4

| 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (3/7)

PIER No. P5

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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/ 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 | |

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 <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 | |
| BEARING/ 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (4/7)

PIER No. P7

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | | |
| BEARING/ 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 | Total Estimated Cost | | |

PIER No. P8

| 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 | | |
| BEARING/ 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 | Total Estimated Cost | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (5/7)

PIER No. P9

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | | |
| 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/ 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 | Total Estimated Cost | | |

PIER No. P10

| 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 | | |
| BEARING/ 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 | Total Estimated Cost | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (6/7)

PIER No. P11

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | |
| BEARING/ 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 | Total Estimated 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 <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/ 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 | Total Estimated Cost | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - CONDITION (7/7)

PIER No. P13

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | |
| 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 | |
| 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - CONDITION (1/2)

| | |
|--------------|----|
| ABUTMENT No. | A1 |
|--------------|----|

| | | | |
|-----------|----------|-------------|--------------------|
| Bridge ID | B00587CB | Bridge Name | 1st MANDAUE-MACTAN |
|-----------|----------|-------------|--------------------|

| 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 | |
| FOUNDATION | 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 | |
| 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 | |
| LEFT 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - CONDITION (2/2)

ABUTMENT No. A1

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - CONDITION (1/2)

ABUTMENT No. A2

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | |
| FOUNDATION | 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 | |
| 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 | |
| LEFT 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 | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - CONDITION (2/2)

ABUTMENT No. A2

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

| 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 | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 1 A1-P1

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

SPAN No. 2 P1-P2

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 3 P2-P3

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

SPAN No. 4 P3-P4

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 5 P4-P5

| 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 | DM | SM | DM | SM | OM | SM |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

SPAN No. 6 P5-P6

| 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 | DM | SM | DM | SM | OM | SM |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 7 P6-P7

| 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 | SM | OM |
| Steel | Corrosion | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | | | |
| | Loose connection | | | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | | | |

| Type of Material | Type of Damage | Severity of Defect | Affected | | Damage Rating | Attrib. Cond. State | | | | | | | |
|---|------------------------|--------------------|----------|----|---------------|---------------------|----|----|----|----|----|----|----|
| | | | Unit | % | | | | | | | | | |
| MAIN MEMBER | | | | | | | | | | | | | |
| Steel Truss | Corrosion | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | | | |
| | Loose Connection | | | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | | | |
| LEFT RAILING (LR) / RIGHT RAILING (RR) | | | | | | | | | | | | | |
| LR | 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. 8 P7-P8

| 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 | SM | OM |
| Steel | Corrosion | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | | | |
| | Loose connection | | | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | | | |

| Type of Material | Type of Damage | Severity of Defect | Affected | | Damage Rating | Attrib. Cond. State | | | | | | | |
|---|------------------------|--------------------|----------|----|---------------|---------------------|----|----|----|----|----|----|----|
| | | | Unit | % | | | | | | | | | |
| MAIN MEMBER | | | | | | | | | | | | | |
| Steel Truss | Corrosion | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | | | |
| | Loose Connection | | | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | | | |
| LEFT RAILING (LR) / RIGHT RAILING (RR) | | | | | | | | | | | | | |
| LR | 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 | | | | | | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 9 P8-P9

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

| Type of Material | Type of Damage | Severity of Defect | Affected | | Damage Rating | Attrib. Cond. State |
|---|------------------------|--------------------|----------|----|---------------|---------------------|
| | | | Unit | % | | |
| MAIN MEMBER | | | | | | |
| Steel Truss | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose Connection | | | | | |
| | Paint Peel Off | | | | | |
| LEFT RAILING (LR) / RIGHT RAILING (RR) | | | | | | |
| LR | RR | LR | RR | LR | RR | LR |
| Steel | Corrosion | | | | | |
| | Loose Connection | | | | | |
| | Impact/Accident Damage | | | | | |
| | Paint Peel Off | | | | | |
| ASPHALT WEARING SURFACE | | | | | | |
| Asphalt | Potholes | | | | | |
| | Shoving | | | | | |
| | Rutting | | | | | |
| | Cracking | | | | | |
| | Raveling | | | | | |

SPAN No. 10 P9-P10

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 11 P10-P11

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

SPAN No. 12 P11-P12

| 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 |
| Steel | Corrosion | | | | | |
| | Cracking | | | | | |
| | Deformation/Buckling | | | | | |
| | Abnormal Vibration | | | | | |
| | Loose connection | | | | | |
| | Paint Peel Off | | | | | |

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

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SPAN ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

SPAN No. 13 P12-P13

| 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 | DM | SM | DM | SM | OM | SM | OM | SM | OM | SM | OM |
| Steel | Corrosion | | | | | | | | | | |
| | Cracking | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | |
| | Loose connection | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | |

| Type of Material | Type of Damage | Severity of Defect | Affected | | Damage Rating | Attrib. Cond. State | | | | | |
|---|------------------------|--------------------|----------|----|---------------|---------------------|----|----|----|----|----|
| | | | Unit | % | | | | | | | |
| MAIN MEMBER | | | | | | | | | | | |
| Steel Girder | Corrosion | | | | | | | | | | |
| | Cracking | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | |
| | Loose Connection | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | |
| 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. 14 P13-A2

| 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 | DM | SM | DM | SM | OM | SM | OM | SM | OM | SM | OM |
| Steel | Corrosion | | | | | | | | | | |
| | Cracking | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | |
| | Loose connection | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | |

| Type of Material | Type of Damage | Severity of Defect | Affected | | Damage Rating | Attrib. Cond. State | | | | | |
|---|------------------------|--------------------|----------|----|---------------|---------------------|----|----|----|----|----|
| | | | Unit | % | | | | | | | |
| MAIN MEMBER | | | | | | | | | | | |
| Steel Girder | Corrosion | | | | | | | | | | |
| | Cracking | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | |
| | Abnormal Vibration | | | | | | | | | | |
| | Loose Connection | | | | | | | | | | |
| | Paint Peel Off | | | | | | | | | | |
| 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 | | | | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - DAMAGE RATING

Bridge ID B00587/CB

Bridge Name 1st MANDAUE-MACTAN

| PIER No. | | P1 | | | | | | | | | | | | | |
|------------------|----------------------------|--------------------|----------|---|---------------|---------------------|------------------|-------------------------|--------------------|----------|---|---------------|---------------------|--|--|
| 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 | | | | | | Steel | Water leakage | | | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | | | |
| | Tilt/Settlement | | | | | | | BEARING/RESTRAINT | | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | | | |
| | | | | | | | | Loose connection | | | | | | | |
| | | | | | | | | Abnormal displacement | | | | | | | |
| | | | | | | | | Paint deterioration | | | | | | | |
| | | | | | | | | Bed (support) damage | | | | | | | |
| PIER No. | | P2 | | | | | | | | | | | | | |
| 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 | | | | | | Steel | Water leakage | | | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | | | |
| | Tilt/Settlement | | | | | | | BEARING/RESTRAINT | | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | | | |
| | | | | | | | | Loose connection | | | | | | | |
| | | | | | | | | Abnormal displacement | | | | | | | |
| | | | | | | | | Paint deterioration | | | | | | | |
| | | | | | | | | Bed (support) damage | | | | | | | |
| PIER No. | | P3 | | | | | | | | | | | | | |
| 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 | | | | | | Steel | Water leakage | | | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | | | |
| | Tilt/Settlement | | | | | | | BEARING/RESTRAINT | | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | | | |
| | | | | | | | | Loose connection | | | | | | | |
| | | | | | | | | Abnormal displacement | | | | | | | |
| | | | | | | | | Paint deterioration | | | | | | | |
| | | | | | | | | Bed (support) damage | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER Element - Damage Rating

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

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 | | | | | | | BEARING/RESTRAINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Corrosion | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Loose connection | | | | | |
| | Delamination | | | | | | | Abnormal displacement | | | | | |
| | Rebar exposure/corrosion | | | | | | | Paint deterioration | | | | | |
| | Honeycomb | | | | | | | Bed (support) damage | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |

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/RESTRAINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Corrosion | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Loose connection | | | | | |
| | Delamination | | | | | | | Abnormal displacement | | | | | |
| | Rebar exposure/corrosion | | | | | | | Paint deterioration | | | | | |
| | Honeycomb | | | | | | | Bed (support) damage | | | | | |
| | 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 | | | | | | | EXPANSION JOINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Water leakage | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| MAIN STRUCTURE | | | | | | | BEARING/RESTRAINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Corrosion | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Loose connection | | | | | |
| | Delamination | | | | | | | Abnormal displacement | | | | | |
| | Rebar exposure/corrosion | | | | | | | Paint deterioration | | | | | |
| | Honeycomb | | | | | | | Bed (support) damage | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

PIER No. P7

| 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 | | | | | | | FOUNDATION | | | | | | |
| Concrete | Cracking | | | | | | Concrete | Cracking | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Spalling/Scaling/Disinteg. | | | | | |
| | Delamination | | | | | | | Delamination | | | | | |
| | Rebar exposure/corrosion | | | | | | | Rebar exposure/corrosion | | | | | |
| | Honeycomb | | | | | | | Honeycomb | | | | | |
| | Tilt/Settlement | | | | | | | Tilt/Settlement | | | | | |
| BEARING/RESTRAINT | | | | | | | | | | | | | |
| Steel | Corrosion | | | | | | | | | | | | |
| | Loose connection | | | | | | | | | | | | |
| | Abnormal displacement | | | | | | | | | | | | |
| | Paint deterioration | | | | | | | | | | | | |
| | Bed (support) damage | | | | | | | | | | | | |

PIER No. P8

| 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 | | | | | | | FOUNDATION | | | | | | |
| Concrete | Cracking | | | | | | Concrete | Cracking | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Spalling/Scaling/Disinteg. | | | | | |
| | Delamination | | | | | | | Delamination | | | | | |
| | Rebar exposure/corrosion | | | | | | | Rebar exposure/corrosion | | | | | |
| | Honeycomb | | | | | | | Honeycomb | | | | | |
| | Tilt/Settlement | | | | | | | Tilt/Settlement | | | | | |
| BEARING/RESTRAINT | | | | | | | | | | | | | |
| Steel | Corrosion | | | | | | | | | | | | |
| | Loose connection | | | | | | | | | | | | |
| | Abnormal displacement | | | | | | | | | | | | |
| | Paint deterioration | | | | | | | | | | | | |
| | Bed (support) damage | | | | | | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT - DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

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 | | | | | | | EXPANSION JOINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Water leakage | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| BEARING/RESTRAINT | | | | | | | BEARING/RESTRAINT | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | |
| | | | | | | | | Loose connection | | | | | |
| | | | | | | | | 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 | | | | | | | BEARING/RESTRAINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Corrosion | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Loose connection | | | | | |
| | Delamination | | | | | | | Abnormal displacement | | | | | |
| | Rebar exposure/corrosion | | | | | | | Paint deterioration | | | | | |
| | Honeycomb | | | | | | | Bed (support) damage | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |

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 | | | | | | Steel | Corrosion | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Loose connection | | | | | |
| | Delamination | | | | | | | Abnormal displacement | | | | | |
| | Rebar exposure/corrosion | | | | | | | Paint deterioration | | | | | |
| | Honeycomb | | | | | | | Bed (support) damage | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PIER ELEMENT -DAMAGE RATING

Bridge ID B00587CB

Bridge Name 1st MANDAUE-MACTAN

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 | | | | | | | EXPANSION JOINT | | | | | | |
| Concrete | Cracking | | | | | | Steel | Water leakage | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| BEARING/RESTRAINT | | | | | | | BEARING/RESTRAINT | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | |
| | | | | | | | | Loose connection | | | | | |
| | | | | | | | | Abnormal displacement | | | | | |
| | | | | | | | | Paint deterioration | | | | | |
| | | | | | | | | Bed (support) damage | | | | | |

PIER No. P13

| 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 | | | | | | Steel | Water leakage | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| BEARING/RESTRAINT | | | | | | | BEARING/RESTRAINT | | | | | | |
| | | | | | | | Steel | Corrosion | | | | | |
| | | | | | | | | Loose connection | | | | | |
| | | | | | | | | Abnormal displacement | | | | | |
| | | | | | | | | Paint deterioration | | | | | |
| | | | | | | | | Bed (support) damage | | | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - DAMAGE RATING

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

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

| 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 | | | | | | Steel | Water leakage | | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | | |
| FOUNDATION | | | | | | | LEFT WING WALL (LW) / RIGHT WING WALL (RW) | | | | | | | |
| Concrete | Cracking | | | | | | LW | RW | LW | RW | LW | RW | LW | RW |
| | Spalling/Scaling/Disinteg. | | | | | | Concrete | | | Cracking | | | | |
| | Delamination | | | | | | | | | Delamination/Disinteg. | | | | |
| | Rebar exposure/corrosion | | | | | | | | | Rebar exposure/corrosion | | | | |
| | Honeycomb | | | | | | | | | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | | |
| Steel | Corrosion | | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | | |
| BEARING/RESTRAINT | | | | | | | BRIDGE APPROACH | | | | | | | |
| Steel | Corrosion | | | | | | Embankment | | | Material loss | | | | |
| | Loose connection | | | | | | | | | Depression | | | | |
| | Abnormal displacement | | | | | | None | | | | | | | |
| | Paint deterioration | | | | | | | | | | | | | |
| | Bed (support) damage | | | | | | | | | | | | | |

NOTE: Assessment of Bridge Approach will be limited to 6.0 meter length from the abutment.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

ABUTMENT ELEMENT - DAMAGE RATING

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

Bridge ID **B00587CB**

Bridge Name **1st MANDAUE-MACTAN**

| 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 | | | | | | Steel | Water leakage | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | | Abnormal space/noise | | | | | |
| | Delamination | | | | | | | Difference in elevation | | | | | |
| | Rebar exposure/corrosion | | | | | | | Displacement | | | | | |
| | Honeycomb | | | | | | | Cracking | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| FOUNDATION | | | | | | | LEFT WING WALL (LW) / RIGHT WING WALL (RW) | | | | | | |
| Concrete | Cracking | | | | | | LW | RW | | | | | |
| | Spalling/Scaling/Disinteg. | | | | | | Concrete | Cracking | | | | | |
| | Delamination | | | | | Delamination/Disinteg. | | | | | | | |
| | Rebar exposure/corrosion | | | | | Rebar exposure/corrosion | | | | | | | |
| | Honeycomb | | | | | | | | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| Steel | Corrosion | | | | | | | | | | | | |
| | Cracking | | | | | | | | | | | | |
| | Deformation/Buckling | | | | | | | | | | | | |
| | Tilt/Settlement | | | | | | | | | | | | |
| BEARING/RESTRAINT | | | | | | | BRIDGE APPROACH | | | | | | |
| Steel | Corrosion | | | | | | Embankment | Material loss | | | | | |
| | Loose connection | | | | | | Depression | | | | | | |
| | Abnormal displacement | | | | | | None | | | | | | |
| | Paint deterioration | | | | | | | | | | | | |
| | Bed (support) damage | | | | | | | | | | | | |

NOTE: Assessment of Bridge Approach will be limited to 6.0 meter length from the abutment.



APPENDIX D-2

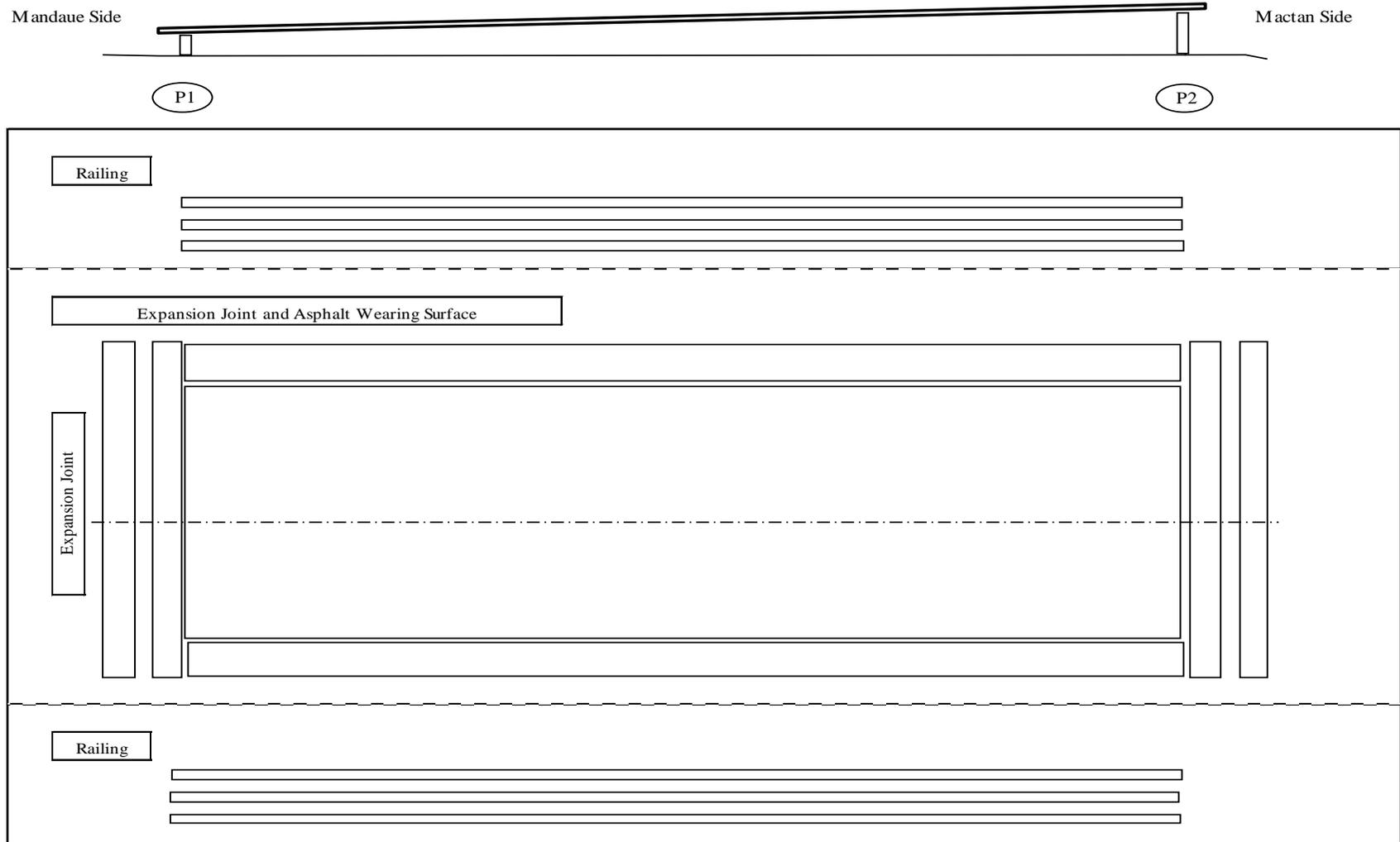
SKETCH DRAWINGS FOR BRIDGE CONDITION INSPECTION

Sketch Drawings for Condition Inspection 1st Mandaue-Mactan Bridge

NOTE: Print in A3 size for use during condition inspection

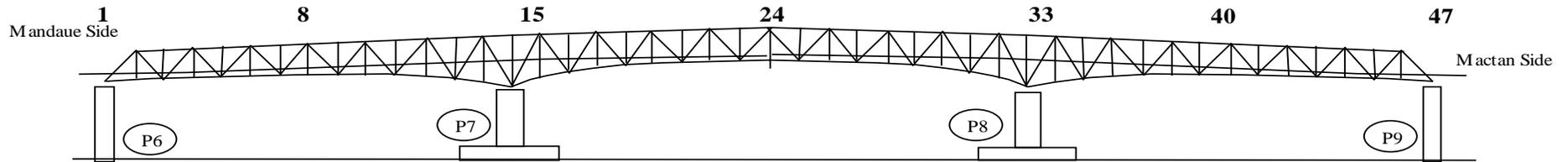
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Condition Inspection Findings at Mandaue side Viaduct P1-P2 as Observed from Bridge Roadway Level
1st Mandaue-Mactan Bridge



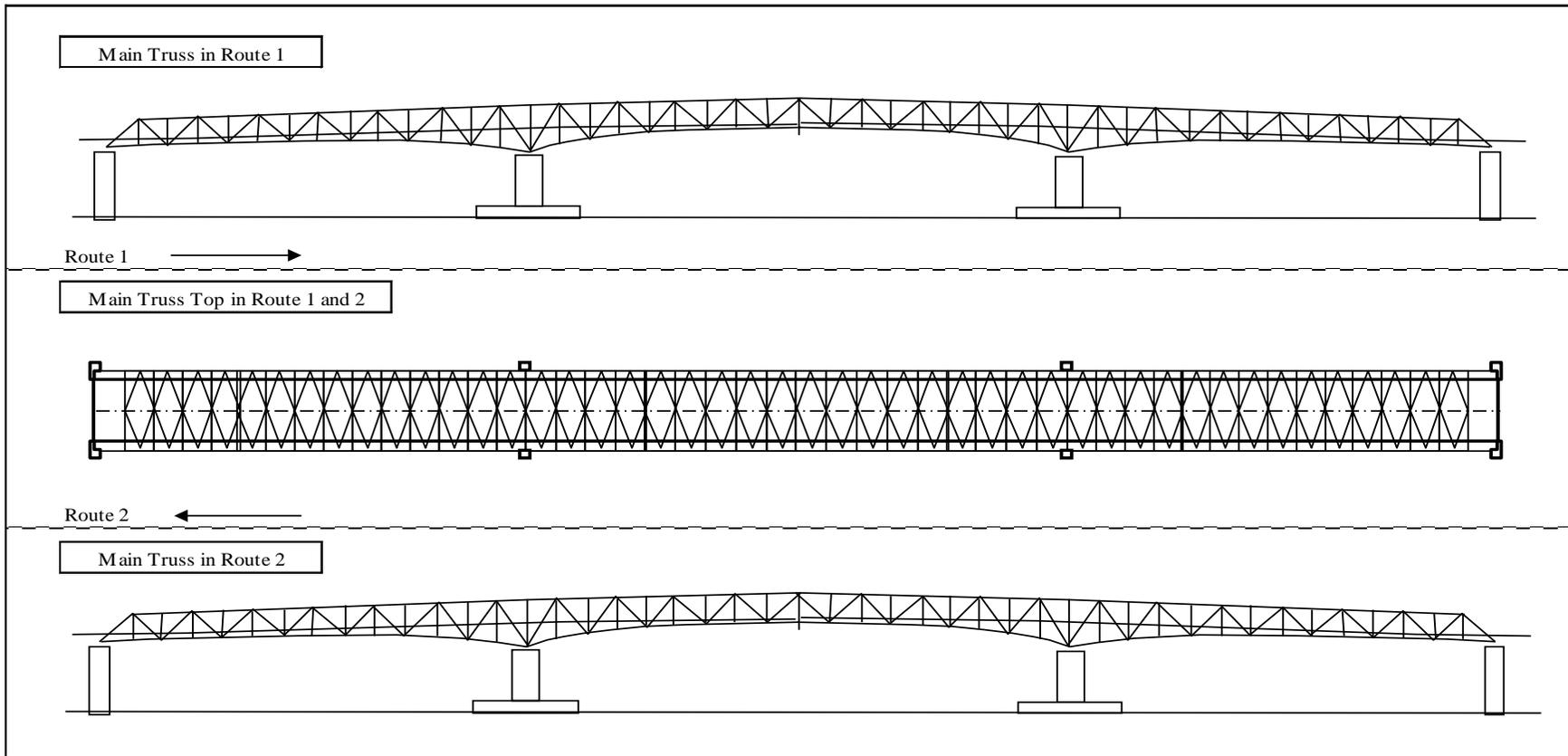
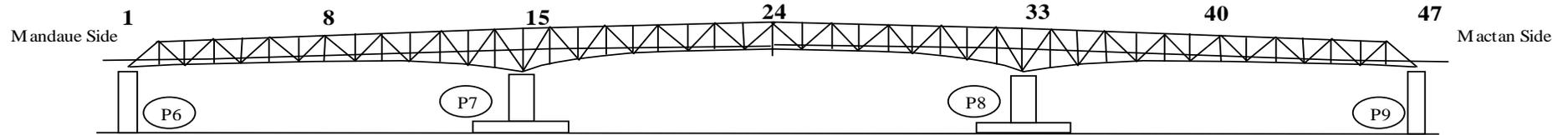
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Condition Inspection Findings at Main Bridge as Observed from Bridge Roadway Level
1st Mandaue-Mactan Bridge

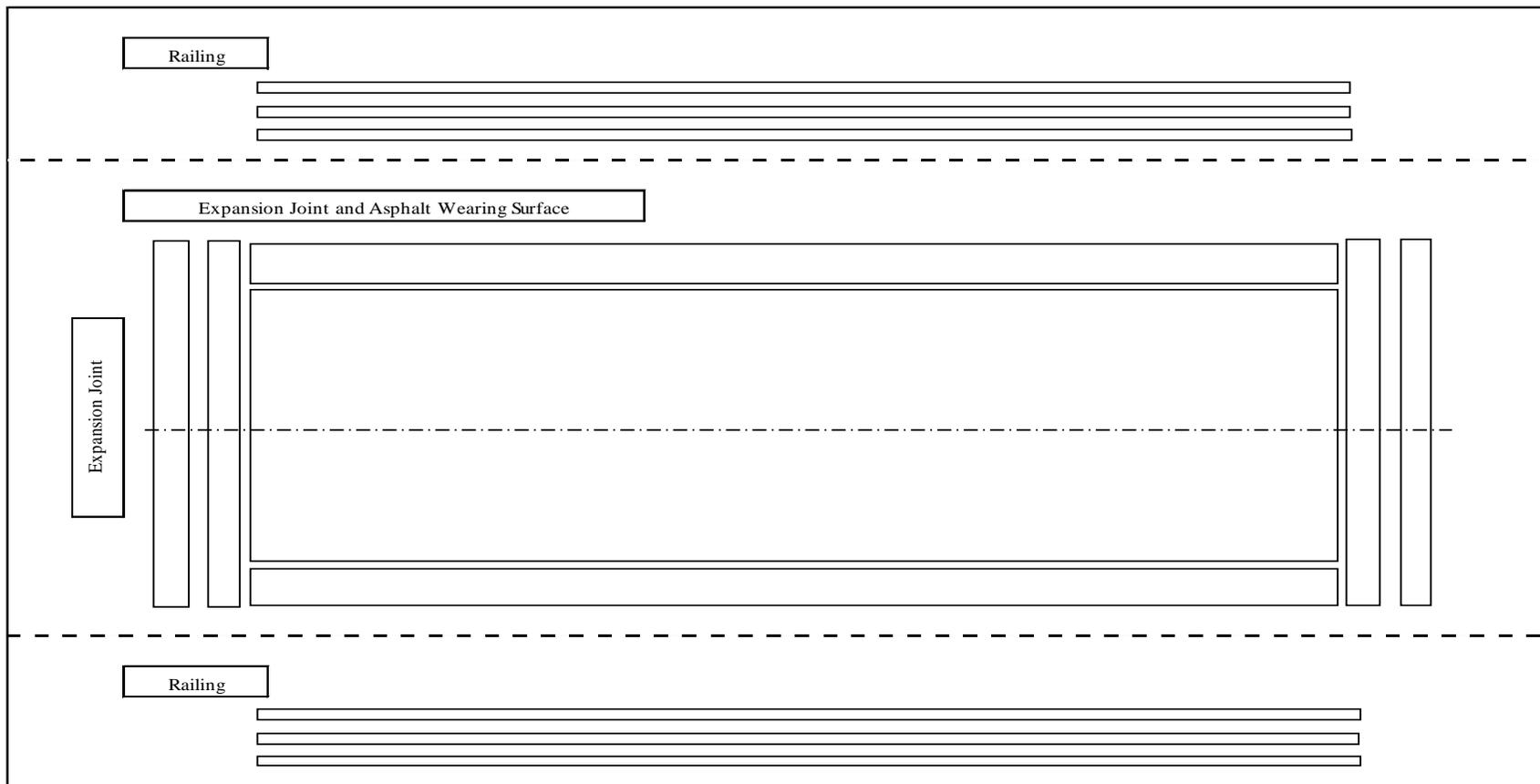
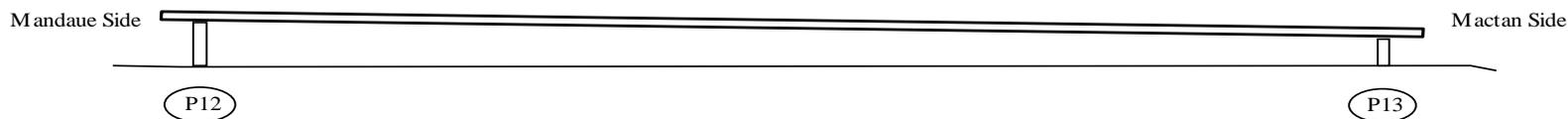


| | | |
|-------------------------|-------|-------|
| Railing | | |
| _____ | | |
| _____ | | |
| _____ | | |
| ----- | | |
| Asphalt Wearing Surface | | |
| Route 1 → | | |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| ----- | ----- | ----- |
| _____ | _____ | _____ |
| Route 2 ← | | |
| Railing | | |
| _____ | | |
| _____ | | |
| _____ | | |

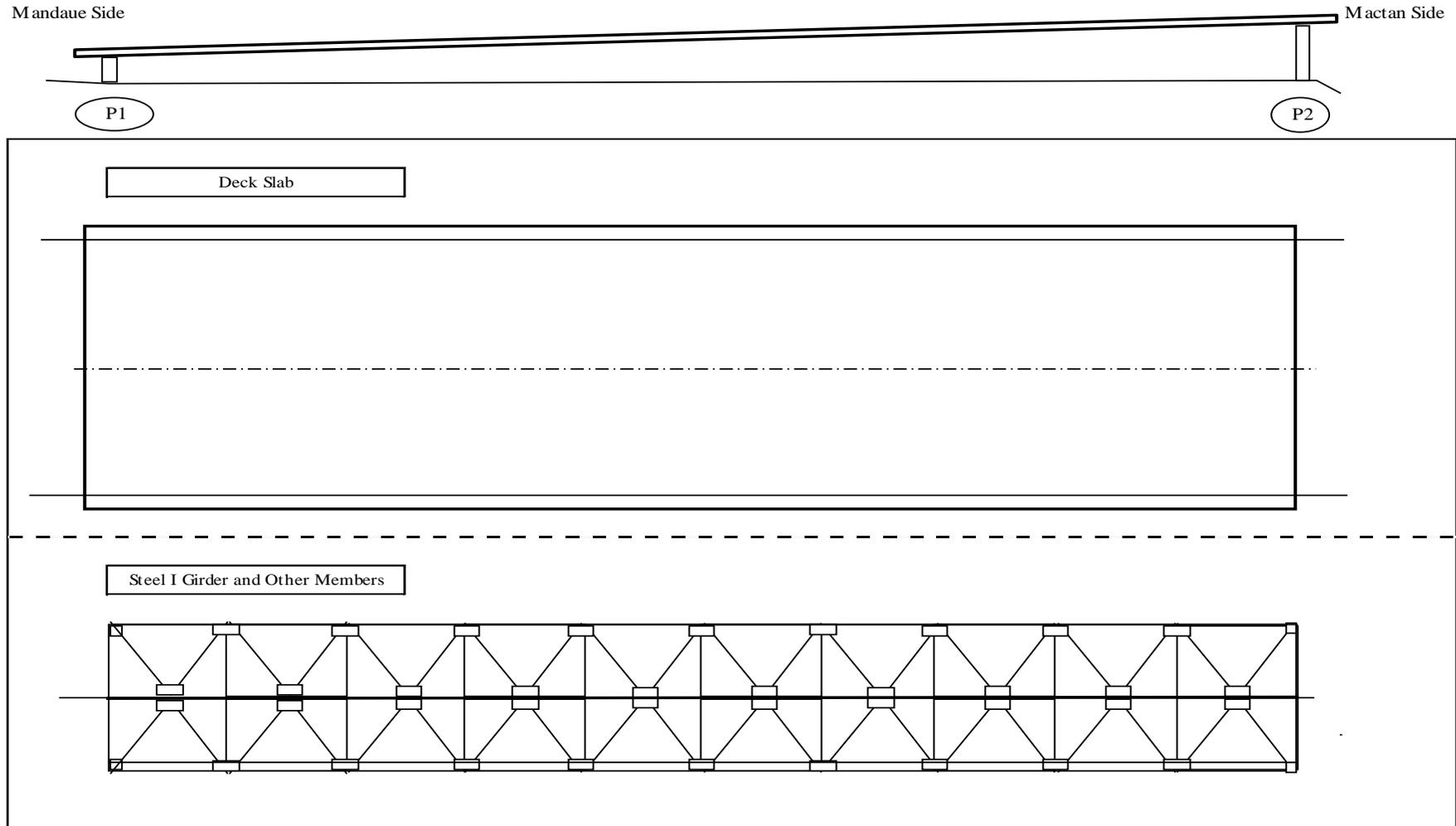
Sketches of Bridge Condition Inspection Findings at Main Bridge as Observed from Bridge Roadway Level
1st Mandaue-Mactan Bridge



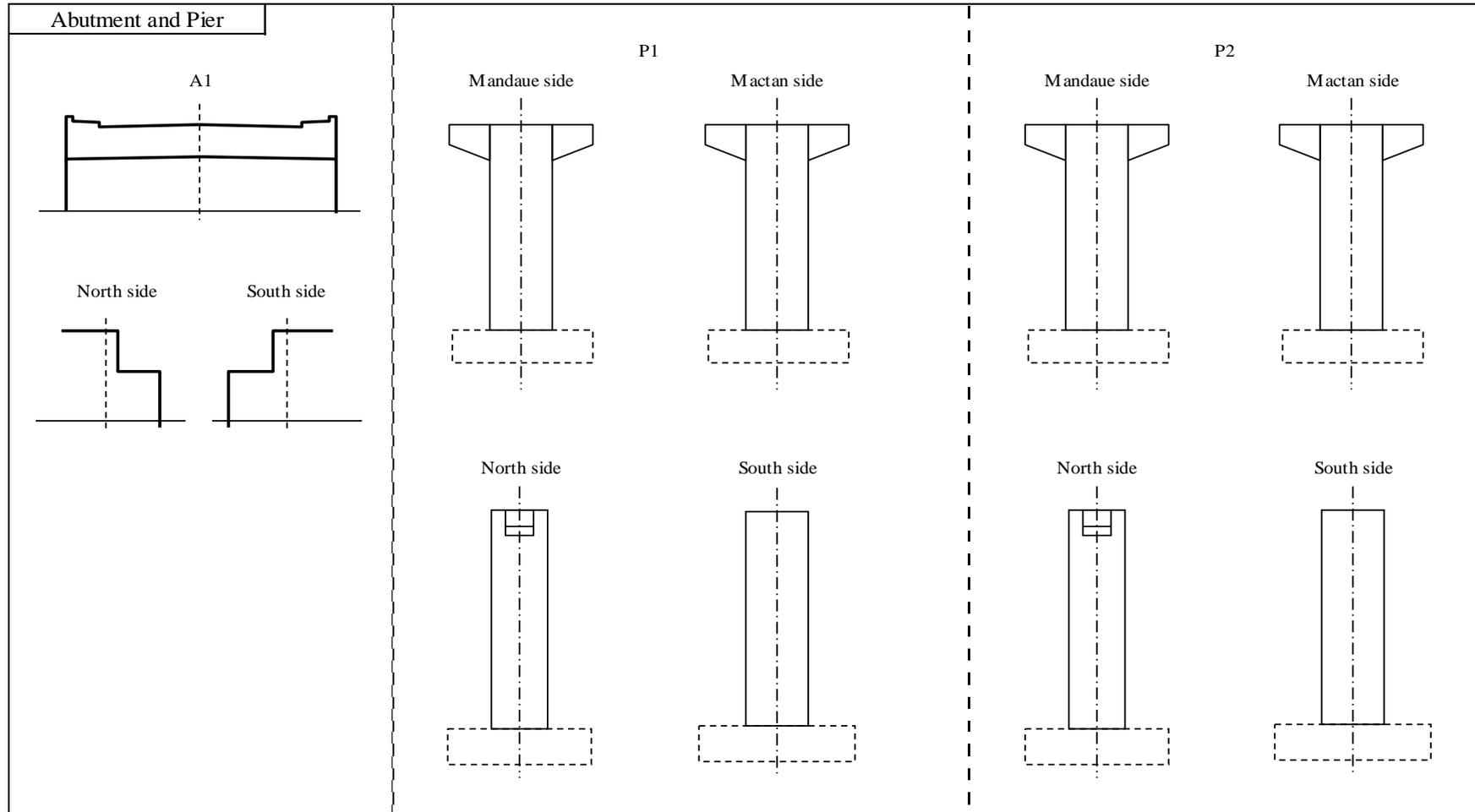
**Sketches of Bridge Condition Inspection Findings at Mactan side Viaduct P12-P13 as Observed from Bridge Roadway Level
1st Mandaue-Mactan Bridge**



**Sketches of Bridge Condition Inspection Findings at Mandaue side Viaduct P1-P2 for Deck Slab, Girders and Other Members
as noted from Ground Level under the Bridge
1st Mandaue-Mactan Bridge**

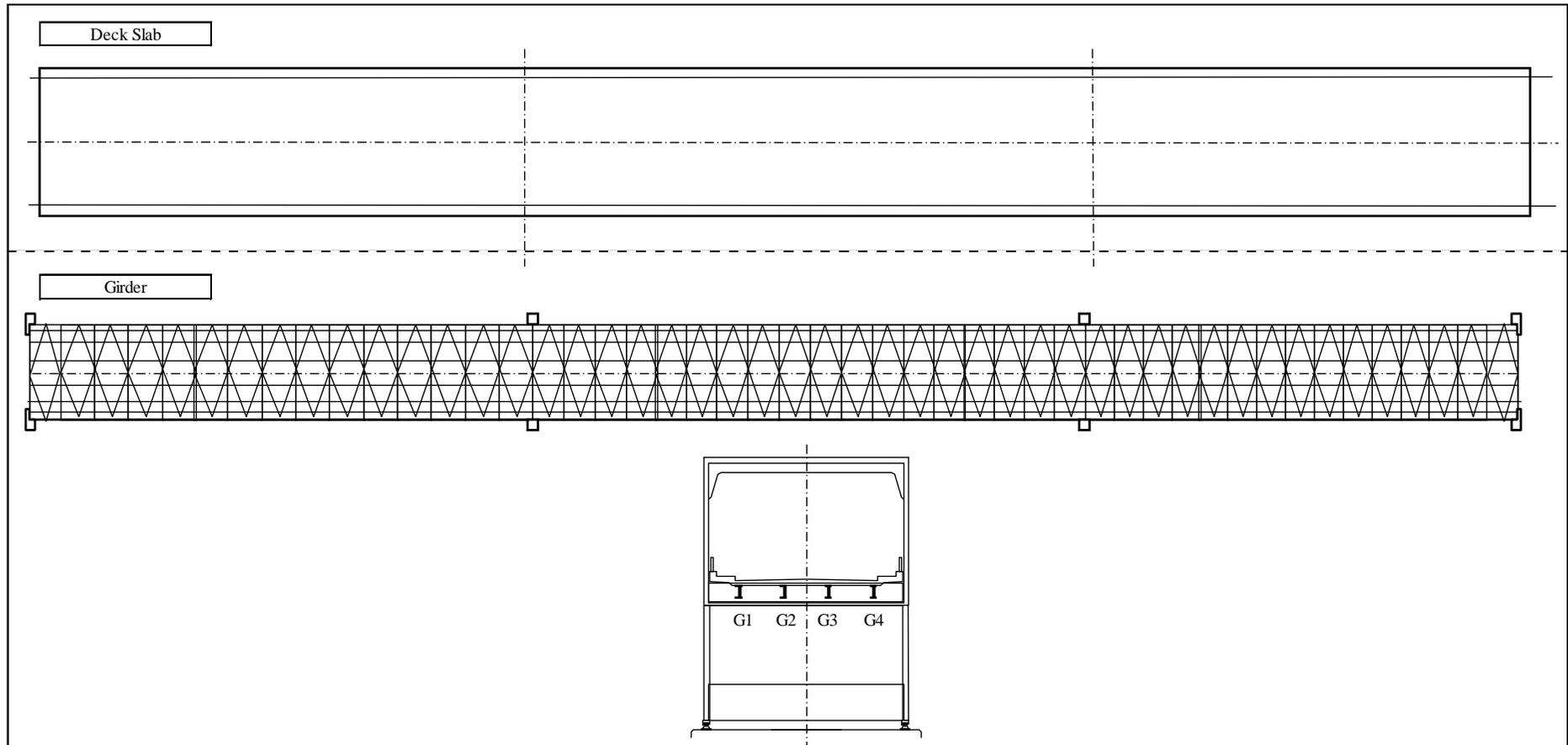
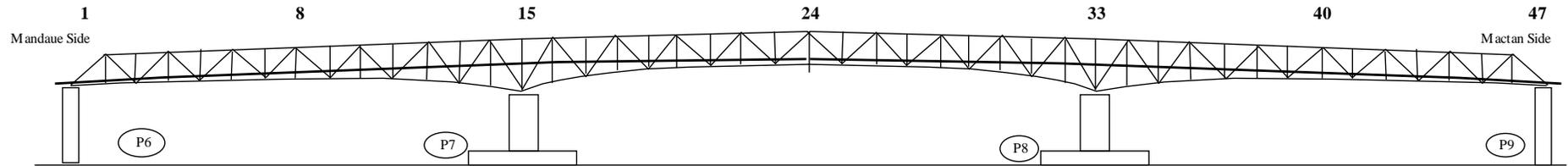


Sketches of Bridge Condition Inspection Findings at Mandaue side Viaduct for A1, P1, P2 as Observed from Ground Level under the Bridge
1st Mandaue-Mactan Bridge



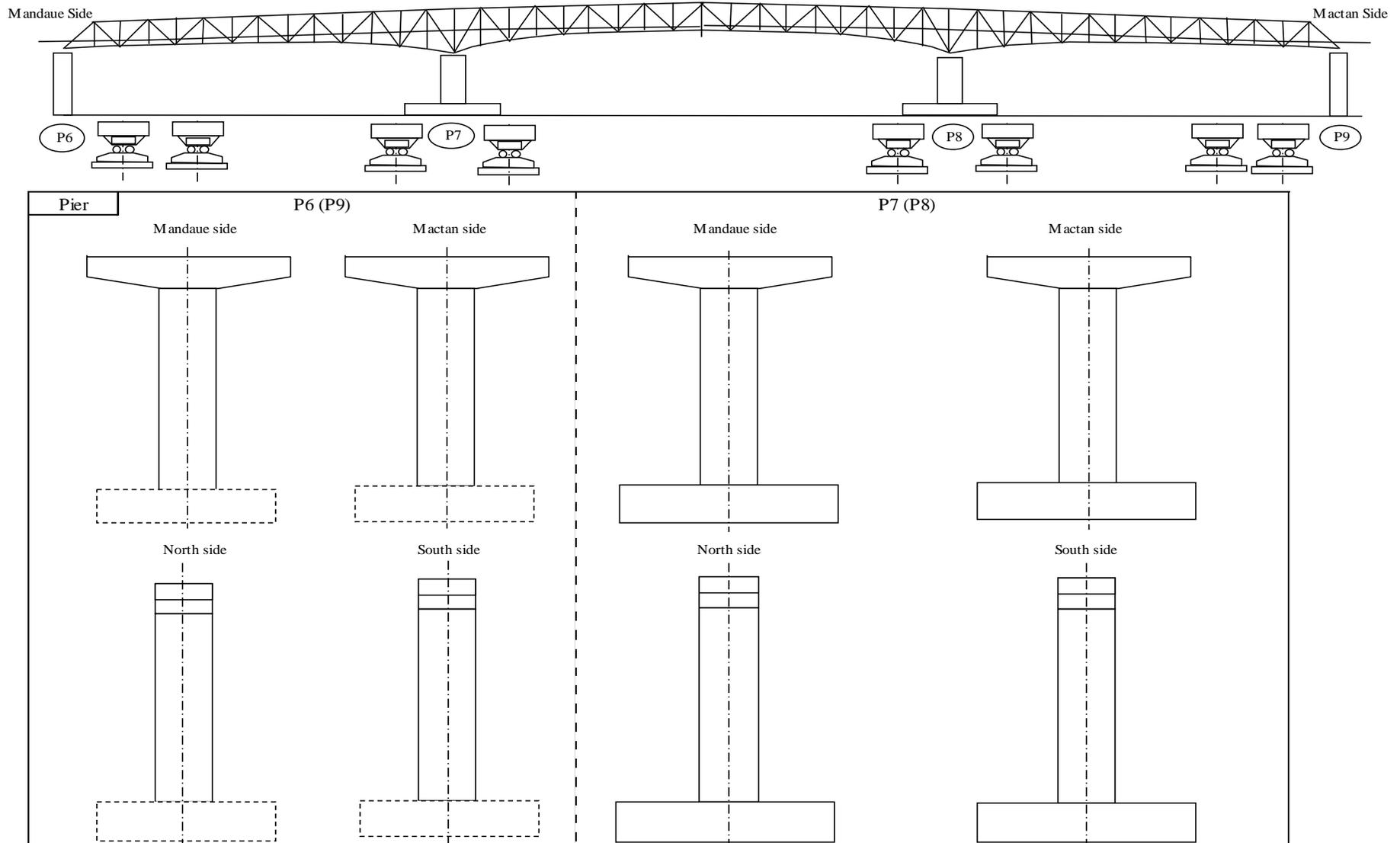
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Condition Inspection Findings at Main Bridge P6-P9 as Observed from Boat under the Bridge
1st Mandaue-Mactan Bridge



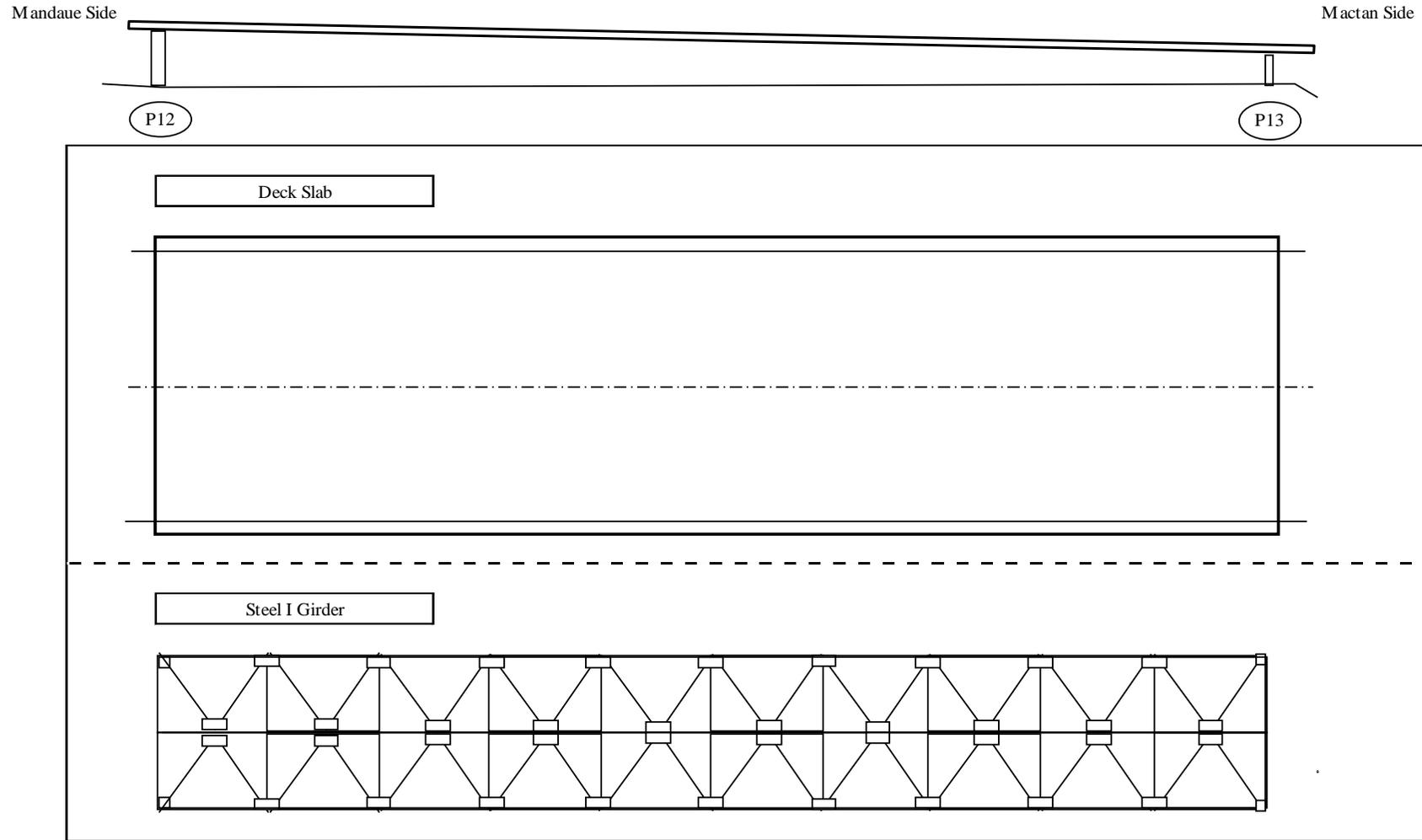
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Condition Inspection Findings at Main Bridge P6-P9 as Observed from Boat under the Bridge
1st Mandaue-Mactan Bridge

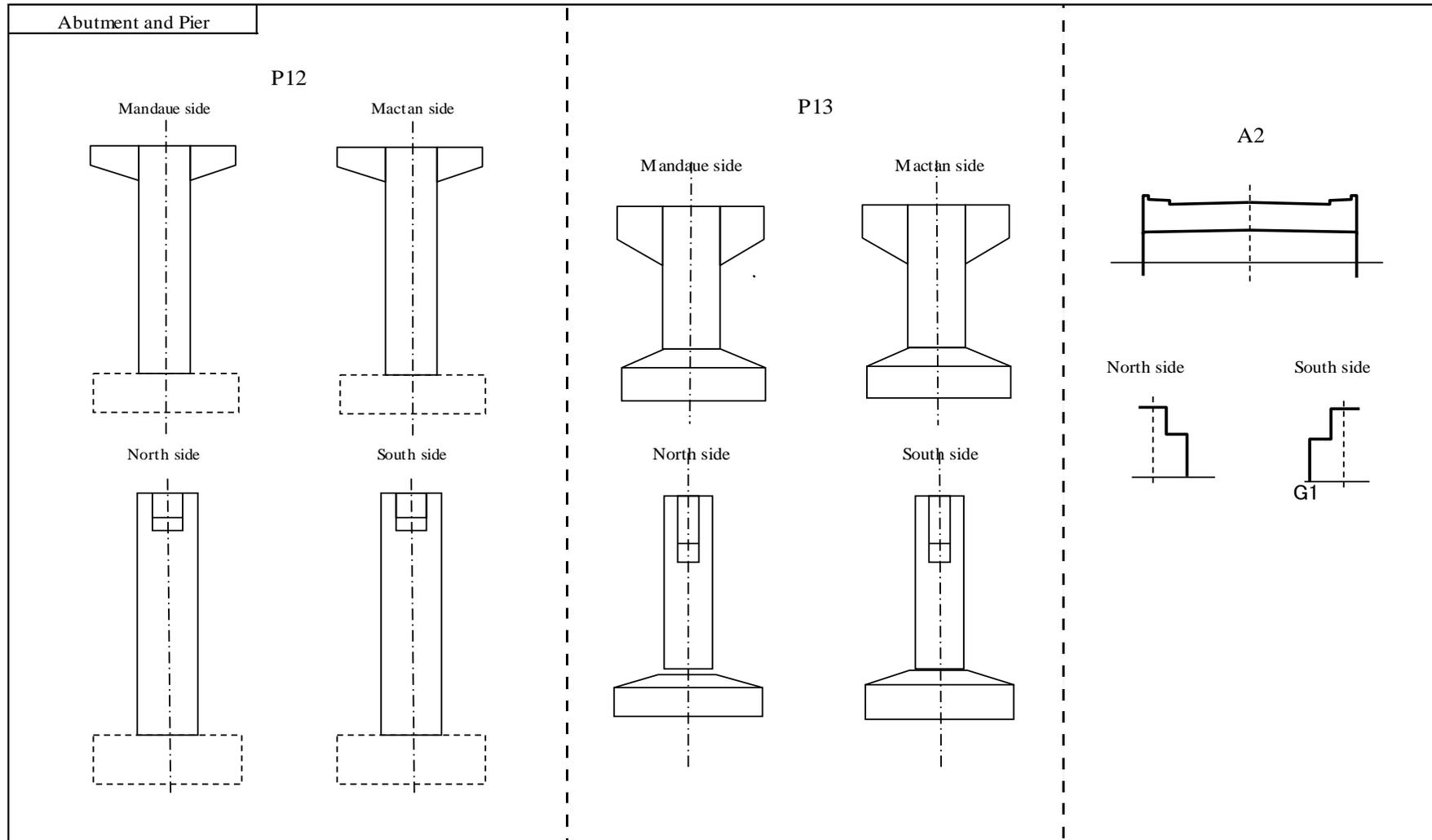


REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Sketches of Bridge Condition Inspection Findings at Mactan side Viaduct P12-P13 for Deck Slab, Girders and Other Members
as noted from Ground Level under the Bridge
1st Mandaue-Mactan Bridge



**Sketches of Bridge Condition Inspection Findings at Mandaue side Viaduct for A2, P12, P13 as Observed from Ground Level under the Bridge
 1st Mandaue-Mactan Bridge**





APPENDIX E-1

BRIDGE INVENTORY INSPECTION FORM



Department of Public Works and Highways

INVENTORY INSPECTION FORM (TYPE 5)

LOCATION

| | |
|--------------------|---|
| BRIDGE ID | B00587CB |
| Bridge Name | 1st Mandaue-Mactan Bridge |
| Road Name | A. C. Cortes Ave. |
| Road ID | R00069CB |
| Section ID | S00360CB |
| Location | 9+704 |

| | |
|-------------------------------|------------------------------------|
| Region | VII |
| Province | Cebu |
| Congressional District | 6TH |
| Engineering District | 6TH |
| Municipality | Mandaue City, Lapulapu City |
| Barangay | Looc, Pajo |
| River Name | Mactan Channel |

| | |
|---------------------------------|--------------------------------------|
| Date of Field Inspection | Dec. 10, 2012 to Jan. 5, 2013 |
|---------------------------------|--------------------------------------|

Total No. of Span:

Total No. of Abutment:

Total No. of Pier:

| | |
|---|--|
| Accomplished by: NELSON B. COMEDIA Engr. II DARIO SARABOSING Engr. II NORMAN WILFRED G. ABAYABAY Engr. II | Submitted by: SUZETTE C. NWANAKA OIC-District Engineer |
|---|--|

MMB – Inventory Inspection Form (Type 5)

Bridge ID **Bridge Name**

INVENTORY

SPECIAL INSPECTION REQUIREMENTS

| | |
|---------------------------|-------------------------------------|
| Boat | <input checked="" type="checkbox"/> |
| Bridge inspection vehicle | <input checked="" 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 checked="" type="checkbox"/> |
| | No | <input type="checkbox"/> |
| If yes, give limit (tons) | 5.0 | |
| Height clearance? | Over (bridge structure over), (m) | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> |
| If yes, give clearances (m) | Under (road under bridge), (m) | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> |
| | 22.86 | |
| Maximum bridge height (m) | 30.0 | |

NAVIGATION CLEARANCES

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

BRIDGE GEOMETRY

| | | |
|---------------------------|-------|------|
| Overall length, (m) | 854 | |
| Overall width, (m) | 10.80 | |
| Number of lanes | 2 | |
| Number of spans | 14 | |
| Width of carriageway, (m) | 7.50 | |
| Width of island(s), (m) | 0.0 | |
| Width of shoulder, (m) | Left | |
| | Right | |
| Sidewalk width, (m) | Left | 1.50 |
| | Right | 1.50 |

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 checked="" type="checkbox"/> |
| Insert year if known | | <input type="text"/> |

END OF WARRANTY PERIOD

| | |
|---------------------------------------|----------------------|
| Insert year of end of warranty period | <input type="text"/> |
|---------------------------------------|----------------------|

PUBLIC UTILITIES CARRIED

| Utility Identification No. | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------------------|---|---|---|---|---|---|
| Electricity | | | | | x | |
| Gas | | | x | | | |
| Telephone | x | | | x | | |
| Oil, fuel | | | | | | |
| Water | | x | | | | |
| Sewage | | | | | | |
| Other | | | | | | |

PUBLIC UTILITIES DETAIL

Description for each utility, listed by Utility Identification No.

| | | |
|---|-------|-------------------------------------|
| 1. PLDT QTY: 4 pcs 4 inches dia. Conduit Pipe | LHS | <input type="checkbox"/> |
| | Under | <input type="checkbox"/> |
| | RHS | <input checked="" type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| 2. MCWD QTY: 1 pc 0.5m. dia. G.I. Pipe | LHS | <input type="checkbox"/> |
| | Under | <input type="checkbox"/> |
| | RHS | <input checked="" type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| 3. TRANSCO QTY: 6 pcs 4 inches dia. Wire Conductor | LHS | <input type="checkbox"/> |
| | Under | <input type="checkbox"/> |
| | RHS | <input checked="" type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| 4. GLOBE QTY: 2 pcs 4 inches dia. Fiber Optic Cable | LHS | <input type="checkbox"/> |
| | Under | <input type="checkbox"/> |
| | RHS | <input checked="" type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| 5. | LHS | <input type="checkbox"/> |
| | Under | <input type="checkbox"/> |
| | RHS | <input type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| 6. | 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) | - |
| Right, (m) | 15 |

MMB – Inventory Inspection Form (Type 5)

Bridge ID B00587CB **Bridge Name** 1st Mandaue-Mactan Bridge

TERRAIN CROSSED

| | |
|---------------------------------|-------------------------------------|
| Sea (exposed) | <input checked="" type="checkbox"/> |
| Estuary (salt water) | <input checked="" type="checkbox"/> |
| River or waterway (fresh water) | <input 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

Insert comments about unusual bridges:

Bridge type: Steel Truss bridge
 Long span bridge crossing over sea water
 Navigation clearance-International route

BRIDGE TYPE OF CONSTRUCTION

| Type of Construction Identification No. | 1 | 2 | 3 |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Girder | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Box girder | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Slab | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Trestle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cable stayed | <input 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"/> |
| 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 checked="" type="checkbox"/> | <input type="checkbox"/> |
| Concrete | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" 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 checked="" 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 type="checkbox"/> |
| | No | <input checked="" 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 | | |
| Bureau of Design, DPWH Central Office, Manila (Incomplete Drawings) | | |

AS-BUILT DRAWINGS

| | | |
|-------------------------|-----------|-------------------------------------|
| Available? | Yes | <input type="checkbox"/> |
| | No | <input type="checkbox"/> |
| | Not known | <input checked="" type="checkbox"/> |
| If yes, insert location | | |

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

BRIDGE MODIFICATION SHEET

MODIFICATION TYPE

| | | |
|------------------------------|------|-------------------------------------|
| Bridge widened? | Yes | <input type="checkbox"/> |
| If yes, complete below | No | <input checked="" type="checkbox"/> |
| Year of widening | | |
| Bridge strengthened? | Yes | <input checked="" type="checkbox"/> |
| If yes, complete below | No | <input type="checkbox"/> |
| Year of strengthening | 1991 | |
| Bridge retrofitted? | Yes | <input type="checkbox"/> |
| If yes, complete below | No | <input checked="" type="checkbox"/> |
| Year of seismic retrofitting | | |
| Bridge lengthened? | Yes | <input type="checkbox"/> |
| If yes, complete below | No | <input checked="" type="checkbox"/> |
| Year of lengthening | | |

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 checked="" type="checkbox"/> |
| Deck reinforcement | <input checked="" type="checkbox"/> |
| Additional piers | <input type="checkbox"/> |
| Substructure reinforcement | <input checked="" 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

MODIFICATION COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 1 |
| Length of span, (m) | 37.20 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> |
| Simply supported | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 2 |
| Length of span, (m) | 37.20 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 3 |
| Length of span, (m) | 37.20 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|------|
| Span Number | 4 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|------|
| Span Number | 5 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|----------|
| Span Number | 6 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 7 |
| Length of span, (m) | 112.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|----------|
| Span Number | 8 |
| Length of span, (m) | 144.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 9 |
| Length of span, (m) | 112.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|------|
| Span Number | 10 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|------|
| Span Number | 11 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|------|
| Span Number | 12 |
| Length of span, (m) | 50.0 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-------|
| Span Number | 13 |
| Length of span, (m) | 37.20 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL SPAN INFORMATION

| | |
|------------------------|-----------|
| Span Number | 14 |
| Length of span, (m) | 37.20 |
| Skew (in Degrees) | 0 |
| Number of main members | 3 |

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 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 checked="" 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 checked="" type="checkbox"/> | <input type="checkbox"/> |
| Simply supported | <input type="checkbox"/> | <input checked="" 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 checked="" type="checkbox"/> |

SECONDARY MEMBER MATERIAL

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

SECONDARY MEMBER PRESTRESSED?

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

OTHER MEMBER TYPE

| | |
|------------|-------------------------------------|
| Diaphragms | <input type="checkbox"/> |
| Bracings | <input checked="" 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 1 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 2 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|----------|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|----------|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|----------|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|----------|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 3 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 4 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID B00587CB

Bridge Name 1st Mandaue-Mactan Bridge

GENERAL PIER INFORMATION

| | |
|--------------------|---|
| Pier Number | 5 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 6 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 7 |
| Pier height, (m) | |
| Pier height case | |

PIER TYPE

| | |
|--------------------|-------------------------------------|
| Wall | <input type="checkbox"/> |
| Single column | <input checked="" type="checkbox"/> |
| Multiple columns | <input 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 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 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 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 type="checkbox"/> |
| None | <input type="checkbox"/> |
| Not known | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|----------|
| Pier Number | 8 |
| Pier height, (m) | 19.20 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|-------------------------------------|
| Wall | <input type="checkbox"/> |
| Single column | <input checked="" type="checkbox"/> |
| Multiple columns | <input 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 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 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 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 type="checkbox"/> |
| None | <input type="checkbox"/> |
| Not known | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|-----------|
| Pier Number | 10 |
| Pier height, (m) | 12.51 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|-------------------------------------|
| Wall | <input type="checkbox"/> |
| Single column | <input checked="" type="checkbox"/> |
| Multiple columns | <input 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 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 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 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 type="checkbox"/> |
| None | <input type="checkbox"/> |
| Not known | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|-----------|
| Pier Number | 10 |
| Pier height, (m) | 12.51 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|-----------|
| Pier Number | 11 |
| Pier height, (m) | 10.45 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|-------------------------------------|
| Wall | <input type="checkbox"/> |
| Single column | <input checked="" type="checkbox"/> |
| Multiple columns | <input 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 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 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 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 type="checkbox"/> |
| None | <input type="checkbox"/> |
| Not known | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|-----------|
| Pier Number | 12 |
| Pier height, (m) | 8.39 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL PIER INFORMATION

| | |
|--------------------|-----------|
| Pier Number | 13 |
| Pier height, (m) | 6.85 |
| Pier height case | |

PIER TYPE

| | |
|--------------------|---|
| Wall | |
| Single column | X |
| Multiple columns | |
| Single pile bent | |
| Multiple pile bent | |
| Other | |
| Not known | |

PIER MATERIAL

| | |
|----------|---|
| Timber | |
| Steel | |
| Concrete | X |
| Masonry | |
| Other | |

PIER FOUNDATION TYPE

| | |
|----------------|---|
| Spread footing | |
| Bored piles | X |
| Driven piles | |
| Caisson | |
| Other | |
| Not known | |

BEARING TYPE LOW CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearings | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| None | |
| Other | |
| Not known | |

BEARING TYPE HIGH CHAINAGE

| | |
|-------------------|--|
| Elastomeric pad | |
| Pot bearing | |
| Steel plate | |
| PTFE coated plate | |
| Metal rocker | |
| Monolithic | |
| Other | |
| None | |
| Not known | |

LATERAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

LONGITUDINAL RESTRAINT TYPE

| | |
|-----------------|--|
| Concrete | |
| Steel | |
| Cables or bolts | |
| Other | |
| None | |
| Not known | |

EXPANSION JOINT TYPE

| | |
|-----------------|---|
| Continuous deck | |
| Steel plate | X |
| Rubber | |
| 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 | |

PIER COMMENTS

Insert comments about unusual piers:

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL ABUTMENT DATA

| | |
|------------------------|----------|
| Abutment Number | 1 |
| Abutment height, (m) | |
| 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 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 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 type="checkbox"/> |
| Not known | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

Abutment 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) | |
| Right, (m) | |

BRIDGE APPROACH
Overall length of approach, (m)

| 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

GENERAL ABUTMENT DATA

| | |
|------------------------|----------|
| Abutment Number | 2 |
| Abutment height, (m) | |
| 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 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 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 type="checkbox"/> |
| Not known | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

EXPANSION JOINT TYPE

| | |
|-----------------|-------------------------------------|
| Continuous deck | <input type="checkbox"/> |
| Steel plate | <input checked="" type="checkbox"/> |
| Rubber | <input 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

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

Abutment 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 | <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

MMB – Inventory Inspection Form (Type 5)

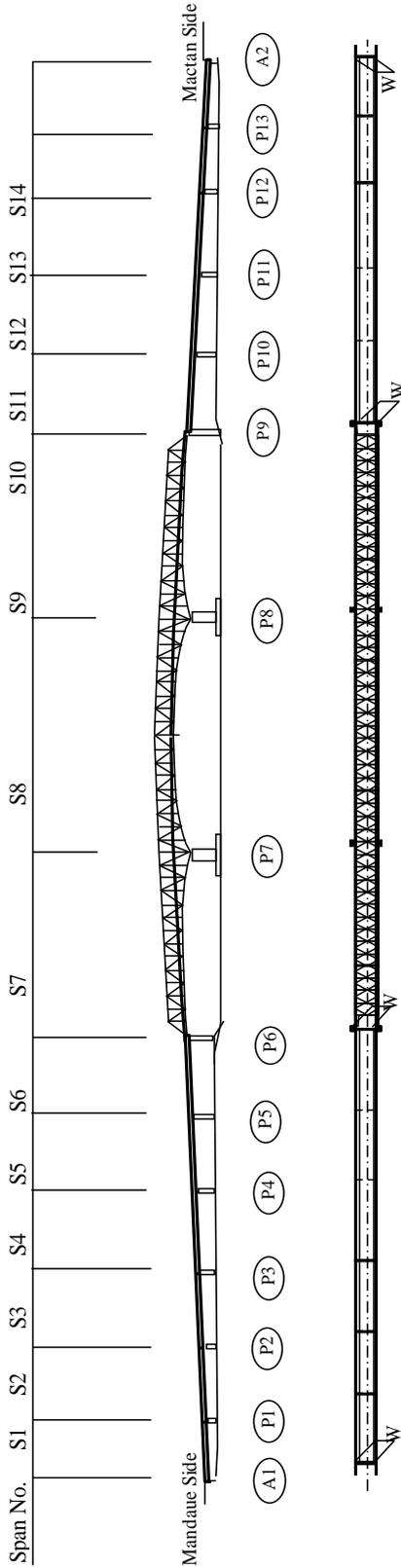
Bridge ID

B00587CB

Bridge Name

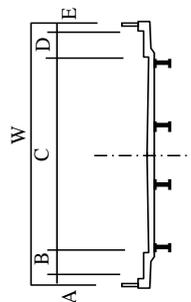
1st Mandaue-Mactan Bridge

1st Mandaue-Mactan Bridge - General View



| Span No. | L(m) | Remarks |
|----------|------|---------|
| S1 | 37.2 | |
| S2 | 37.2 | |
| S3 | 37.2 | |
| S4 | 50 | |
| S5 | 50 | |
| S6 | 50 | |
| S7 | 112 | |
| S8 | 144 | |
| S9 | 112 | |
| S10 | 50 | |
| S11 | 50 | |
| S12 | 50 | |
| S13 | 37.2 | |
| S14 | 37.2 | |
| App. 1 | 130 | |
| App. 2 | 130 | |

| Sec. | Lane | L(m) | Remarks |
|------|------|------|---------|
| P6 | A | 10.8 | |
| | B | 1.5 | |
| | C | 7.5 | |
| | D | 1.5 | |
| | E | 0.3 | |
| P9 | A | 10.8 | |
| | B | 1.5 | |
| | C | 7.5 | |
| | D | 1.5 | |
| | E | 0.3 | |
| A2 | A | 10.8 | |
| | B | 1.5 | |
| | C | 7.5 | |
| | D | 1.5 | |
| | E | 0.3 | |

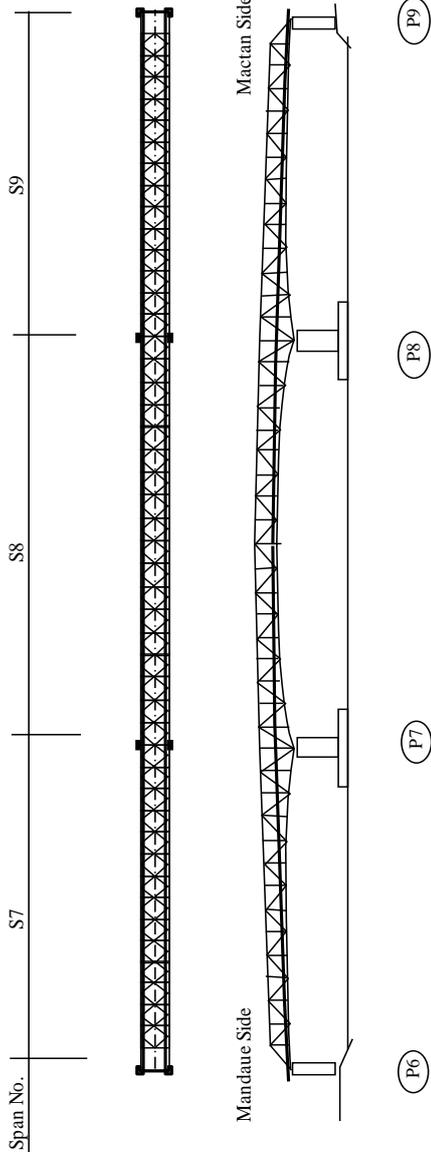


MMB – Inventory Inspection Form (Type 5)

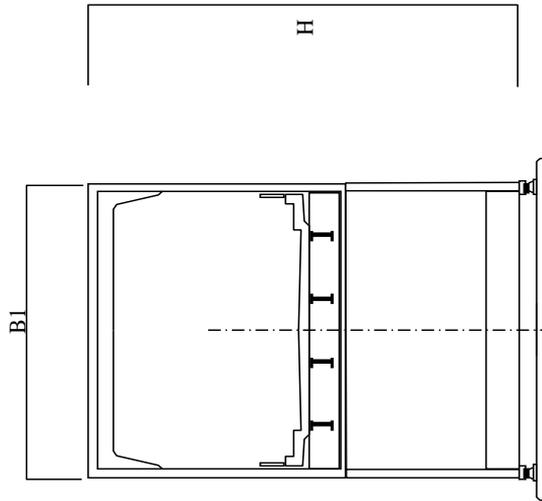
Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

1st Mandaue-Mactan Bridge Superstructure Main Bridge



| Steel Truss Measurement | | | |
|-------------------------|-----------|------|---------|
| Total Height and Width | | | |
| Section | Component | L(m) | Remarks |
| P6 (P9) | H | 0.3 | |
| | B1 | 11.1 | |
| S7 (S8) Middle | H | 6.99 | |
| | B1 | 11.1 | |
| P7 (P8) | H | 14.9 | |
| | B1 | 11.1 | |

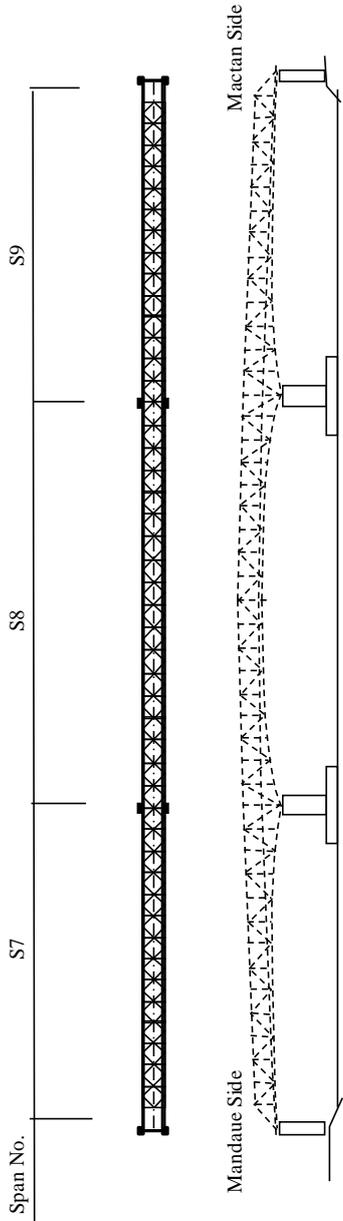


MMB – Inventory Inspection Form (Type 5)

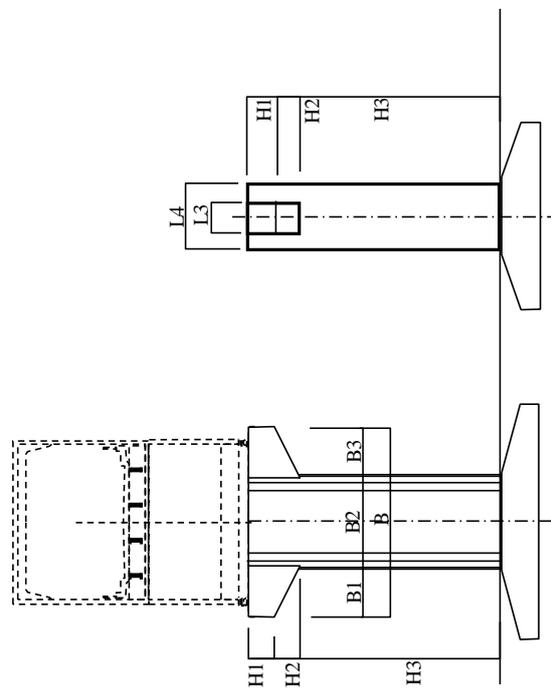
Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

1st Mandaue-Mactan Bridge - Substructure Main Bridge



- (P6)
- (P7)
- (P8)
- (P9)



| Pier Measurement | | | | |
|------------------|-----------|-------|---------|--|
| Height and Width | | | | |
| No. | Component | L (m) | Remarks | |
| P7 | H1 | 2 | | |
| | H2 | 3.6 | | |
| | H3 | 13.6 | | |
| | B | 14.94 | | |
| | B1 | 4 | | |
| | B2 | 6.94 | | |
| | B3 | 4 | | |
| | L3 | 3.5 | | |
| | L4 | 6.94 | | |
| | P8 | H1 | 2 | |
| | | H2 | 3.6 | |
| | | H3 | 13.6 | |
| B | | 14.9 | | |
| B1 | | 4 | | |
| B2 | | 6.9 | | |
| B3 | | 4 | | |
| L3 | | 3.5 | | |
| L4 | 6.9 | | | |

MMB – Inventory Inspection Form (Type 5)

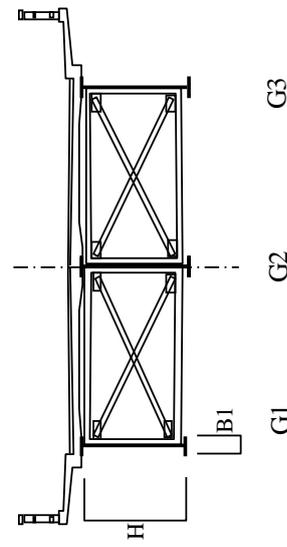
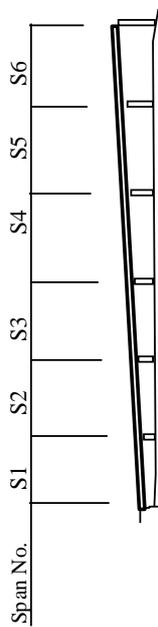
Bridge ID

B00587CB

Bridge Name

1st Mandaue-Mactan Bridge

1st Mandaue-Mactan Bridge - Superstructure of Mandaue side Viaduct



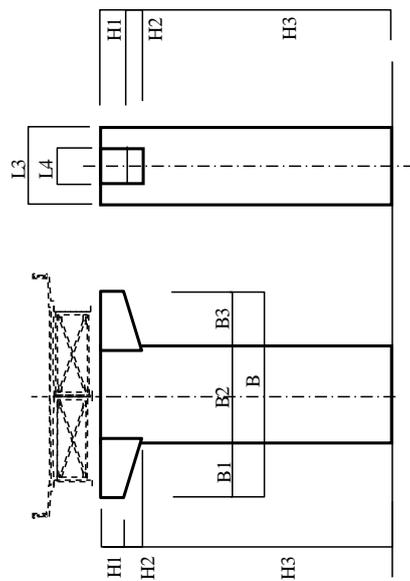
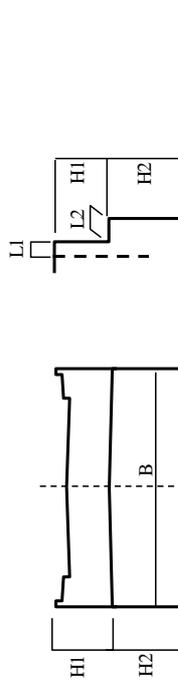
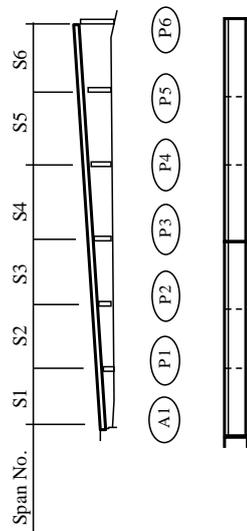
| Steel Girder Measurement | | | |
|----------------------------------|-----------|------|---------|
| Depth of Girder and Flange Width | | | |
| Section | Component | L(m) | Remarks |
| S1 Middle | H | 2.5 | |
| | B1 | | |
| S4 Middle | H | 2.5 | |
| | B1 | | |

MMB – Inventory Inspection Form (Type 5)

Bridge ID **B00587CB**

Bridge Name **1st Mandaue-Mactan Bridge**

1st Mandaue-Mactan Bridge - Substructure of Mandaue side Viaduct



| Abutment and Pier Measurement | | | |
|-------------------------------|------------------|-------|---------|
| No. | Height and Width | | Remarks |
| | Component | L (m) | |
| A1 | H1 | | |
| | H2 | | |
| | B | | |
| | L1 | | |
| | L2 | | |
| | L3 | | |
| P1 | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 6.9 | |
| | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |
| | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 8.57 | |
| P2 | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |
| P3 | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 10.24 | |
| | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |
| | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 12.48 | |
| P4 | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |

| Abutment and Pier Measurement | | | |
|-------------------------------|------------------|-------|---------|
| No. | Height and Width | | Remarks |
| | Component | L (m) | |
| P5 | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 14.73 | |
| | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| P6 | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |
| | H1 | 1 | |
| | H2 | 2.1 | |
| | H3 | 14.17 | |
| | B | 8.8 | |
| | B1 | 2.9 | |
| | B2 | 3 | |
| | B3 | 2.9 | |
| | L3 | 3 | |
| | L4 | 1.4 | |

MMB – Inventory Inspection Form (Type 5)

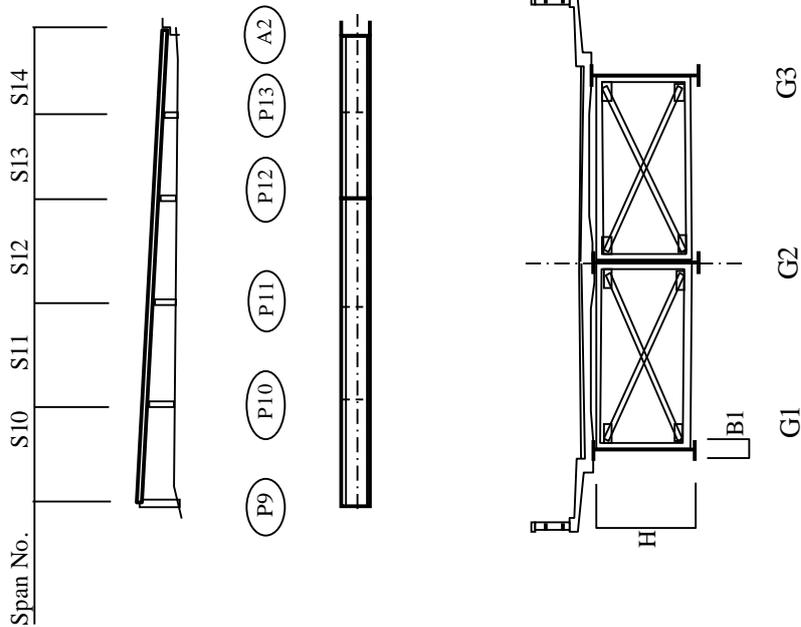
Bridge ID

B00587CB

Bridge Name

1st Mandaue-Mactan Bridge

1st Mandaue-Mactan Bridge - Superstructure of Mactan side Viaduct



| Girder Measurement | | | |
|----------------------------------|--------|------|---------|
| Depth of Girder and Flange width | | | |
| Section | Member | L(m) | Remarks |
| S10 Middle | H | 2.5 | |
| | B1 | | |
| S13 Middle | H | 2.5 | |
| | B1 | | |

MMB – Inventory Inspection Form (Type 5)

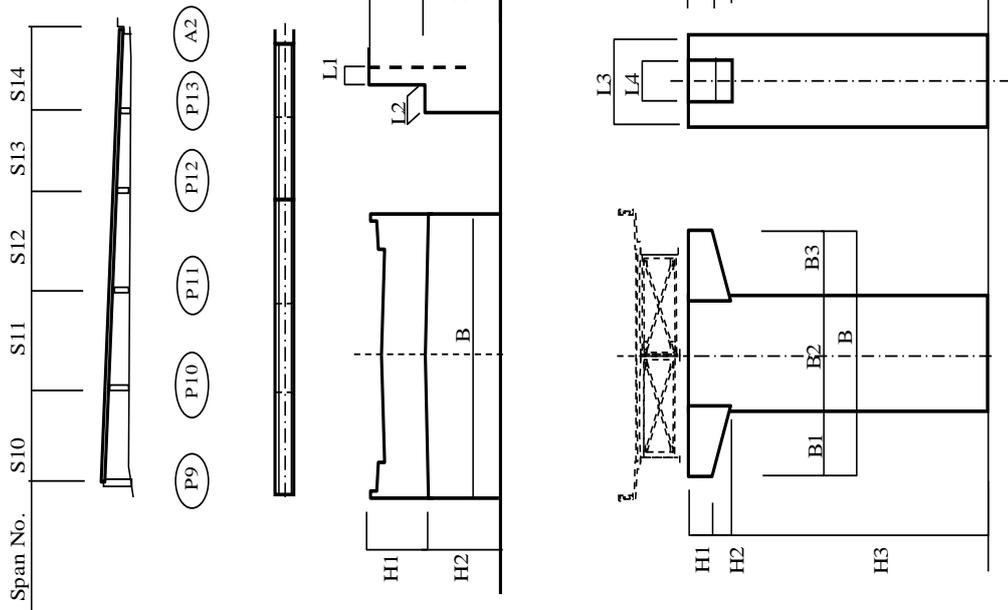
Bridge ID

B00587CB

Bridge Name

1st Mandaue-Mactan Bridge

1st Mandaue-Mactan Bridge - Substructure of Mactan side Viaduct



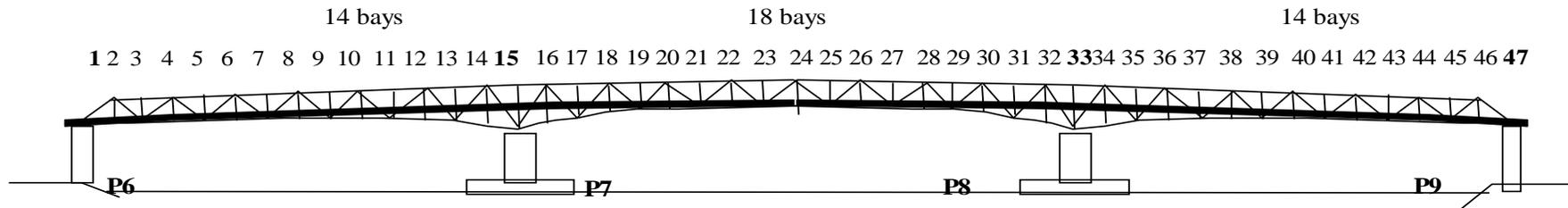
| Abutment and Pier Measurement | | | | |
|-------------------------------|------------------|-------|---------|---------|
| No. | Height and Width | | | Remarks |
| | Component | L (m) | Remarks | |
| P9 | H1 | 1 | | |
| | H2 | 2.1 | | |
| | H3 | 14.37 | | |
| | B | 8.8 | | |
| | B1 | 2.9 | | |
| | B2 | 3 | | |
| | B3 | 2.9 | | |
| P10 | L3 | 3 | | |
| | L4 | 1.4 | | |
| | H1 | 1 | | |
| | H2 | 2.1 | | |
| | H3 | 13.59 | | |
| | B | 8.8 | | |
| | B1 | 2.9 | | |
| P11 | B2 | 3 | | |
| | B3 | 2.9 | | |
| | L3 | 3 | | |
| | L4 | 1.4 | | |
| | H1 | 1 | | |
| | H2 | 2.1 | | |
| | H3 | 10 | | |
| P12 | B | 8.8 | | |
| | B1 | 2.9 | | |
| | B2 | 3 | | |
| | B3 | 2.9 | | |
| | L3 | 3 | | |
| | L4 | 1.4 | | |
| | H1 | 1 | | |
| P13 | H2 | 2.1 | | |
| | H3 | 3.75 | | |
| | B | 8.8 | | |
| | B1 | 2.9 | | |
| | B2 | 3 | | |
| | B3 | 2.9 | | |
| | L3 | 3 | | |
| A2 | L4 | 1.4 | | |
| | H1 | 1 | | |
| | H2 | 2.1 | | |
| | B | 8.8 | | |
| | L1 | 1 | | |
| | L2 | 1 | | |



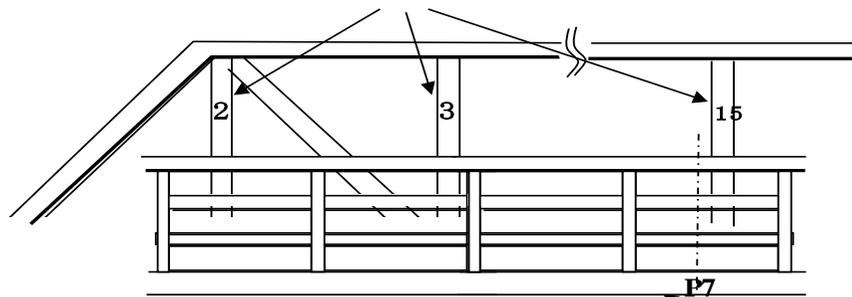
APPENDIX F-1

**NUMBERING OF TRUSS, PIER
AND ABUTMENT**

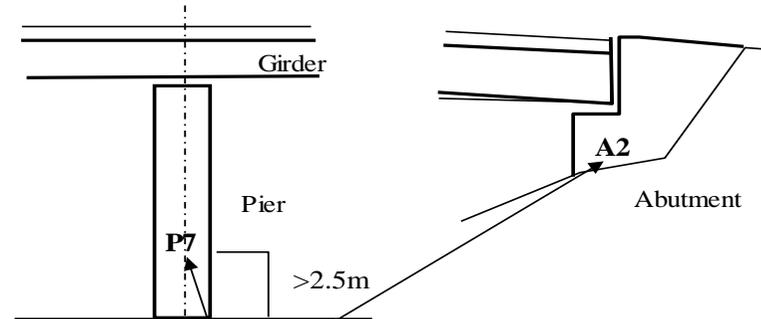
1st Mandaue-Mactan Bridge



Numbering of Truss is marked on the Vertical Members only.



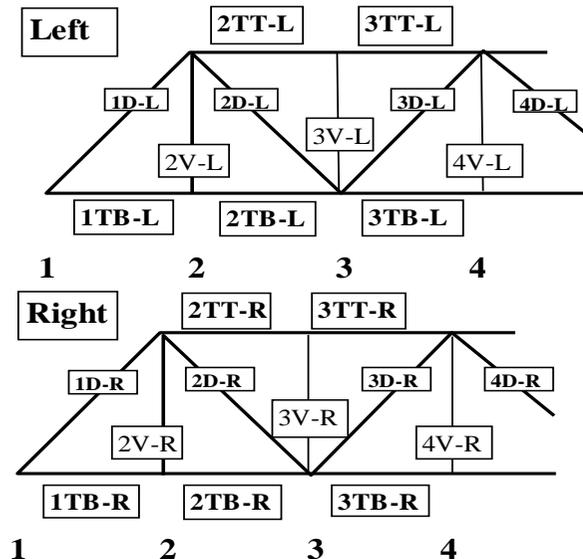
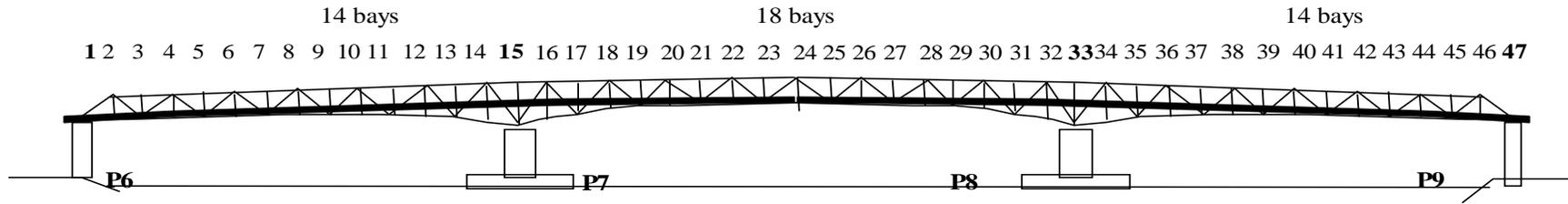
Numbering of Pier is marked along the curb of the sidewalk.



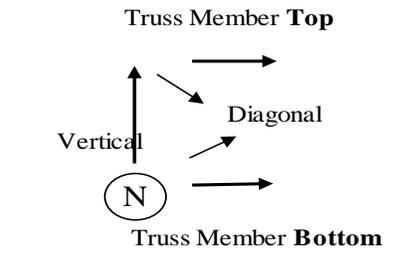
Numbering of Pier and Abutment is marked on the side of the substructures.

Numbering of Truss, Pier and Abutment for 1st Mandaue-Mactan Bridge

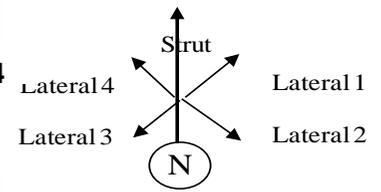
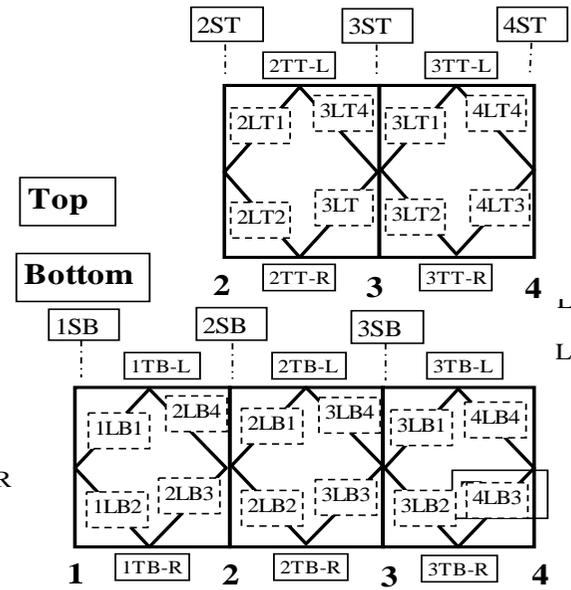
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS



Note: The numbering of truss members indicated herein need not to be marked on the member itself. These numberings and the sequence it is arranged serve as guide in identifying each member during any type of inspection that will be undertaken on the bridge.

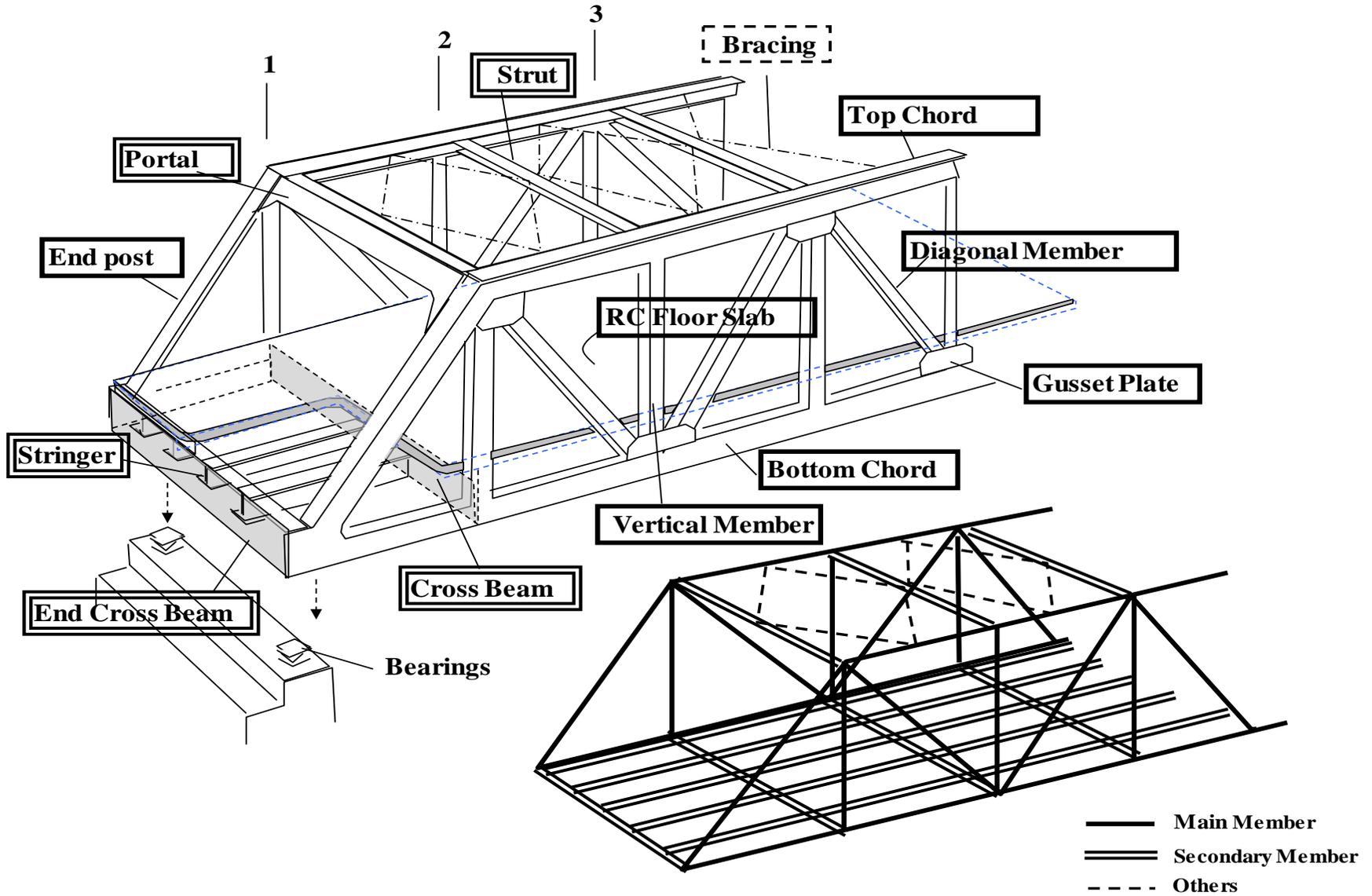


Sec./No. Member
 N- V:Vertical-L,R
 TT:Truss Top-L,R
 TB:Truss Bottom-L,R
 D: Diagonal-L,R
 N=1--47



Sec./No. Member
 N- S:Strut - Top,Bottom
 L:Lateral-Top,Bottom
 -1,2,3,4

Numbering of Truss Member of Mandaue-Mactan Bridge



Identification of Truss Members (1st Mactan-Mandaue Bridge)



APPENDIX G-1

GEOMETRICAL INSPECTION FORM

BRIDGE MANAGEMENT SYSTEM

GEOMETRICAL INSPECTION FORM (TYPE 6)

1st MANDAUE-MACTAN BRIDGE

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
 Department of Public Works and Highways
BRIDGE MANAGEMENT SYSTEM
FOR
1ST MANDAUE-MACTAN BRIDGE
GEOMETRICAL INSPECTION FORM (TYPE 6)

LOCATION

| | |
|-------------|---------------------------|
| BRIDGE ID | B00587CB |
| Bridge Name | 1st MANDAUE-MACTAN BRIDGE |
| Road Name | A.C.Cortes Ave. |
| Road ID | R00069CB |
| Section ID | S00360CB |
| Location | 9 + 704 |

| | |
|------------------------|-----------------------------|
| Region | VII |
| Province | Cebu |
| Congressional District | 6th |
| Engineering District | 6th |
| Municipality | Mandaue City, Lapulapu City |
| Barangay | Looc , Pajo |
| River Name | Mactan Channel |

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

SUMMARY

COMMENTS:

Geometrical survey conducted by Cebu 6th DEO on May 7 and 12-16, 2014

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID. B00587CB

Bridge Name 1st Mandaue-Mactan

Leveling of Piers and Deck Slab

Assumed Elevation

| Element (Pier) | Place | 2014 | 2017 | Difference | Remark | Element (Deck Slab) | No. | Place | 2014 | 2017 | Difference | Remark |
|----------------|-------|--------|------|------------|--------|------------------------|-----|-------|--------|------|------------|--------|
| P6 | East | 25.648 | | | | Longitudinal Alignment | 1 | East | 28.536 | | | |
| | West | 25.584 | | | | Longitudinal Alignment | 2 | East | 31.304 | | | |
| P7 | East | 30.441 | | | | Longitudinal Alignment | 3 | East | 28.615 | | | |
| | West | 30.445 | | | | Longitudinal Alignment | 1 | West | 28.526 | | | |
| P8 | East | 30.474 | | | | Longitudinal Alignment | 2 | West | 31.359 | | | |
| | West | 30.471 | | | | Longitudinal Alignment | 3 | West | 28.586 | | | |
| P9 | East | 25.693 | | | | | | | | | | |
| | West | 25.700 | | | | | | | | | | |

Elev. At Top of Coping of Piers

| | | | | | |
|----|------|--------|--|--|--|
| P6 | East | 23.318 | | | |
| | West | 24.278 | | | |
| P7 | East | 19.068 | | | |
| | West | 20.018 | | | |
| P8 | East | 20.778 | | | |
| | West | 21.818 | | | |
| P9 | East | 29.318 | | | |
| | West | 30.278 | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID.

B00587CB

Bridge Name

1st Mandaue-Mactan

Slope of Truss Top Chord

| Measure Point | Place | 2014 (Original) (Decimal) | 2017 | Difference | Remark |
|-----------------------|-------|---------------------------------|------|------------|--------|
| Angle (Vertical) | V1 | 4.523611 | | | |
| | V2 | 4.595278 | | | |
| | V3 | 4.059167 | | | |
| | V4 | 4.585000 | | | |
| | V5 | 4.631667 | | | |
| | V6 | 4.596389 | | | |
| | V7 | 4.578333 | | | |
| | V8 | 4.543056 | | | |
| Angle (Horizontal) | H1 | 86.628890 | | | |
| | H2 | 86.961944 | | | |
| | H3 | 86.989167 | | | |
| | H4 | 86.959444 | | | |
| Length | L1 | 112.062 | | | |
| | L2 | 112.064 | | | |
| | L3 | 72.125 | | | |
| | L4 | 72.101 | | | |
| | L5 | 72.100 | | | |
| | L6 | 72.102 | | | |
| | L7 | 112.068 | | | |
| | L8 | 112.064 | | | |
| Height | K1 | 1.220 | | | |
| | K2 | 1.230 | | | |
| | K3 | 1.380 | | | |
| | K4 | 1.350 | | | |
| | K5 | 1.300 | | | |
| | K6 | 1.340 | | | |
| | K7 | 1.320 | | | |
| | K8 | 1.320 | | | |

| Element | No. | 2014 (Original) (m) | 2017 | Difference | Remark |
|---------------|-----|---------------------------|------|------------|---------------------|
| Rise | 1 | 10.086 | | | $K1 + \tan V1 * L1$ |
| | 2 | 10.237 | | | $K2 + \tan V2 * L2$ |
| | 3 | 6.498 | | | $K3 + \tan V3 * L3$ |
| | 4 | 7.132 | | | $K4 + \tan V4 * L4$ |
| | 5 | 7.141 | | | $K5 + \tan V5 * L5$ |
| | 6 | 7.137 | | | $K6 + \tan V6 * L6$ |
| | 7 | 10.294 | | | $K7 + \tan V7 * L7$ |
| | 8 | 10.224 | | | $K8 + \tan V8 * L8$ |
| Average Rise | | 8.594 | | | |
| Slope | 3 | 4.249 | | | $L3 / \tan H1$ |
| | 4 | 3.827 | | | $L4 / \tan H2$ |
| | 7 | 3.792 | | | $L7 / \tan H3$ |
| | 8 | 5.953 | | | $L8 / \tan H4$ |
| Average Slope | | 4.455 | | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID.

B00587CB

Bridge Name

1st Mandaue-Mactan

Expansion Joint

| Measure Point | Place | 2014 (Original) (cm) | 2017 | Difference | Remark |
|---------------|-------|----------------------|------|------------|--------|
| P6 | East | J1 | 5 | | |
| | | J2 | 5 | | |
| | | J (Ave) | 5 | | |
| | West | J1 | 4 | | |
| | | J2 | 4 | | |
| | | J (Ave) | 4 | | |

| Measure Point | Place | 2014 (Original) (cm) | 2017 | Difference | Remark |
|---------------|-------|----------------------|------|------------|--------|
| P9 | East | J1 | 4.5 | | |
| | | J2 | 4.5 | | |
| | | J (Ave) | 4.5 | | |
| | West | J1 | 4 | | |
| | | J2 | 4 | | |
| | | J (Ave) | 4 | | |

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID.

B00587CB

Bridge Name

1st Mandaue-Mactan

Bearings

| Measure Point | Place | | 2014 (Original) (cm) | 2017 | Difference | Remark | Measure Point | Place | | 2014 (Original) (cm) | 2017 | Difference | Remark |
|---------------|-------|---------------|----------------------------|-------|------------|--------|---------------|-------|------|----------------------------|------|------------|--------|
| | | | | | | | | | | | | | |
| P6 | East | H1 | Low Chainage | 35 | | | P7 | East | H1 | Low Chainage | 33 | | |
| | | H2 | High Chainage | 35 | | | | | H2 | High Chainage | 33 | | |
| | | H3 | Low Chainage | 30 | | | | | H3 | Low Chainage | 33 | | |
| | | H4 | High Chainage | 31 | | | | | H4 | High Chainage | 33 | | |
| | | Ave | | 32.75 | | | | | Ave | | 33 | | |
| | | M1 | Low Chainage | 5 | | | | | M1 | Low Chainage | 25 | | |
| | | M2 | High Chainage | 5 | | | | | M2 | High Chainage | 25 | | |
| | | M3 | Low Chainage | 16 | | | | | M3 | Low Chainage | 25 | | |
| | | M4 | High Chainage | 15 | | | | | M4 | High Chainage | 25 | | |
| | | Ave | | 10.25 | | | | | Ave | | 25 | | |
| | West | H1 | Low Chainage | 35 | | | | West | H1 | Low Chainage | 33 | | |
| | | H2 | High Chainage | 35 | | | | | H2 | High Chainage | 33 | | |
| | | H3 | Low Chainage | 31 | | | | | H3 | Low Chainage | 33 | | |
| | | H4 | High Chainage | 31 | | | | | H4 | High Chainage | 33 | | |
| | | Ave | | 33 | | | | | Ave | | 33 | | |
| | | M1 | Low Chainage | 6 | | | | | M1 | Low Chainage | 25 | | |
| | | M2 | High Chainage | 6 | | | | | M2 | High Chainage | 25 | | |
| | | M3 | Low Chainage | 14 | | | | | M3 | Low Chainage | 26 | | |
| M4 | | High Chainage | 14 | | | M4 | High Chainage | | 26 | | | | |
| Ave | | | 10 | | | Ave | | | 25.5 | | | | |

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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

SUMMARY

Bridge ID.

B00587CB

Bridge Name

1st Mandaue-Mactan

Bearings

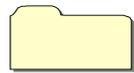
| Measure Point | Place | | 2014 (Original) | 2017 | Difference | Remark | Measure Point | Place | | 2014 (Original) | 2017 | Difference | Remark |
|---------------|-------|-----|-----------------|------|------------|--------|---------------|-------|---------------|-----------------|------|------------|--------|
| | | | | | | | | | | | | | |
| P8 | East | H1 | Low Chainage | 64 | | | P9 | East | H1 | Low Chainage | 30 | | |
| | | H2 | High Chainage | 64 | | | | | H2 | High Chainage | 30 | | |
| | | H3 | Low Chainage | 64 | | | | | H3 | Low Chainage | 35 | | |
| | | H4 | High Chainage | 64 | | | | | H4 | High Chainage | 35 | | |
| | | Ave | | 64 | | | | | Ave | | 32.5 | | |
| | | M1 | Low Chainage | 24 | | | | | M1 | Low Chainage | 15 | | |
| | | M2 | High Chainage | 24 | | | | | M2 | High Chainage | 15 | | |
| | | M3 | Low Chainage | 30 | | | | | M3 | Low Chainage | 3.5 | | |
| | | M4 | High Chainage | 30 | | | | | M4 | High Chainage | 4.5 | | |
| | | Ave | | 27 | | | | | Ave | | 9.5 | | |
| | West | H1 | Low Chainage | 63.5 | | | West | H1 | Low Chainage | 30 | | | |
| | | H2 | High Chainage | 63.5 | | | | H2 | High Chainage | 30 | | | |
| | | H3 | Low Chainage | 63.5 | | | | H3 | Low Chainage | 35 | | | |
| | | H4 | High Chainage | 63.5 | | | | H4 | High Chainage | 35 | | | |
| | | Ave | | 63.5 | | | | Ave | | 32.5 | | | |
| | | M1 | Low Chainage | 26 | | | | M1 | Low Chainage | 16 | | | |
| | | M2 | High Chainage | 26 | | | | M2 | High Chainage | 16 | | | |
| | | M3 | Low Chainage | 30 | | | | M3 | Low Chainage | 3 | | | |
| | | M4 | High Chainage | 30 | | | | M4 | High Chainage | 3.5 | | | |
| | | Ave | | 28 | | | | Ave | | 9.625 | | | |



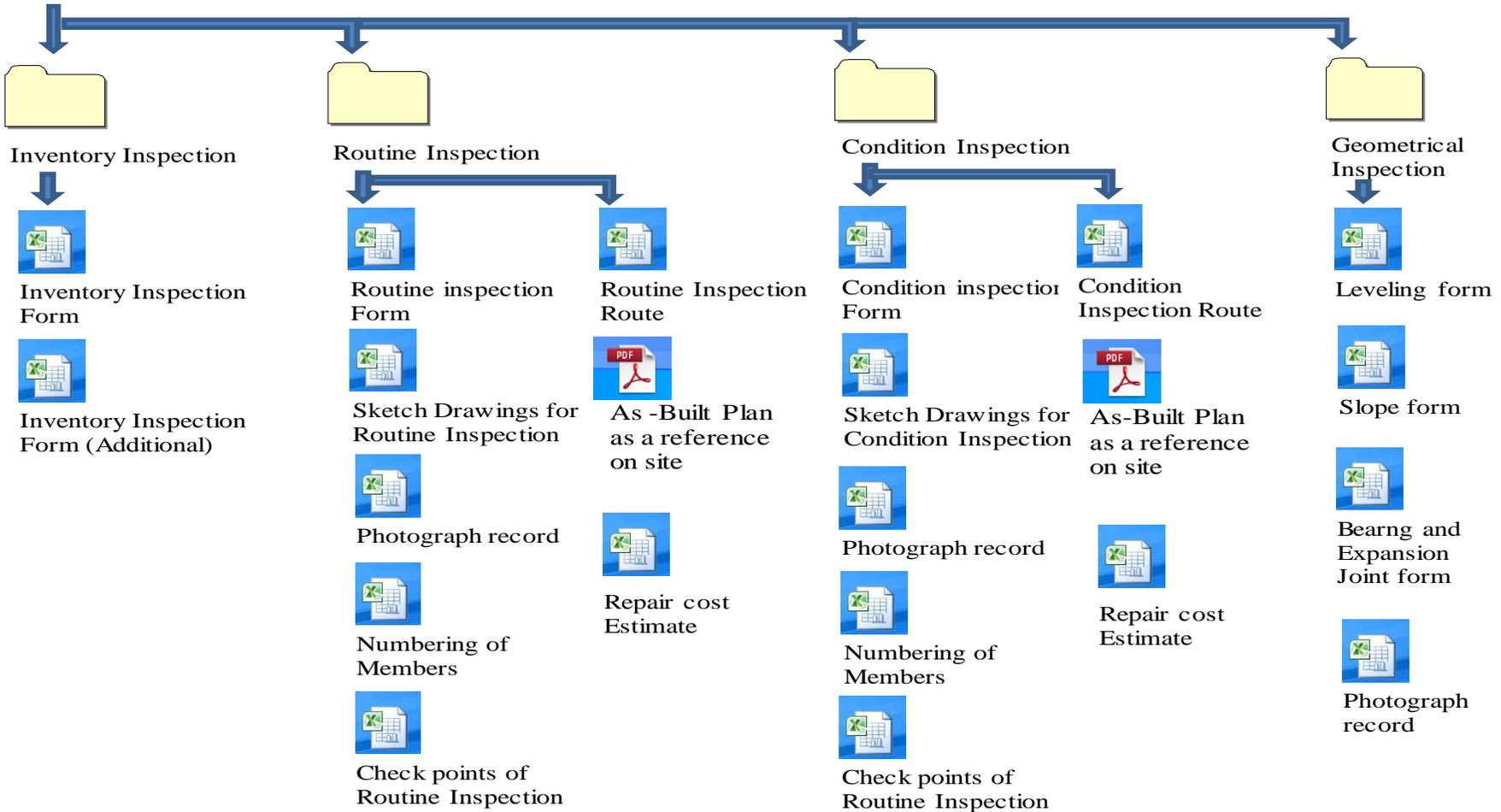
APPENDIX H

**FLOWCHART OF SPECIAL BRIDGE
INVENTORY DATABASE**

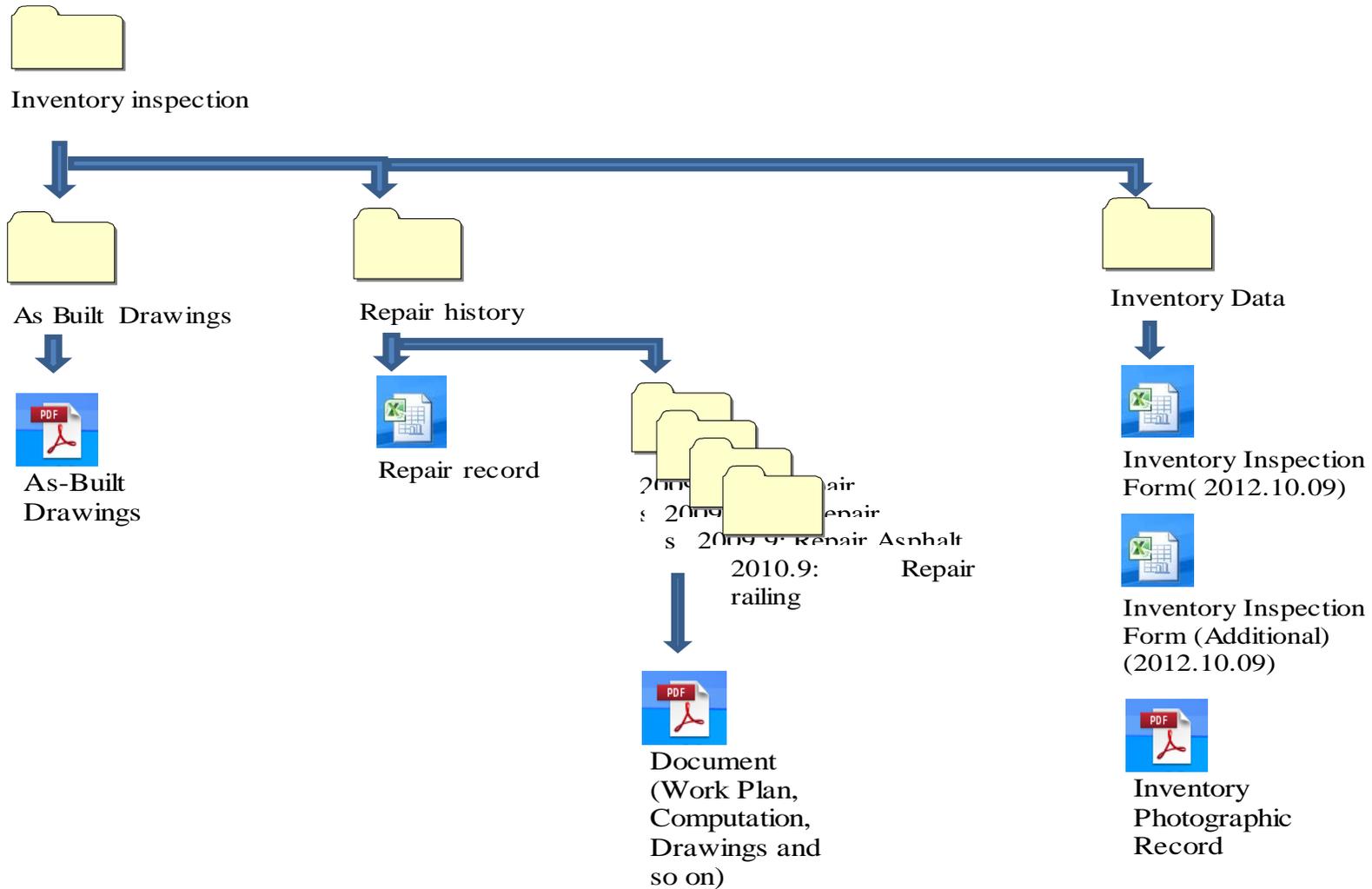
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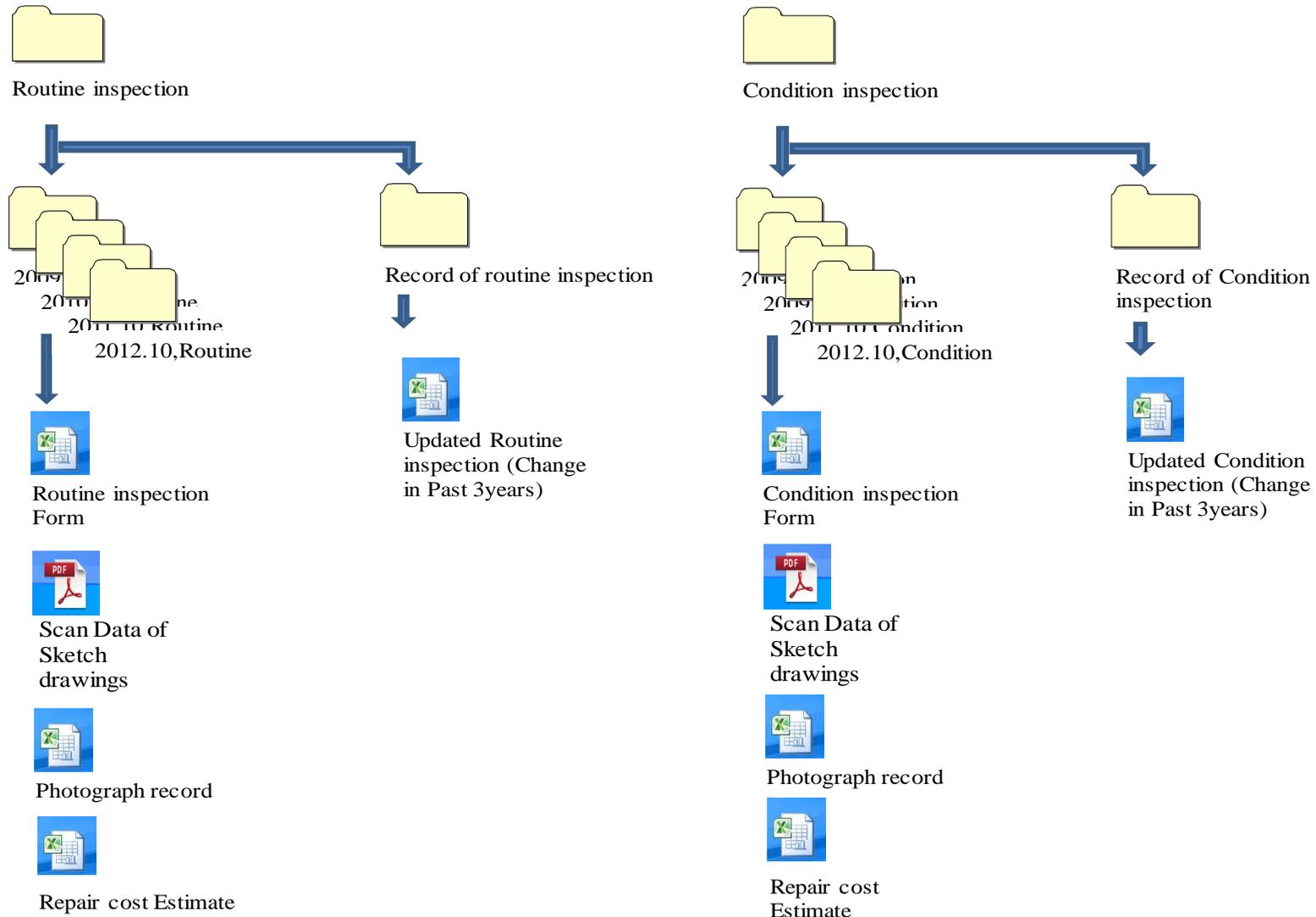
Forms for inspection



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