

B.C. MINISTRY OF TRANSPORTATION

SA06 Local Area Specification #5

BRIDGE AND TUNNEL SYSTEMS MAINTENANCE

1. OBJECTIVE

To ensure the safe and efficient operation of all mechanical and electrical systems.

2. GENERAL PERFORMANCE SPECIFICATIONS

2.1 Routine Maintenance Services

All services for this Local Area Specification are Routine.

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

- a) George Massey Tunnel – all electrical, electronic and camera equipment connected to or fed from the Tunnel power services and systems, on Route 99 or connecting roads, from 72nd Street to the south side of Westminster Highway. The Contractor is not responsible for roadway lighting not fed from the Tunnel power services or for traffic signals;
- b) Mary Hill By-Pass Pump Station.

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 mechanical and electrical components in accordance with the Province's and manufacturer's maintenance manuals and check sheets, as may be amended from time to time;

- b) maintain, repair and replace the following systems:
 - i) sumps and pumps;
 - ii) generators and motors, including all battery back-up systems, in accordance with the George Massey Tunnel Counterflow System Service Generator & UPS Maintenance Manual;
 - iii) ventilation systems;
 - iv) sprinkler systems;
 - v) all lighting systems except as noted in section 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, including interface components in the tower (PLC, genius blocks, I/O blocks and the communication hub);
 - viii) complete video monitoring/surveillance systems, including submarine cable, fibre optic cable and electrical cable between the video kiosk and the video components in the tower;
 - ix) in-pavement electronic guidance systems (Smart Studs);
 - x) seismic emergency closure system, in accordance with the George Massey Tunnel Seismic Emergency Closure System Maintenance and Response Procedures;

Notes:

- 1. The Contractor is not responsible for maintaining or upgrading the central control and PLC software; or for providing updates to software necessitated by recurrent operational problems; that will be the responsibility of the Province.
- c) complete a driving inspection of the lane control system components as defined in the Counterflow Operations Manual;
- d) supply and re-hang gates; and, supply and replace bulbs and lenses;
- e) provide bench testing of all lane control conflict monitors by qualified personnel using industry standard equipment and procedures;

Notes:

1. If it is estimated by the Contractor and confirmed by the Bridge Structural Engineer or Senior Electrical 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. Tunnel doors in the George Massey Tunnel are considered one continuous component.

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 maintenance and report the failure to the Province;
- b) complete repairs and return the system to full functionality in accordance with the province's operations manuals;
- 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 bulbs; and, clean all tunnel lighting twice per year;
- i) ensure minimum lighting performance levels as follows:
 - i) roadway lighting: no more than two adjacent luminaires or 20% of total system luminaires will be non-operational;

- ii) tunnel lighting: no three adjacent luminaires or 10% of any one lighting level will be non-operational;
- j) ensure minimum in-pavement electronic guidance systems (Smart Studs) lighting performance levels as follows:
 - i) Smart-stud lighting: no more than 3 adjacent Smart-Studs or 10% of total system devices will be non-operational;
- k) re-hang gates as required;
- l) provide bench testing of all lane control conflict monitors every 12 months.

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.