

## Table of Contents

1	HOWE SOUND	1
1.01	Definitions	1
1.02	Bridge and Tunnel Traffic Monitoring / Control – Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel	2
1.03	Bridge and Tunnel System Maintenance – Lions Gate Bridge and Cassiar Tunnel	4
1.04	Bridge Traveller Maintenance – Lions Gate Bridge and Ironworkers Memorial Second Narrows Bridge	6
1.05	Highway Crossing Infrastructure	7
1.06	Invasive Plants Management	9
1.07	Lane Closures	11
1.08	Maintenance Exceptions	13
1.09	Pavement Surface Reflectors	14
1.10	Salt Containment Infrastructure Maintenance	15
1.11	Sound Wall Maintenance	18
1.12	Traffic Patrol – Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel	19

## 1 HOWE SOUND

### 1.01 Definitions

In these Local Area Specifications, capitalized terms will have the corresponding meanings as set out in Article 1 of this Agreement and Section 1 of this Schedule 1 (“Specifications”), and as set forth below:

**“Bridge Traveller”** means a traveller, including all its components that is used for Bridge maintenance and repair, including, but not limited to the structural elements, electrical system, mechanical system, hydraulic system, tracks, guideways, all associated hardware, safety lines, fall access to systems, hatches, ladders and walkways.

**“Invasive Plants”** means any invasive alien plant species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems.

**“Salt Containment Infrastructure”** means a storage facility, including all of its components that is used for the storage and loading/unloading salt for winter maintenance operations including, but not limited to the salt shed, fabric/steel roofing, pit floor, evapotranspiration liner, containment pad, and skirt.

**“Sound Wall”** means a vertical structure designed to reduce Highway noise levels.

## **1.02 Bridge and Tunnel Traffic Monitoring / Control – Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel**

### **1.02.1 Outcome**

To provide traffic monitoring and/or traffic control for the Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel.

### **1.02.2 Routine Maintenance Services**

- PM1.02.2-1** Provide continuous traffic monitoring and/or traffic control 24 hours per day with console operators located at the Regional Transportation Management Centre.
- PM1.02.2-2** Initiate counterflow lane change operations within 5 minutes, when warranted by traffic conditions at the Lions Gate Bridge.
- PM1.02.2-3** Dispatch safety patrols immediately for counterflow lane change operations or traffic related incidents or other incidents affecting traffic flow.
- PM1.02.2-4** Respond immediately to power failures that prevent traffic signals from operating, as directed by the Province.
- PM1.02.2-5** Notify safety patrols and police authorities immediately of all traffic related incidents or other incidents affecting traffic flow.
- PM1.02.2-6** Report to the Province immediately when counterflow lane change operations are initiated or when traffic related incidents or other incidents affect traffic flow.
- PM1.02.2-7** Respond to media requests immediately regarding traffic conditions, as approved by the Province.

#### **Notes:**

- 1) Traffic monitoring is required for the Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel. Traffic control is required for the Lions Gate Bridge and the Cassiar Tunnel.

### **1.02.3 Materials and/or Procedures**

- a) Comply with the Lions Gate Bridge Lane Control System Operator's Manual, Overview of the Lions Gate Bridge Lane Control System, Cassiar Tunnel System – System Overview Manual, Cassiar Connector Project Main Tunnel Section, Operation and Maintenance Manual Volume 1 and Cassiar Tunnel System Operating and Maintenance Manuals Volume 2 User Manual;

- b) Monitor and evaluate weather conditions, road surfaces and traffic congestion using methods including, but not limited to safety patrols and technology to anticipate counterflow lane changes;
- c) Operate the counterflow system during counterflow lane changing; and
- d) Document traffic monitoring report logs and other reports, as directed by the Province.

## 1.03 Bridge and Tunnel System Maintenance – Lions Gate Bridge and Cassiar Tunnel

### 1.03.1 Outcome

To provide safe and efficient operation of mechanical systems at the Lions Gate Bridge and Cassiar Tunnel.

### 1.03.2 Routine Maintenance Services

- PM1.03.2-1** Repair immediately any Bridge mechanical system failures.
- PM1.03.2-2** Notify the Province immediately of any Bridge mechanical system failures.
- PM1.03.2-3** Maintain, repair or replace immediately damaged or deteriorated Bridge mechanical system components.
- PM1.03.2-4** Conduct inspections in accordance with the manufacturer's specifications and recommendations, provincial manuals and check sheets.
- PM1.03.2-5** Test and certify the sprinkler system biannually or in accordance with local fire department requirements, whichever is more frequent.
- PM1.03.2-6** Conduct a daily driving inspection of the lane control system components during the morning counterflow operation and during the afternoon counterflow operation.
- PM1.03.2-7** Clean computer workstation components every 3 months.

#### Notes:

- 1) The Bridge systems for the Lions Gate Bridge includes all mechanical equipment connected to the Bridge and the control building on Highway 1A/Highway 99 and connecting roads, including but not limited to sumps, pumps, boilers, generators, motors, fuel tanks, HVAC systems and sprinkler systems; and
- 2) The Tunnel systems for the Cassiar Tunnel includes all mechanical equipment connected to or fed from the Tunnel power services and systems on Highway 1 (Trans Canada Highway) and the connecting roads.

### 1.03.3 Materials and/or Procedures

- a) Comply with the Lions Gate Bridge Lane Control System Operator's Manual, Overview of the Lions Gate Bridge Lane Control System, Cassiar Tunnel System – System Overview Manual, Cassiar Connector Project Main Tunnel Section, Operation and Maintenance Manual Volume 1 and Cassiar Tunnel System Operating and Maintenance Manuals Volume 2 User Manual and provincial check sheets; and
- b) Maintain, repair or replace mechanical equipment in accordance with the manufacturer's specifications and recommendations.

**1.03.4 Routine Maintenance Services Cap**

\$35,000 - for each occurrence, the cost to repair or replace mechanical systems, or components.

## **1.04 Bridge Traveller Maintenance – Lions Gate Bridge and Ironworkers Memorial Second Narrows Bridge**

### **1.04.1 Outcome**

To provide a safe, efficient and smooth operation of the Bridge Travellers at the Lions Gate Bridge and the Ironworkers Memorial Second Narrows Bridge.

### **1.04.2 Routine Maintenance Services**

**PM1.04.2-1** Repair or replace damaged or deteriorated mechanical, electrical or hydraulic Bridge Traveller components within 21 days.

**PM1.04.2-2** Inspect, test and certify Bridge Travellers annually.

**PM1.04.2-3** Operate Bridge Travellers monthly to confirm the units function as designed.

### **1.04.3 Materials and/or Procedures**

- a) Maintain and repair Bridge Travellers in accordance with the manufacturer's specifications and recommendations.

### **1.04.4 Routine Maintenance Services Cap**

\$35,000 - for each occurrence, the cost to repair or replace a Bridge Traveller.

## 1.05 Highway Crossing Infrastructure

### 1.05.1 Outcome

To provide safe passage of pedestrians and animals underneath or beside a Highway.

### 1.05.2 Routine Maintenance Services

**PM1.05.2-1** Respond immediately to restrict all access to Highway Crossing Infrastructure, as directed by the Province.

**PM1.05.2-2** Repair or replace immediately, as directed by the Province, any damaged or deteriorated Highway Crossing Infrastructure that has been structurally compromised, as determined by the Province.

**PM1.05.2-3** Repair or replace within 3 months, any damaged or deteriorated Highway Crossing Infrastructure that has not been structurally compromised, as determined by the Province.

**PM1.05.2-4** Remove Debris immediately from the surfaces of floors, pedestrian paths or stairways.

**PM1.05.2-5** Remove Accumulations, surface contaminants and chemicals by June 30 of each calendar year from all surfaces.

**PM1.05.2-6** Remove Debris within 1 month that impedes the passage of animals in animal accessed Highway Crossing Infrastructure.

### 1.05.3 Quantified Maintenance Services

**PM1.05.3-1** Repair within 24 hours damaged or deteriorated surfaces on underpass floors, pedestrian paths or stairways.

**PM1.05.3-2** Repair within 6 months other damaged or deteriorated surfaces.

#### Specific Requirements:

- a) Maintain Highway Crossing Infrastructure within Rest Areas in accordance with the response of the adjacent Highway Classification.

### 1.05.4 Materials and/or Procedures

Refer to Subsection 1.6 of this Schedule 1 ("Specifications").

Additional material and/or procedures requirements are as follows:

- a) Use materials in accordance with the same type and quality on the existing Highway Crossing Infrastructure.



**1.05.5 Routine Maintenance Services Cap**

\$50,000 – for each occurrence, the cost to repair or replace Highway Crossing Infrastructure.

**1.05.6 Warranty**

Refer to Section 3 of this Schedule 1 (“Specifications”).

## 1.06 Invasive Plants Management

### 1.06.1 Outcome

To minimize the introduction and spread of Invasive Plants on Highways and Gravel Pits.

### 1.06.2 Routine Maintenance Services

**PM1.06.2-1** Meet annually, with the agency conducting Invasive Plant management for the Province, during development of the Quantified Maintenance Services to coordinate planned activities.

**PM1.06.2-2** Inspect all Gravel Pits and material sources annually to ensure they are free of Invasive Plants.

**PM1.06.2-3** Report Invasive Plant conditions to the agency conducting Invasive Plant management for the Province, as follows:

Performance Criteria	Response
a) Prior to the disturbance of knotweed species that restricts Sight Distance or creates a condition that is unsafe or has the potential to become unsafe	immediately
b) Any Invasive Plant infestations on Highways and Gravel Pits	2 d

#### Notes:

1) Only the exposed, active areas of the Gravel Pits are to be considered.

### 1.06.3 Quantified Maintenance Services

**PM1.06.3-1** Seed specific areas of exposed soils exceeding 1 metre up the Shoulder sideslope and the backslope due to ditch maintenance.

#### Notes:

1) The Standard Specifications for Highway Construction describes the revegetation requirements including, but not limited to blending, seed analysis and application timing.

### 1.06.4 Materials and/or Procedures

Refer to Subsection 1.6 of this Schedule 1 (“Specifications”).

Additional materials and/or procedures requirements are as follows:

a) Comply with the Best Practices for Managing Invasive Plants on Roadsides;

- b) Incorporate Invasive Plant management when planning and performing Quantified Maintenance Services;
- c) Seed side-cast ditch materials;
- d) Seek approval from the Province if disturbance of knotweed species is required;
- e) The Contractor may submit a plan for approval by the Province for the use of herbicides, as a control measure for knotweed or other Invasive Plants;
- f) Herbicides are to be applied by a certified pesticide applicator;
- g) Do not use gravel materials contaminated with Invasive Plants, unless a rectification process is submitted and approved by the Province; and
- h) Report Invasive Plants to the agency conducting Invasive Plant management for the Province online or using the Province's smartphone application or the provincial toll-free service.

#### **1.06.5 Warranty**

Refer to Section 3 of this Schedule 1 ("Specifications").

## 1.07 Lane Closures

### 1.07.1 Outcome

To keep Highway Users safe and provide the Services with minimal interruptions to the flow of traffic.

### 1.07.2 Routine Maintenance Services

**PM1.07.2-1** Notify emergency services and TransLink a minimum of 2 days in advance of all lane closures.

**PM1.07.2-2** Advertise all lane closures a minimum of 2 days in advance on the local radio stations and in newspapers.

**PM1.07.2-3** Use portable changeable message signs a minimum of 2 days in advance of all lane closures with a duration greater than 2 weeks.

**PM1.07.2-4** Adjust or terminate Services if a Traffic Delay exceeds 3 minutes through a work zone.

**PM1.07.2-5** Lane closures are prohibited as follows:

Highway	Starting	Ending	Between	Time Period
Highway 1	Monday	Sunday	1 <sup>st</sup> Avenue On Ramp and Horseshoe Bay	0500 to 2100
Highway 99	Monday	Thursday	Marine Drive (North Vancouver) and Chilco Drive (Vancouver)	0530 to 2230
Highway 99	Friday	Saturday	Marine Drive (North Vancouver) and Chilco Drive (Vancouver)	0530 to 0000
Highway 99	Sunday	Sunday	Marine Drive (North Vancouver) and Chilco Drive (Vancouver)	0930 to 2230

#### Notes:

- 1) The Province may modify the prohibitions in response to changing conditions, including but not limited to traffic volumes, construction, or other changing conditions as determined by the Province.
- 2) The Province may grant exemptions to the time periods where lane closures are prohibited for work of short duration or minimal impact to traffic flow or for work that cannot be practically accomplished by means of artificial lighting.

### 1.07.3 Materials and/or Procedures

Additional materials and/or procedures are as follows:

- a) Ensure traffic control devices are not in an active position when lane closures are prohibited;

- b) All lane closures are prohibited from 1200 to 2400 hours on Thursdays when statutory holidays fall on a Friday;
- c) All lane closures are prohibited from 1200 to 2400 hours on Fridays when statutory holidays fall on a Monday;
- d) All lane closures are prohibited on multi-lane Highways when traffic volumes exceed 1200 vehicles per hour per open lane for lanes adjacent to the work zone; and
- e) All lane closures are prohibited on multi lane Highways when traffic volumes exceed 1500 vehicles per hour per open lane for lanes not adjacent to the work zone.

**1.08 Maintenance Exceptions****1.08.1 Outcome**

To facilitate safe and efficient service delivery on #895R Cypress Bowl Road, and #894R Mount Seymour Road.

**1.08.2 Routine Maintenance Services**

**PM1.08.2-1** Maintain Cypress Bowl Road and Mount Seymour Road in accordance with the General Specifications, except for General Specifications 3.01, 3.02, 3.03 and 3.04 of this Schedule 1 (“Specifications”).

**1.08.3 Materials and/or Procedures**

Refer to Subsection 1.6 of this Schedule 1 (“Specifications”).

**1.09 Pavement Surface Reflectors****1.09.1 Outcome**

To facilitate the safe and orderly movement of traffic.

**1.09.2 Routine Maintenance Services**

There are no Routine Maintenance Services.

**1.09.3 Quantified Maintenance Services**

**PM1.09.3-1** Replace pavement surface reflectors by May 31<sup>st</sup> of each calendar year that are missing or are no longer effective.

**PM1.09.3-2** Install non-recessed pavement surface reflectors within 1 month at new locations.

**1.09.4 Materials and/or Procedures**

Refer to Subsection 1.6 of this Schedule 1 ("Specifications").

## 1.10 Salt Containment Infrastructure Maintenance

### 1.10.1 Outcome

To provide for the safe handling and storage of salt and Winter Abrasives on provincial land and monitor, maintain, repair and replace provincially owned Salt Containment Infrastructure.

### 1.10.2 Routine Maintenance Services

- PM1.10.2-1** Off-load salt onto an evapotranspiration liner or containment pad, if available and/or store immediately within the salt shed.
- PM1.10.2-2** Retrieve and return to the salt shed immediately, any salt spillage over the top of skirt that lines the inside of the salt shed.
- PM1.10.2-3** Remove immediately, any salt or salt contaminated material on the pit floor to a depth of 40 centimetres for use with Winter Abrasives when processing.
- PM1.10.2-4** Notify the Province immediately of any damage to the containment pond, including but not limited to the liner, berm or fencing.
- PM1.10.2-5** Temporarily repair damaged or deteriorated salt shed components immediately, that permits water infiltration.
- PM1.10.2-6** Permanently repair within 8 weeks, any temporarily repaired steel/fabric salt shed components that permits water infiltration.
- PM1.10.2-7** Permanently repair within 2 weeks, any temporarily repaired wooden salt shed components that permits water infiltration.
- PM1.10.2-8** Inspect and document the condition of Salt Containment Infrastructure as follows:

Performance Criteria	Response
a) Evapotranspiration water/brine levels	daily or more often when required
b) Water in the containment pond to prevent over-flowing	daily or more often when required
c) Steel/fabric salt sheds including, but not limited to, the steel structural components including base plates, wire cross-bracing, fabric roof, fabric lashing, winches and vents, lock-blocks and protective skirt	bi-annually in the spring and fall or in accordance with the manufacturer's specifications and recommendations, whichever is more frequent
d) Wooden salt shed including but not limited to structural condition and weatherproof exterior	annually
e) Salt shed apron and containment pad surfaces	annually
f) Evapotranspiration liner surface absorption	daily or more often when required



**PM1.10.2-9** Maintain the superstructure of steel/fabric salt sheds as follows:

Performance Criteria	Response
a) Remove grime and encrusted salt off the salt shed's steel interior	annually
b) Lubricate winches	annually
c) Re-tension-web and fabric roof lashing	annually
d) Re-tighten fastening bolts	annually
e) Remove surface rust	annually

**PM1.10.2-10** Repair or replace Salt Containment Infrastructure as follows:

Performance Criteria	Response
a) Damaged or deteriorated containment pond components, including but not limited to the liner, berm or fencing	immediately
b) Loss of absorption for a compact surface where water is ponding on the evapotranspiration liner	immediately
c) Saturation or overflow of evapotranspiration water/brine	when required
d) Damaged or deteriorated wooden salt shed components	within 2 weeks of the bi-annual inspection or as noted in PM1.10.2-8
e) Damaged or deteriorated steel/fabric salt shed components	within 8 weeks of the bi-annual inspection or as noted in PM 1.10.2-8 if salt and/or Winter Abrasive with salt is present or prior to when the salt and/or Winter Abrasive with salt is scheduled to be stored
f) Cracked, chipped edges, pot holes, settling/ponding, or base failure of surfaces	General Specifications 1.01, 1.06 and 1.10 of this Schedule 1 ("Specifications") for a Class 4 Highway

**PM1.01.2-11** Replace annually, the top 10 centimetres of salt contaminated material on the evapotranspiration surface with free draining material and use the removed salt contaminated material for Winter Abrasives processing.**Notes:**

- 1) The Province inspection H-form is to be used for inspections of steel/fabric salt sheds; and
- 2) PM1.10.2-10 (f) includes possible Quantified Maintenance Services
- 3) Salt Shed locations are provided in Appendix A of Schedule 13 ("Gravel Licence").

**1.10.3 Materials and/or Procedures**

Refer to Subsection 1.6 of this Schedule 1 ("Specifications").

Additional materials and/or procedures requirements are as follows:

- a) Load salt and/or Winter Abrasive containing salt on a containment pad or the evapotranspiration liner surface;
- b) Store salt and/or Winter Abrasive containing salt at a height below the top 30 centimetres of the skirt within a steel/fabric salt shed and ensure the top of the lock block wall remains free of salt accumulation;
- c) Park heavy equipment used for loading salt or Winter Abrasive containing salt, on the containment pad, evapotranspiration liner or within the salt shed;
- d) Prevent spillage onto the pit floor when transporting salt;
- e) Store Winter Abrasive containing salt under cover or on a containment pad or on an evapotranspiration liner, if supplied;
- f) Use a spill proof apron for salt hoppers to contain salt and facilitate retrieval;
- g) Store salt contaminated material for future use with Winter Abrasives on a containment pad or evapotranspiration liner or in a salt shed;
- h) Prevent salt contaminated materials from being tracked from the containment pad or evapotranspiration liner and use a containment pond for disposal, if one exists on site;
- i) Maintain an open catchment area adjacent to the salt shed exterior walls to accommodate unobstructed snow shedding off the structure;
- j) Remove snow from the roof of steel/fabric salt shed and adjust the roof tension after the snow accumulation has been removed in accordance with the manufacturer's specifications and recommendations;
- k) Reseal exposed surfaces following the removal of surface rust with zinc-rich primer/paint;
- l) Maintain and repair damaged or deteriorated salt shed components in accordance with the manufacturer's specifications and recommendations;
- m) Use engineered designs for all repairs, modifications or replacement to steel/fabric salt shed structural components including, but not limited to the fabric roof, prepared by a Professional Engineer, retained by the Contractor; and
- n) Securely lock gates and post signage to prevent unauthorized access to fenced containment ponds.

#### **1.10.4 Routine Maintenance Services Cap**

\$50,000 – for each occurrence, the cost to repair or replace a salt shed.

## 1.11 Sound Wall Maintenance

### 1.11.1 Outcome

To provide safe and stable Sounds Walls.

### 1.11.2 Routine Maintenance Services

There are no Routine Maintenance Services.

### 1.11.3 Quantified Maintenance Services

**PM1.11.3-1** Repair immediately, as directed by the Province, any damaged or deteriorated Sound Walls that have been structurally compromised, as determined by the Province.

**PM1.11.3-2** Repair any damaged or deteriorated Sound Walls that have not been structurally compromised, as determined by the Province as follows:

Performance Criteria	Response by Highway Classification	
	1&2	3
a) Damage, deterioration, deflection or settlement	1 m	2 m

**PM1.11.3-3** Repair within 6 months, other damaged or deteriorated Sound Walls.

**PM1.11.3-4** Replace within 6 months, Sound Wall components that are damaged or deteriorated beyond repair.

### 1.11.4 Materials and/or Procedures

Refer to Subsection 1.6 of this Schedule 1 (“Specifications”).

Additional materials and/or procedures requirements are as follows:

- a) Supply and use material of the same type, quality and size as existing; and
- b) Repair or replace damaged or deteriorated Sound Walls in accordance with the manufacturer’s specifications and recommendations.

### 1.11.5 Warranty

Refer to Section 3 of this Schedule 1 (“Specifications”)

## 1.12 Traffic Patrol – Lions Gate Bridge, Ironworkers Memorial Second Narrows Bridge and the Cassiar Tunnel

### 1.12.1 Outcome

To provide the safe and efficient flow of traffic on the Lions Gate Bridge, Stanley Park Causeway, Iron Workers Memorial Second Narrows Bridge and Cassiar Tunnel from the McGill interchange to 1<sup>st</sup> Avenue.

### 1.12.2 Routine Maintenance Services

**PM1.12.2-1** Conduct hourly traffic patrols continuously at each location.

**PM1.12.2-2** Station patrol vehicles at each location for point duty, when not performing traffic patrols as follows:

Location	From	To	Time Period	No. of Vehicles
a) Lions Gate Bridge and Stanley Park Causeway	Monday	Sunday	0000 to 2400	1
	Monday	Friday	0600 to 2200	2
	Saturday	Sunday	0900 to 2200	2
	Statutory Holidays		0900 to 2200	2
b) Iron Workers Memorial Second Narrows Bridge and Cassiar Tunnel Combined	Monday	Sunday	0000 to 2400	2
	Monday	Friday	0600 to 2200	3
	Saturday	Sunday	0600 to 2300	3
	Statutory Holidays		0600 to 2300	3

**PM1.12.2-3** Respond with a patrol vehicle immediately to the scene of an obstruction.

**PM1.12.2-4** Remove any vehicles involved in an incident or other obstructions immediately from the Travelled Lanes.

**PM1.12.2-5** Respond immediately to prevent Highway Users from any unauthorized access to Structures.

**PM1.12.2-6** Identify and document immediately, all traffic disruption incidents, including their circumstances within a daily log book.

**PM1.12.2-7** Communicate immediately the following conditions or incidents to the Regional Traffic Management Centre:

Location	Condition or Incident
a) All locations	Any affecting or having the potential to affect the flow of traffic
b) All locations	Damage to a Bridge, Tunnel, entrance ramp or an exit ramp
c) Lions Gate Bridge	Southbound traffic from the west backs up onto the Capilano Bridge
	Southbound traffic from the east backs up onto Marine Drive
	Northbound traffic backs up on the Denman Street Interchange
	Traffic backed up onto both the north and south approaches

### 1.12.3 Materials and/or Procedures

Additional materials and/or procedures requirements are as follows:

- a) Provide a flat deck tow vehicle and a tow truck for the Lions Gate Bridge;
- b) Provide a flat deck tow vehicle, a heavy wrecker tow truck and a tow truck for the Iron Workers Memorial Second Narrows Bridge and the Cassiar Tunnel;
- c) Ensure patrol vehicles have a minimum 1 tonne rating and are equipped to communicate with the Regional Traffic Management Centre at all times; and
- d) Patrol vehicles are to be equipped with the following:
  - Front push bumper and wheel lift device;
  - Firefighting equipment;
  - Basic first aid equipment;
  - Safety flares;
  - Brooms, shovels, jumper cables and other equipment as directed by the province;
  - Flashing arrow board; and
  - 20 litres of liquid absorbing compound.