

# Maintenance

## Master Specification

### M12B Electrical and Mechanical Port River Expressway and Rail Bridges

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## M12B Port River Expressway Road and Rail Bridges

### 1 Description of Works and Work Requirements

#### General

- 1.1 The Port River Expressway Road and Rail Bridges (“the Bridges”) require routine inspections and maintenance to prevent operational breakdowns which create pedestrian, road, rail, and marine traffic disruptions and to ensure the reliability of the operation of the bascule span.
- 1.2 The Works consists of mechanical and electrical preventative maintenance for the Bridges, including both the road and rail operating bascule spans, warning gates on the road bridge, and the OMCS Building.
- 1.3 This Part M12B is limited to the road and rail bridge bascule spans, warning gates on the road bridge, and the OMCS Building only. The specification for any other mechanical and electrical devices, including VMS, CMS, CCTV, Traffic Signals, lighting, and any other device located on the approach roads and surrounds, are included in M12.
- 1.4 Services to be provided include:
  - a) routine mechanical and electrical inspections and preventative maintenance, as set out in the Maintenance Activity Schedule contained in Appendix 1 – Port River Expressway Inspection Schedule, and the information provided in the Operations and Maintenance Manual Port River Expressway Part A: Road Works and Part B: Rail Works contained in Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B);
  - b) programmed maintenance of the Bridges’ bascule pier operational systems / mechanisms to rectify any faults found during regular inspections, bridge operator calls for assistance, and other site visits;
  - c) reporting of any maintenance repairs required from regular inspections of the Bridges Northern and Southern bascule pier operational systems / mechanisms; and
  - d) Assistance for emergency opening and manual tests.
- 1.5 In addition the Contractor shall:
  - a) perform SMS as requested by the Superintendent, in accordance with the specifications;
  - b) provide an emergency response and fault response service; and
  - c) develop inspection / test sheets as required.
- 1.6 Programmed Routine Maintenance activities are to be inclusive of required consumables. No additional payment will be made for consumables such as oil, grease, fuel etc.

#### Site Requirements

- 1.7 The Traffic Management Centre (TMC) is responsible for the overall operation of traffic over the Bridge. The Contractor shall report to the TMC prior to work being undertaken and maintain constant communication. The TMC can be contacted on [1800 018 313](tel:1800018313).
- 1.8 The Contractor shall ensure as a minimum that both prior to and when working on the bridge that the TMC and the Superintendent are advised of the Contractor’s work.

#### Rail Interface

- 1.9 Part M1 Clause 18 “Rail Interface” is not applicable to the Port River Expressway Rail Bridge.

## 2 Contractor's Nominated Representative

- 2.1 The Contractor shall nominate a Site Representative for Routine inspections and maintenance who shall have the authority to make decisions on behalf of the Contractor. The Contractor shall nominate an Emergency Response Representative to respond to emergency and fault breakdowns, who shall be competent to make recommendations to the Superintendent to return the Bridge to a safe operational condition.
- 2.2 The Contractor shall advise the Superintendent of any changes to the Contractor's nominated Site Representatives and Emergency Response Representatives.

## 3 Drawings / Systems Operation & Maintenance Manuals

- 3.1 Port River Expressway drawings are provided in Appendix 3 – Port River Expressway and Road Drawings.
- 3.2 Electrical / Electronic systems and maintenance manuals for road and rail are provided in Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B).
- 3.3 The accuracy and completeness of the drawings is not guaranteed. The Contractor must maintain a current and accurate set of drawings and manuals for all Assets under the Contract and must provide to the Superintendent within 28 days a copy of any document updated as a result of the Works, or discovery of an error or omission.

## 4 Bridge Constraints

- 4.1 The Bridge is located above the Adelaide Dolphin Sanctuary, which is protected by the Adelaide Dolphin Sanctuary Act 2005. The Act states that "A person must take all reasonable measures to prevent or minimise any harm to the Sanctuary through his or her actions or activities" and "the extent to which an act or activity may have a cumulative effect on the Sanctuary" (Refer Part 5 of the Act). The Contractor shall ensure that all activities undertaken do not breach the Adelaide Dolphin Sanctuary Act 2005.

## 5 Risk Analysis and Hazards

- 5.1 The Contractor shall conduct and document a site specific risk and safe work analysis prior to any work taking place. Where required, equipment lock-out procedures shall be documented including the removal of lock outs left in place by others. The initial analysis should cover inspections and routine maintenance (minor repairs).
- 5.2 The Contractor must negotiate suitable times for maintenance and locking out of the bridge with the TMC. Lock outs must be scheduled to minimise impact on road and marine users and must be approved by the TMC. The Contractor is not entitled to additional payments resulting from maintenance scheduling.

## 6 Inspection Requirements

### Programmed Inspections and Maintenance

- 6.1 The programmed inspections and maintenance schedule is as detailed in Appendix 1 – Port River Expressway Inspection Schedule. The Contractor shall plan, conduct, and coordinate all inspection and maintenance activities listed in the schedule.
- 6.2 The Contractor shall submit a schedule of inspections to the Superintendent during the Mobilisation Period. The Contractor shall update the schedule when new systems are installed and commissioned, or if the required timing of tasks change.

- 6.3 The Superintendent reserves the right to be present for inspections. The Contractor must provide a minimum of 48 hours' notice to the Superintendent for any change to scheduled inspection dates or planned maintenance works.
- 6.4 Inspections must be undertaken in accordance with all relevant Australian Standards and Austroads Guidelines.

## Fortnightly Safety Inspections

- 6.5 Commencing in the first month of the Maintenance Period, the Contractor shall carry out functional safety inspections on a fortnightly basis as detailed in the Locking and Detection Devices (Safety Inspection), refer to the Operations and Maintenance Manual Port River Expressway Part A: Road Works and Part B: Rail Works contained in Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B), activity guideline B-15.
- 6.6 Attention is drawn to the SIL (Safety Integrity Level) ratings applied to several (Safety Instrument Function) SIF as detailed in the Operations and Maintenance Manuals (Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B)).

## Monthly Mechanical and Electrical Inspections

- 6.7 Commencing in the first month of the Maintenance Period, the Contractor shall carry out inspections on a monthly basis to check all mechanical and electrical components for, wear, damage, correct operational settings then carry out work and repair requirements as authorised by the Superintendent.
- 6.8 The Bridge must be raised and lowered at least once per inspection to ensure all elements of the operation are functioning correctly.
- 6.9 The Work must include but not be limited to the activities set out in the Maintenance Activity Inspection Schedule contained in Appendix 1 – Port River Expressway Inspection Schedule, and the Assets listed for inspection as set out in the Operations and Maintenance Manual.

## Mechanical and Electrical Maintenance

- 6.10 The Contractor shall conduct all required mechanical and electrical maintenance as set out in the Maintenance Activity Inspection Schedule contained in Appendix 1 – Port River Expressway Inspection Schedule, and the Assets listed for inspection as set out in the Operations and Maintenance Manual, and then carry out work and repair requirements as authorised by the Superintendent.
- 6.11 The Contractor shall supply a comprehensive report for all aspects of maintenance including Assets inspected, condition assessment, Assets repaired and details, Assets requiring further inspection or maintenance works, and all test results. For reference, reports previously prepared are included in Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B).

## Annual Condition Assessment Report

- 6.12 The Contractor shall prepare a comprehensive Mechanical and Electrical Condition Report every year, in months as set out in the Maintenance Activity Schedule contained in Appendix 1 – Port River Expressway Inspection Schedule. The report must cover a visual assessment and inspection of all road and rail bridge operating equipment. For reference, a report previously prepared is included in Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B).

## 7 Emergency Breakdown Services

- 7.1 In the event of the Contractor being notified and requested to attend site to rectify emergency breakdown the Contractor shall ensure that the Superintendent and the TMC are advised of the event.

- 7.2 This will allow for notifications to be given to other stakeholders of the structure and enable the on call program to be cancelled during the period of any emergency repair works.
- 7.3 The Contractor shall provide a highly responsive and complete 24 hour, 7 days a week, mechanical and electrical / electronic emergency break-down repair service for the bascule span operations. Response times are critical and following notification the Contractor must respond within the times given in Appendix 2 – Port River Expressway Fault Responses Times.

## 8 Reporting Requirements

### Programmed Inspection Reports

- 8.1 The Contractor shall submit a report to the Superintendent within 14 days of completing each scheduled inspection.
- 8.2 The reports shall include the following:
- a) summary of any visible signs of damage, loss, corrosion, and excessive wear to the items / components listed to be inspected / maintained;
  - b) listing of Works completed and required repairs, including recommendations and methodologies to retain operational service of the bridge, for all associated items / components inspected;
  - c) estimates for any required repairs or maintenance, including the timeframe to repair and any materials, components, and labour to return listed items back to operational service;
  - d) the risk profile and criticality of any Asset that requires maintenance; and
  - e) Inspection and Test Sheets recording the inspections, test results, lubrication, adjustments, and any repairs undertaken for each of the items / components listed to be inspected / maintained.
- 8.3 The Superintendent has no obligation to award any additional works from inspections undertaken by the Contractor. Any additional Works may be instructed through a Work Order.

### Programmed Maintenance Reports

- 8.4 The Contractor shall submit a report to the Superintendent within 14 days of completing any maintenance works. The reports shall be inclusive of the following:
- a) summary of any works undertaken to repair / replace items / components / equipment that required servicing / replacement, including dates and times spent making them good;
  - b) any findings or conclusions associated with failure of items / components / equipment required to be serviced or replaced;
  - c) any operations and maintenance manuals relevant to replaced items / components / equipment; and
  - d) any certifications required in accordance with statutory and regulatory requirements.

### Emergency Breakdown Reports

- 8.5 The Contractor shall submit a report to the Superintendent within 14 days of completing emergency repair work undertaken to make the bridge operational. The reports shall be inclusive of the following:
- a) summary of any works undertaken to repair / replace items / components / equipment that required servicing / replacement, including dates and times spent making them good;
  - b) any findings or conclusions associated with failure of items / components / equipment required to be serviced or replaced;
  - c) any operations and maintenance manuals relevant to replaced items / components / equipment; and
  - d) any certifications required in accordance with statutory and regulatory requirements.

## 9 Bridge Operation Constraints

9.1 The Contractor is advised of the following restrictions:

- a) bridge opening times <https://www.sa.gov.au/topics/boating-and-marine/boat-operators-licences-and-permits/opening-the-port-river-bridges>;
- b) public navigating the Port River can request to have an opening of the Bridges in accordance with a Departmental on call program. All requests pass through the Traffic Management Centre and the Bridges are opened within 2 hours of receiving such a request. The Contractor shall notify the Superintendent of any proposed or emergency works. The Superintendent at its absolute discretion may alter the on call program;
- c) except in emergencies, activities that restrict road traffic (including bridge opening for test purposes) shall occur outside the hours 07:00 to 09:00 am and 4:00 to 6:00 pm;
- d) except in emergencies, the Contractor may request approval to close the Bridges to vehicle and / or pedestrian traffic. At least two months prior to the proposed closure written approval must be obtained from the Superintendent. The Principal reserves the right to reject any request for any closure; and
- e) Prior to programming any maintenance inspections on the rail bascule bridge, the Contractor must obtain network access approval from the Australian Rail Track Corporation (ARTC).

## 10 Equipment Rendered Idle

10.1 Equipment rendered isolated/inoperative during inspection or maintenance for any reason shall be locked off and safety information warning tagged, with information clearly printed stating the following:

- a) detailed reason for the isolation;
- b) the full name of person responsible for rendering the isolation;
- c) the name of the company the person represents;
- d) the date of the isolation; and
- e) the date of estimated return to service.

10.2 The Contractor shall have a documented procedure for isolating / locking off of equipment and for the removal of the isolation.

10.3 The Bridge Operator(s) and the Superintendent must be notified immediately and in writing of any such isolation and the possible effect it may have on the operation of the Bridge and their safety.

## 11 Rail Bridge

11.1 The Contractor must be an Accredited Rail Operator in order to undertake Works to the Prexy Rail Bridge.

11.2 The Contractor shall contact ARTC, track and train controllers for access approval and follow all requirements including any training, prior to accessing the Rail Bascule Bridge for any inspections or Works. ARTC can be contacted at [\(08\) 8152 5142](tel:0881525142).



## 12 Appendix 1 – Port River Expressway Inspection Schedule

12.1 Refer separate file.

## 13 Appendix 2 – Port River Expressway Fault Responses Times

<b>Device Failure</b>	<b>Response Times</b>
<b>Bascule Span</b>	
<b>Condition</b>	
Bascule span is closed, traffic flow is not impeded due to breakdown and no vessel is waiting for the span to open	48 hours
Bascule span is closed, traffic flow is not impeded due to breakdown but a vessel is waiting for the span to open or a span opening to allow a vessel to pass underneath has been booked and is due within 24 hours.	90 minutes
Bascule span cannot be fully or safely closed.	Target 30 minutes Maximum 90 minutes
<b>Boom Gate and Warning Signal</b>	
<b>Condition</b>	
Boom gate and or warning signal not operating correctly, bascule span is closed, traffic flow is not impeded due to breakdown and no vessel is waiting for the span to open	48 hours
Boom gate and or warning signal not operating correctly, bascule span is closed, traffic flow is not impeded due to breakdown but a vessel is waiting for the span to open or a span opening to allow a vessel to pass underneath has been booked and is due within 24 hours.	90 minutes
Boom gate and or warning signal not operating correctly, Bascule span cannot be fully or safely closed.	Target 30 minutes Maximum 90 minutes

## 14 Appendix 3 – Port River Expressway and Road Drawings

14.1 Refer separate files.

## 15 Appendix 4 – Bridge Electrical and Control Systems Operation and Maintenance Instruction Manuals (Part A & Part B)

15.1 Refer separate files.

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