

BC MINISTRY OF TRANSPORTATION

Electrical Maintenance Specification E-110 (Version 6 – May/05)

TRAFFIC AND PEDESTRIAN SIGNALS MAINTENANCE

1. OBJECTIVE

- To ensure that Traffic and Pedestrian Signals, including ramp flow metering signals, are operational and function in accordance with their design and Ministry standards.

2. GENERAL PERFORMANCE SPECIFICATIONS

2.1 Routine Maintenance Services

The Contractor must:

- a) perform preventative maintenance of traffic and pedestrian signals;
- b) repair traffic and pedestrian signals;
- c) replace non-functioning signal components;
- d) remove graffiti;
- e) ensure visibility;
- f) implement new timing plans (under threshold amounts);
- g) collect controller volume and measures of effectiveness (MOE) logs (under threshold amounts);
- h) test all emergency, railway and transit preemption systems, and
- i) document all traffic signal activities.

2.2 Additional Services

The Contractor must as and when required by the Ministry:

- a) modify existing Traffic Signal equipment as determined by the Ministry;

- b) commission all traffic signals;
- c) collect controller volume and MOE logs (over threshold amounts); and
- d) implement new timing plans (over threshold amounts)

3. DETAILED PERFORMANCE SPECIFICATIONS

3.1 Routine Maintenance Services

The Contractor must:

- a) Repair or replace traffic and pedestrian signals and their components;
- b) perform preventative maintenance;
- c) replace incandescent lamps;
- d) replace failed LED signal head light sources;
- e) test conflict monitors;
- f) notify the PHCC of any malfunctioning traffic or pedestrian signal causing a traffic disruption and inform the PHCC when repaired;
- g) remove or cover graffiti in accordance with the *Highway Maintenance Specification – Litter Collection and Graffiti Removal*;
- h) implement traffic signal timing plans as per Section 600 of the *Traffic Controller Design Manual* up to a maximum number of 100% of the pedestrian and traffic signal inventory total per year;
- i) collect controller volume and MOE logs as requested by the Ministry following the guidelines outlined in Section 600 of the *Traffic Controller Design Manual* up to a maximum of 50% of the pedestrian and traffic signal inventory total per year; and
- j) contact the railway authority and arrange to jointly test the operation of any railway preemption or railway advance warning sign system in the field;

- k) test all traffic signal emergency and transit preemption systems by using the “local” setting in the controller cabinet preemption cards and testing each direction of preemption to ensure operation as per the design documentation (municipality is responsible for maintaining, testing and repairing all emergency preemption sensors),
- l) document all activities related to electrical maintenance of traffic signals including but not limited to field inspections, patrols, testing, complaints received / responses made, and all changes made to the controller equipment and operations, as per Section 600 of the *Traffic Controller Design Manual*.

3.1.1 Performance Time Frames

The following establishes the maximum time, from the time the deficiency was detected or reported to the Contractor, within which the Contractor must Respond to the deficiency:

- a) traffic and pedestrian signals and their components that constitute or have the potential to constitute an immediate safety hazard to the Highway User or cause a traffic disruption, within 1 hour;
- b) traffic and pedestrian signals and their components that do not operate as per their original design intent but are not immediate safety hazards, on the next regularly scheduled work day;
- c) traffic and pedestrian signals and/or their components that operate as per the original design intent, do not create a safety hazard, and are structurally sound but have identified deficiencies, within 3 months.

The Contractor must:

- a) perform preventative maintenance;
- b) replace all non-LED lamps of signal heads once every 12 months;
- c) replace failed LED signal head light sources as required;

- d) test all conflict monitors once every 12 months;
- e) notify the PHCC of any malfunctioning traffic or pedestrian signal causing traffic disruption within 5 minutes from the time the malfunction was detected by or reported to the Contractor and inform the PHCC when repaired;
- f) remove or cover graffiti in accordance with the Performance Time Frames listed in the *Highway Maintenance Specification – Litter Collection and Graffiti Removal*;
- g) implement traffic signal timing plans as follows:
 - New Traffic Controllers or Modifications to Existing Controllers – to meet the project schedule (with 2 week notification);
 - Observed Operational Field Problems – within 12 hours of receiving the traffic signal timing plan;
 - Scheduled Roadway Maintenance or Construction activities by others – to meet the scheduled maintenance or construction activities (with 1 week notification); and
 - Coordination Plan Updates – within 3 weeks of receiving the traffic signal timing plans.
- h) collect controller volume and MOE logs as requested by the Ministry as follows:
 - within 24 hours for 5 locations per year; and
 - within 4 weeks for the remainder of the 50% of the pedestrian and traffic signal inventory total per year.
- i) contact the railway authority and arrange to jointly test the operation of any railway preemption or railway advance warning sign system in the field once per year,
- j) advise the railway authority, Regional Traffic Engineer and Manager, Electrical Services if the traffic signal preemption system is not operational immediately,

- k) contact the municipality responsible for maintaining the emergency preemption sensors and obtain a certificate from the municipality stating that the sensors have been tested and are fully operational once per year,
- l) test all traffic signal emergency and transit preemption systems by using the “local” setting in the controller cabinet preemption cards and testing each direction of preemption to ensure operation as per the design documentation once per year,
- m) document all activities related to electrical maintenance and operations of traffic and pedestrian signals immediately.

Note:

The Contractor will clean, repair and/or replace all signs with electrical appurtenances in accordance with the Highway Maintenance Specification for *Sign System Maintenance*.

3.2 Additional Services

The Contractor must as and when required by the Ministry:

- a) Modify existing operational field traffic signal hardware as determined by the Ministry;
- b) Commission all traffic signals on Ministry roadways as per Section 500 of the *Traffic Controller Design Manual*, including new traffic signals, modification to existing traffic signals, and replacement of traffic controllers;
- c) collect controller volume and MOE logs as requested by the Ministry following the guidelines outlined in Section 600 of the *Traffic Controller Design Manual* over and above the 50% total pedestrian and traffic signal inventory number to be collected under **Routine Maintenance Services**; and
- d) implement traffic signal timing plans as per Section 600 of the *Traffic Controller Design Manual* over and above the 100% of the pedestrian and traffic signal inventory number to be collected under **Routine Maintenance Services**.

3.2.1 Performance Time Frames

The Contractor must:

- a) Modify existing operational field traffic signal hardware to meet the implementation schedule for the project as determined by the Manager, Electrical Services;
- b) Commission all traffic signals on Ministry roadways to meet the implementation schedule for the project as determined by the Manager, Electrical Services;
- c) collect controller volume and MOE logs as requested by the Ministry within 4 weeks for any logs over and above the 50% of the pedestrian and traffic signal inventory total per year; and
- d) implement traffic signal timing plans over and above the 100% of the pedestrian and traffic signal inventory number to be collected under **Routine Maintenance Services** as follows:
 - New Traffic Controllers or Modifications to Existing Controllers – to meet the project schedule (with 2 week notification period);
 - Observed Operational Field Problems – within 12 hours of receiving the traffic signal timing plan;
 - Scheduled Roadway Maintenance or Construction activities by others – to meet the scheduled maintenance activities (with 1 week notification period); and
 - Coordination Plan Updates – within three weeks of receiving the traffic signal timing plans.

3.3 Materials

- Refer to 3.1 of the Introduction.
- For new traffic signal controller installations, the Ministry shall supply a complete unit as per the design requirements.

