

**B.C. MINISTRY OF TRANSPORTATION**

**SA04 – Local Area Specification #4**

**BRIDGE AND TUNNEL SYSTEMS MAINTENANCE**

**1. OBJECTIVE**

To ensure the safe and efficient operation of all mechanical and electrical systems in the Cassiar Tunnel and the Lion’s Gate Bridge.

**2. GENERAL PERFORMANCE SPECIFICATIONS**

**2.1 Routine Maintenance Services**

All services for this Local Area Specification are Routine.

The Contractor must perform Tunnel Systems Maintenance in accordance with this Local Area Specification at the following locations:

- a) Cassiar Tunnel – all electrical, electronic, camera and mechanical equipment connected to or fed from the Tunnel power services and systems, on Route 1 or connecting roads, including the camera system located on and at either end of the Second Narrows (Iron Workers’ Memorial) Bridge; the Contractor is not responsible for maintaining roadway and highmast lighting outside the Tunnel;
- b) Lion’s Gate Bridge – all electrical, electronic, camera and mechanical equipment connected to the Bridge and control building power services and systems, on the Route 1A/99A and connecting roads; the Contractor is not responsible for maintaining the lane control system equipment owned by the City of Vancouver.

**2.2 Quantified Maintenance Services**

Not applicable to this Local Area Specification.

**3. DETAILED PERFORMANCE SPECIFICATIONS**

**3.1 Routine Maintenance Services**

The Contractor must:

- a) maintain, repair and replace all mechanical and electrical components in accordance with the Province's and the manufacturer's maintenance manuals and check sheets, as may be amended from time to time; the manuals and check sheets are available by contacting the District office;
- b) maintain, repair and replace all bridge electrical equipment including the following systems:
  - i) sumps and pumps;
  - ii) generators and motors, including fuel tanks and battery back-up systems;
  - iii) ventilation systems;
  - iv) sprinkler systems;
  - v) all lighting systems except as noted in section 2.2.1 of this Local Area Specification;
  - vi) lane control systems;
  - vii) components of lane control computers (work stations), including hardware contained in the work station; communication links to components in the field and interface components in the tower (PLC, Genius Blocks, I/O locks and the Communication Hub); and
  - viii) complete video monitoring/surveillance systems including fibre optic cable and electrical cable between the video kiosk and the video components in the tower.
- c) complete a driving inspection of the lane control system components as defined in the Counterflow Operations Manual.

Notes:

1. If it is estimated by the Contractor and confirmed by the Bridge Structural Engineer, that at any particular time, the costs to repair or replace systems or associated components exceeds \$35,000, refer to Section G of the Introduction to the Maintenance Specifications.

2. The Province will maintain/upgrade the central control and PLC software and provide updates to software necessitated by recurrent operational problems.

### **3.1.1 Performance Time Frames**

The Contractor must:

- a) immediately, upon detection or notification to the Contractor of a mechanical or electrical system failure, initiate corrective maintenance and report the failure to the Province;
- b) complete repairs and return the system to full functionality;
- c) schedule and perform inspection and routine maintenance of electrical and mechanical systems in accordance with the Province's and/or manufacturer's maintenance manuals and check sheets;
- d) ensure the sprinkler system is tested and certified at least twice per year, or more frequently if required by the local fire department;
- e) complete a daily driving inspection of the lane control system components as defined in the Counterflow Operations Manual, during both normal operation and counterflow (a.m. and p.m.);
- f) clean computer workstation components quarterly;
- g) group re-lamp and clean all roadway lighting every 48 months and incandescent fixtures annually;
- h) spot re-lamp all burned out and clean all tunnel lighting twice per year;
- i) ensure minimum lighting performance levels as follows:
  - 1) roadway lighting – ensure no more than two adjacent luminaries or more than 20% of the total system luminaries are non-operational;
  - 2) tunnel lighting – ensure no three adjacent luminaries or more than 10% of any one lighting level are non-operational;
- j) provide bench testing of all lane control conflict monitors every 12 months by qualified personnel using industry standard equipment and procedures.

### **3.2 Quantified Maintenance Services**

Not applicable to this Local Area Specification.

### **3.3 Materials**

The Contractor must supply and use materials in accordance with the Province's and/or manufacturer's maintenance manuals, or as proposed by the Contractor and approved in writing by the Province.

## **4. WARRANTY**

Not applicable to this Local Area Specification.